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THE UNIVERSITY OF AUCKLAND
BUSINESS SCHOOL

NON-ICT EXECUTIVE PERCEPTIONS OF, AND ATTITUDES TOWARDS, ICT INFRASTRUCTURE PROJECTS:

DO THEY INFLUENCE THE OUTCOMES OF SUCH
PROJECTS?

*A Thesis
Submitted in Fulfilment of
the Requirements for the Degree*

of

Doctor of Philosophy

By

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(November 2006)

DISCLAIMERS

This thesis contains no material that has been accepted for a degree or Diploma by the University or any other institution, except by way of background information, and duly acknowledged in the thesis.

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Gillian Reid
October 2006

ABSTRACT

There are many issues involved in implementing Information and Communications Technology (ICT) projects in general, and infrastructure (ICT/I) projects in particular. Failures are still common despite advances in project management tools, and increased ICT sophistication. Executive sponsorship and support is acknowledged to make a difference to the success or failure of these kinds of projects. Little has been written on the views of non-ICT executives about the issues they have with ICT/I projects, which have particular challenges because of their highly technical nature.

This research sought to develop a theory not only about **what** the issues are, from the non-ICT executive perspective, but also **how** these issues appear in, and may affect the outcomes of, such projects. An interpretive study using single units of analysis within multiple cases, to build an inductively derived theory, was the approach chosen for this research. An adapted grounded theory analysis, following the original Glaser and Strauss (1967) philosophy, was used to analyse data extracted from interviews with fifteen chief executives or equivalents. Three themes arose out of this process:

- Executive Perceptions of ICT/I
- Strategic Alignment of ICT/I projects
- ICT/I Project Outcomes

The themes had quite strong connections between them. Jargon Barriers between ICT staff and these executives, affected the executives perceptions of ICT/I and were strong contributing factors for a poor strategic alignment between ICT/I projects and business goals. The poor alignment was primarily caused as a result of low levels of executive engagement with these projects, because they couldn't understand the "techno-speak" of their ICT people. The consequence was consistently low satisfaction with ICT/I project life cycle outcomes. There was a very real difference between the satisfaction levels of executives who had made definite efforts to overcome, or deal with, the ICT/I jargon barriers, and those who hadn't. there was a very real difference

between the satisfaction levels of executives who had made definite efforts to overcome, or deal with, the ICT/I jargon barriers, and those who hadn't.

The substantive theory developed from this work is that:

Jargon barriers created by ICT staff generate poor relationships between ICT staff and their executives,

which in turn can cause low levels of executive engagement with their infrastructure projects,

and consequently affect executive perceptions about the outcomes of these projects..

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DEDICATION

I wish to dedicate this work to three people. Firstly, to my parents, who steadfastly believed throughout my whole life that I could achieve whatever I set out to do. They made great sacrifices to get me started on the road of lifelong learning, and were supportive and proud of every milestone I reached. I am deeply grateful for that.

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CHAPTER 1:

INTRODUCTION

- 1.1 Background
- 1.2 The Research Problem
- 1.3 The Research Focus
- 1.4 The Value of this Research
- 1.5 Chapter Summary and Thesis Overview

“It is widely known that many large-scale change management projects involving new information technology (IT) fail for reasons unrelated to technical feasibility and reliability.....both IT specialists and line managers frequently have and hold on to failure-promoting beliefs about their roles in change.Implicit in major IT-enabled change projects (especially those labelled “IT infrastructure projects”) are expectations that the organisation and its people will operate better when the technology is successfully installed and used”. (Markus and Benjamin 1997 p. 55)

1.1 Background

Key senior decision-makers need to feel they can confidently and cost-effectively gain access to the information they need to make business decisions, and process it in a timely enough manner to make good decisions. Even though there may be “a lack of clarity in the visions for the organisation, a unifying theme runs through all – information technology (IT) is a critical component that is both driving change and enabling survival” (Appelgate 1994 p. 18). IT enables executives to deliberate on the information they have,

and use it to improve the quality of their planning, controlling, and decision-making activities (Mintzberg 1994). (Marginson, King and Macauley 2000) describe executive behaviour as frequently reactive and tactical, in an environment characterized by variety and discontinuity. Thus, the availability of critical decision-making information is a major influence on executives' own mental models and their confidence in the organisation's Information and Communication Technology (ICT) facilities. CEOs and equivalent executives have a significant influence on the attitudes of others in an organisation. How they feel about their ICT is likely to be a determinant of its place in the 'success' scale of organisational strategy and operations. Management are seeking "more concrete evidence of the IS contribution to the success of the business and the 'real' value of their often extensive IT investments" (Serafeimidis and Smithson 2000 p. 93). Regrettably, as far as IT-enabled change and decision-making is concerned, "both IT specialists and line managers frequently have, and hold on, to failure-promoting beliefs about their roles in change" (Markus and Benjamin 1997 p. 93). In the case of senior management, these beliefs influence their perception of, and attitude towards, ICT.

Three aspects of these 'failure-promoting beliefs' epitomise the gap between what ICT projects deliver, and the level of satisfaction the business has about the quality of that delivery. They are:

- The perceptions executives have about ICT people, product, and service.
- The ICT infrastructure itself, and non-ICT staff understanding of it.
- The publicity about, and record of, ICT project failures, and how these influence executive attitudes about such projects.

1.1.1 Executive Perceptions

ICT projects still have a reputation for delivering less than the senior executive stakeholders expect, (Heeks 2002; Hind 2002; Myers 1995). A Tasmanian Government commissioned white paper on Guidelines for Project Management, noted that, "projects which are not considered successful can be quite demoralizing for those involved. ... All large sized organisations have some examples of projects which can be considered failures."

(Tasmanian Government Department of Premier and Cabinet 1998 1.2.1). Unfortunately, this kind of outcome is rather too common in the case of ICT projects. These projects are typically complex and expensive, and routinely considered by the results of research to have only a 16% to 34% reported success rate, of delivery on time, to budget, and to specification (BCS 2004; Heeks 2002; NZIM 2003). Results often do not lead to business process improvements, or to business stakeholder satisfaction with the value the projects bring (Habermann and Scheer 2000; Smith 2001).

In a survey conducted by KPMG Management Consulting, Smith (2001) reported that one of the root causes of troubled projects in the U.K. public sector was a lack of senior management involvement and commitment. This appeared to have an impact on overall business stakeholder attitudes about these projects, and was therefore felt to be a contributing factor to their reported less than satisfactory outcomes. Senior executive attitudes and perceptions about the success or failure of their organisation's ICT Infrastructure projects are likely to have a significant impact on the way these projects are viewed by others in the organisation. This thesis develops a theory to explain the reasons for such perceptions. It also suggests some opportunities for improvement in the delivery of these projects.

1.1.2 The ICT Infrastructure (ICT/I)

The ICT Infrastructure (ICT/I) component of an organisation comprises those basic facilities and installations needed for the appropriate functioning of the whole ICT environment (Broadbent, Weill and St Clair 1999; Weill and Vitale 2002). ICT/I projects are those that directly affect the environment in which software applications run. They include

- network changes;
- desktop operations and roll-out of “shrink-wrapped” or “packaged” applications;
- telecommunications, including internet connectivity and activity;
- hardware related activities, including new purchases, equipment rationalisation, disk and memory upgrades, and applications implementation.

They are usually characterised by considerable technical complexity, and “where even limited failures occur can cause widespread disruption and damage” (Lukasik,

Greenberg and Goodman 1998 p. 12). These factors generate difficulties in general user comprehension about the implications of what may seem to be a straightforward business requirements specification. Users rarely understand the technical implications of their requests, and the appropriate technical architect and design people are often not involved at early requirements definition stages (Habermann and Scheer 2000; Lukasik, Greenberg et al. 1998; Serafeimidis and Psinos 1995).

One familiar example of these kinds of projects would be the physical implementation across an organisation of an Enterprise Resource Planning (ERP) software package. Frequently, there is little or no real understanding of the impact on network traffic and response times, hardware capabilities, user capabilities, or organisational culture impacts, (Avgerou 2001; Krumbholz, Galliers, Coulianos and Maiden 2000; Sumner 2000). It may be that the highly technical nature of ICT Infrastructure projects makes their implementation harder than ICT software application projects. It may also be more difficult for front-line users and business executives to understand their characteristics and organisational implications. This lack of understanding may potentially lead to negative perceptions about the value these projects deliver. The increasing importance of the ICT Infrastructure to an organisation may thus be overlooked. In fact, with the rapid and dramatic development of the Internet, and company Intranets, ICT/I is likely to become a critical factor in an organisation's future growth, cost-effectiveness, and value to stakeholders.

1.1.3 ICT Project Failure

From many years personal experience as an ICT project manager, an IT Manager, and a manager of teams of project managers, I have found many issues involved in implementing ICT projects generally, and infrastructure projects in particular. There are frequent disconnects between what the business expects and what the ICT people believe they are delivering. "Failures remain common despite advances in development tools and technologies Not only have many organisations failed to learn, but they have also learned to fail. Over time they accept and expect poor performance" (Lyytinen and Robey 1999 p. 85). While undoubtedly there are many ICT/I projects that are developed and

delivered satisfactorily, the failures are frequently high-profile, critical, and particularly expensive (Alward and Sheffield 2000; Lukasik, Greenberg et al. 1998; Myers 1995). Even limited failures in ICT/I systems can cause widespread disruption and damage. This is especially so in the areas of telecommunications and company networks, given the increasing dependency upon these facilities (Lukasik, Greenberg et al. 1998).

According to Somers and Nelson (2001) Information System failure is “the inability of an IS to meet a specific stakeholder group’s expectations” (p3). They also note that successfully managing user expectations was usually found to relate to successful systems implementation. This theme runs through a number of researchers’ findings (Boddy 2000; IBM 1997; Lyytinen and Robey 1999; Markus and Benjamin 1997; Serafeimidis and Smithson 1994; Telindus 2004). Unfortunately, the expectations of a company may exceed the capabilities of a system, especially if there has been inadequate communication and agreement between the users and the ICT people (Somers and Nelson 2001). Where such poor communication occurs, executive attitudes may become negative. David Clarke a recent CEO of the British Computer Society summed up the situation:

“I know of no other area that performs as poorly as Information Technology (IT) in meeting business objectives. Many studies show that far too many projects are never completed, and many of those that do get finished, are not considered a complete success by the users, and are often over time or budget. This has become a fundamental issue: businesses won’t take the punt they did in the past: they are looking very carefully at what they’re going to get for their money – and whether they are going to get it at all.” (Clarke 2002)

To exacerbate the issues noted above, there is an apparent dearth of research into performance and delivery of ICT/I activities, which frequently form the ‘engine’ or ‘utility’ side of ICT projects. Most research attention has traditionally been given to the software products residing on the underlying infrastructure. Consequently there is a low awareness of success of ICT/I projects, or value they deliver to the organisation. Although Schon (1983) writes of the “reflective practitioner”, the reality is often that any reflection relates to the

immediate problem at hand. Thus there is little time allowed to bring individual reflections into a meaningful whole that relates to the entire technical environment. This would be particularly true in the case of executive stakeholders who do not have a substantial understanding of the technical aspects of ICT. Even less time is made available to consider creating a sound procedural framework for all projects of this kind.

1.2 The Research Problem

The academic and business literature on information and communication technology projects tends to reinforce that ICT is a major and critical component of all aspects of organisational change (Appelgate 1994; Markus and Benjamin 1997; Serafeimidis and Smithson 1994; Serafeimidis and Smithson 2000). There is a perennial issue that has been raised by authors for many years, namely, why are ICT projects still not delivering to the success or satisfaction levels anticipated? For many companies, ICT has caused a radical rethink of the way business should operate. It is redefining whole markets and industries, and has become a major influence on the strategies of firms that compete in them. The amounts spent on ICT are often enormous. Consequently, senior management are under increasing pressure from Boards and shareholders to demonstrate the value that this investment is bringing to the business (Heeks 2002; Lyytinen and Robey 1999; Serafeimidis and Psoinos 1995). As well as this pressure, “one of the key roles of an ICT group is to identify the important ICT infrastructure services that the firm needs to conduct business electronically, now and in the future” (Weill and Vitale 2002 p. 8) in order to effectively support strategic directions the business wishes to take.

Much of ICT now does have the characteristics of infrastructure utilities, which are there to enable the ‘business’ part of the organisation to operate effectively. However, while costs are high, the benefits of ICT are often seen to be indirect and difficult to measure. Additionally, many CEOs and senior business executives have difficulty being confident in either the communications they receive about this technology, or the benefits their business might be gaining from implementing it. Apart from companies specifically engaged in the

business of ICT, there are very few CEOs who have come to that position via a professional ICT background. There is a tension faced by these senior executives between the need to maintain a competitive position, the cost of doing so where ICT is involved, the lack of real understanding of what the technology means to the business, and the difficulty of measuring benefits. This research is an exploration of the effect this tension has upon the executives' perceptions of, and attitudes about, their ICT Infrastructure, and the projects that build and maintain it. It is anticipated the benefits of this study will be:

- an improved awareness by all ICT/I project stakeholders of the issues that senior executives face in this area; and
- a better understanding of the changes that all stakeholders in such projects may need to make, in order to ensure higher levels of success and/or executive satisfaction.

Researchers have identified a number of possible reasons for the low levels of satisfaction in the results of ICT projects, (including ICT infrastructure projects). Regularly referenced examples are high costs, poor project management skills, and project scope change. The latter of these three often results from the user gaining increased understanding of what is really required as the project progresses, and changing the requirements as a consequence, (Alward and Sheffield 2000). Most importantly, there is a recognition that changes in technology, competition, and consumer demand have brought about the need to alter both strategies and infrastructure in most organisations (Curry and Knowles 2005; Gillard 2004; IBM 1997; Lyytinen and Robey 1999; Markus and Benjamin 1997). Thus, the issues of disconnects between what is delivered by ICT and the expectations of business executives, still exist (Franz and Robey 1984; Szajna and Scannell 1993; Wetherbe 1991). There is little published research on the results of collecting and analysing the views of **non-ICT** business executives regarding issues they have with ICT projects. Nor is there much published about considering the perceptions of, and attitudes about, these projects, held by this group. Franz (1984), Jarvenpaa and Ives (1991) Pijpers (2005), Serafeimidis (2000), Szajna (1993), and Wetherbe (1991) are among the few who have researched this perspective. There is even less written on senior executive issues with ICT/I projects, or calls in the literature for further research in this particular area. Jarvenpaa and Ives (1991),

and Pijpers and Montfort (2005) are among the very few who have mentioned this, and only in general association with all ICT. There is increasing importance on the underlying ICT/I for an organisation's ability to operate effectively. Thus, ICT/I projects and their relationship with business critical success factors are a neglected area of research

My interest in the whole area of the senior non-ICT executive's strategic relationship with ICT/I projects had been one of the original drivers for this study. My own business and technical association with these people had raised many questions about their attitudes towards ICT/I projects. In particular, I was interested in how these attitudes might affect the strategic direction of an organisation. Senior non-ICT executives play a key role in their businesses, influencing strategic direction and the implementation of projects that relate to strategic decisions. The infrastructure component of ICT, plays an increasingly important role in business strategic decisions and directions. The very technical nature of many ICT/I projects may generate views held about them that are different from the way software applications development projects are seen. Thus there seemed to be potential value in trying to find out how these executives viewed their ICT infrastructure, and the projects that built and supported it. Understanding those perceptions and attitudes could potentially disclose some previously unrecognised reasons for the apparent disconnect between ICT and the business, especially where the most senior business decision-maker does not have a background in ICT. Consequently, the general research problem to be investigated in this thesis is:

Do non-ICT executive stakeholder perceptions of, and attitudes towards, delivery of ICT infrastructure projects influence the outcomes of such projects?

1.3 The Research Focus

The research was intended to investigate the issues surrounding successful and satisfactory delivery of ICT **Infrastructure** projects, (as opposed to software development projects) solely from a senior non-ICT executive perspective, and develop a theory related to

the reasons for those issues. It is intended that the results will assist ICT project teams, client stakeholders, and ICT project sponsors, to understand what they need to do to address those issues. Obtaining the views of a number of senior executives about their ICT/I projects should, after analysis and interpretation, reduce ambiguity, and improve planning and execution of these projects, with an expected outcome of increased success and satisfaction.

Most research on the issue of any form of ICT project delivery dealt either with the projects themselves, or the business end-users, or an ICT perspective on these projects. Little attention had been paid to the perspective of senior non-ICT executives, especially CEOs. These senior executives were responsible for creating the most value for their business at the lowest possible cost, and were increasingly dependent on ICT to achieve that. They were thus dealing with a component of their business which had an increasing level of importance, but one that was typically quite outside their own area of expertise or background. Did their attitudes and perceptions help or hinder the value-creation process?

In order to research the perceptions and attitudes of these executives towards their ICT/I projects, a suitable sample of this group needed to be identified and selected. The executives approached for participation in this study were either the most senior, or a direct report to the most senior, non-ICT person in the company. None of them had a professional ICT background. The companies were all New Zealand-based operations, although some were the New Zealand subsidiaries of multi-national organisations. A mixture of small, medium and large companies was used, and there was a fairly broad cross-section of company and industry types. All of the companies employed more than 20 staff, and had at least one permanent ICT staff member responsible for the infrastructure component of their ICT operations.

There are five general elements being considered in this research around the delivery of ICT/I projects, which have been identified by both ICT practitioners and a number of writers on ICT project failure issues (Boddy 2000; Heeks 2002; Lyytinen and Robey 1999; Management 2003; Myers 1995; Smith 2001). Each of these elements was investigated for

their impact, although personal experience, and published research data, (Avgerou 2001; Bennington and Baccarini 2004; Bullen 2001; Ives 2005; Scott and Vessey 2002), indicated that they are not discrete. These elements appear to have overlapping relationships that individually, or in concert, become barriers to successful project delivery, and subsequent business satisfaction with ICT/I projects. Figure 1.1 illustrates the elements used as starting points for this research, along with their relationships to ICT/I project issues and one another. Their noted relationship with one another does not cover all possibilities, merely those that seemed most obvious, and about which there had been other research.

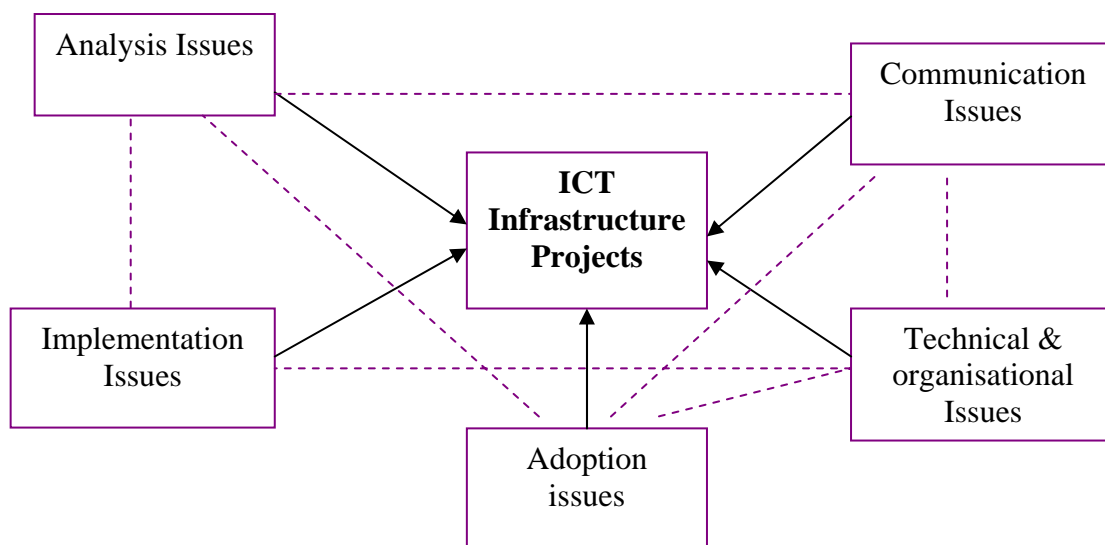


Fig. 1.1 Common ICT/I project issue elements

- **Adoption issues:** these relate to the timing of introduction and acceptance of new technology into an organisation. Early or late adoption of technology, can have a distinct effect on organisational effectiveness and competitiveness. Early adoption of new technology may provide competitive opportunities, but potentially carries high risk that these massive investments may not achieve the potential pay-offs promised, (Markus, Axline, Petrie and Tanis 2000). Late adoption, when the technology is better proven, is safer. However it may cost the business dearly in its need to adapt to a changing market place, by not using information technology fast enough to drive change and enable survival (Applegate 1994).

- **Analysis issues:** where there has been a failure to define the business and technical systems requirements to a level that is fully understood and accepted by the key stakeholders before detailed design and development commences. Because there are questions that are common to a variety of exploratory activities, it is often assumed that the process of inquiry and fact finding for ICT does not need any special skill. However, the inquiry process can easily derail, and careful planning is required (Garvin 2000). This has been a depressingly familiar situation in ICT projects. The lack of adequate planning and requirements gathering at the analysis stage has caused major problems further along the life cycle of many projects. Planning and analysis needs to be carried out by **all** the organisational units involved in a project (Kerzner 1992). In this way, all the necessary information is brought together and agreed by all the stakeholders concerned. Thus, “the best solution to the owner’s requirements is achieved, and money and resources are committed only as uncertainty is reduced” (Turner 1993 p. 285). Other authors, such as Haberman and Scheer (2000) also commented on these planning and analysis issues. They particularly identified situations where, if not clearly defined the ICT system might become increasingly complicated and difficult to master.
- **Communication issues;** where the progress of a project is not adequately communicated between the project team and the business stakeholders. Everyone concerned needs to have a full understanding of issues being raised that could impact on a project’s successful delivery. “Communication is the oil that keeps everything working properly” (Somers and Nelson 2001 p. 5). When issues arise on either side there are often no effective processes in place to communicate them to the affected people, and develop satisfactory resolutions for them. There were some interesting comments about this made by Lyytinen and Robey (1999) when writing about the London Stock Exchange Taurus project. Almost all of the issues that eventually brought the project to a halt were related either to an unwillingness to listen to warnings being delivered about the project, or to continued confusion about the

system's purpose and design. A situation that would be much less likely to occur if good two-way communication processes had been in place.

- **Technical and Organisational issues;** where the match between the technology proposed and the organisational requirements is incomplete. Technology opportunities are often used to drive a solution to an organisational issue that could be resolved differently. Alternatively, organisational issues may bring pressure to use new or immature technology as a 'quick fix' even if it is not clear that this is the best long-term business solution. A number of writers who have investigated project failure have commented on this. Particularly well known is the work carried out by Wanda Orlikowski on her own or in collaboration with others. Comments made in the joint research, Orlikowski and Robey (1991), on the interaction of organisations and information technology, are very pertinent. They said that, "Information Technology is both an antecedent and a consequence of organisational action", (p. 151) and there needs to be a full understanding of the implications of its introduction into organisational life.
- **Implementation issues;** where promises and delivery realities do not meet. Implementation issues frequently arise as a result of deficiencies in some or all of the earlier stages of a project. This is especially the case when gaining business stakeholder involvement and commitment to the success of the project. Alward and Sheffield (2000), Kwon and Zmud (1987), and Myers (1995), are among the numbers of writers who have commented on this phenomenon. They all agree that in spite of the many years of research into information systems implementation, the majority of such research results have not brought improvement in ICT project implementation. Nor does the research show improvement in the learning that should have been gained by others' experiences. As an example, in New Zealand, there were two major government funded projects, the Education Department centralised payroll system in 1989, (Myers 1995), and the Police INCIS system, only ten years later

(Alward and Sheffield 2000), that failed during implementation, for very similar reasons.

1.4 The Value of this Research

Executive support, either as project champions, or sponsors, can make a huge difference to the success or failure of ICT/I projects. A number of writers have emphasised the importance of good governance, and involvement from groups such as Project Steering Committees, for successful outcomes from projects (Grant 2003; Tasmanian Government Department of Premier and Cabinet 1998) A large section of Chapter 10, ‘Dealing with Executives’ in Kerzner (1992) is dedicated to the role and importance of project sponsors. Kerzner also commented in the overview to his book, that

“Success in project management is like a three-legged stool. The first leg is the project manager, the second leg is the line manager, and the third leg is senior management. If any of the three legs fail, then even delicate balancing may not prevent the stool from falling down. Senior management involvement is necessary to provide advice and guidance to the project manager, as well as to provide encouragement to the line managers to keep their promises. When the executive acts in this capacity, he or she assumes the role of project sponsor” (Kerzner 1992 p. 17)

1.5 Chapter Summary and Thesis Overview

The overall structure of the thesis was developed using the (Sheffield 2004 (b)) V Model as its framework. This V Model is a graphical display technique that presents levels of abstraction (vertical axis) against time (horizontal axis). Key dependencies and relationships between each of the thesis chapters are shown both vertically and horizontally (Sheffield 2004 (b)). The top level of the V Model (steps 1 and 6) represents the highest level of abstraction, effectively the overview and discussion. The bottom points (steps 3 and 4) represent the lowest level of abstraction, namely the research methodology, data collection

and analysis, that supports the higher level discussion (Sheffield 2004 (a)). Of particular importance is the horizontal link between steps 1 and 6, where the initial intentions of the research outlined in Chapter 1 are matched against the final outcomes described in Chapters 9 and 10.

The principle of the V Model was applied in each chapter of the thesis to show the links between the steps of the research process, and the connection between intention and outcome. The rigour of the structure enforces the horizontal links of the thesis, effectively grounding each step in what came before, and what its horizontal ‘partner’ promises. It also reflects some principles of Habermas’ Theory of Communicative Action (Habermas 2000), relating to what he calls his three personal, social and material worlds, (as reflected in the V.Model by the three levels of ‘Why?’, ‘What?’, and ‘How?’), (Sheffield 2004 (b)). Figure 1.2 shows the structure of the V Model as it is applied to this thesis.

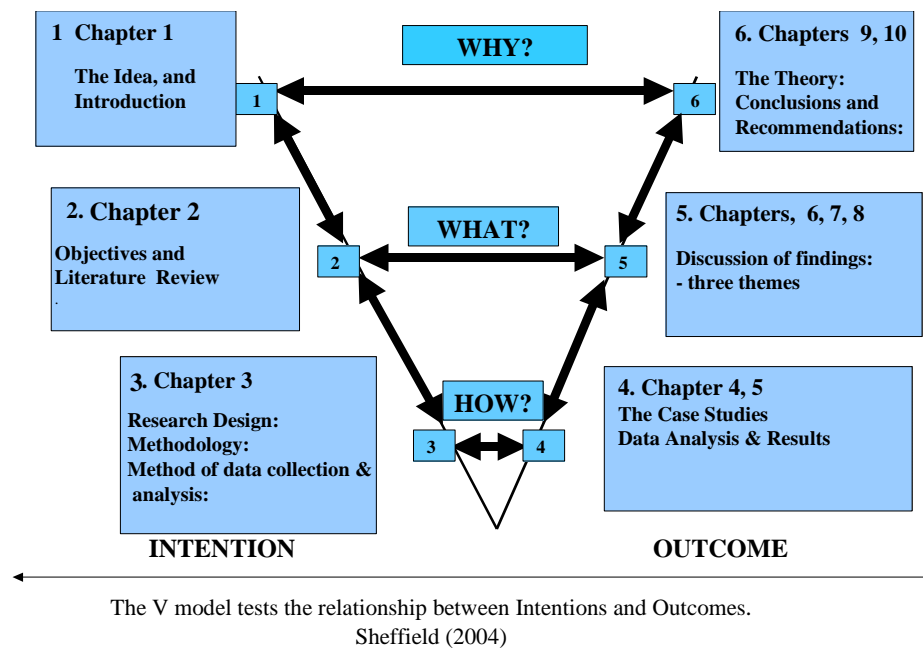


Fig. 1.2 The V Model showing the structure of this thesis

One of the aspirations of this thesis is that the theory developed as its outcome, will increase the mutual understanding of both the ICT and executive ‘actors’ involved in the development

and implementation of ICT Infrastructure projects. It is also hoped that some purposeful strategic action will eventuate. Desirably, these actors will achieve their ends by influencing each other to deliver more effective and rational outcomes (Cecez-Kecmanovic, Janson and Brown 2002).

Chapter 1 – *Introduction*, provides an overview of the thesis, giving an outline of the idea behind, and motivation for, this project. It describes the background to the research, defines the research area, the context in which it is placed, and the key issues being explored. It also identifies the value that undertaking such a research project expects to deliver. Namely, as a result of this research, a substantive theory will be developed about how and why these executive tensions and disconnects occur, and the effect they have on the outcomes of ICT/I projects. Such a theory should facilitate improvement in the overall ability and reputation of ICT/I projects to deliver satisfactory outcomes for all their stakeholders. It is also hoped to be useful in further academic research on issues related to general ICT projects.

Chapter 2 – *Objectives and Literature Review*, describes the specific objectives of this study. It also explores research literature that discusses the environment of these projects and the five key elements previously identified that have implications for their satisfactory outcomes or otherwise. This literature is revisited and reassessed in Chapters 6, 7, and 8, during the discussion of the research findings. It provides the basis for the comparison that occurs between the research objectives and the discussion of findings from the data collection and analysis (note the arrow in the V Model between Chapters 2 and 6, 7, and 8).

Chapter 3 – *Research Design and Methodological Approach*, details the philosophical assumptions underpinning the research. It explains and justifies the chosen case study methodology, and discusses the data collection and analysis techniques used. Specifically, it describes the use of an adaptation of grounded theory for the data analysis and theory development.

Chapter 4 – *The Case Studies and Preliminary Data Analysis*, describes the fifteen organisations used for this research, and the executives who were the units of analysis. It also describes the very preliminary interview analysis that prepared the extracted data for grounded theory coding.

Chapter 5 – *Grounded Theory Data Analysis*, describes the adapted grounded theory process undertaken to analyse the interview data, implementing the research design outlined in Chapter 3. The Open, Selective and Theoretical Coding phases are described as they progress towards the development of key themes. These themes underpin the development of the preliminary theory that is discussed in Chapters Six, Seven, and Eight. A summary of the key findings from the interviews is also presented, showing the categories developed that assisted the early part of the Grounded Theory coding process.

Chapters 6, 7, and 8 – provide discussion of the three key themes developing from the research, namely –

- **Executive Perceptions of ICT**
- **Strategic Alignment of ICT/I Projects**
- **ICT/I Project Outcomes**

that become the foundation for the theory the data analysis produced. These are related back to the five elements identified and examined in the literature reviewed in Chapter 2. Further literature is explored, in light of the outcome of the data analysis process.

Chapter 9 – *Theoretical Framework*, outlines the theory developed as a response to the research questions. The relationship between the developed theory and the research questions is also detailed. The findings related to answering the research questions are summarised, drawing them into the theory that has been developed. An overview of the implications that can be drawn from this research is also provided.

Chapter 10 - *Conclusions and Recommendations*, details the conclusions drawn from the results of the research. It also makes recommendations with regard to how the theory

may be applied to improve both the perception and reality of ICT/I project delivery, and the satisfaction levels of the executives involved. Finally, it comments on the value this research brings to the areas of ICT and ICT/I project delivery. In particular it notes the overall contributions to ICT research, the assumptions made, limitations discovered, and some further possible research directions.

CHAPTER 2:

OBJECTIVES AND LITERATURE REVIEW

2.0 Chapter Overview

2.1 Research Objectives

2.2 General Literature Review on ICT Project Issues

2.3 ICT Infrastructure Projects

2.4 Adoption Issues

2.5 Analysis and Specification Issues

2.6 Communication Issues

2.7 Technical and Organisational Issues

2.8 Implementation Issues

2.9 Chapter Reflections

“Using IT in ways that that can trigger major organisational changes creates high-risk, potentially high-reward, situations that I call technochange (for technology-driven organisational change) The potential for the ‘solution’ to be misaligned with important organisational characteristics, such as culture or incentives, is great” (Markus 2004 p. 4)

2.0 Chapter Overview

This chapter defines the specific objectives of the research, and provides a general discussion of the literature relating to ICT/I projects, particularly the elements identified in Chapter 1 as key issues in development and implementation. It is divided into separate sections, each one defining the research problem further. Thus it develops an initial structure and context for this study that assists the methodological approach outlined in Chapter 3.

There was a deliberate intention, influenced by the principles of grounded theory (Glaser and Strauss 1967), to bring as little as possible in the way of predetermined views, either experiential or from literature, into this research. Therefore much of the writing that would typically be included in a traditional literature review is revisited in Chapters 6, 7, and 8, during discussion of the findings. Referenced literature is also used in Chapter 9 as part of the development of the theoretical framework. Consequently, the literature reviewed and discussed in this chapter relates primarily to general ICT and ICT/I project issues. The literature reviewed about the five initial elements of known issues already identified in Chapter 1, gives an overview of the theoretical environment in which this study is situated. As a preliminary consideration of the background to this study, this approach is quite acceptable within the context of a grounded theory approach (Urquhart and Fernandez 2006). The emergent theory would determine the level of relevance of this preliminary review, and would be supplemented by further reading and discussion.

2.1 Research Objectives

2.1.1 Primary Objective

ICT projects have long been regarded as the most challenging and failure-prone of all types of projects. This is especially so as they have become more complex in scope, and no longer just a matter of installing a new computer system for the ICT department. ICT is now integral to the core business and mission of an organisation (Vann 2004). The context of this research was the area of ICT that addresses ICT Infrastructure (ICT/I) projects – their development and delivery. This aspect of ICT has almost become a utility. It is, however, an area that is critical to the overall ability of an organisation to deliver information that enables quality planning, controlling, and decision-making activities (Mintzberg 1994). There is a wealth of published research on issues related to ICT projects. However, there is little on the views of non-ICT executives about the issues they have with ICT projects, and with ICT/I projects in particular. Other studies (Markus 2004; Ross, Beath and Goodhue 1996; Sambamurthy and Zmud 2000) have stressed the need for better theoretical models that will trace the path from ICT investments to better business value. The objective of this research

was to seek out the views of a number of non-ICT executives about their ICT/I projects, then develop a theory about these views that could be applied against the development and delivery of all ICT/I projects.

2.1.2 Sub-objective

The sub-objective here is to conduct a literature review of issues related to ICT/I projects. In particular, the focus is on considering literature that may assist the development of an initial framework for the research design section of this research. It explores literature related to five common elements I have observed, and others have written about, that have caused difficulties in the development and implementation of ICT/I projects. These five elements:

- Adoption Issues
- Analysis Issues
- Communication Issues
- Technical and Organisational Issues
- Implementation Issues

have been described in Chapter 1, and have both a discrete and an interrelated relationship to the potential success of an ICT/I project. It was also anticipated that further factors affecting these projects would come to light during the exploration of the issues with the selected executives. However, these five were deemed appropriate as a starting point, and were familiar project issue areas to these stakeholders. While these elements are examined in this chapter in relation to all ICT projects, the organisational and social context they inhabit for ICT/I projects in particular is also taken into account. There is a considerable quantity of literature around the study of various behavioural characteristics which affect technological change (Avgerou 2001). However, in this research, it was the behavioural characteristics of the senior non-ICT executive, which were of particular interest, and how these might affect the development and delivery of ICT/I projects.

2.2 General Literature Review on ICT Project Issues

2.2.1 Rationale

While the research project focused on ICT/I projects, it seemed pertinent to reflect on issues around all ICT projects. I expected this exercise to give me a broader perspective on the identified problems with all ICT projects, and see where there was a connection with the infrastructure components of them. I also had a strong desire to avoid being too constrained by the views expressed in the literature gathered. In order for me to be open to the views expressed by the executive stakeholders I wished to study, I needed to avoid the filters that can be generated by adherence to the writings of others, as well as the ones I might be tempted to apply as a result of my own experiences in ICT projects (Garvin 2000). I also needed to be open to new ideas coming out of the fieldwork component of the research activities. This was essential if I hoped to develop a credible theory about the reasons behind the documented low levels of satisfaction about ICT projects in general, and these ICT/I ones in particular. Thus, the core of my literature review was around the five elements already noted, together with some exploration of issues related to the areas of project governance, ICT/business relationships, and general views of ICT project success or failure.

2.2.2 Identified Issues

“There is an irreversible trend toward using technology to enable the next generation of business models, but it is in the nature of the business leader to assume the technology will be there to meet the business plan” (Palmer 2003 p. 23). Palmer goes on to comment on the problems facing managers who are focussed on their own areas of the business, but assume that they have the necessary technology available for them to carry out their own business responsibilities and strategies. He warns of the consequent problems of low system utilisation, persistently occurring user errors, and long downtimes, if these managers do not get involved with the design and implementation of their systems. This raised two interesting issues around the decisions organisations make when structuring their ICT activities “in order to manage the imperatives of the business and technological environments of the digital economy” (Sambamurthy and Zmud 2000 p. 105). These issues are related to ICT governance and ICT/Business partnerships. All authors reviewed for this

research agreed that ICT is fundamental to a firm's survival in the 21st century. However there is also evidence that many firms are investing in ICT without deriving the expected benefits from it. This is in spite of the fact that researchers have long stated that there are a number of ICT-related principles of good business. Key ones identified are those related to a strong partnering relationship between the ICT area and the business unit management, which affect a firm's ability to deploy ICT for strategic objectives, and become a potential source of competitive advantage (Bharadwaj 2000).

2.2.3 ICT Governance

General issues of governance around all ICT projects have been raised by a number of authors. "Effective IT governance is about the way senior management interacts and communicates with IT leaders to ensure that technology investments enable the achievement of business strategy in an effective and efficient manner" (Rau 2004 p. 35). The most common manifestation of a governance body is the ICT Steering Committee that may be formed for a specific project, or may have ongoing organisational responsibilities for all ICT projects. Such a group would provide organisational direction and funding authority for major technology projects, with the project manager operationalising those directions.

A useful model describing the intricacies and interrelationships involved in business and ICT governance was developed by Parker (1996). Although the dynamics of these relationships are not obvious in such a model, it serves to give a simple illustration of how a good alignment between business and ICT should look. Figure 2.2 illustrates this governance model.

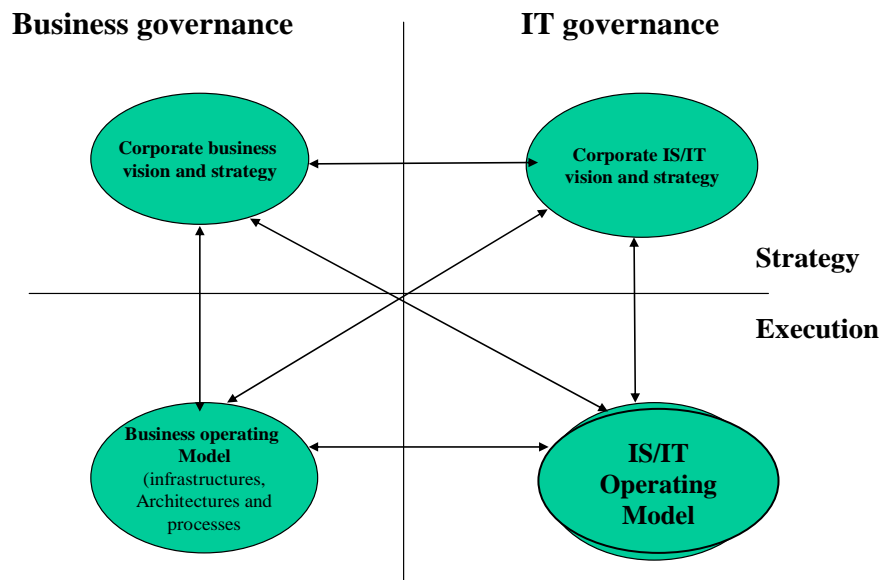


Fig. 2.2 Business/IT strategic alignment (Parker 1996)

In spite of the increasing use of project management principles and techniques, and the use of governance bodies such as Steering Committees, the frequently documented poor rate of success of ICT projects is of continuing concern both to the ICT industry, and to its customers. In particular, one of the obstacles to achieving project success was that frequently the project managers and their key customers (including the senior executives) had completely different views of what project management is about (Ives 2005). According to Ives, project managers focus on efficiency and effectiveness measures of project management as an ongoing control mechanism. However most executives view it as something anyone can do when the need arises, to fix a short-term situation.

An interesting finding about this area of project governance and sponsorship was that “effective sponsorship and governance models for projects within organisations were often not well-established or stable” (Ives 2005 p. 15). He also noted that executives were frequently “unwilling to stand behind their projects”; that projects were not “viewed as a core

capability mechanism within their organisation”, and that executives did not “fully trust the discipline of project management”. He felt that without effective project sponsorship and governance the present poor rate of project success is likely to continue. His conclusions were well supported by the substantial body of scholarly and industry-sourced literature he had discussed earlier in his paper. This view was also propounded by Grant (2003). He too felt that the ICT function needed to be led by the most senior executives, so that it would have sufficient authority to carry out its responsibilities without undue interference or hindrance. Thus the importance of executive sponsorship and governance of ICT and ICT/I projects should not be underestimated if these projects are to have a good chance of success. It is the executives’ responsibility to ensure that the whole process of technology investments through these projects is effective and efficient, in order to pursue the organisation’s goals and objectives (Rau 2004). Unfortunately, there is considerable evidence that this is often not the case. Frequently, governance “as the locus of enterprise decision-making authority for core IT activities, was not the only, or even a major, theme” (Sambamurthy and Zmud 2000 p. 106).

2.2.4 ICT/Business Partnerships

The quality and effectiveness of the relationship between the ICT group and business management has a significant influence on an organisation’s ability to deploy IT to meet its strategic objectives (Markus 2004; Orlikowski and Barley 2001; Ross, Beath et al. 1996; Somers and Nelson 2001). The research carried out by Ross, Beath, and Goodhue (1996) surveyed 50 senior ICT executives to ascertain their management objectives. Their responses, while reflecting the task focus completion mindset common to ICT people, did include “better aligning IT products and services with the firm’s business goals” (p. 32). This research showed awareness of the need to apply ICT solutions to strategic needs, and do that better than their organisation’s competitors. BUT, the research also identified that the motivating force behind these ICT executives and their staff was typically toward increasing their technical knowledge and finding the opportunities to address new technical challenges. They consistently stated they wanted to align IT products and services with business goals. However, in practice there seemed to be more of a desire to see if they could find a business goal that would align with a desirable new piece of technology. They did not demonstrate

having a holistic view of the business and where ICT might support overall business strategies.

This finding was consistent with my own experience over a number of years in a variety of organisations. There is still a fundamental disconnect between what the business managers see as the role of ICT in their organisation, and what the ICT staff see as opportunities for delivering high quality technical solutions to business issues (Palmer 2003). “Unless and until a firm does it well, information technology management can represent either a distinct competency or a competitive liability” (Ross, Beath et al. 1996 p. 41) . A shared responsibility between ICT and business management for effective application and deployment of ICT in an organisation, is really important (Ross, Beath et al. 1996). There is also a need for top management leadership in establishing and agreeing ICT priorities.

2.3 ICT Infrastructure Projects

The ICT infrastructure is the foundation and base of all aspects of ICT systems and portfolios in an organisation. It is typically shared among business units as a common supply of technological services (Broadbent, Weill et al. 1999). As stated in Chapter 1, there has been little published research about ICT/I project delivery and success, or on non-ICT executive attitudes about that. However, Schwager et al (2000) found support for the view that top executives are beginning to recognise the importance of their ICT infrastructure. Those companies that had recognised the importance this brought to the organisation were outperforming others in key areas of return on sales, revenue growth, and increase in market share.

Broadbent et al (1999) also found there was a correlation between those companies with high levels of ICT/I capabilities and organisational ability to implement extensive changes to business processes in relatively short time frames. Further, while discussing critical success factors for customer systems implementation, Kwon and Zmud (1987) also acknowledged the importance of “a sound technical solution”. They too recognised that no matter how good the applications’ strategic alignment or cross-functional synergies might be,

the infrastructure engine driving the application was a key factor in ICT systems success. This doesn't necessarily mean that executives understand and welcome either their ICT department's or vendors' desires to continually enhance the performance of this part of the business. Executives are frequently unconvinced that the resulting technology investments are being used in a cost-effective and efficient way, or are satisfactorily meeting their organisational aims and objectives (Carr 2004).

The vast majority of people using desktop PCs, or telephones, rely on only a few simple applications. Thus there are reasonable questions surrounding the ICT decisions to roll out infrastructure upgrades as frequently as every two to three years. Unlike the Schwager et al (2000) findings, Carr (2003) felt there was little evidence that this expenditure would lead to the durable advances needed for sustained business profits. He saw the opposite as more likely to be true, and cited examples of research that revealed absolutely no correlation between the amount a company spent on ICT and how well the company performed. Although his comments were strongly refuted by other industry people at the time (Melymuka 2003), there has also been concern about the relationship between ICT and productivity, usually referred to as the "productivity paradox" (Rei 2004; Spithoven 2003). This is the situation where overall productivity rates did not seem to reflect the increasing amounts spent on ICT in an organisation. A quandary indeed, as the ability to generate sustainable competitive advantage through information and communications technology is very dependent on sound, sharable technical platforms. These are the foundations which are essential for making ICT software applications cost effective in their operation and support (Ross, Beath et al. 1996). Effectively managing these infrastructure assets, and the projects which introduce or enhance them, can make a difference between them being a competitive advantage or a liability. However, it is also acknowledged that building strong ICT/I capabilities is complex, and requires considerable time and effort (Bharadwaj 2000).

Thus, there are some key issues to consider with regard to an organisation's ICT/I. Not only may 'more' not equal 'better', but there needs to be considerable rigour attached to the decision-making around expenditure on these projects and their subsequent management. This must tie in with significant governance by senior business management. The five

elements described in the next sections are project issues common to all ICT projects, applications or infrastructure, and all have an influence on the organisational perspective of the services delivered by ICT. How senior business and ICT management handle these and other pertinent ICT project issues determines the level of success and user satisfaction of the organisation's ICT services.

2.4 Adoption Issues

Adoption issues occur where there are issues related to early or late adoption of technology, and their subsequent effect on organisational effectiveness and competitiveness. There is a deep division in the literature about advantages and disadvantages related to an organisation being an early or late adopter of ICT. Generally it is functionality at the user level that is the driver of technology adoption. The underlying infrastructure capabilities have a significant influence on expanding and enhancing system functionality and performance. There is a range of adoption approaches from the innovators at one end of the scale, who aggressively seek out and deploy new technology, right through to laggards at the other end of the scale. These are the organisations who avoid implementing new technology until it is safely embedded in mainstream environments (Smith 2003). Companies are likely to fall into three positions in the technology adoption cycle:

“early adopters, driven by business benefit but with an eye for new technology; the early majority, which keep an eye on deployment by the early adopters and then buy; and the late majority which take a similar approach to the early majority, but are less confident in their ability to adopt new technology.” (Smith 2003)

Successful businesses deliver value from today's technology through timely adoption of its capabilities, providing them with a market edge. However, there is considerable disagreement in the literature as to exactly when this 'timely' adoption should occur, particularly when one looks at some of the most recent emerging technologies. Voice over Internet protocol (VOIP) is a good example. It was announced with great fanfare more than four years ago, but has not yet reached a plateau of productivity to have its benefits fully realised. Nor do business users seem fully comfortable either with the benefits it may offer

or how it could be integrated with existing systems. This is not a piece of ICT/I technology that has generated a flurry of early adopters. In contrast, there are many examples of the rush to emulate innovators Amazon, in terms of online retailing, and Dell, in terms of mass customisation in the supply chain and speed of delivery. This indicates that the immediately perceived competitive edge gained by these organisations generated a ‘bandwagon’ effect, and rapid growth of the early adopter group (Tsikriktsis, Lanzollo and Frohlich 2004).

Representative of the views on the side of the tortoise of late majority rather than the hare of early adopters, is Carr (2004). He had much to say about the risk mitigation strategies that companies could practise by staying away from leading edge technology. He believed that this strategy significantly reduced the risk of being saddled with technology that was still full of bugs. Companies could and should learn from successes and mistakes of early adopters. This would not only avoid unnecessary costs (and business stress), but also enable organisations to build better systems as a result. He didn’t comment on what would happen if there were no early adopters. There are however, well-documented examples of new technology that was never adopted, and disappeared. Regarded as too far ahead of their time, or of no clear practical or commercial value, with no early adopters to support their introduction, they failed to gain any place in the technology adoption cycle. Examples are: the 1950s transistorised radio wristwatch, the 1970s wristwatch calculator, the 1990s credit card calculator. They were all too small for users’ fingers, and thus never accepted as useful technological developments.

Public sector organisations, in particular, which have extensive bureaucratic procedures, are most likely to be in the late majority group. Market signals and profits, which drive companies in the private sector, are not normally seen as critical success factors for them. Their goals are more likely to be related to social objectives and political influences. Their challenges in the adoption and implementation of ICT are constrained by these, and the different kinds of customers they serve (Tarafdar and Vaidya 2005). These organisations are also likely to be influenced by Mimetic Isomorphism – “the tendency of organisations to imitate each other when their understanding of technologies, goals, and

environment is weak – reflected in the adoption of pre-packaged ‘best practices’, ‘lessons learned’, ‘benchmarking’“ (Vann 2004 p. 52) .

The real driver of business productivity improvements supported by the adoption of new technology is likely to be pressure from competition. It is this which would push managers “to take aggressive measures to improve their companies’ efficiency and effectiveness”, also from Carr (2004). Rouse (2003) comments on this problem as well, where companies are often under considerable pressure to adopt new technologies before they are fully bedded into the market place. This is most likely because of strong competitive forces and the whole pace of technology development. This truly perches a company on the horns of a dilemma. On the one hand the risks of aggressive ICT innovation may outweigh the potential benefits, and on the other hand there are likely to be times when it makes strategic sense to get out ahead of the competition. On top of this, both practitioners and researchers agree that a good alignment of business goals and the right underlying ICT architecture are important for superior business performance. In their study of electronic business adoption, Zhu, Kraemar, and Zhu (2003) found that “technology competence, and competitive pressure are significant adoption drivers” (p251). In spite of this, ICT solutions and the underpinning infrastructure are often deployed for the purpose of “solving pressing functional and technical problems without much regard for overall strategic considerations” (Grant 2003 p. 159). The “lack of a systematic approach to managing technology hampers many companies in their drive for improved organisational effectiveness” (Farrukh, Fraser, Hadjidakas and Phaal 2004 p. 39).

The whole ICT adoption process is very complicated. Generally speaking, “technology adoption constitutes the commitment to use, and the incorporation of, a new technology by an organisation” (Rouse 2003 p.7) as part of the process of attempting to achieve organisational goals. Just because a piece of technology exists does not ensure that it will be noticed, let alone adopted. Therefore there needs to be some understanding of the technology, and what it might do to benefit the organisation. There also needs to be an awareness of its existence, and a recognition that use of new technology could be a key part of developing the business (Farrukh, Fraser et al. 2004). The first step to be considered is

whether the technology is relevant to the overall business strategy being considered, or at the very least, the present business situation being addressed. This would be followed in all likelihood by studying how, or whether, other organisations are using it. The expertise for the technical analysis required here, would typically reside with the organisation's ICT department and the technology vendors. Because of the earlier comments on difficulties related to convincing business executives that a new piece of technology would bring the business benefits desired, early adoption is not at all a given. This is even if the ICT staff see benefits of such a move. Selling the idea is further complicated by the fact that any adoption decision is challenging because new technologies are being developed and introduced at such an explosive rate (Rouse 2003). This can be a very real constraint when trying to deal with the 'business goal/adopt now or later' dilemma.

However, there is some persuasive evidence that companies are becoming aware of the importance that their ICT infrastructure brings to their whole area of IT capability, and their ability to leverage ICT for both tangible and intangible benefits (Bharadwaj 2000). Companies who have consistently developed high levels of ICT infrastructure capabilities are in much stronger positions to respond to market competitive forces than they would have been if their ICT infrastructure was aging, inappropriate, or inflexible (Broadbent, Weill et al. 1999; Brown, Hoppe, Muger and Newman 2004). The consensus of the hares in this debate is that companies must continually make ICT more efficient and adaptive in order to handle business changes and new business opportunities (Hindle 2004). The ability to innovate using the potential of technology, (especially with improvements to technical platforms), is an important contributor to organisational wealth, and success in a fast-changing business (Martin 2003; Mustonen-Ollila and Lyytinen 2004).

2.5 Analysis and Specification Issues

Analysis and Specification issues occur where there has been a failure to define the business and technical systems requirements to a level that is fully understood and accepted by the key stakeholders before detailed design and development commences. Much literature exists on the issue of the gap between the expectation of the user and the ability of

the ICT people to understand the user's expectations. Various attempts have been made both to measure this, and to provide resolutions (Jiang, Klein and Carr 2002). This area is one of the most difficult aspects of any ICT project. Its messy, non-linear nature is familiar to all ICT practitioners and widely researched (Beath and Orlikowski 1994; Davidson 2002; Orlikowski and Baroudi 1991). In particular, the socio-cognitive interpretations of stakeholders' organisational world, about an ICT development, will influence their actions when attempting to arrive at an understanding of the system requirements (Beath and Orlikowski 1994). Increasing the understanding of these socio-cognitive processes should improve both the satisfaction felt by the stakeholders, and the success rates of ICT project delivery (Davidson 2002).

All systems should begin with a purpose. In the case of ICT and especially ICT/I systems, users need technical advice and support to define a system's purpose. These people typically do not know enough about the organisation's technical environment to specify correctly what is needed to meet a particular business goal. The user typically knows the problem or need, but can't solve it. In the ICT part of the organisation are the technical professionals. They know a great deal about the computer environment, but often do not have a clear understanding of the user's needs. They could potentially solve the problem or meet the user's need, if only they understood what it was (Davis 1984). The realm of systems analysis and specification, is now often referred to as Project Configuration, in ICT/I projects. It basically means the "choice of the key elements of the project's technical architecture" (Martin 2003 p.1), and is where the user and ICT groups meet. Here, the user needs get translated into the technical requirements specifications needed by the ICT professionals to develop and implement an appropriate ICT solution.

Users view a system quite differently from ICT personnel, and their participation and involvement have frequently been suggested as significant factors in ICT project success (Havelka 2003; Markus, Axline et al. 2000; Schneider and Sarker 2005). The techniques and approaches for this process have evolved considerably over the past two to three decades. However, there are still significant issues with this element of the whole systems development life cycle whether it relates either to software, or technical infrastructure,

systems. This information requirements definition and early analysis phase of an ICT project is key to its success. Any mistakes made at this point cascade into the later phases, increasing cost, and time completion, issues. The specification process should ensure the context and scope of the required/desired change is identified. This is as important where the issue is a change or upgrade to legacy systems, as when considering the introduction of new technology (Hess 2005). It is also “critical to have an exceedingly well-defined requirements document in order to ensure a successful project that meets the three concurrent metrics of on time, within budget, and in conformance to requirements” (Edwards and Sridhar 2005 p. 22). Any efforts to improve this phase should positively impact the entire development process and the final implemented system (Havelka 2003). Because of the complexity and interdependencies of ICT systems, it is very difficult to change the design once development and implementation commence. System requirements need to be complete, correct, and agreed before these phases commence, in order to have a good chance of project success (Kanellis and Paul 2005).

The Baroudi, Olson and Ives (1986) study of user involvement in the analysis and design of computer-based systems also concluded that there was strong justification for involving users in system development activities. They commented on the wide range of previous literature on similar studies that supported the view that user involvement was a key variable affecting the outcome of the design process. Consequently, there is a reasonable expectation that “user involvement will increase system usage, and user information satisfaction is consistent with theories of participative decision making” (Baroudi, Olson et al. 1986 p. 236) p236.

However, user involvement in the analysis and specification leading to ICT project decisions can be very diverse, and specifying requirements is a very communication-intensive collaborative process. It is often fraught with “semantic confusion” among users from different areas (Edwards and Sridhar 2005; Havelka 2003). Boonstra (2003) wrote of an extensive project where the process of ICT decision-making was studied in 20 organisations. He discovered a variety of influences on the analysis and specification activities. The issues identified in his work, covered areas where many stakeholders

attempted to promote their own agendas and interests, often in conflict with others. He noted there had been an assumption among a number of writers that there was clarity and agreement about both the objectives of the organisation and the objectives of a project. This was not substantiated by his work. He found four competing forces, of rationale, necessity, politics, and innovation, which influence ICT decision-making, and consequently project specification or configuration. Therefore, it would be optimistic and inadequate to assume traditional views about ICT problems, which are that the specifications of solutions, can be perceived as rational, and thus suitable for a planned approach. There is no universally applicable specification and decision-making process for what are more likely to be complex and dynamic situations. There is often a need to reconcile different viewpoints, and an all too frequent perception of stakeholder disappointment (Boonstra 2003; Chae and Poole 2005; Edwards and Sridhar 2005; Kanellis and Paul 2005).

There is however, overwhelming agreement that user input and involvement, at this critical phase of determining business needs for all the stakeholders, is fundamental to implementation of a successful system (Schneider and Sarker 2005). When writing about an ICT project failure, Schneider and Sarker (2005) commented that even though the managers in charge of the project emphasised user involvement in the process of determining their requirements, this involvement was not seen as mandatory by top management. The roles of relevant, but relatively 'hidden', decision makers were overlooked, with disastrous consequences and termination of the project. Kanellis et al (2005) also found in their research that there was a great level of mistrust and territorialism. At the analysis and system specification stage of some system changes, there was "an aggressive/defensive stand rather than a co-operative one – exactly the time when more cooperation was needed" (p. 73). Incidentally, they also found that their case study participants finally realised that it was not possible to develop an ICT project with a perfect fit to all the organisation's short and long-term needs. However, an acid test of a successful configuration is its ability to meet its specified requirements within 'high velocity' time constraints and tight budgets (Martin 2003). Thus, there is a compromise forced for most development expectations.

Another of the key factors that inhibited users' requirements being properly considered in this phase, was the situation where an ICT project was controlled either by the ICT people, or by a dominant user area (Havelka 2003). The respondents in Havelka's research considered that a project specification was more likely to include a wider range of user suggestions and needs, if outside resources were used to carry out this phase of the project life cycle. An interesting finding; which aligned with the Boonstra (2003) and others' comments about reconciling different viewpoints in order to gain agreement on the final project configuration, and prevent later rework. So, it is important that all ICT projects have their information requirements definitions demonstrating a good fit with the overall organisational use which the project is intended to provide (DeLone and McLean 1992; Havelka 2003; Kanellis and Paul 2005; Markus 1983). If this does not happen, users will find other ways to meet their needs. A common manifestation of this situation is the development of 'underground alliances' of groups of users. These occur when users either feel disenfranchised by the outcomes of a system implementation that doesn't meet their needs, or have a general disregard for the formal ICT systems forced on them. They take control of their own fate, and produce mini-environments and/or systems which they create and operate within, and which deliver the outcomes they want (Kanellis and Paul 2005). This approach can work only until there is some major change to the organisation's ICT infrastructure and systems. At this point, if these 'informal' min-systems and environments are removed, there may be significant risks to the continued operability of some parts of the business. A very real challenge at the analysis and system requirements definition phase, is "how to allow for maximum flexibility at the user and business unit level without the introduction of conflict that could jeopardise the integrity and stability of the corporate ICT organisation" (Kanellis and Paul 2005 p. 82).

This challenge is made even more complex by a comment made by one of the interviewees in Martin's (2003) research, who noted that "most clients still do not know what they want their IT to do for them – but they want it faster than they used to" (p. 4). The problem here is that if the requirements and specifications aren't worked out clearly and agreed by all the relevant stakeholders, the risk of failure of the project is increased. Consequently, it is unsurprising that most writers on this subject agree that management

support and commitment to the analysis and specification process is vital. A project with strong senior management support is more likely to get the attention, focus, and resources necessary to overcome the assorted barriers and other risks it will face (Havelka 2003).

2.6 Communication Issues

Communication issues occur where the progress of a project is not adequately communicated between the project team and the business stakeholders so all concerned can have a full understanding of issues being raised that could impact on the project's successful delivery. Communication is possibly the most critical factor in determining the success of projects. This is especially true of technical ones, where the rapid acquisition and exchange of information can occupy between 50% and 75% of time spent by people on such activities (Starling 1993). It is the means for "effectively linking project participants and for facilitating project management" (Nicholas 1989 p. 27). Good communication needs to be maintained through all stages of a project, from initial inception to final implementation.

However, ICT Project personnel tend to be very task-oriented, as opposed to people-oriented. As a consequence of this, they do not readily consider that time is usefully spent sharing either their knowledge, or their activities on their current project, with others outside their current project team (Ives 2005). Yet, ICT professionals believe that they are reasonably effective communicators. They give confident responses when asked to self-evaluate their performance in communication-related activities. According to Willcoxson and Chatham (2004), these include management of customer relationships, communicating effectively with customers, providing information systems that meet the day-to-day needs of business, or, delivering on what it (ICT) promises. However, these authors went on to comment that their research into IT/Business relationships showed that this area of ICT performance, was rated lower by the business respondents, than by the ICT respondents. They also noted that their results were consistent with earlier literature about ICT/Business culture gaps and communication difficulties. There was still a downward trend shown by the business respondents on the question of whether ICT and business people speak the same

language. It was felt this might be explained by a “continuing failure to address IT/business communication difficulties – the ‘culture gap –“ (Willcoxson and Chatham 2004 p. 77).

There are also other reasons for this attitude that stem from human organisational behaviour. If, in an organisation, knowledge is power, then shared knowledge may mean less power. This can generate a negative impact on individual status, responsibility, or salary. If so, there is little incentive to communicate project issues or project status so that someone else may either resolve the issue or take over the project (Garvin 2000). A strong predictor of rapid technology assimilation is the extent to which an organisation has open and constant communications across levels and between departments when ICT projects are being developed and implemented (Kontoghiorghes 2005; Waring and Wainwright 2002).

ICT specialists need to think about their roles in projects. In particular, they need to consider how they communicate with end-users and other stakeholders. There is a body of research that indicates that technical specialists have a narrow understanding of stakeholder needs. Their communications with stakeholders appear to fall far short of appropriate unambiguous and readable communication and documentation. This is largely because technical people do not write or communicate in non-technical language very well (McManus and Kalugerovich 2002; Willcoxson and Chatham 2004). Also, quite often, ICT specialists “lack business sense and an appreciation of what users intend with their systems” (Beath and Orlikowski 1994 p. 356). They have failed to recognise the fundamental shift away from traditional ways of computing which were once under the control of the ICT specialists. The move now is towards end-user driven computing. This is where the business users are not only demanding systems that clearly meet their business needs, but are also developing systems for themselves, away from the ICT group. This activity is particularly prevalent where there has been a history of a poor communication relationship between the ICT specialists and business users. Organisations are adopting much flatter management structures than in the past, with different approaches to internal and external networks, alliances and project teams. Thus, communication and transfer of information is likely to be more effective between similar areas, (in terms of language and goal orientation), than between highly differentiated ones (Tushman 1978).

Largely because of the current compressed modes of communication, (memos, email, text messages), language and communication processes are extremely important. This is especially true when dealing with technical ICT projects, given the rapid changes in technology, and constant pressures to adopt the latest tools and techniques (Vann 2004). Campobasso and Hosking (2004) in their research on project success factors, were very clear about the dangers of underestimating the value of communication. They noted that, “failing to speak to the community can alienate constituents, and sends a message that a legitimate process was not used to drive the solution” (p. 2). The Tushman (1978) research also noted that “individuals within high performing technical service projects communicate within their groups and to the larger organisation more than individuals in low performing projects” (p. 638). Weiss and Anderson (2004) continued this theme with a comment from one of the CIOs they interviewed, who told them “not all IT people are always sensitive or able to communicate non-technical issues well with their customers” (p. 15). This comment is supported by Ives (2005 p. 42), who noted that “one obstacle to achieving project success is that project managers and their customers are often not talking the same language”. The biblical term ‘Tower of Babel’ has been used in a number of writings about the communication issues organisations face between their ICT specialists and the business stakeholders (Fogel 1998). The Beath et al (1994) paper summarises this ‘Tower of Babel’ view in the comments about how users and ICT specialists confuse one another with their quite different language bases. The situation is further exacerbated by the Vann (2004) notion of clashing grammars, generated by “cognitive impairments in the communication process used by otherwise well-meaning and positively motivated participants” (p. 67).

ICT projects, especially ICT/I projects, cannot be developed under the premise that communication is no more than the distribution of information without shared knowledge and understanding of that information. This is a denial of the fundamental truth that “knowledge is a social process phenomenon, that develops collectively from group relationships and patterns of communication” (Varey and Wood-Harper 2002 p. 230). These authors went on to comment, “communication is about trans-formation not in-formation”. This denial about the source and development of knowledge is as dangerous when held by

business stakeholders as when held by ICT people. It is a significant contributing factor to the well-publicised low levels of ICT project success and satisfaction. Communication is also about listening. Effective listening, and understanding how to ask pertinent questions are critical for any project, in order to avoid 'Project Delivery Shock'. This is the situation where the client reacts to the final delivery of a project by exclaiming 'this isn't what I wanted' (Kersey 1999; Pitman 1992). Again, this is a far too frequently articulated expression of project delivery dissatisfaction, and a result of poor information transformation and inadequate project communications (Parker and Mobey 2004). An effective communications plan will incorporate ways to monitor the communications process by asking questions such as:

“How well is the communication process going?

To what extent have we improved our communication?

How open are the people about what is happening?

How effective are the meetings?

What improvements must still be made in the way we communicate?” (Pitman 1992 p. 19).

The executive view of the organisation is strategic, and not operational. This means that they are typically concerned with the social theorist Habermas (1984) Personal World (Why?) and the Social World (What?) of their business activities, rather than the Material World (How?) The particular characteristics of both the personal and social worlds, as they relate to the way in which executives communicate, are illustrated in Mingers (2001) framework diagram of the Habermas' (1984) three worlds theory of communicative action. Discussing the early writings of Habermas, Mingers notes that Habermas was “concerned with actual utterances made by speakers engaged in a social process, and argues that such utterances implicitly raise or embody particular validity claims” (p. 244). The executives' world, which is typically one of personal experience, with some subjectivity, participation, and intersubjectivity, quite closely reflects the Mingers (2001) framework (shown as Figure 2.3 below).

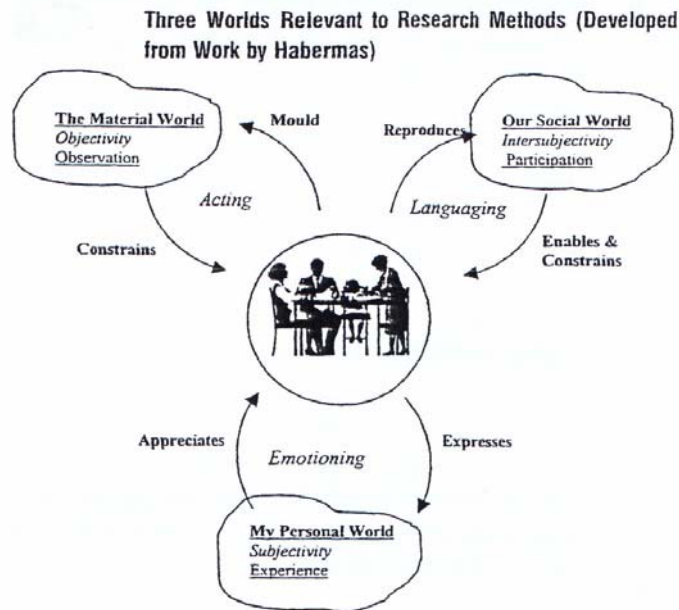


Fig 2.3 Mingers (2001) framework of the multidimensional world as developed from Habermas' (1984) theory of communicative action

Where communication is open and freely shared, ICT projects will be viewed as an extension of existing business practices, and they will be more readily accepted and assimilated than if they are seen to be imposed on the users (Kontogiorghes 2005)

2.7 Technical and Organisational Issues

Technical and Organisational issues occur where the match between the technology proposed and the organisational requirements is incomplete. “Technological misfit is referring to a change in technology itself that makes the existing systems obsolete and cumbersome in the eyes of the users and usually determines the level of systems’ usability” (Kanellis and Paul 2005 p. 72). A report in Computerworld New Zealand, highlighted the issues faced by both ICT people and the organisation, with regard to technical and organisational decision-making in the present business climate. Charles Spinosa, group director of the New York ICT consulting firm Vision stated, “CEOs increasingly see business units as where they can get the competitive advantage that they’re not getting by and large

from IT. Business managers have become more savvy about technology, and often recommend purchases” (Leung 2005 p. 3).

ICT professionals are losing some control of ICT decisions to business units. Consequently, establishing good working relationships with these business units is now critical particularly if those business units are gaining more independence in the way they run their day-to-day ICT operations. The Weiss and Anderson (2004) research discovered that “customers of the professionals surveyed did not believe that their particular IT group/department understood their business organisational culture, or political pressures” (p. 15). This kind of view reflects a change from the situation where business processes were often dictated by a particular ICT software or infrastructure environment. The technical implications of such an organisational change can be significant. This is particularly so if there is consideration to be given to reducing unnecessary duplication of technology, along with associated technology protection, risk management, and security, strategies. Most organisations are now facing the need to address the consequences of such changes. This is causing them to alter their technical/organisational strategies and infrastructure “without loss of organisational cohesion and stability” (Curry and Knowles 2005 p. 54). In their study of a case within the British National Health System, Curry and Knowles noted some of the problems that can surface within any organisation, especially one as large and disparate as the NHS, if computerisation is not effectively implemented and used. They determined that desired strategic and operational benefits would only be achieved with good links from system and infrastructure requirements to overall functions and processes, rather than to individual business units. Alignment and integration of ICT with business goals is crucial to a firm’s survival, and for achieving competitive advantages (Weiss and Anderson 2004). Yet, there is still a tendency of many companies to embrace the latest tools and techniques, which might really be driven from mimetic and market pressures, rather than from demonstrated success of the technology (Vann 2004).

The level of success achieved by any ICT project relates very much to the way it fits between an organisation’s culture, strategy, and processes; and its infrastructure, technology, and environment (Kanellis and Paul 2005; Waring and Wainwright 2002). The contributing

effect of an organisation's culture to overall business success has been written about extensively in management literature (Argyris 1982; Kramer, Dougherty and Pierce 2004; Maund 1999; McAleese and Hargie 2004; Peters and Waterman 1982; Schwartz and Davis 1981). The idealistic view of a company where all staff work together towards common goals is regarded as being far from the real world situation. Individual needs and aspirations may not only be independent of, but may be in conflict with, the structure, beliefs, and strategies, of the organisation (McAleese and Hargie 2004). Managers need to consider a number of factors when matching organisational strategies with technology opportunities, in order to achieve a sustainable competitive advantage. Not the least of these is recognition of embedded company culture and the links between it and the ability to introduce new technology or any other dramatic change (Appelbaum, Shapiro, Danakas, Gualtieri, Li, Loo, Renaud and Zampieri 2004; Kramer, Dougherty et al. 2004). Sometimes, people have to "surrender some of their individual flexibility and independence in order to attain organisational goals" (McAleese and Hargie 2004 p. 155). Also, ICT staff need to be well-informed about directions and changes in organisational strategies which might affect ICT project planning, budgets, and performance (Weiss and Anderson 2004).

In writing about the model they developed of risk factors in Enterprise Systems (ES) implementations at Dow Corning and Fox Meyer, Scott and Vessey (2002) commented that "the major difference between the two companies at the organisational context level was in their organisational culture" (p. 77). In Dow Corning there was an open and creative culture, which in the end, helped the company deliver a successful implementation of their ES. This was in spite of the many project risks identified by the Scott-Vessey model. On the other hand, Fox Meyer did not have a culture of open communication, and this meant that employees did not exhibit particular organisational loyalty. They thought only of either personal costs or benefits to themselves of the proposed implementation. Thus, even when it was clear to the IS staff that incorrect decisions were being made, they did not bring these to management's attention. The mistake with regard to the choice of technology that ultimately failed to deliver anything close to expectations was the consequence of management errors, many of which were related to the culture of the organisation itself. Vann (2004) also writes of the issues related to resistance to organisational and technological change. He notes that,

“any top-down importation of planned change solutions that is perceived as ‘alien’ or ‘foreign’ by the organisational participants, will be resisted in a variety of ways” (p. 67). Projects relying on such new technology will have difficulty in meeting their expected outcomes, unless there is an organisational culture that is accepting of change.

A further challenge to the business world is the way it is being transformed to meet the opportunities and competitive challenges presented by the dramatic growth of the Internet as a business tool. Using the opportunities presented by new technologies, companies can operate quite differently, more efficiently, and extend their operations into new electronic markets (Razi, Tarn and Siddiqui 2004). However, in order to succeed in this new technological world, different organisational strategies and ICT infrastructures need to be developed, along with associated changes in the way staff accept the new ICT environment (Curry and Knowles 2005; Vann 2004). “The most difficult factor to address, and thus that for which the risk is highest, is a change in organisational culture” (Scott and Vessey 2002 p. 76). This includes a change in how the ICT people relate to the users. Therefore, success or failure of ICT projects is as likely to result from the social and technical interplay within an organisation as from a technological fit or misfit of a solution to a particular business problem. This is particularly true in the appearance of a new breed of sophisticated users. These people are technically competent, and have strong desires to drive technological changes from their perspective, position, and knowledge. They are increasingly willing to articulate their views that a project is not considered a success in their terms if it fits the functional specifications but does not fit their needs and the organisation as an entity (Kanellis and Paul 2005; Levine and Rossmore 1993).

2.8 Implementation Issues

Implementation issues occur where promises and delivery realities do not meet. They frequently arise as a result of deficiencies in some or all of the earlier stages of a project. This is especially the case for those related to gaining business stakeholder involvement and commitment to the success of the project. This situation is summed up well by Levine and Rossmore (1993) who commented, “whatever its ultimate benefit for an organisation’s business, IT implementation is likely to be a complex and difficult process involving both

the technical and social systems of the organisation” (p. 55). ICT projects have many different expectations put on them, in the organisation’s attempts to integrate these technological products and services with the core business (Mitev and Kerkham 2001). Suwardy, Ratnatunga and Sohal (2003) agreed, when discussing the numerous impediments to successful ICT project implementation. They noted that “the larger (or more complicated) the project, the more risky and difficult it is to implement”, and the less likely it is to be successful. Their study essentially found that implementing ICT projects requires particular attention to a number of critical success factors; resource procurement, management support, development tools, project management, and project specifications. Without an understanding of user needs and expectations, and of the culture of the organisation, the final delivered project runs a risk of being of limited use, and gaining even less acceptance. The problems may not only occur with the users. Senior management may try to promote a business vision and associated system change into an organisation without recognising the impact on the ICT environment. Where the changes may not be seen as beneficial to the ICT staff, there is likely to be as much resistance to the change from them as there may be from business users (Wang and Paper 2005).

If an ICT system is not perceived as meeting user needs or solving technical problems, people will bypass it, and either resort to running their old systems, or covertly, then overtly, oppose its use (Markus 1983). Thus business stakeholder involvement must be more than consultation. It is integral to the whole project development and implementation process. Top management support is also needed, as it is the willingness of this group to provide the necessary resources, authority, or power, that has a strong influence on project implementation success (Al-Mudimigh, Zairi and Al-Mashari 2001; Alward and Sheffield 2000; Kwon and Zmud 1987; Levine and Rossmoore 1993). Both Levine et al (1993) and Markus (1983), wrote of the barriers to successful implementation that arose because of lack of attention to authority and power relationships in an organisation. They described different cases, with similar unsatisfactory outcomes. All of them concluded that the ‘right’ answer to an ICT problem could not be determined without understanding the organisation, and the interests of its decision-makers, in order to anticipate what dilemmas may be caused by that ‘right’ answer. Historically, successful project implementations have occurred where the

organisational structure, systems, people, and culture have been aligned. In these projects there has been a recognition that every project “has a life of its own which cannot be perfectly controlled or predicted” (Pare 2002).

ICT project implementation failures, or lack of satisfactory success, have been widely documented and gained extensive media coverage. Prominent New Zealand examples are the Department of Education Centralised Payroll System (Myers 1994), and the Police Integrated National Computerised Information System (INCIS) (Alward and Sheffield 2000). Others include the London Ambulance Dispatch System, the Baggage Handling Systems at Denver and Hong Kong Airports, and the Integrated Driver Licensing and Registration System at Denver Department of Motor Vehicles (Dhillon 2004). In each of these, and other, cases, there was significant organisational change taking place that was technology-driven. As a result, there is continuing, general managerial, concern over the capability of their organisations to manage the introduction of information technology into their business units and work groups (Grenci and Hull 2004; Kwon and Zmud 1987). Bronsema and Keen (1983) also discussed these difficulties of ICT project implementation. They noted the dynamic implementation process involved where the stakes are high, and users get concerned about computers affecting their sense of self, their jobs and their skills.

There is rarely a single reason for failure. Typically, many things contribute to such an outcome, and failure at one step in the project life cycle usually contributes to failure at successive steps (Grenci and Hull 2004). As Myers (1994) noted in his analysis of the failed New Zealand Education Department Payroll project, there are very complex realities in the social life of an organisation, and there were many factors and events that led to the implementation problems of that system. The organisational context of an ICT project is thus very important for understanding the best chances of a successful and satisfactory implementation. “We need to recognise that constructs such as ‘success’ and ‘user satisfaction’ are, by definition, matters of interpretation” (Myers 1995 p. 156). This study also underlines Myers’ comments that there are no clear measures of success. Individual perceptions have an influence over how an attribute such as ‘success’ or ‘satisfaction’ may be interpreted.

Every project, and certainly every ICT project, carries a certain amount of risk. Typical of these are underestimation of continuing labour costs, dependence on one particular individual to be the key player in the project implementation, and the general lack of awareness of the complex organisational implications of such a development (Mitev and Kerkham 2001). Risk identification and management are an integral part of the project development and implementation process. Unless this occurs, deviation from the implementation budget, schedule, and goals, will not be handled appropriately with corrective action taken in a timely manner. Contingency planning of such risks may prevent or inhibit such problems. Two of the key determinants of risk in ICT project implementation are “the size and structure of the project, and the company’s management experience of the technology involved” (Parker and Mobey 2004 p. 19). This was particularly critical during the NZ INCIS project where key risks (especially ones such as technology changes) to the project were not identified, understood, addressed or mitigated by the Police or the vendor (Alward and Sheffield 2000).

There is another risk inherent in projects as significant as ICT ones, particularly in the ICT/I area of generic off-the-shelf packages such as ERP systems. If the implementation is not adapted to the prevailing corporate style, then there is a high likelihood of system underperformance and implementation over-runs. The influence of corporate culture on system implementation has been fairly widely researched. Three different types of these culture clashes identified by Krumbholz et al (2000) summarise the most common ones. These are,

- clash with the future planned culture,
- clash with the supplier’s culture implicit in the package, and
- clash with the new business processes to be implemented alongside the system.

They particularly noted, in their research, the association that customer’s observable practices had with problems that arose during an ERP package implementation. Unless such practices are accommodated and managed within the context of the project implementation, culture clash issues will impact the project outcomes.

ICT can play an important role in enabling core business processes, and the translation of corporate business strategy into a technology implementation strategy (Al-Mudimigh, Zairi et al. 2001; Mitev and Kerkham 2001). It is important not to underplay the “range of technical and organisational project management issues that are critical for the success of an ICT project” (Dhillon 2004 p. 641). ICT projects are planned technological innovations and interventions, introduced as a result of an articulated need by one or more organisational members. Successful implementation of such projects will often depend on how well the complexities of the organisation’s internal and external environments are recognised and managed (Kwon and Zmud 1987). It may also depend on how capable the organisation is of managing their introduction (Grenci and Hull 2004; Mitev and Kerkham 2001; Parker and Mobey 2004). Therefore, a proactive stance needs to be taken, where the implementation plan starts with the issues and challenges to be overcome, rather than simply be drafted as a list of actions to be taken and decisions to be made. Success is more likely when there is a clear vision of the project, which allows for possible challenges to be anticipated, with appropriate action plans developed. (Pare 2002),

2.9 Chapter Reflections

This Chapter has shown there are issues related to the development and implementation of ICT projects that are supported by many authors. ICT project success or failure is often dependent upon the effectiveness and inter-relationship of most of the elements described here. ICT/I projects are complex in scope and development, and comprise activities that are integral to the core business strategies of an organisation. The importance of ICT project governance and of ICT/Business partnerships has also been explored. These issues were shown to be significant enough to be included in this exploration of the non-ICT executives’ perceptions and attitudes about ICT/I projects. Although little was found in the literature that addressed specific ICT/I project issues, the general reviews of issues related to all ICT projects gave sufficient support to the validity of this research. Specifically, the situation experienced by non-ICT executives, when considering both their perceptions of, and attitudes about, their ICT/I projects. In summary, the literature discussed here supported my

view that the five original identified elements, plus the two new ones of ICT Governance and ICT Business Partnerships, were appropriate to be used as starting points for the planned interaction with senior non-ICT executives. The next step was to consider the most appropriate research design approach for this exercise. The choice should allow the perceptions and attitudes held by these people to surface with a minimum of influence from the researcher, and be rich enough to provide the foundation for the anticipated theory development.

CHAPTER 3:

RESEARCH DESIGN AND METHODOLOGY

3.0 Chapter Overview

3.1 Overall Research Strategy

3.2 The Place of Theory in Interpretive Research

3.3 Choice of Grounded Theory as Data Analysis Method

3.4 Chapter Reflections

*“In the most elementary sense, the design is the logical sequence that connects the empirical data to a study’s initial research questions and, ultimately, to its conclusions. Colloquially, a research design is an **action 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 these questions. Between **here** and **there** may be found a number of major steps, including the collection and analysis of relevant data.” (Yin 1994 p. 19)*

3.0 Chapter Overview

This chapter describes the research design and overall approach used to seek answers to the research problem, which is:

Do non-ICT executive stakeholder perceptions of, and attitudes towards, the delivery of ICT infrastructure projects influence the outcomes of such projects?

Phrasing the research problem as a series of more detailed questions to be considered during the data analysis process, in order to develop a substantive theory about this problem, generated the following:

Research Question 1: What are executive perceptions of, and attitudes towards, ICT and ICT/I projects in their organisations?

Research Question 2: What are executive perceptions of, and attitudes towards, the strategic alignment of ICT/I projects with the business?

Research Question 3: What are executive perceptions of, and attitudes towards, the outcomes of ICT/I projects?

Research Question 4: Can executive perceptions and attitudes influence the strategic alignment of ICT/I projects with the business, and thus the overall life cycle and outcomes of these projects?

The research sought to develop a theory not only about *what* the issues are, but also *how* those issues appear in, and may affect the life cycle of, such projects. It was not expected to be a causal model, but would describe what influences and affects executive perceptions about and attitudes towards these ICT/I projects. In order to do this, the research strategy needed to be consistent and credible. It also needed to support an in-depth exploration of the issues raised by the participants. The context of the research was the engagement of a number of senior non-ICT executives for open-ended discussions about their views on ICT Infrastructure project delivery. Thus, considering the type of information to be gathered from these interviews, a subjective rather than an objective approach was deemed to be the most appropriate, (Orlikowski and Baroudi 1991). It is explained in detail in sections 3.1.1 and 3.1.2 of this Chapter.

3.1 Overall Research Strategy

There are underlying assumptions in all research about what constitutes ‘valid research’, the context of the research, and which research methods are appropriate (Myers 1997a). It is important to understand the assumptions being made, and the likely paradigms that will flow from them. “In its established usage, a paradigm is an accepted model or pattern it is an object for further articulation and specification under new or more stringent conditions” (Kuhn 1996 p. 23). Further, “a paradigm is thus a construct that specifies the general set of philosophical assumptions covering, for example:

- ontology (what is assumed to exist),
- epistemology (the nature of valid knowledge),
- ethics or axiology (what is valued or considered right), and
- methodology” (Mingers 2001 p. 242)

3.1.1 Ontology

The underlying ontological perspective about the nature of the reality being studied, and the epistemological assumption for this situation, determined the choice of the design paradigm. Researchers are consistently faced with the basic question of whether the reality to be investigated is of an objective nature and independent of humans; or subjective, and therefore only existing through the action of humans subjectively creating and re-creating it (Burrell and Morgan 1991; Orlikowski and Baroudi 1991). In the case of this research the social world was not ‘given’, but produced and reinforced by the humans involved. Therefore the ontological perspective in this case is one that emphasises the subjective and intersubjective meanings that these humans use to construct and understand their reality, as they interact with the world around them (Orlikowski and Baroudi 1991). The desire was to “uncover the socially constructed meaning” (Cavana, Delahaye and Sekaran 2001 p. 9), these executives had created about their ICT/I projects. Their perceptions were socially constructed, and quite possibly different from those of the ICT staff. Thus it was important to take a research approach that allowed the executive reality to be recognised. My task as the researcher, was to “convert the respondents’ subjective experiences into a public language so that the experience can be communicated to others” (Taber 1991 p. 577). Consequently, an interpretive research approach, utilizing embedded case studies of a number of Chief Executives or equivalents in a variety of organisations, seemed especially

appropriate to facilitate the theory-building desired in this study, (Cavana, Delahaye et al. 2001; Eisenhardt 1989; Glaser and Strauss 1967; Yin 1994).

The nature of this research problem was, like most organisational phenomena, quite complex. It was to be an exploratory, theory-building field study, of perceptions, attitudes, and expectations, of senior non-ICT executives about their ICT/I projects. Responses to inquiries about these perceptions etc. were generally expected to be:

- personally interpretive,
- subjective,
- context and role sensitive,
- relatively unstructured, and
- quite rich in their content, (Miles and Huberman 1994)

The ontological approach thus needed to be one that allowed expansive responses to the key questions asked of the executives, and was designed to reveal their perceptions and attitudes about ICT/I project delivery. In particular, the research was an exploration of the setting these people inhabit, and an attempt “to learn what is meaningful or relevant to the people being studied, or how *(these)* individuals experience daily life” (Neuman 1997 p. 69).

3.1.2 Epistemology

Epistemology is “the theory of knowledge embedded in the theoretical perspective, and thereby in the methodology a way of understanding and explaining how we know what we know” (Crotty 1998). For interpretive research, the distance between the researcher and the subject(s) participating in the research is minimised as far as possible, and the researcher closely interacts with whatever is being researched. What is being drawn from the research activity is interpretive, less empirically measurable, and likely to be more reflective of feelings, attitudes, and perceptions. The data gathered are subjective, value-laden, context-sensitive, often informal, and strongly inductive (Cavana, Delahaye et al. 2001; Denzin and Lincoln 2000). They are consequently more complex and challenging to analyse, but critical to the overall value of the particular research. Interpretive research sees “the unique features of specific contexts and meanings as essential to understand social meaning. Evidence about

social action cannot be isolated from the context in which it occurs, or the meanings assigned to it by the social actors concerned” (Neuman 1997 p. 72).

Collis and Hussey (2003) also describe Interpretive research as a paradigm that is concerned with understanding human behaviour from the participant’s own frame of reference. They stress the subjective aspects of human activity “by focussing on the meaning, rather than the measurement, of social phenomena” (p. 53). Unlike the data collected and considered in positivist research, these are frequently inconsistent and not necessarily reproducible. The data collection and analysis methods used are therefore inductive. They attempt to describe and translate the meaning of the language used, and provide description about what occurs in the social world the subjects inhabit. Cavana et al (2001) have a similar view, using the terminology “qualitative research”, noting that it “reveals people’s values, interpretive schemes, mind maps, belief systems and rules of living so that the respondents’ reality can be understood” (p. 34). Myers (1997b p. 2) summed up the rationale for this qualitative research when he noted “if there is one thing which distinguishes humans from the natural world, it is our ability to talk! Qualitative research methods are designed to help researchers understand people and the social contexts within which they live”, by listening to them talk, then interpreting the rich meaning derived from those conversations. Thus qualitative research “produces findings not arrived at by statistical procedures or other means of quantification” (Ives 2005 p. 43). Neuman (1997) also commented on this process of studying “meaningful social action”. He saw the interpretive researcher wanting to share the experience and perspective of the people being studied, and to discover what is meaningful or relevant for them. Everything about this paradigm reflects the way the information, from the executives participating in this research exercise, needs to be gathered, interpreted, and then analysed. It also supports the consequent expectation that a theory can evolve from the patterns, themes, and concepts arising from the basic data analysis, and the relationships between these concepts.

The task of the interpretive researcher is to manage the process of recording and interpreting individuals’ perceptions and attitudes as accurately as possible. When dealing with human events and activities, attitudes and perceptions, it is highly desirable to

appreciate the context within which these attitudes and perceptions develop. However, my own background experience as a senior ICT professional, meant it was important to avoid the danger of having my own understandings, convictions, and conceptual orientations colour the interpretation of the interaction between me as the researcher and the participants. Orlikowski et al (1991), in their comments about interpretive studies, emphasised that “interpretive researchers attempt to understand phenomena through accessing the meaning that participants assign to them” (p.5). There are assumptions being made about the human knowledge captured, and assumptions being made about the realities of the world being investigated. All of these shape the meaning inductively derived from the answers to the research questions (Crotty 1998; Dey 1998). Mingers (2001) too, was concerned that interpretive analysis should “surface and understand the *meaning* of the various interactions to the individual participants themselves within their particular organizational context” (p. 252).

Subjectivist, interpretive, research using a qualitative rather than quantitative methodology met the particular purposes of this research. The process of eliciting subjective meanings, that the executives attached to their responses about the effectiveness of the ICT/I projects in their organisations, encouraged “qualitative methods of ascertaining what those meanings are. This is epistemologically consistent” (Crotty 1998 p. 16). The research was not an empirical description of their reality, it was an attempt to inductively interpret it from their subjective experiences (Dey 1998; Varey and Wood-Harper 2002). The interpretation is carried out as seen through the lens of the researcher, who then needs to demonstrate an appropriate chain of evidence leading to the theory being postulated.

3.1.3 Research Methodology

Having addressed the ontological and epistemological positions for this research, the next stage was to determine the most appropriate choice of methodology. How a problem lends itself to study carries certain assumptions about the choice of paradigm, methodology, and methods, for the study. As previously stated, the interpretive approach chosen here involves the use and interpretation of language, feelings, and description, leading to inductive theory building. Typically the issues being investigated are complex, organisationally

situated, and reflect problematic relationships (Stake 2002). Interpretive research methodologies and methods are particularly useful when applied to information systems research that considers the organisational context of a problem being addressed (Myers 1997a). They also more readily allow for theory to be **generated from** the observations (inductive reasoning), rather than as a framework that is created and **decided before** the investigation is carried out (deductive reasoning).

This piece of research was seeking to develop a theory about executive perceptions of, and attitudes towards, ICT/I projects, with individual executive interviews as the data collection device. While it could be considered to fall within a variety of methodological approaches, the works of Yin (1994), Stake (2002), and Eisenhardt (1989) were particularly helpful for making the final choice. Yin (1994), describes a case study as “an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (p. 13). He sees the case study as being particularly useful when addressing contextual issues that are pertinent to the matter being studied. It provides opportunities to gain data of greater depth and breadth than could be extracted from other approaches. A concept that sat well within the context of this research. Eisenhardt (1989) also comments on the case study being “a research strategy which focuses on understanding the dynamics present within single settings”, and is a very useful approach when considering building theoretical models. Her approach was a strong influence in the decision to use this methodology. Stake (2002 p. 437) expanded further on these principles by identifying and describing three different types of case study;

- “intrinsic”, where the researcher is trying to gain a better understanding of one particular case, but does not have a purpose of theory building as a result;
- “instrumental”, where “a particular case is examined mainly to provide insight into an issue, or to redraw a generalisation”; and
- “collective”, where “a researcher may jointly study a number of cases in order to investigate a phenomenon, population, or general condition”. This particular concept is strikingly similar to Yin’s (1994 p. 44) comments on what he calls “multiple case

design”, where single units of analysis are used within multiple case studies of a particular phenomenon.

Therefore, the case study as a general methodology seemed the most logical approach, when compared with the other likely qualitative research options of:

- action research (“a type of *applied research* designed to find an effective way of bringing about a conscious change in a partly controlled environment” (Collis and Hussey 2003 p. 67), or
- ethnography (“ an approach in which the researcher uses socially acquired and shared knowledge to understand the observed patterns of human activity” (Collis and Hussey 2003 p. 70).

Neither of these two latter approaches appeared to have a particularly good fit with a strategy that would be dealing with the researcher’s role of outside observer collecting data from multiple sources of evidence. Some prior development of theoretical propositions that would guide the data collection and analysis process also had to be considered (Yin 1994). Being an outside observer meant that some distance could be preserved between the researcher and the executives involved in the research. The researcher would most likely be seen as not having any direct personal stake in the executives’ interpretations of the questions asked, thus allowing them to be relatively frank in expressing their views (Walsham 2001). The explanations provided by Stake (2002) for each of his three different kinds of case study, positioned this particular research as a collective case study, where a number of individual cases would be studied in order to investigate the phenomenon in question. His comments about the fact that it may or may not be known in advance whether the individual cases might manifest some common characteristic were very pertinent in this situation. He also noted that the individual cases “are chosen because it is believed that understanding them will lead to better understanding, perhaps better theorising, about a still larger collection of cases” (p. 437). This view was also valuable, given that a theory was to be developed from the analysed data.

The logical research strategy for the situation already described was essentially interpretive, with the intention of gathering qualitative attitudinal data from a number of

semi-structured interviews. The research approach could be considered as a ‘multiple mini-case’, where breadth of approach is traded off against depth (Martin 2003). Fifteen organisations would be consulted, with single-person interviews forming the data sources. Thus, this study also fitted within Yin’s (1994) type 3 case study design of single units of analysis within multiple cases. Other, similar interpretive research projects assisted the decision-making process of number of cases and number of units of analysis within the cases. Urquhart (1999) worked with six cases, and two units of analysis for her interviews within each case. De Salas (2002) worked with a single case, seven case sub-units, and an average of two members of each case sub-unit as the interviewees.

The particular cases in this study were chosen for theoretical sampling, rather than statistical reasons, (Glaser and Strauss 1967). They involved a variety of senior non-ICT executives in small, medium, and large organisations, engaged in a number of different business activities. (ref Appendix 2 for Organisational Information Table). The criteria for inclusion in the project were that the interview subjects did not head an ICT company, nor have an ICT background. They were also either, the senior executive in their organisation, or, in the case of large, or multi-national organisations, a direct report to the most senior national or regional executive. Identification of the research questions and the initial specification of possible constructs to help shape the preliminary design of the theory-building exercise were regarded as important in the early stages of the research design. Eisenhardt (1989) commented about this phase of applying the research questions in a case study research methodology. It made it possible to “specify the kind of organisation to be approached, and once there, the kind of data to be gathered”. As a research endeavour, the qualitative case study contributes uniquely to knowledge attained about individuals, organisations, social and political phenomena (De Salas 2002). Whatever the unit of analysis, case studies are generally put to use when the desire is to understand complex social phenomena, especially when they are described by the participants.

3.1.4 Research Method

The overall research strategy considered, the choice of a methodology, and the appropriate data collection and analysis techniques, were influenced by a number of factors.

These were the numbers and type of people who needed to be key contributors to the initial data collection, plus the open-ended nature of the data to be collected, and the expectation that a theory will be built from the analysis of the data gathered. The chosen data collection and analysis processes would be significant in describing the world these people lived in. Yin (1994 p. 79) notes there are a number of sources of evidence within a case study research methodology. Most typically there would be general “documentation, archival records, interviews, direct observations, participant observation, and physical artefacts”. Table 3.1 illustrates Yin’s (1994) view of those sources of evidence along with their recognized strengths and weaknesses.

Table. 3.1 Yin (1994) Six sources of evidence: strengths and weaknesses

<u>Source of Evidence</u>	<u>Strengths</u>	<u>Weaknesses</u>
Documentation	<ul style="list-style-type: none"> • stable - can be reviewed repeatedly • unobtrusive - not created as a result of the case study • exact - contains exact names, references, and details of an event • broad coverage - long span of time, many events, and many settings 	<ul style="list-style-type: none"> • retrievability - can be low • biased selectivity, if collection is incomplete • reporting bias - reflects (unknown) bias of author • access – may be deliberately blocked
Archival Records	<ul style="list-style-type: none"> • (same as above for documentation) • precise and quantitative 	<ul style="list-style-type: none"> • (same as above for documentation) • accessibility due to privacy reasons
<u>Interviews</u>	<ul style="list-style-type: none"> • targeted - focuses directly on case study topic • insightful - provides perceived causal inferences 	<ul style="list-style-type: none"> • bias due to poorly constructed questions • response bias • inaccuracies due to poor recall • reflexivity - interviewee gives what interviewer wants to hear
Direct Observations	<ul style="list-style-type: none"> • reality - covers events in real-time • contextual - covers context of event 	<ul style="list-style-type: none"> • time - consuming • selectivity - unless broad coverage • reflexivity - events may proceed differently because it is being observed • cost - hours needed by human observers
Participant Observation	<ul style="list-style-type: none"> • (same as above for direct observations) • insightful into interpersonal behaviour and motives 	<ul style="list-style-type: none"> • (same as above for direct observations) • bias due to investigator’s manipulation of events
Physical Artefacts	<ul style="list-style-type: none"> • insightful into cultural features • insightful into technical operations 	<ul style="list-style-type: none"> • selectivity • availability

With respect to interpretive case studies, Walsham (1995 p. 78) also noted that “it can be argued that interviews are the primary data source, since it is through this method that the researcher can best access the interpretations that participants have regarding the actions and events which have taken, or are taking, place, and the views and aspirations of themselves and other participants.” Consequently, the preference of interview as the primary data collection method was strongly influenced by writers such as Walsham (1995), Yin (1994), Eisenhardt (1989), and Pinsonneault and Kraemer (1993). They see an interview style of survey activity as being most effective when sensitive or complex data are needed. The questions, while targeted, can be open ended in nature, thus gathering respondents’ opinions as well as facts. The exploratory approach to be taken in the questions fitted the Pinsonneault and Kraemer view of the importance attached to the interviewer becoming familiar with the issues being faced by the interviewees. It also allowed consequent discovery of the range of responses likely to occur in the selected population. Orlikowski and Baroudi (1991 p. 13) comment on the importance of meaning and descriptions that come out of the interview process, “not merely because they reveal subjects’ states of mind which can be correlated with external behaviours, but because they are constitutive of those behaviours”. Denzin and Lincoln (2000) go further, and acknowledge the challenge faced by qualitative researchers when trying to use methods of data capture that uncover the meanings their subjects bring to the issues being explored. They recognise that these are subjective, with any window into the inner life of an individual potentially being an attempt by the researcher to make sense of, or to interpret, the phenomena being investigated in terms of the meanings people bring to them (Denzin and Lincoln 2000).

However, “overall, interviews are an essential source of case study evidence because most case studies are about human affairs” (Yin 1994 p. 85). Thus, the interview is a good way of discovering, and raising, new possibilities about, and dimensions of, the considered issues. It is the output from this phase that can develop the concepts, themes, and patterns that will ultimately be used to develop a theory that attempts to address the research questions. The data collection component of this research was to be a set of interviews, (one

per participant) designed to elicit the views of a sample of senior non-ICT executives, at CEO level or equivalent, about ICT/I projects in their organisations. The interviews were particularly intended to explore the areas generally covered by the five elements already identified in Chapter 2. It was also expected that the outcomes of the interview analysis would potentially produce more elements, help refine understanding of the research problem, and provide guidelines for development of a substantive theory.

Nonetheless, this approach of semi-structured interviews presented a number of challenges. The primary one was the subsequent interpretation of the executive interviews, as this involved gathering meaning from the comments given, and analysing and summarizing the interpretations of those people's words. The social world these people inhabit is not one of objective, tangible structures existing independently of their awareness and appreciation (Burrell and Morgan 1991). Organisational behaviour, in their context, is rarely systematic and replicable. It is far more likely to be an interpretive process, dealing with motives and reasons that lead people to act in various ways. The interview data gained was expected to give an account of the articulated issues in a way that appropriately reflected the views of the executive participants. Their views were likely to be a mixture of real history, combined with subjectivity and individual frames of reference (Burrell and Morgan 1991). These would colour their perceptions and understanding of the success, or otherwise, of infrastructure projects in their environments (Berger and Luckmann 1967). There was also the Klein and Myers (1999) Principle of Suspicion to be taken into consideration during the interview process. It was unknown how much effect there may be of “socially created distortions” (p.77) from the social world being described, that could affect how the interviewees might respond to questioning about these projects. There were also potential behavioural characteristics of chief executives which colour their views of themselves, (Beamish 2005; Clapham and Schwenk 1991; Olsson 2002; Wood and Vilkinas 2005), their views of their staff, (Wood and Vilkinas 2004), their levels of self-confidence when considering strategic decision-making in their organisations, (Bowman 1999; Karami, Analoui and Kakabadse 2006), and levels of optimism about such decision-making (Lovallo and Kahneman 2003; Norburn 1989). As interviews were chosen as the most appropriate

method of capturing the desired data, it was important to recognise and address the possible weaknesses of this method. The four points of weakness noted by Yin (1994), of:

- Question bias
- Response bias
- Poor recall inaccuracies
- Reflexivity

are addressed in later sections of this chapter. Figure 3.3 gives an overview of the interview design and implementation process.

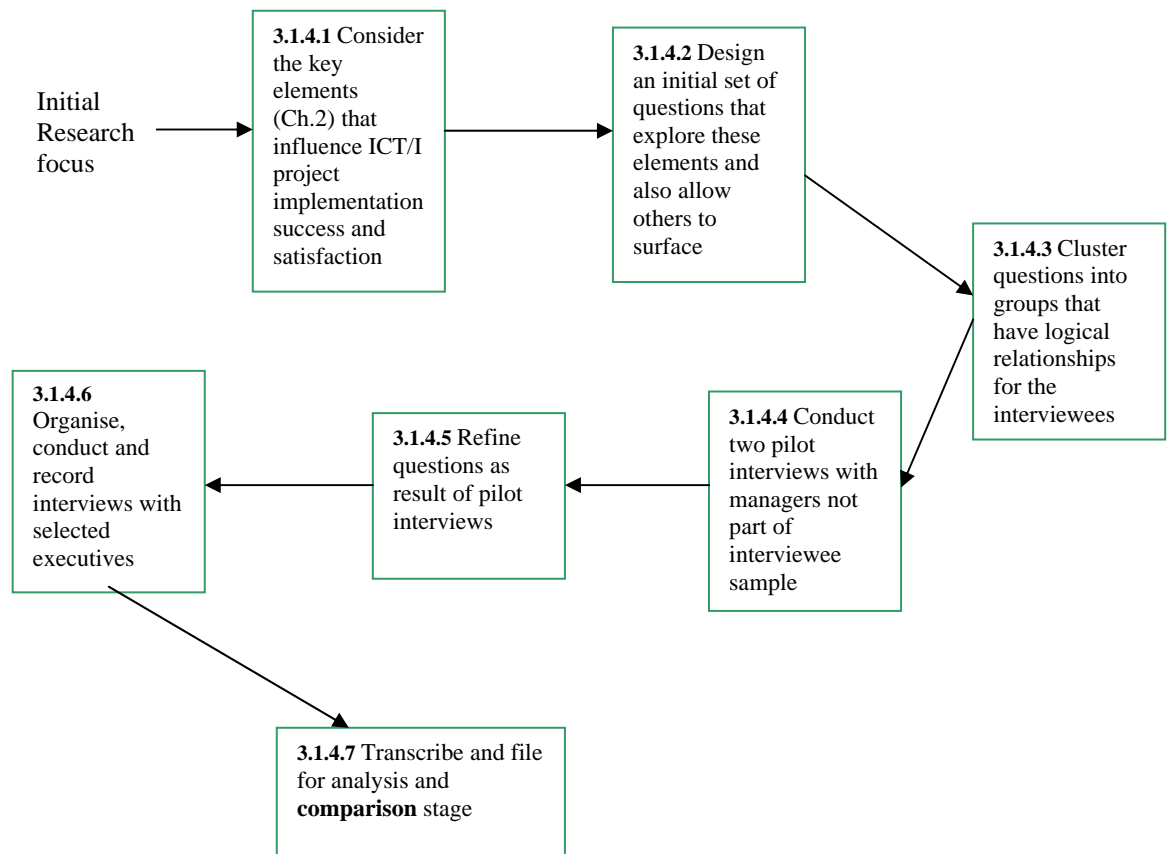


Fig. 3.3 Flow diagram of interview design and implementation process

3.1.4.1 Consideration of key elements

The development of the initial interview design, and the focus of the questions, was based on the initial five elements described in Chapter 2. They were seen as being core to the issues raised and influential in guiding the research design, namely:

- Adoption Issues
- Analysis Issues
- Communication Issues
- Technical and Organisational Issues
- Implementation Issues

An analysis of the literature reveals that when undertaking an interpretive research activity and subsequent analysis, a number of authors recommend the use of a ‘conceptual framework’ to help bind and direct the research (Collis and Hussey 2003; Eisenhardt 1989; Miles and Huberman 1994). In particular, Miles and Huberman felt that developing a conceptual framework identified the main things to be studied – the key factors, constructs, or variables – and the presumed relationships between them. It was also, as Walsham (1995 p. 77) noted, ”possible to access existing knowledge of theory in a particular subject domain without being trapped in the view that it represents final truth in that area”. Thus, a carefully constructed preliminary conceptual framework can be very useful, recognising it is but a means of creating a general direction for the research. In the case of this research, the elements described have occurred consistently in the literature about project issues and failures. Their importance to the research question is supported by anecdotal experience from the general business and ICT industry environments where I have worked as an ICT practitioner and Manager for many years. They also appear as regular comments in articles in ICT industry publications, (BCS 2004; Clarke 2002; Gardner 2000; Myers 1994).

The first stage of the research design was to create a conceptual framework around these core elements. This was merely a starting point, in order to frame some general themes that could be explored in the interview phase. There was also the recognition that they may be modified, expanded, or replaced as a result of the data collection and analysis.

3.1.4.2 Interview questions and the five core elements

The core issues that appear routinely in literature about ICT project failure and have been observed in practice, were broken down into general concepts. These would be useful to explore in the hope of extracting the type of information being sought from the executives

about their organisations' experiences with ICT/I projects, along with their own perspectives and attitudes about them.

The concepts generated were:

- Organisational activities – (*setting the scene*) exploring the position of ICT and the senior ICT staff member in the organisation.
- Chartering a project – (*strategic context*) looking at the history of, plans for, and decision-making processes around ICT/I projects
- Managing a project – (*operationalising*) exploring ICT/I project scoping, implementation, and progress reporting
- View of how it all works – (*reflections*) perceptions of ICT/I project success or failure, meeting of business expectations, and resource availability and competence

With these as guiding principles for the exploratory discussions being carried out in the interviews, twenty-six reasonably structured, but open-ended, questions were developed. This was intended to ensure that similar ground would be covered in each interview. It was also to assist the later comparative analysis process, which was expected to generate concepts, patterns, and further themes from the interview data collected.

3.1.4.3 Developing question clusters

The questions were refined, and then grouped into four clusters that were structured in a logical sequence both within the cluster, and from one cluster to the next. Within each cluster, there were questions that related to one or more of the initial five elements being explored. The first few questions were also designed to position both the organisation and the interviewee relative to the others being interviewed, and act as an icebreaker to the interview. Table 3.2 illustrates both the clusters and the general types of questions asked. (The final interview questions in their concept clusters are attached as Appendix 1.)

Table 3.2 Question clusters and exploration of the particular constructs being investigated.

Cluster	General Questions	Elements explored	
Organisational	Org. business activities	Adoption	
	Individual Responsibilities & prof. background	Technical/Organisational	
	Spend on ICT	Adoption	
	ICT people involvement with strategic planning	Analysis Technical/Organisational Adoption	
	Alignment of ICT/I projects to Business Plan	Analysis Technical/Organisational Adoption	
	Overall responsibilities for ICT/I projects, & reporting lines	Technical/Organisational	
	Appropriateness of ICT in the organisation	Technical/Organisational Adoption	
Chartering a Project	Particular characteristics of ICT/I projects	Analysis Technical/Organisational Implementation	
	Personal involvement with ICT/I projects	Analysis Technical/Organisational Implementation	
	Types of ICT & non-ICT projects undertaken & planned	Analysis Technical/Organisational Adoption	
	Similarities/Differences in approach & decision to proceed	Analysis Technical/Organisational Adoption	
	Post Implementation Review & Return On Investment carried out to check delivery against original projected benefits	Analysis Communication Implementation	
	Managing a Project	ICT/I projects managed & resourced from internal/external sources	Communication
		Project scope changes & causes	Communication Technical/Organisational Implementation
Effectiveness/Appropriateness of Business/ICT personnel communication		Communication	
ICT/I project progress reporting		Communication Implementation	
View of how it all works	Success or failure measurements	Analysis Technical/Organisational Implementation	
	Satisfaction with resource availability & expertise	Communication Implementation	
	Business expectations of ICT team delivery, & satisfaction with this	Communication Technical/Organisational Implementation	
	Recollections of/reflections on, a particular ICT/I project	Analysis Communication Technical/Organisational Implementation	

3.1.4.4 Piloting interview questions

The first draft of the interview questions was critiqued by research colleagues for length, structure, completeness, and clarity. The questions were refined, and two versions created, one for the interviewer and another for the interviewee. The interviewer's copy had some extra follow-up questions to elicit further information if the interviewee didn't cover the key points spontaneously. The amended set of questions was then piloted as a formal, recorded interview, with a non-ICT manager colleague, to check timing, structure, flow, and interviewee acceptability.

3.1.4.5 Question refinement

Some further minor amendments, primarily in the areas of question emphasis, language expression and use of ICT idiomatic terms, were made as a result of this exercise. A second pilot interview was then held with another non-ICT manager, not part of the selected interviewee group. One further very minor amendment, again related to language used, was made to one question as a result of the second pilot interview. This process was designed to address the first identified weakness in the Yin (1994) table of potential 'Bias due to poorly constructed questions'.

3.1.4.6 Organise and conduct interviews

Initially it was planned to make contact with ten company Chief Executives or equivalent, using my own network of business contacts as the introductory links. The level of interest in the research project was such that the number of 'interested interviewees' quickly grew to fifteen. Since the work of coding and analysing the results of these interviews was likely to be substantial, I stopped accepting offers at that number, until it could be determined from the fifteen interviews whether there may be more useful information to be gained from any further interviews. Eisenhardt (1989 p. 545) writes of "theoretical saturation the point at which incremental learning is minimal because the researchers are observing phenomena seen before (Glaser and Strauss 1967)". At fifteen interviews, it was expected that there would be some clear indicators as to whether any more useful, contradictory, or confirmatory information could be gained by talking to more people. If the incremental improvement to the body of knowledge gained by then was minimal, the interview process would stop. The decision at this point would also be influenced by

reflecting on the likely effect of any noticeable “Response bias” as noted in the Yin (1994) table.

The companies these people represented were all operating in New Zealand, although some were multi-nationals. They ranged from a small (\$300,000) annual ICT spend, through to large (\$10 billion worldwide) ICT spend over the past 12 months. All the companies employed more than 20 staff, with an ICT infrastructure and operation in place of at least one full-time, dedicated, ICT staff member. A good cross-section of business environments was represented:

- Telecommunications Suppliers (1)
- Legal (2)
- Retail (1)
- Manufacturing and Distributing (2)
- Utility (Electricity) Suppliers (2)
- Health (2)
- Private Training Provider (1)
- Insurance (1)
- Public Education Institution (1)
- Pharmaceutical (1)
- Aged Care services (1)

The fifteen executives interviewed were all aged in their late forties to early sixties, as is typical for people at this level in New Zealand companies. Information about their professional background was also elicited during the interview, to see if this may have had any influence on their attitude towards their ICT/I projects.

Each interviewee was provided with a copy of the questions to be asked, in advance of the interview, together with an information sheet explaining the purpose of the study and the interview. (Ref. Appendix 12 for a copy of the Participant Information Sheet). This allowed the interviewees some time to consider their responses prior to the actual interview taking place. The interviews were carried out between June and October 2003. All the executives were interviewed in their work environments, and were asked if the interview

could be recorded. They all agreed, and were also assured of their anonymity, an issue for some of them given the sensitive nature of a number of the questions. They were offered a summarised copy of the interview coding and analysis exercise, for information and comment. Every one of them expressed interest in receiving this. The approach of both interview preparation and audio-recording was designed to address the third and fourth identified weaknesses in the Yin (1994) table of “inaccuracies due to poor recall”, and “reflexivity”. The interviews typically ran for between sixty and ninety minutes, depending on the conversation style of the person being interviewed, and the amount of comment the participant wished to make in response to some of the questions. Table 3.3 illustrates the sequence of interviews, the executives interviewed, and the types of organisations they represented. This is elaborated on further in Chapter 4.

Table 3.3: Interview schedule

Interview date	Interviewee	Organisation
June 2 nd	Operations Manager	Health Insurance
June 3 rd	General Manager	Law Firm
June 4 th	Director	Private Training Provider
June 11 th	NZ General Manager – Telecomms Division	Technical Services Provider – (International company)
June 12 th	NZ General Manager	Consumer electronic retail – (International company)
June 17 th	Group General Manager	Electricity Asset Management
June 18 th	Global HR Manager	Wine manufacturing and distribution – (International company)
June 19 th	Chief Executive	Plastic Film Manufacturing
June 24 th	General Manager	Electricity generator and retailer
June 25 th	NZ Managing Director	Pharmaceutical company – (International company)
June 26 th	Chief Executive	Aged Care Services
July 15 th	Chief Executive	Independent Practitioners’ Association
July 18 th	Chief Executive	Law Firm
Sept. 20 th	Chief Executive	Pacific Primary Care
Oct. 12 th	Chief Executive	Education Provider

Each interview began with some general questions about the company, the interviewee’s role, and career background. These questions were primarily designed to

position each interviewee and company within the whole group of interviews, and were quite factual. It was possible, but not known at that stage, that there may be some factors which influenced the executives' attitudes to, and perceptions about, ICT/I project delivery that were related either to the company, or the executive's own background. The information derived from these initial questions was separated from the qualitative data supplied in the rest of the interview, and put into a table of organisational information. (ref Appendix 2 for copy of the table). All the interviewees were interested in the area being researched, a number of them commenting that their views about these kinds of projects had never been sought before. It was interesting, and unexpected, that in almost all cases, I had to clarify the distinct difference between software development projects and infrastructure projects. For these people, they had all been just ICT projects, and 'tarred with the same brush'. Also, there were some ICT/I project examples I listed, which had, for some of these executives, not been recognised as ICT projects at all. Once they differentiated between the two kinds of projects, their thinking and perspectives changed, with some interesting subsequent comments.

3.1.4.7 Interview transcription and filing

After each interview was recorded on to a digital recorder, it was downloaded as an audio file on to both a PC hard drive and CD. I then transcribed directly from the audio record to a Word document, in order to capture and follow-up on anything that may not be completely clear, while the interview was still fresh. This was also intended to address the third weakness of the interview process, identified by Yin (1994), namely 'inaccuracies due to poor recall'. The transcribed interviews each generated between 12 and 15 pages of text of the comments made by the interviewees. The transcriptions were then ready for analysis, consideration of the findings drawn from the analysis, and subsequent theory building.

3.2 Choice of Grounded Theory as the Data Analysis Method

3.2.1 Overall Approach

There were a number of approaches that could be used to assist the process of inductive theory building, but the one preferred was that of grounded theory, as originally developed

by Glaser and Strauss (1967) and further refined by each of the original authors both singly and in collaboration with others.

“It (grounded theory) is a style of doing qualitative analysis that includes a number of distinct features, such as theoretical sampling, and certain methodological guidelines, such as the making of constant comparisons and the use of a coding paradigm, to ensure conceptual development and intensity” (Strauss 1987 p. 5).

Orlikowski (1993) also noted both that grounded theory is very useful for areas of research where there is little theory, and helpful for the whole interpretive analysis process. The grounded theory methodology for inductive theory building emphasises the need for the researcher to become immersed in the collected data. At the same time it tries to guard against imposing theories from related areas that do not actually match the patterns in the data (Glaser 1978). It is an inductive approach to data analysis, yet it draws on the strengths of positivist approaches in the way that it provides coding procedures to analyse the captured data. In other words, it is principally a “qualitative research method that uses a systematic set of procedures to develop an inductively derived theory about a phenomenon” (Strauss and Corbin 1994 p. 24). It is attractive for qualitative research because it offers well-signposted procedures. It is a general style of interpretive analysis and inductive theory-building which does not depend on particular disciplinary perspectives (Strauss 1987). The comparative analysis process which is the heart of this approach, allows a theory to develop that is compatible and consistent with the collected evidence that is its source. It doesn't constrain the researcher either by literature, or by standard ways of thinking about the data. Piantanada, Tananis and Grubs (2002 p. 3) note, “the procedures of grounded theory provide interpretive researchers with a disciplined process, not simply for generating concepts, but more importantly for coming to see possible and plausible relationships between them”. From these relationships would be generated a theory that naturally emerges from, and is substantiated by, the empirical data that conceived it.

There had been an ideological split between Glaser and Strauss in 1990, which culminated in two different approaches to grounded theory data analysis. Glaser continued to emphasise the ‘emergent’ nature of the grounded theory method, and was committed to recognised principles and practices associated with the interpretive paradigm. Strauss on the

other hand, as Babchuk (1996 p. 3) p3 noted, “seems to be relatively more concerned with producing a detailed description of the cultural scene”. Glaser argued that this approach could generate a forced result, because of the many rules and procedures espoused. This is particularly so in the application of the Strauss and Corbin (1990) guidelines for their three coding steps or stages – open, axial, and selective, which form, for them, the heart of grounded theory analysis. Nevertheless, both Glaser and Strauss were clear about basing the resulting theory on the data. This ties, or grounds, it to the data, and reduces the likelihood of either fitting popular theories to the data, or finding examples to fit a desired theory. By following the grounded theory principles of comparative analysis, the groups or subgroups of people being studied are compared, and their similarities and/or differences built into a theory. It is the data which comes from the interaction with the research participants which provides the basis for patterns to show up which can lead to general concepts about the data. This in turn leads to broader theoretical propositions (Glaser and Strauss 1967). Therefore, grounded theory data analysis is the “generation of emergent conceptualisations into integrated patterns, which are denoted by categories and their properties woven together by the constant comparison process which is designed to generate concepts from all the data” (Glaser 2002 p. 1). It was Glaser’s simpler, holistic, approach to the data analysis process which appealed to me, as it seemed less likely than the later Strauss and Corbin (1990) approach, to get buried in procedural rules.

One of the particular strengths of grounded theory, when used for inductive theory building, is the open coding phase, which ensures that the researcher intimately understands the data being analysed. In spite of their later differences, detailed very comprehensively in Charmaz (2000), both Glaser and Strauss maintained this as the first stage of the grounded theory approach to data analysis. It provides a very sound foundation for the subsequent stages of developing patterns and themes. These potentially lead to the development of a credible and substantive theory about the perceptions and attitudes the executives had of their ICT/I project development and implementation. Sarker, Lau and Sahay (2001), used grounded theory for inductive theory building about virtual team development, and were very confident that “open coding would contribute positively to any genre of inductive qualitative research, by facilitating the immersion of the researcher in the data. Therefore, open coding

should be considered as a first step for examining qualitative data whether using case study, ethnography, or any other similar methodology”(p. 52). It is important for any researcher, who is considering using grounded theory, that what grounded theory is not, is understood as well as what grounded theory actually is. It is not a routine application of formulaic techniques to data, nor an excuse for the absence of a methodology. It is neither easy, nor perfect, but it is a practical method of conducting research which analyses the meanings of discussions carried out by people within a social research situation (Suddaby 2006). In spite of a number of myths surrounding both what grounded theory is, and how it should be used, it is now generally regarded as “a flexible research method that is good for researching processes, and for building theory in unexplored areas” (Urquhart and Fernandez 2006 p. 6)

Finally, there was an anticipated difficulty of extracting data on the phenomenon of executive perceptions of, and attitudes towards, ICT/I projects, from large numbers of respondents. The principle of theoretical sampling, an important property of the grounded theory approach, was seen as being very relevant for this situation. I could develop categories from the comparative analysis process, refining the ideas that were surfacing, without having to increase the size of the interviewee sample. The theoretical sampling would help me “identify conceptual boundaries and pinpoint the fit and relevance” of the categories generated (Charmaz 2000 p. 519).

3.2.2 Grounded Theory and Personal Experience

I wished to keep away from a predetermined result, or be constrained by rules which may lead to one. I also empathised with Glaser’s views on grounded theory. These were the key influences in following the original Glaser and Strauss (1967) guidelines of coding and analysing the data gained from the interviews. The formal analysis process started with open coding, and was followed with selective and theoretical coding to complete the picture, without applying the Strauss and Corbin (1990) ‘rules’ as rigorously as they recommend. There was no predisposition towards identifying ‘typical’ behaviour or responses from the interviewees, or skewing the responses towards a ‘right’ interpretation of the interview discourses. It is however recognised that interpretive research does acknowledge an engagement between the researcher and the participants; as noted in Klein and Myers (1999)

principles 3 and 6 in their paper on interpretive research, but this can be accommodated by applying a general principle of suspicion about the questions and responses, and being aware of a researcher's own biases. This was a danger identified in the more prescriptive Strauss and Corbin (1990) approach, and commented on also by Walsham (1995). My own experience of ICT/I projects just needed to be set aside in order to allow these concepts to emerge in as open and impartial manner as possible. Thus the discipline of following the original grounded theory data analysis approach, to build a theory from the empirical evidence gathered, was expected to maintain a credible level of data interpretation integrity.

3.2.3 The Coding Process

The data gathered from the interviews, was initially to be coded using a minor adaptation of the original Glaser and Strauss (1967) grounded theory data analysis approach. Comparative analyses would then be made of the key concepts that emerged from each interview, by mapping similar responses within and across each group, to produce a picture of generic ICT infrastructure project issues. Once the analysis had been completed, the participating interviewees would be sent a summary, where the individual participants could not be identified. This was in order for them to comment on the results, or add anything more that came to their mind, and to provide some corroboration of concepts generated. Chapter 5 covers a more detailed explanation of the coding and analysis process, through to the preliminary theory development.

3.3 The Place of Theory in Interpretive Research

Many authors, e.g. Cavana et al (2001), Collis et al (2003), Eisenhardt (1989), Walsham (1995) etc, comment on the key role theory plays in interpretive research. In the deductive approach, theory is often used to create an initial framework that takes previous knowledge into account, and forms a basis for the approach to the issue to be studied. Here the researcher begins with a reasonably clear theoretical proposition, and uses that to confirm or predict general patterns of human behaviour (Cavana, Delahaye et al. 2001; Neuman 1997). This approach is typically referred to as "moving from the general to the particular"

(Collis and Hussey 2003 p. 15). However, as Walsham (1995) p76 states, “there is a danger of the researcher only seeing what the theory suggests, and thus using the theory in a rigid way which stifles potential new issues and avenues of exploration”.

In inductive research, a theory is developed from collected empirical data, and “general inferences are induced from particular instances, which is the reverse of the deductive method” (Collis and Hussey 2003 p. 15). I desired in this piece of research to preserve as much openness as is possible to the data collected. Initial theories and assumptions would be kept as far out of the picture as possible, except as a skeletal map of a few key elements that would be drawn in detail, and expanded by the interview participants. Thus, as Urquhart (1999 p. 28) noted, the concepts could emerge naturally, as the executives saw them, “rather than be forced into predefined categories or relationships”. It also would address any potential “reflexivity” weakness of the interviewing process, as identified by Yin (1994), in which there is a danger that the interviewee may give what he or she believes the interviewer wants to hear. Therefore, a ‘bottom-up’ approach towards the data analysis that sat comfortably within the principles of inductive theory building was used. This was an attempt to elicit the desired deep insights into the issues related to the executives’ views of ICT/I project delivery in their organisations. Figure 3.5 illustrates the fundamental differences between the deductive and inductive approaches, and reinforces the appropriateness of the research design choice made for this study. As stated earlier, this was to be an exploratory study, intending to develop a theory that may explain the behaviour of senior executives when dealing with their ICT/I projects (Charmaz 2006).

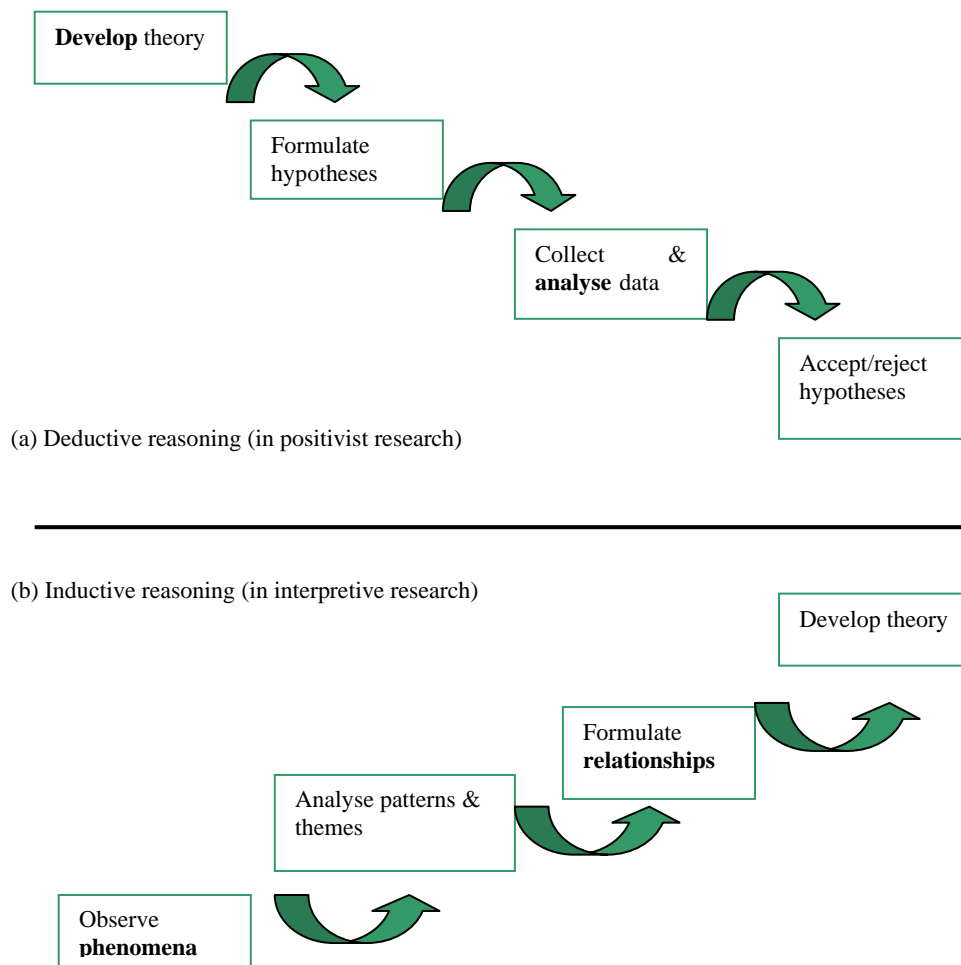


Fig. 3.5 Deductive and inductive reasoning in business research (Cavana, Delahaye et al. 2001) p.36)

The Urquhart (2001) discussion on dealing with relevant literature where the bulk of the literature search was carried out *after* the substantive theory was developed, has been quite influential in the overall approach to this project. This approach made the literature review more focused, and made more sense in the context of considering the themes that may come out of the coded and analysed interviews. I followed the initial Glaser and Strauss (1967) principal of grounded theory that suggests other theoretical ideas be suspended. It thus allows the theory to emerge inductively rather than as an extrapolation of views of the world expressed in existing literature. As previously discussed, a preliminary literature review was carried out, but the bulk of literature searching was delayed until the data had been collected and analysed. The emergent theory dictated the relevance of the literature used (Urquhart and Fernandez 2006). Urquhart's (2001) explanation of Glaser's (1978)

concept of *'theoretical sensitivity'* became both helpful and re-assuring at this point. I needed to reconcile the desire to undertake the research with as few predetermined views as possible, while recognising that there would still be a need to relate to previous research carried out into ICT/I project delivery. The theory would be related to, and reviewed against, literature in the substantive area under study. The emergent theory would then be assessed as to whether it confirmed, contradicted, or extended existing theories in the literature.

3.3.1 Inductive Theory Building

As stated earlier, it was not intended to propose relationships between any variables, or the core elements already identified in Chapter 2. Instead, I wished to gather a "rich" description of the issues identified by the executives, and from the analysis of this, build an inductive and substantive theory about those issues. Discovering theory from the field data collected is very much the philosophy that Glaser and Strauss (1967) espoused in their 'grounded theory' concept. It was also used by Orlikowski (1993) as the basis of her interpretive case studies on the adoption and use of CASE tools. My interviews were expected to generate valuable insights into the social context of the ICT/I project issues, focussing on the executives' perspectives and interpretations of these projects. Eisenhardt (1989) used an interesting framework, or 'roadmap' for building theory from case study research. This was adapted by other authors such as Urquhart (1999), and De Salas (2002), to describe the investigation process from definition of the research questions through to inductive theory development. The adaptation done by De Salas (2002), was found helpful in this research activity also, and has been used with further adaptation in Table 3.4 to describe the investigation process used in this study.

Table 3.4 Theory building steps used in this research – (adapted from Eisenhardt 1989 and De Salas 2003).

Step	Approach adopted in this study	Reason
Getting Started	<p>Definition of research questions to meet intentions of original research idea.</p> <p>Generate some broad constructs from literature review to guide the process of data collection.</p> <p>Neither theory nor hypothesis presented at initial stage – discovery of theory would arise from the field data.</p>	<p>Focuses efforts</p> <p>Provides better grounding of interview questions</p> <p>Retains theoretical flexibility and integrity</p>
Case selections	<p>Fifteen CEO/GMs approached and selected as interview participants</p> <p>Opportunist selection across variety of industries, and sizes of organisations within available population</p>	<p>Meets criteria in research questions</p> <p>Gain cross section of ‘inhabitants’, and focus research efforts on theoretically useful cases.</p>
Crafting instruments and protocols	<p>Interview chosen as most suitable qualitative data collection method</p> <p>Interview questions generated around themes developed from original broad constructs</p> <p>Interview questions piloted with two ‘manager volunteers’.</p> <p>A single investigator was used for all interviews.</p>	<p>Desired ‘rich’ data unlikely to be gathered from these participants using other methods.</p> <p>Maintains consistency of general responses for later analysis and comparison</p> <p>Checks understanding of questions and flow of interview</p> <p>Maintains consistency within data collection and analysis procedures</p>
Undertaking data collection and initial analysis	<p>Interviews recorded and transcribed over three month period, prior to data analysis activities</p> <p>Data ‘nuggets’ from each interview extracted and filed under theme headings prior to formal grounded theory analytical approach</p>	<p>Any required follow-ups or adjustments to data collected could be done while interview still fresh with participants</p> <p>Brings clusters of similar statement ‘nuggets’ together and identifies duplications or mismatches. Identifies emerging themes.</p>
Analysing the data	<p>Each case initially individually analysed using G&S (1967) grounded theory coding principles and techniques.</p> <p>All cases included in group analysis at Selective coding stage to identify common issues of relevance to the study.</p> <p>Cross case pattern search using theme analysis to confirm or disconfirm relationships</p>	<p>To cope with complex and huge volume of data, and allow relationship patterns of each to emerge for preliminary theory generation</p> <p>Look beyond initial impressions to see evidence through multiple lenses</p> <p>Helps focus on original ‘five elements’ and any new ones to begin theory build. Develops familiarity with data and preliminary theory generation.</p>
Shaping preliminary theory	<p>Codes and categories, together with emerging themes, used as theory building blocks and compared to data in each successive case.</p> <p>Grounded theory coding process taken through to theoretical coding, once all interviews have been</p>	<p>Sharpens early theory definition, validity, and measurability.</p> <p>Builds internal validity</p> <p>Confirms, extends, and sharpens theory.</p>

	through the open and selective coding stages.	
Enfolding the literature	Emergent theory comparison with conflicting or supporting literature where available.	Builds internal validity, raises theoretical level, deepens insight, and sharpens construct definitions Sharpens generalisability, improves construct definition, strengthens internal validity by tying together unexpectedly similar phenomena, and raises theoretical level Literature reviews should assist justification of the findings to the research community at completion of the project.
Reaching closure	Analysis process ends, and substantive theory confirmed.	Marginal improvement is so small it ceases to add value, or there are no further code movements appearing; i.e. data and theoretical saturation achieved.

3.4 Chapter Reflections

This chapter has described the selection of, and overall approach to, the research design paradigm and methodology I considered most appropriate for attempting to answer the research questions. The research takes an interpretive approach and uses a case study methodology. The Glaser and Strauss (1967) grounded theory approach is used to analyse the findings from the case study. Support for the chosen methodology came particularly from:

- Denzin and Lincoln (2000 p. 3) “qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them”;
- McGrath, Martin and Kulka (1982 p. 69) ”the research process can be viewed as a *series of interlocking choices* in which we try *simultaneously to maximise several conflicting desiderata*”;
- Eisenhardt (1989 p. 536) “theory-building research is begun as close as possible to the ideal of no theory under consideration and no hypothesis to test” and “the case study is a research strategy which focuses on understanding the dynamics present within single settings”;
- Yin (1994 p. 1) “case studies are the preferred strategy when ‘how’ or ‘why’ questions are being posed, when the investigator has little control over events,

and when the focus is on some contemporary phenomenon within some real-life context”;

- Dey (1998 p. 2) commenting on “ Tesch’s (1990) ‘descriptive/interpretive’ approaches which are oriented to providing thorough descriptions and interpretations of social phenomena, including its meaning to those who experience it”;
- Charmaz (2000) “the rigour of grounded theory approaches offers qualitative researchers a set of clear guidelines from which to build explanatory frameworks that specify relationships between concepts”.

As well as describing the overall research strategy and methodology, the specific research method of senior executive interviews was explained along with the process of determining themed questions to be asked. The accumulated responses to these questions, when analysed, should lead to a theory which provides an answer to the research questions. The next chapter describes the cases in some detail, and outlines the preliminary approach to the data analysis process.

CHAPTER 4

THE CASE STUDIES AND PRELIMINARY DATA ANALYSIS

4.0 Chapter Overview

4.1 The Case Study Units of Analysis

4.2 Preliminary Interview Analysis

4.3 Chapter Reflections

4.0 Chapter Overview

This chapter describes the fifteen organisations used in the study. It gives a summary of the main areas of business of each one, and the responsibilities of the executives interviewed. ICT/I projects undertaken and planned are also noted. Finally, the approach to data collection and initial extraction of data for grounded theory analysis is outlined.

4.1 The Case Study Units of Analysis

(Ref. Appendix 2 for table summaries of the organisational information detailed here)

4.1.1 Company A – Management of Electricity Network Infrastructure.

- **Company A** is a provider of electricity networks, telecommunications networks, and information systems related to the electricity industry. It is also involved in investment analysis, capital management, and management of outsourced service providers. Another key component of the business is the management of the regulatory interface with government.
- The interviewee was the General Manager, and his responsibility covered management of the assets of the business. Responsible for all decisions around capital investment, maintenance performance, contracts or frameworks for the

outsourced service provision, business systems and network technology solutions, and all the technology components related to them. A key part of his role is responsibility for the strategic framework of the business going forward. That includes being CEO of a joint venture business with two venture partners.

- ICT/I projects undertaken in the past three years include a full customer management system implementation together with the new infrastructure it runs on. There was also the component replacement of an existing old system with new functionality, plus a smart operational system that works with the company's other systems to manage the electricity network maintenance program, minimizing operator intervention. There has been implementation of a system that manages the deployment of devices in the field from a control perspective, and an online field device monitoring system with full network modelling capabilities.
- Top priorities for upcoming ICT/I projects include integrating a company they have recently merged with, and selecting appropriate systems to go forward from the merger. There is also a continuing ongoing search for bolt-ons to the technology to improve the company's competitive situation in the whole area of electricity and telecommunications infrastructure management.

4.1.2 Company B - Electronics Retailer

- **Company B** is a wholly owned subsidiary of a large publicly listed Australian retail group. The New Zealand operation has been in place for about 20 years. It has 600 staff, 40 company-owned stores, and approximately 15 owner-operator companies who on-sell products. The company not only sells retail but also wholesale and through its web site. It deals in four main categories of merchandise
 - computers, peripherals etc, and software;
 - communications, phones, faxes, modems, cellular phones;
 - electronics, (components, testing equipment, cable etc).; and

- light entertainment, which is anything to do with audio products, DVDs, small TVs, gaming etc.
- The interviewee was the General Manager of the NZ business who reports into the General Manager of the whole electronics group in Australia. His key responsibilities are the whole merchandising and distribution sides of the NZ business.
- ICT/I projects undertaken in the past three years have been a complete replacement of the main computer, integration of the point-of-sale systems throughout the stores including all new point-of-sale equipment, and upgrade of their e-mail and desktop facilities. The Company does not yet have an Intranet.
- ICT/I projects planned for the next three years include an upgrade of the PABX and the inter-store communications. Included in the store and in-house communications plan is the development of a company Intranet. There is also a project on EDI automatic ordering and other general supply chain operations, which is undergoing trials at the moment. A key driver is to increase automation and bring further efficiencies into the supply chain to help reduce the cost of doing business.

4.1.3 Company C - Legal Firm

- **Company C** is a mid-sized New Zealand owned and operated legal firm with eight partners, 23 lawyers, and a total of 45 people in the organization. The bulk of their work is commercial, property, and litigation.
- The interviewee was the General Manager who had overall responsibility for all operational matters including finance, plus ensuring that the lawyers have all the tools they need to deliver services to their clients. Responsibilities also included training, recruitment, and ensuring that the business survives and the partners make a profit.
- ICT/I projects undertaken in the past three years were primarily upgrades of servers, network, desktops, software, hardware, and telephones. There were two incompatible networks, old desktops, a limited telephone system, and too

many uncontrolled printers and faxes. The company also moved to new premises. That exercise included bringing in new technology and establishing a new single network.

- ICT/I projects planned for the next three years are primarily around e-business. This would provide client access through the Internet on a secure path where they will be able to see (and pay) their accounts, view the status and progress of their documents, and see the services the company can offer.

4.1.4 Company D – Private Training Provider

- **Company D** is a mid-sized privately-owned Training provider. The staff are involved in four types of business. Firstly, traditional applications training, which has been core business for the past 17 years. Secondly, Microsoft and Lotus technical training that has been carried out for the past 10 years. Thirdly there is a group doing applications development both for the company as internal work and for external clients. Fourthly there is a Certification group working on gaining international recognition for the training programs by having NZQA Certification of the courses they run.
- The interviewee was the principal company director, who is also responsible for special projects such as the NZQA relationship, and the company's new Web development project. The latter project was from a business perspective, ensuring that the business requirements are known to the project team.
- ICT/I projects carried out over the past three years include the ongoing annual roll-over of desktop equipment, and a major upgrading of the administrative system, rolling out a new range of office products.
- ICT/I projects planned for the next three years revolve around the key Web services project, moving into phase two and phase three. Other than that there were the normal annual equipment rollover upgrades.

4.1.5 Company E - Wine Manufacturing and Distribution

- **Company E** is a wine manufacturing company that produces fine wines through the whole process from growing grapes to distribution. It is part of an international group with headquarters in the USA but mainly based in Australia and New Zealand. The core part of the NZ business is a group of regional wineries that carry out the entire winemaking cycle other than bottling which is then done on one central site.
- The interviewee was the global HR manager, who was responsible for all HR activities within the international group.
- ICT/I projects carried out over the past three years include the upgrade of a number of servers and getting them to communicate with one another, so that a number of the sites can be linked together. There has also been a major telecommunications project about managing information in the most effective way for the business.
- Planned ICT/I projects for the next few years include a full rollout of Lotus Notes, and an upgrade to the warehouse management system, which includes tracking the movement of wine.

4.1.6 Company F - Technical Services Provider

- **Company F** is part of a world-wide organisation that provides technical services to industry. In New Zealand its four main business streams are:
 - providing services in the electrical industry,
 - telecommunications services,
 - railway locomotive and fleet maintenance, and
 - technical services to the power generation industry.
- There is also a minor amount of product sales because worldwide the company is a manufacturer and distributor of products in those areas that it cultivates.

- The interviewee was General Manager of telecommunications services in New Zealand, the largest of the four business units, which includes the telecommunications services unit in Australia and reports directly into the international head office. This unit has about 35 staff throughout New Zealand and a similar number in Australia.
- ICT/I projects carried out over the past three years have been to centralize and upgrade the infrastructure that runs the 'work management' system, upgrading network access to the branches around the country, and upgrading call-centre access and response functionality.
- ICT/I projects planned include a major one to keep track of all the telecommunications network maintenance requests received. This is primarily implementing a national job tracking database and establishing an appropriate infrastructure for it to operate on, accessible through the Internet by both staff and customers so the jobs can be seen in a live, real-time basis.

4.1.7 Company G – Plastics Manufacturing

- **Company G** is a medium-sized, privately owned, New Zealand company in the business of plastic film manufacturing from the extrusion phase through to printing and conversion. Its clients are mainly industrial, who use the film to package their products. The company is well established in the New Zealand market, and has doubled the amount of product it makes and sells over the past 12 months. It is currently very profitable, and sees itself as strongly competitive against some of the multinationals operating in the same area.
- The interviewee was the CEO of the organization, responsible for all strategic activities for the company, potentially taking it forward to a public listing.
- The only ICT/I project of any significance undertaken over recent times was the expansion of a fibre optic network link into the factory and down into the production planning section.
- A high priority for the business is automation of the links through all the production process. The CEO wants to track all of the steps of a production

project right from initial extrusion up to when the film comes out as a finished product. This will include bar-coding printed product and implementing the ERP project, linking it with the whole production process.

4.1.8 Company H – Independent Practitioners’ Association

- **Company H** is an IPA of 5,000 patients affiliated with 54 doctors. These range from sole charge to 6-doctor practices. The IPA looks after the information management needs of the Ministry of Health on behalf of its members.
- The interviewee was the CEO, responsible for all activities carried out by the IPA, reporting to its Board.
- Key ICT/I projects carried out over the past three years have been related to moving away from paper-based records to electronic record management. This meant upgrading all the record management and communication systems, as government funding requirements are for electronically held information and records.
- ICT/I projects planned for the next three years include improving the bandwidth to the GPs, and getting shared information for all of them. They must be able to continue operating effectively within government structures, and ensure information infrastructure is in place to meet those requirements.

4.1.9 Company I - Electricity Generation

- **Company I** is an electricity generating Company whose main business activity is to facilitate the supply of electricity to its customers.
- The interviewee was the General Manager who is responsible for all aspects of the retail business of electricity supply and the overall operations of the company. The main drivers for the company are to hold and increase the customer base, retaining existing customers and acquiring the right customers to support the company’s growth strategy.

- ICT/I projects undertaken in the past three years include infrastructure upgrades particularly around the billing system, a wholesale warehousing of electricity, upgrading the call-centre facilities and operations, and a major hardware server upgrade.
- Planned ICT/I projects include moving to Windows 2000 on the desktops, integrating all the desktops over the Internet, replacing hardware, and infrastructure development around e-business. It is considered important to automate many of the intensely manual processes, and their ICT/I would have a significant part to play in this exercise.

4.1.10 Company J – Health Insurance

- **Company J** is a large New Zealand Health Insurance company, which also owns and operates two private hospitals. It has fairly recently purchased a competitor in this market and was still in the process of merging all the systems and infrastructure operations. The interviewee was the Operations Manager, who had overall responsibility for the merged company operations areas, including those of the ICT group.
- ICT/I projects carried out over the past three years involve preparing for the merger/takeover infrastructural implications, and combining the two different infrastructural environments. Also, upgrading the core insurance premium package and rolling out Windows NT and thin client on to the 500 desktops in the merged company.
- Projects planned for the next three years include completing the implementation of a CRM package, and further network and desktop upgrades.

4.1.11 Company K – Pharmaceutical Manufacturer and Distributor

- **Company K** is a large multinational pharmaceutical company, formed in 1996 from the merger of two large old European pharmaceutical companies. It develops, manufactures, and distributes pharmaceutical products for both human and animal needs.

- The interviewee was the New Zealand Managing Director, responsible for all the New Zealand operational and organisational results.
- ICT/I projects undertaken over the past three years are mostly routine operational ones such as hardware or network upgrades, or replacements.
- Priorities for the next three years included a complete office system upgrade, an upgrade to the company's operating system, and an upgrade to the telephone system.

4.1.12 Company L – Aged Care Service Provider

- **Company L** is a large not-for profit provider of services to the elderly, including Rest Homes, Hospitals, Day Care Respite, Assisted Housing, and Independent Retirement Living. It operates over seven sites in the upper part of the North Island with more than 700 staff and 1300 residents. It also has management contracts for two other complexes.
- The interviewee was the CEO, responsible for the organisation's strategic direction and operation. The role also included looking at opportunities for different ways the organisation might move forward with other service directions in the aged care area.
- ICT work carried out over the past three years include, establishing internet connectivity, implementation of desktops with e-mail for the administrative staff, a web site, a new finance system, and the network infrastructure to run it all on.
- Plans for the next three years include moving away from administrative systems to leading-edge monitoring programmes and other infrastructural functions that would improve the service to the residents, especially in areas that can provide assistance for their continued independent living.

4.1.13 Company M – Law Firm

- **Company M** is one of New Zealand’s largest law partnerships, delivering legal services to New Zealand corporate and business clients. It has about 500 people spread across two offices in Auckland and Wellington.
- The interviewee was the CEO, responsible for running the business side of the organisation, including resourcing, finance, ICT, and business development. On the legal (practice) side this role is also responsible for running the executive committee, which comprises the heads of all the various legal sections, as well as the Directors.
- ICT/I projects carried out over the past three years included product and service upgrades, improving the connectivity between the Auckland and Wellington office, rolling out new PCs as part of a regular three-year replacement cycle, and early testing of electronic ways of handling documents.
- Top priorities for the next three years were bedding down the first phase of a new document management system, and moving to implement phase two which will bring extra functionality. Continuing development of the client management tools included improving the access that clients have to the work being done for them by implementing new communications and database technology. These are important for maintaining a competitive edge in the New Zealand corporate law environment.

4.1.14 Company N - Health Services Provider (Primary Health Organisation)

- **Company N** is a Pacific Primary Health Care organisation, responsible for delivering general practice and nursing services to Pacific people in the Auckland region.
- The interviewee was the CEO of the umbrella organisation of a structure that comprises a number of Independent Practitioner Associations (IPA) with their own Chief Executives, management, clinical, and administrative structures.

The responsibility of the PHO is to manage and support the information needs of the IPAs, their reporting relationship with government, and their clinical and workforce development services. All ICT support, administrative support, and business planning is provided from this organisation and the responsibility of this CEO. The organisation is very new, formed just over six months ago, and still regards itself as being in start-up mode.

- ICT/I projects already carried out include the establishment of the network infrastructure, the communications functionality to the IPAs, and procurement of appropriate desktop/laptop equipment with operating systems and software.
- Project priorities for the next three years are mainly around enhancing support and communication levels to the IPAs. This includes improving the extraction of information from their database, developing and implementing some predictive tools for patient management, and touch- screen facilities for patient self-help and information.

4.1.15 Company O – Education Provider

- **Company O** is a private school which provides schooling for children from age three to nineteen. It is the fourth largest business in Wellington, outside government.
- The interviewee was the CEO responsible for the overall running of the school, reporting through a Board of Management to an overall Trust Board.
- Significant ICT/I projects have been undertaken in the past three years, including installing a wireless LAN, upgrading the operating system from Windows 98 to 2000, installing more servers, upgrading the capacity of the email system and installing more PCs.
- The major ICT/I work planned for the next three years is to complete the installation of the wireless LAN in order to disseminate hand-held technology units to every pupil in the school, and installing more data cabling to support the network and server upgrades.

A summary of the fifteen interviewees and their organisations is found in Appendix 2.

4.2 Preliminary Interview Analysis

Before embarking on the formal grounded theory process, I did a preliminary analysis of the interview transcripts. At the point of considering a suitable approach to this I felt a slight adaptation of the pure grounded theory approach would be appropriate, without compromising the data analysis process. Rather than code every line of each interview, I decided to chunk out pieces of data that were the key comments made relating to the questions being asked, and code them a little later as a separate process. This would focus more quickly on the issues these executives might have with ICT/I project development and delivery. Each interview was dealt with in this way before moving on to the next one, and before the formal grounded theory coding process was attempted.

4.2.1 Drawing Initial Distinctions in the Data

For each interview in turn, key phrases (I called them ‘nuggets’, as in gold exploration and discovery) that were components of answers to the interview questions and which had some relationship to the research problem were extracted from the transcript. This put structure around the initial data extraction exercise, and drew out the very early concepts that would eventually reveal “the fundamental patterns in a substantive area or a formal area” (Glaser 2002 p. 2). Each of these ‘nuggets’ of information was a thick, rich description of a point being discussed, and was written on to Post-it notes. This process was much as Garvin (2000) described for the LL Bean Case Study on a new product development process. The researchers’ approach in the LL Bean data extraction and analysis situation was to take the transcribed interview, “then using yellow Post-Its, write up lists of ‘voices’ and ‘images’, one item per Post-It. A *voice* is a verbatim quote, a ‘sound bite’ taken directly from the interview” (Garvin 2000 p. 73). A similar approach was taken by Taber (Taber 1991). Glaser (1978) also wrote of these ‘voice of the participants’ images, and the grounded theory concepts that arise from such ‘in vivo,’ impressionary, statements.

As I saw it, my grounded theory task was to discover which concepts did fit, work, and were relevant to the problem being investigated (Glaser 1978). This sat well with my desire to start the data extraction and analysis process by capturing key ‘nuggets’ of information from the interviews, without attempting to interpret them at the time of extraction. The patterns would emerge simply by constant comparison of the sampled ‘nuggets’ both within an interview, and across all of them. The original Glaser and Strauss (1967) concept of grounded theory was one of flexibility and the use of systematic comparisons. So, although I felt I was undertaking an adaptation of the pure approach to grounded theory in order to avoid being overwhelmed by the sheer mass of data being accumulated, I did not believe I was compromising its basic principles.

4.2.2 Preliminary data clustering

The Post-its of the ‘nuggets’ from an interview were clustered on a wall under provisional Start List headings, as suggested by Miles and Huberman (1994). These initial headings were summaries of the general interview questions detailed in Chapter 3, Table 3.2, excluding the four factual organisational ones. The five project-related elements outlined and discussed in Chapter 2, were also part of the early Start List headings. At this stage, the motivation was only to get some basic groupings of ‘nuggets’ of interesting impressions and comments, and see whether the issues originally thought to be important, were in fact reflected in the responses made by the interviewees. Dey (1998) also wrote of this process of data ‘chunking’ as a way of gaining some initial understanding of the early patterns or themes coming out of the data. Each interview transcript was dealt with in this way before moving on to the next one.

The photograph included here as Image 4.1 shows a sample of Post-It ‘sound bites’ from one interview, as they were clustered under the initial general headings, prior to any further sorting or grouping.



Image 4.1 Nuggets of 'spoken text' extracted from an interview.

Once the extracted 'nuggets' from an interview were thus displayed they could be moved around into more logical clusters. These clusters became the first phase of the classification activity that Dey (1998) wrote about as being an integral part of the whole process of data analysis. He commented that the business of data classification "lays the conceptual foundations upon which the interpretation and explanation are based" (p40). It was this ordering process, derived from both Dey (1998) and Miles and Huberman (1994) that assisted my approach to this first data extraction exercise, yet I felt did not compromise the grounded theory principles I was following. This 'nugget', or 'data chunking' stage was a precursor to the formal grounded theory coding, and helped the process of handling the enormous amount of data that was being collected.

Dey (1998 p. 20) also suggested organising the data “by grouping like with like, so that any observation which seems similar to or related to others can be grouped with those observations”. He wrote about this process in a way that implied a very visual and physical activity, and used the term ‘bits of data’, where I saw my ‘nuggets’ as pieces of gold found throughout the interviews. Furthermore, the ability to physically stand back and look at all the ‘nuggets’ from an interview at the same time, generally classify them, and move them around into groups that had similar components, was very much in line with the process the researchers in the LL Bean project (Garvin 2000) went through. It was interesting how quickly logical clusters began to appear. There were the original five research elements already mentioned, and other new groups where the particular ‘nugget’ identified something that did not belong in one of those original elements. This process was not precisely according to the original grounded theory constant comparative analysis of the raw data through the Glaser (1978) coding phases. However, it still was quite iterative, and routinely generated new concepts in a way that was consistent with his approach.

There was no attempt to assign codes to the ‘nuggets’ during this step, merely to do a first pass of some logical clustering of them. Most interviews generated about one hundred of these ‘nuggets’. This approach removed duplication and achieved an initial set of elements that could be further refined by the grounded theory coding process. Eight further groups were identified and created during this process and are detailed below in Table 4.1.

Table 4.1 Constructs generated at first pass data extraction

Original Elements/Categories	Typical comments
Analysis/Specification issues	<i>I don't want IT to build something that at the end of the day doesn't work, and then they say, "well, it's all there in the specifications".</i>
Communication issues	<i>I always go back to the people involved if I have a question. As long as they don't talk to me like I'm a moron, the communications work fine.</i>
Technical & Organisational issues	<i>We decided to get our Public Health Nurse a laptop. That turned out to be a real mission as there were issues of connectivity and security that were completely new to us.</i>
Implementation issues	<i>We've never done a PIR. How do you quantify the spin-offs of some initiative that has been started that generates positive outcomes somewhere else.</i>
Adoption issues	<i>Have to be an early adopter, or industry, technology, and the competition, just overtakes you.</i>
New Elements/Categories	
ICT staff	<i>There's a gap between how they see life, and how the business people see life.</i>
People skills	<i>Critical to have leadership and strategic thinking skills to supplement technical capabilities.</i>
Environment issues	<i>We are very affected by regulatory issues.</i>
Project scope change	<i>Rapid changes in technology cause scope and cost change.</i>
Management issues	<i>Unless there's a major issue, I don't want to know about it. And, yes, I accept that part of that is that there's an element of me being technophobic.</i>
Strategic issues	<i>Almost everything we want to do to go forward, to improve service, to improve delivery, involves some form of IT.</i>
Project Success Factors	<i>Does it work, and are the users satisfied that they have got what was supposed to have been delivered?</i>
Business/IT environment	<i>In a large project environment it is harder to check if ICT are always meeting business expectations.</i>

This whole exercise was very time consuming. There were a couple of very early false starts at attempting to go straight to Open Coding from the full interview transcript, prior to seeking guidance from Dey's (1998), Urquhart's (1999), and Miles and Huberman's (1994) works. After that help the data extraction was much less daunting, and considerably more satisfying. It immediately provided some understanding of general families of similar 'nuggets', especially where they were extracted from different parts of the same interview. It also brought some order and meaning to the mass of data collected in each interview. Early patterns in the interview data could emerge and be summarised, prior to the more organised process of open coding as the next step. Appendix 4 shows an example of a list of nuggets

from one interview, prior to any open coding activity. It was at this point that the formal grounded theory, three stage (bottom up), analysis really began. The codes, concepts, and category relationships generated from this process, became the input to the inductive theory-building process that developed the theoretical concepts for use in developing the substantive theory discussed in Chapter 9.

4.3 Adaptation of the Grounded Theory Approach

As has been explained in Chapter 3, my intention was to use grounded theory (Glaser and Strauss 1967) as the method of data analysis. In particular, I wished to use the comparative analysis approach of Open, Selective, and Theoretical coding, as espoused by Glaser (1992) to generate the theory. This was in preference to the more prescriptive approach of Open, Axial, and Selective coding around a particular paradigm, as advocated by Strauss and Corbin (1990). A comparison between the approach I took with the traditional grounded theory data analysis approach, is detailed in Table 4.2. It was mainly at the open coding stage where my approach differed, although much of the literature written by researchers other than Glaser or Strauss, (Calloway and Knapp 2003; Esteves, Ramos and Carvalho 2002; Hale and Moss 1999; Hueser 1999), indicate such personal variations are not uncommon.

Table 4.2 Adaptation of Grounded Theory approach to data analysis

Traditional GT Approach - (Glaser 1992; Glaser and Strauss 1967; Miles and Huberman 1994)	This Study's Approach to GT	Comments
Sampling selected subjects – to the point of theoretical saturation	Sampling selected subjects – to the point of theoretical saturation	Appropriate to keep. The chosen sample provided a “useful conceptual rendering of the data that explains the studied phenomena” (Charmaz 2000) p519, up to the point where theoretical saturation is achieved – i.e. additional variations input from the sample were minimal.
Initial (open) coding – examine each line of data, immediately interpreting and defining actions or events within it with an assigned descriptive code. Make constant comparisons with data	1. Develop ‘start lists’ (Miles and Huberman 1994) of ‘sound bites of voices and images’ (Garvin 2000), gathered as my ‘nuggets’, or “chunks” of data (Dey 1998), from each interview, without attempting to interpret or code them. The ‘nuggets’	Attempting to put some structure around the extraction of data from the voluminous text transcriptions of the interviews made the sheer mass of data more manageable.

<p>already coded. Label and categorise the developing concepts.</p>	<p>were phrases, which could be <, =, or > than one line.</p> <p>2. Physically cluster ‘nuggets’ into similar logical groups or ‘families’ (Dey 1998), by constantly comparing them, within and across interviews.</p> <p>3. Assign open codes to the ‘nuggets’ in each group, and re-cluster into open code lists. Effectively a ‘two-pass’ system (Garvin 2000).</p>	<p>Clustering the ‘nuggets’ helps the later open coding process by keeping focus on the fundamental comparative analysis process, key to the GT approach, without being diverted by thinking up code names for them at that time. It also allows similar ‘nuggets; from multiple interviews to be put together, identifying any cross-interview relationships</p> <p>Subsequent open coding process made easier because similar nuggets are already clustered together. One or more codes could be assigned to ‘nuggets’ in each group, depending on level of concept and pattern refinement deemed useful.</p>
<p>Selective Coding – moving from the specific to the general. Weaving codes into categories, that begin to tell a story about the data collected from the sampled subjects. Final theoretical categories contain sub-categories which are the properties of that category (Glaser 1992). Use the concept of analytic (theoretical) memos to describe the theoretical paradigms and relationships emerging (Strauss and Corbin 1990). Systematically examine relationships between categories, validating those relationships, filling in categories that need further refinement and development (Glaser 1992).</p>	<p>Selective coding – grouping the codes into low-level categories. Create new, or merge, categories as comparative analysis process continued. Roll up the low-level categories into major categories that summarise the key elements beginning to appear (Charmaz 2000).</p> <p>Write analytic memos on the concepts and relationships beginning to emerge as the major (theoretical) categories are developed.</p> <p>Compare the major categories to one another to examine any emerging relationships, and recheck the properties (low-level categories) of each (Glaser 1992).</p>	<p>Selective coding process virtually identical to Glaser (1992) comments, with the categories emerging as “abstract of time, place, or people”. During this process, two of the original elements thought important, disappeared.</p> <p>The use of these memos helped formulate and revise the developing theory – and is an integral part of doing GT (Strauss and Corbin 1990)</p> <p>This comparative analysis process, also integral to GT, began to demonstrate some multiple relationships rather than a pivot around one core category.</p>
<p>Theoretical Coding - discover “a core category which organises the other categories by continually resolving the main concern” (Glaser 2002).</p>	<p>Close examination of the relationships between the categories. The patterns this process created (Glaser 2002) begin to build theoretical concepts or themes, rather than a “core category”.</p>	<p>The relationships were discovered to be more complex than could be reduced to one key category with satellite categories. The comparison process produced distinct themes, which had a linear relationship with one another.</p>

4.4 Chapter Reflections

A brief summary of the interviewees and their organisations is again extracted from Appendix 2 and shown here as Table 4.3 to help explain the contexts of the nuggets used in the category discussions.

Table 4.3 Basic Interviewee and Organisational Information

Company	Business	Main Activities	Interviewee
A	Electricity asset management	Network, telecomms, IS provision to the electricity industry	Group General Manager
B	Consumer electronic Retail	Buying/selling electronic goods; i.e. taking new product to market in the consumer electronics field	NZ General Manager
C	Law Practice	Provision of legal services, (commercial, property, litigation)	General Manager
D	ICT Training Provider	Applications training. Technical training. Commercial Software development. NZQA Certification.	Company Owner, Director, & GM Special Projects.
E	Wine Manufacturing & distribution	Grow & buy grapes, press grapes, start & manufacture wine, blend & bottle wine, distribute wine	Global HR Manager
F	Technical Services to industry	Provision of contracted services to Electrical, Telecomms., Power generation industries, Transrail's fleet.	NZ GM Telecoms Division
G	Plastic film manufacturing	Create plastic film from extrusion through to printing and conversion – mainly for industrial clients.	CEO
H	Independent Practitioners' Association	Looks after the professional development and information management needs of MoH on behalf of its members.	CEO
I	Electricity generator and retailer	Facilitating supply of electricity to its customers	GM
J	Medical Insurance	Managing medical insurance premiums and claims – corporate and individual memberships. Management of owned private surgical hospitals.	Operations Manager
K	Pharmaceutical Company	Develop, manufacture, and distribute pharmaceutical products.	NZ MD
L	Aged Care Service industry	Services to the elderly, including Rest Homes, Hospitals, Day Care Respite, Assisted Housing, Independent Living. Management of other complexes under Mgmt Contracts.	CEO
M	Law Firm	Delivery of legal services to NZ Corporates and business clients.	CEO
N	Pacific Primary Care organisation.	Deliver general practice and nursing services to Pacific people in Auckland region. (It's still a 'start-up' operation in its first year).	CEO
O	Education provider	Private Schooling for children from 3.5 to 19 years of age.	CEO

The first pass of data extraction and preliminary analysis was carried out. This prepared the data for the formal grounded theory coding process, detailed in Chapter 5.

CHAPTER 5

GROUNDED THEORY DATA ANALYSIS

- 5.0 Chapter Overview
- 5.1 Open coding
- 5.2 Selective coding
- 5.3 Theoretical coding
- 5.4 Inductive Theory Building
- 5.5 Chapter Reflections

5.0 Chapter Overview

This chapter contains an account of the specific grounded theory data analysis methods employed in this study. The flow diagram that is Figure 5.1 was developed as a tool to guide the process of analysing the data collected in the interviews. It is in essence a subset of Table 3.4 in Chapter 3, and provides an overview of the specific activities carried out that were to result in the generation of an initial theory. At all times the research problem to be resolved was the focus of the data analysis, and the relevance of each piece of data being analysed was related back to that.

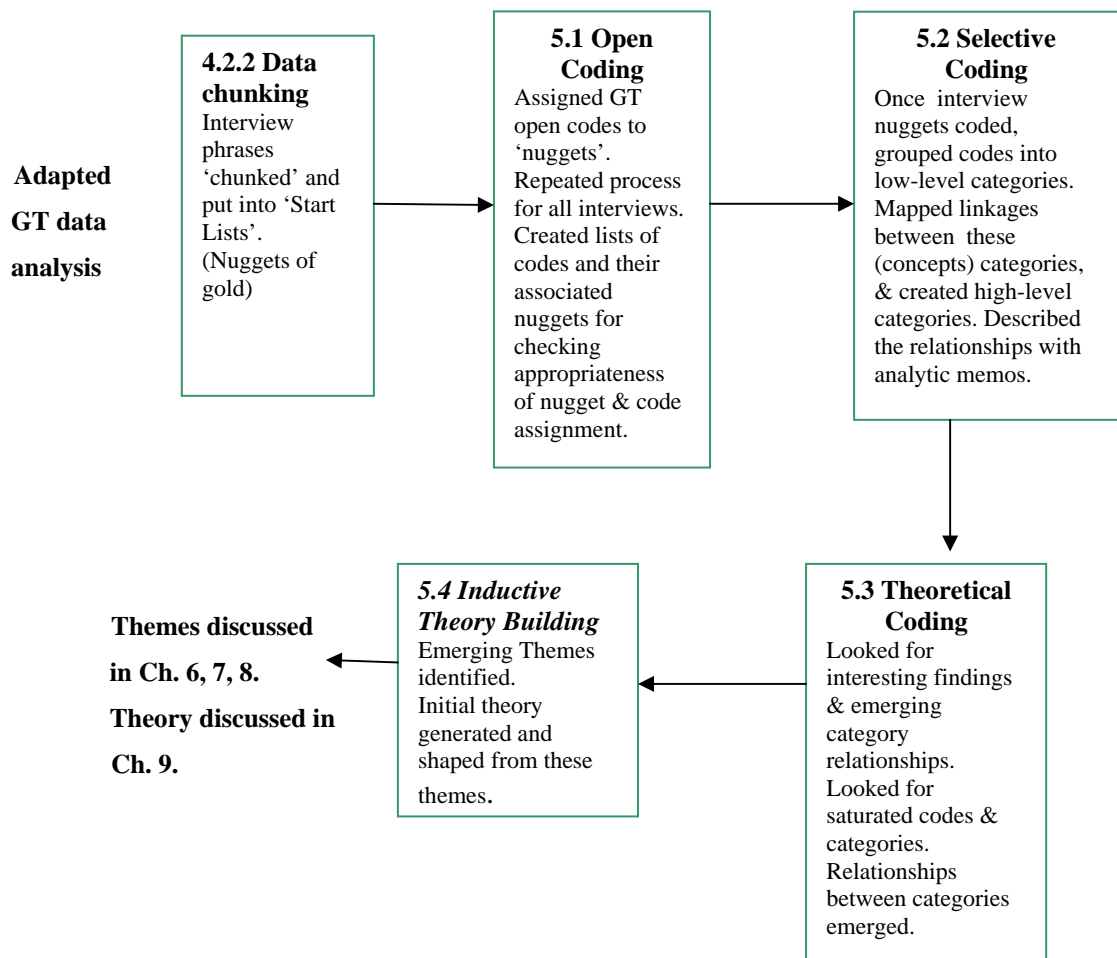


Fig. 5.1 Theory building steps used in interview data analysis

5.1 Open Coding

Open coding is the first stage of the whole theoretical and comparative analysis process that is designed to generate theory within a grounded theory framework. Glaser (2002) p1 comments that the whole process of grounded theory is “the generation of emergent conceptualisations into integrated patterns, which are denoted by categories and their properties”. The coding and categorisation develops the research focus, and allows specific researchable constructs to emerge, grounded in the source data. As many researchers have noted, (Esteves, Ramos et al. 2002; Hueser 1999; McCarthy 1999; Urquhart 1999; Urquhart 2001), this process is very time consuming, and is potentially quite messy. However it can generate wonderful rich and interesting concepts from the

data, which are critical to the development of a theory that could provide an answer to the research problem.

The data ‘nuggets’ generated from the preliminary data analysis process were loosely organised into general families of similar ‘nuggets’. These reflected all the elements that had appeared out of the first clustering. Grounded theory open codes were then created that related to the meaning of each ‘nugget’, and highlighted some concept that these ‘nuggets’ implied. Glaser’s writings laid great emphasis on the fact that this concept naming process was not about trying to understand the world of the research participants as they described or constructed it (Glaser 1978). It was designed to uncover concepts and patterns the participants were not necessarily aware of at the time of the interview discussions. Their comments would be made in the context of their particular environment and situation. The resulting conceptualisations and the theory that developed from them however, would be “abstract of time, place, and people” (Glaser 2002 p. 2).

The codes were created with the intention of being reasonably understandable without explanation, by outsiders, and also after time lapse. While the open coding was undertaken with the research problem and the, now thirteen, elements in mind, there were no other predetermined concepts or theories driving the process. The nuggets had been extracted directly from the transcripts, and now would be interpreted and coded for the real inquiry into the data to begin. In the early stages of this coding activity, a number of nuggets were allocated more than one code, allowing for multiple interpretations of that piece of text. For example, the nugget “*We don’t yet have a strategic view of all components, especially technology, that make up the business*” was initially coded as both ‘**Business Issue Challenges**’ and ‘**Mgmt ICT Understanding**’. There was some initial agonising over whether a code was ‘absolutely right’ in its description of a nugget of text. However, I finally decided that choosing codes that made sense, and were applied consistently each time they were used, meant a higher likelihood of completing this exercise before the end of the Century. Table 5.1 shows some examples of nuggets and the initial open codes generated from them.

Table 5.1 Examples of initial open codes generated from transcript nuggets.

'Nugget' from Interview Transcript	Initial open code
<i>Technical jargon is a barrier to understanding what is happening</i>	Technology barriers
<i>So much background we just don't have as non-ICT Mgrs, which makes information and advice hard to understand/believe</i>	ICT background deficiencies
<i>ICT people just focussed on what can be done with the technology</i>	Technology focus
<i>Technology developments make it possible to do things better, faster, more cost-effectively. Can't afford to stop.</i>	Productivity benefits
<i>ICT should build better communications links with end-users and management</i>	Comms expectations

Each new nugget was compared with those codes already created, and new codes were added when an existing one didn't fit. As the coding process continued, and became mature with my increasing confidence in the activity, multiple-coded nuggets were revisited and refined so they each had only one code assigned. Also, some early open codes were either renamed to describe their 'nuggets' better, or merged into a single more sensible one. For example '*high level focus of business projects*' and '*low level focus of ICT projects*' became a new code, '*ICT project focus*'. As a result, what appeared initially to be a large and almost overwhelming list of open codes was gradually refined down to a more manageable and meaningful number.

As seen by the example in Appendix 5 a number of different codes were typically generated from the 'nuggets' in any given cluster. The process was manageable because of the smaller number of pieces of data being dealt with at any given time. It also helped the issues identified by Klein and Myers (1999) about the process of 'Abstraction' and 'Generalisation'. I was concerned that any theoretical abstractions and generalisations I derived "should be clearly related to the field study details as they were experienced and /or collected by the researcher. This is so readers can follow how the researcher arrived at his or her theoretical insights" (Klein and Myers 1999 p. 75). A very important principle for me, as I wanted to be sure I could defend the thinking and analysis process I went through to develop any final inductive theory.

Lists were created of each code, and all the ‘nuggets’ that had been assigned that code. After all the interviews had been coded, each of these lists was scrutinised to see if any ‘nuggets’ appeared to have been inappropriately coded, when compared with all the others assigned that code. A number of ‘nuggets’ were recoded and moved as a result of this exercise. This was a laborious process, because of the large amount of data being coded. Given the length of time taken to do the coding, I felt it necessary to check and recheck the original coding in order to feel confident that the generated codes were consistent, and true to the data. That also helped minimise any external environmental or time factors, which might have affected the coding process. This process was particularly useful for showing up the most saturated codes, (i.e. the most occurrences of nuggets in a code). It also compared one nugget with another, and each new nugget with the concepts that were beginning to emerge (Dey 1998). An example of one open code and its final list of associated nuggets is included as Appendix 6.

As the interview analysis results show, some of the original assumptions about expected issues were not supported by the data. There were some new issues appearing, which had not been considered in the original ICT/I project issue elements.

5.2 Selective Coding

After the Open Coding phase, comparative analyses were made of the key concepts that had emerged from each interview. This was carried out by the process of Selective Coding, mapping similar responses within and across each group, to produce a picture of generic ICT/I project issues as themes, which were then used to generate the theory. Selective Coding is the second stage of Glaser’s (1978) grounded theory process. The data extraction from the first six interviews, along with the process of open coding, had generated some initial low-level categories (constructs). It was appealing, at this point, to begin grouping these into somewhat more abstract categories. The open codes became the properties of the low-level categories, and those categories became the properties of the higher level, more abstract ones (Glaser 2002). Sometimes one code fitted more than one category. In these cases, a new category was created to address this duplication, and the open

code(s) moved into that. Sometimes it became clear that these categories themselves could be moved or merged, and this was also done as the coding process moved along. For example, two early categories of '*ICT Staff*' and '*People Skills Issues*' merged when it was clear the codes in each of them were so similar.

Strauss and Corbin (1990 p. 97) have also commented about this process. They saw it as “a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories”. This was a particularly interesting phase in the whole data analysis process. For the first time, really new concepts were beginning to emerge, that were not part of the original elements found in the literature reviewed to that point, or from background experience. This process of category creation, movement, and merging, continued through the whole selective coding activity, and generated some very interesting insights into the extracted interview data. A number of passes and re-passes of grouping low-level categories into more abstract ones were carried out. Any cluster of open codes, into these low level categories, had to make sense in the context of supporting the meaning of the concept being described. It needed to be a clear ‘family of codes’, and be able to ‘tell a story’ in its own right, as well as assisting in the process of establishing relationships and links between the categories. The discipline that had been applied to ensure that the original data nuggets were suitably assigned to open codes, and the open codes clustered into category ‘families’, meant this selective coding process was handled with much more confidence than was originally envisaged. The constant comparative analysis pattern-matching of open codes through to clusters of low level categories, then to the creation of major categories and theoretical themes, became an enjoyable ‘jigsaw building’ experience.

This category (construct) creation and refinement process finally generated nine major categories, which are detailed in Table 5.2. The process caused the disappearance of two of the original five project issue elements. **Analysis Issues** just didn’t survive as significant as far as these types of projects were concerned, and instead became a minor component of overall *ICT/Project Scoping*. **Adoption Issues** also became subsumed into the larger, and more importantly regarded, category of **Executive Engagement Issues**.

Table 5.2 Major Categories and their associated low-level categories

Jargon Barriers	Business of ICT/I	Professional Relationship Issues	Tech/Org issues	Executive Engagement Issues	Strategic issues	ICT/I Project Skills issues	Implementation issues	ICT/I Project Success Factors
Jargon Issues	Technology/Business Balance	ICT/Business Expectations	ICT Responsibilities	Change Management Issues	Business Value of ICT/I	Business capabilities	PIR activities	ICT/I Project strategies
Jargon interpretation	Mgmt Support	ICT/Comms Quality	Infrastructure Challenges	Executive Involvement	Org. Leadership & strategy	ICT Project Skills Sourcing	ICT/I Project delivery	ICT/I Project scoping
Mgmt ICT understanding	ICT Business Understanding	ICT Imperialism	Technology Dependency	ICT/I Expertise concerns	Project priority conflicts	ICT Project Skills Dependencies	Project expectations	Organisational buy-in
	ICT Reporting Structure	ICT Insularity	Technology Seduction	Technology adoption	Technology key business driver		Project management	Risk Mgmt
	ICT/User Interface	Mgmt Dissatisfaction			Technology opportunities		Project progress reporting	Training
		Cultural disconnects					Project Scope change	

One example of the rolled up results of constantly comparing these low-level categories, was the third major category in the above table, **Professional Relationship Issues**. The low-level categories here identified some of the human issues affecting the executives’ perceptions of, and attitudes towards, their ICT/I projects.

Another example, the major category **ICT/I Project Success Factors**, represented the interviewees’ views about what makes or breaks an ICT/I project. Because a number of different interpretations may be drawn from these groupings, the ‘nuggets’ assembled within each original open code, were kept as a foundation to the whole exercise. This effectively maintained a memo list of the key components of each open code, and the subsequent category and selective code groupings. If there was any doubt about the validity of associations made between open codes through the selective coding process, or later relationships between the resulting categories, those ‘nuggets’ were a quick way of checking that the theory being created was still grounded in the original data.

The major categories had to make sense in terms of the low-level categories they represented, along with the ‘attributes’ and ‘descriptors’ of open codes and nuggets that had built up those categories. Analytic memos greatly assisted that process. Maintaining

the integrity of the interpretive (bottom up) approach, no implications of relationships between major categories were considered at this stage; I just wanted to be sure the categories were clearly grounded in the data that formed the analytical trail to this point, and were presented in a way that would lead logically to the next phase, Theoretical Coding.

5.3 Theoretical Coding

Theoretical coding coding involved the process of examining the relationships between the categories that had been created. A conversation about the challenges of resolving ‘many to many’ relationship issues, triggered a discussion of similar analysis work I had carried out in the past. This theoretical coding process was very reminiscent of the development of entity relationship diagrams in ICT systems analysis and design, with both single, and multiple, relationships developing. Initial properties, (the open codes in their low level categories) were elevated to larger categories, and the category (entity) linkages were then explored, tested, reformed and re-tested. An interesting parallel between the grounded theory analysis process and entity relationship modelling (Chen 1976) was appearing. The final categories were strikingly similar to entities (distinct concepts). The low-level category groupings within them were attributes of the entity, (with the original open codes as attribute descriptors). Relationships between the categories were considered in much the same way as entity relationships get developed. At this point of the interpretive process, these categories seemed to “exhaust the types of themes present in the manuscripts, and were of sufficient level of abstraction to classify uniquely all themes using a manageable number of categories” (Taber 1991 p. 584). A diagrammatic illustration of the categories and their relationships is shown as Figure 5.2.

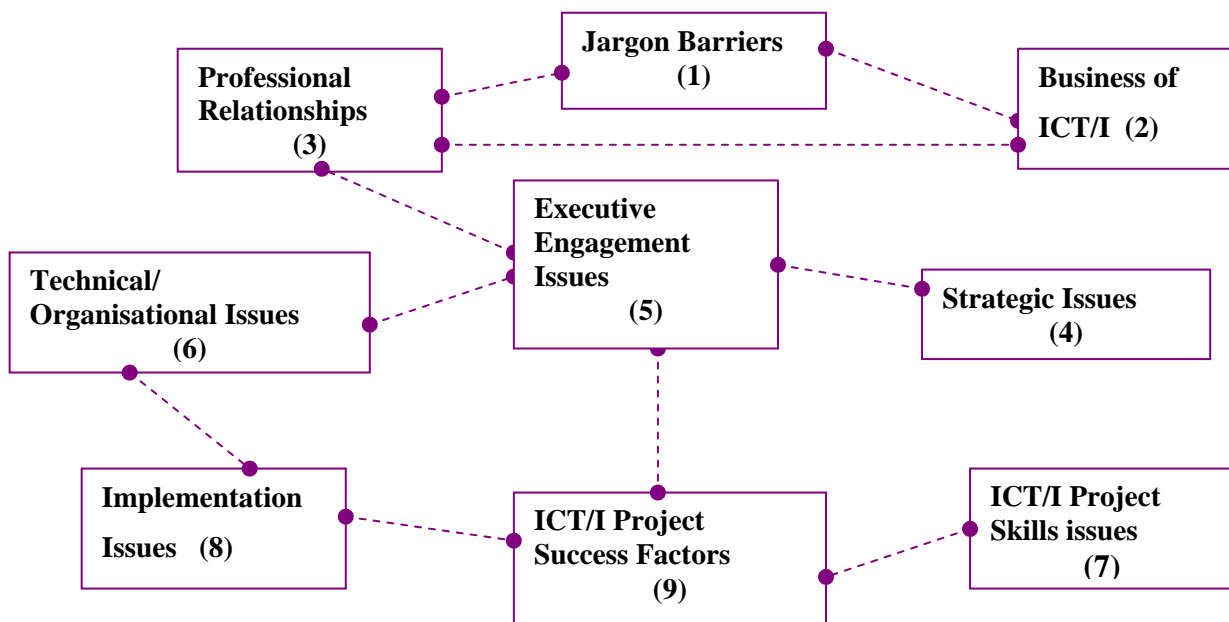


Fig 5.2 Theoretical coding relationships (See also Appendix 7 for detailed major and low level Category breakdown diagram)

In order to be re-assured that the connections were sensible, the relationships themselves were described, and noted as analytic memos, as suggested by Glaser and Strauss (1967). Table 5.3 illustrates the analytic memos noted during this process, the relationships between categories as numbered in Figure 5.2, and some of the interview ‘nuggets’ that generated them.

Table 5.3 Analytic memos generated during Selective Coding process.

Categories	Categories	Memo Summaries	Sample ‘nuggets’
1. Jargon Barriers	3. Professional Relationship Issues	Affect communication between ICT and user staff, impacting its quality, and user confidence in ICT. Re-enforces user view of ICT staff being insular and imperialist. Affect decisions made about skills sourcing and the ICT reporting structure.	<p>“I’m sitting here thinking, ‘what the hell am I doing? I don’t know anything about what they are talking about.’ And it all becomes a barrier”</p> <p>“The attitude is that IT specialists know what we need better than we do, because of the specialist technology.”</p>
1. Jargon Barriers	2. Business of ICT/I	Affect executive view of ICT business language skills. Expressions of concern about the business capabilities of the ICT people, and the impact this has on the non-ICT staff who need to make technology decisions.	<p>“These IT people know absolutely nothing about the health sector. That really annoys me, but they can also be very intimidating.”</p> <p>“It’s very hard to be able to comment on some of this if you don’t get the report in plain English, or you aren’t really comfortable with the terminology being used”.</p>

3. Business of ICT/I	3 Professional Relationship Issues	Affect the technology/business balance. Impacts on ICT comms. quality. Improved where Mgmt support high, as ICT people themselves are seen to be barriers to good comms. relationships.	<p><i>“Company has moved on from just selection and deployment of appropriate technology that met current needs, to technology that is aligned with business strategies”</i></p> <p><i>“Overall, I think the fact that we committed a whole lot of people to it, and kept the communications working, helped it to go well.”</i></p>
4. Strategic Issues	5. Exec. Engagement Issues	Affect strategic issues, if technology issues, which could be drivers to address business challenges aren't incorporated into the planning process. Results from issues over Cultural Disconnects in the ICT relationship with the executive team.	<p><i>“As long as that culture and values mismatch is there, I feel they're not as good as they could be. They're not aligned, and that's going to cause problems.”</i></p> <p><i>“Previous IT manager, while highly intelligent, and a very nice guy, was just not able to work the business relationship and understanding role.”</i></p>
3. Professional Relationship Issues	5. Exec. Engagement Issues	Affect issues around technology adoption, and its impact on ICT/Business expectations. Results from poor ICT comms. quality, and the level of ICT business understanding.	<p><i>“I've had this (technical communication) issue out with the IT people. They have to be able to convince the people here that what they want to bring in will be really helpful”.</i></p> <p><i>“We usually get delivery on time, but the ultimate outcomes of fully working, consistent outcomes, are not happening in a timely or very satisfactory way, and I think we have been too willing to accept this as part of ‘doing IT’”.</i></p>
6. Tech/org issues	5. Executive Engagement Issues	Affect organisational issues related to ICT performance and responsibilities. Results from unsatisfactory resolutions of issues related to technology adoption and executive expertise concerns.	<p><i>“ICT projects have less ‘executive team’ focus, even though whole business affected. ICT projects were often displaced by priorities of “familiar” projects.”</i></p> <p><i>“IT staff are so enthusiastic about technology they tend to oversell, and then can't deliver.”</i></p>
6. Tech/Org Issues &	8.Implementation Issues	Affect implementation issues related to overall project mgmt and delivery. Impedes successful/effective project outcomes in organisations increasingly aware of their technology dependencies.	<p><i>“We had a computer system that was totally not aligned with the way we ran the business. So we had to rebuild all of the operating processes, none of which were documented.”</i></p> <p><i>“There are problems around the whole technical nature of these projects. I think it's the implementation process, not overall what we're trying to do.”</i></p>
8.Implementation issues	9. ICT/I project success factors	Affect project expectations, management, and delivery, all dependent on project scoping and organisational buy-in.	<p><i>“Difficulty getting agreement from Business Unit owner as to what project cost/benefit objectives will be so they can be measured at project completion.”</i></p> <p><i>“At the end of the day, it's all how it goes in execution. You can plan until the cows come home; you're only up against the rail when you actually come to execute it.”</i></p>
7. ICT/I Project Skills Issues	9. ICT/I Project Success Factors	Affect total project life cycle, as project delivery success dependant on skills available at key points of project.	<p><i>“Not freeing up sufficient, appropriate, resources rapidly impacts implementation plan.”</i></p> <p><i>“It's critical who you employ for a project – getting the right mix of skills and personality that will make a project successful.”</i></p> <p><i>“With ICT/I projects, we can bring in other resources to them more easily than we can in the software development projects, where you have to know so much more about the business.”</i></p>

5. Exec. Engagement Issues, & 8.Implementati on Issues & 7. ICT/I Project Skills Issues	9. ICT/I Project Success Factors,	Risk mgmt, project scoping, organisational buy-in, and overall ICT strategies, affected by executive engagement issues, implementation issues, and skills issues. All these in turn are affected by the other constructs (entities) which link to them.	<p><i>“We need to get the conceptual stuff sorted out so we can write a good specification of what we want, then we can go to the marketplace to find the most suitable provider.”</i></p> <p><i>“The temptation is there, when IT people start getting into this, for us to be gathering in new technology that ultimately won’t achieve what we want. I see that as a real risk.”</i></p>
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This process was like a big jigsaw puzzle being assembled without a picture to guide the process. Interestingly, Dey (1998) also wrote of this task as being like “the completion of a jigsaw puzzle”. He commented that “the finished puzzle represents the results of our research, and through it we can identify different facets of social action and their mutual connection” (p. 40). The nuggets were the individual pieces which “correspond to the separate facets of the social reality we are investigating”, (Dey 1998). At that stage, as for a jigsaw with all the pieces scattered around, one has absolutely no idea what the final picture (inductive theoretical framework) will look like. However, there is a classification process whereby the pieces are put together to produce an overall, meaningful picture. My classification process was built from the Miles and Huberman (1994) Start Lists, as previously described. It moved through all the constant comparison stages of grounded theory data analysis, to a final picture of key concepts evolving out of the analysed data that generated the substantive theory. The open codes were small clusters of those pieces of the jigsaw that seemed to make sense and connect to each other, the low level categories were clusters of those codes, and the major categories were larger groupings of those initial clusters. Finally, some clear, identifiable concepts, themes, or images (a picture) arose out of the groupings being brought together in the most logical manner. In the end, all the pieces had to fit, and make sense, for the subsequent theory to appear and be credible. Figure 5.3 shows one example of how some of these ‘jigsaw piece’ connections built towards a final theoretical concept or theme.

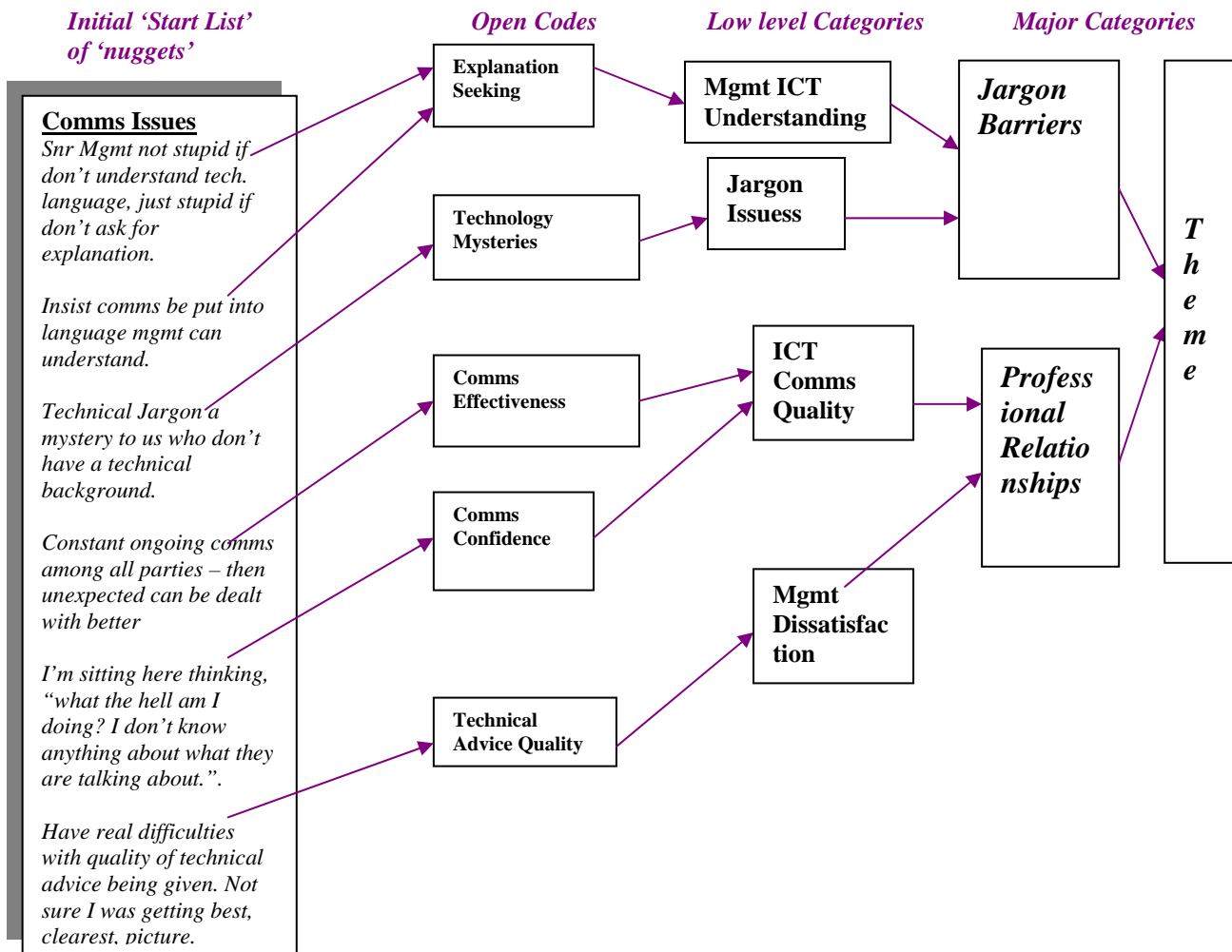


Fig. 5.3 Nugget to category to theme connections.

By following Glaser's (1992) approach, the theoretical coding themes were now appearing naturally and persuasively. A difficulty with the alternative Strauss and Corbin (1990) approach is that there can be a blurring of lines developing at this point between where formal axial coding ends and selective coding begins. Glaser, Strauss and Corbin do however, all agree that the emphasis of grounded theory is on the development of a theory, grounded in the original captured data. They just differ on the process of generating such theory. Glaser insists that it should just naturally emerge from the process of constant comparison, and Strauss and Corbin insist that strict coding guidelines and procedures should be followed to generate credibility of the theory developed. My preferred approach all the way through the coding process was aligned with the original

grounded theory approach, where the coding process was to be free from too many preconceptions and rules. The coding should allow the categories (concepts) and properties logically to develop from the source data. This process, if followed with analytical integrity, would let the theoretical codes emerge as and where they may. Glaser held to the view in his later writings, (Glaser 1992; Glaser 2002) that data should not be forced into any pre-determined paradigm. It should be allowed to display its properties, its possibilities, and the interconnecting relationships that would emerge naturally. That approach worked well for this data, and produced some interesting concepts, not previously considered in the early part of the research process.

The first time the theoretical coding point was reached, six of the fifteen interviews had been taken through the selective coding process, and their apparent relationships had been established. It was clear, that with fewer than half the interviews coded, the categories had to be considered tentative and preliminary, and that they remain flexible (Tesch 1990). As Glaser and Strauss (1967) had originally observed, the initial lower level codes did emerge fairly quickly. The higher-level categories came later, as the concepts were gathered together and integrated in the coding process. At the stage of analysis where these first six interviews had been taken through to selective coding, there were very few new observations being made by the interview participants. Since it was possible theoretical saturation may have been reached, I decided to fix these initial codes and categories as “base codes” then apply them to all the subsequent interviews being coded. Any open codes, that didn’t have logical homes, would cause the creation of new codes and categories, but only after comparison with the existing ones. The codes and their relationships to one another would be revisited with each additional interview, continuing the process of constant comparative analysis that is fundamental to the grounded theory approach.

Two other analysis activities were carried out at this point. The first looked at contextual data such as interviewee background. This would provide possible referencing for the analysis of executive perceptions, particularly when considering if they were positive or negative. (Ref. Appendix 2 for a brief summary of interviewee backgrounds).

This was compared with individual executive's overall attitudes towards both their ICT staff, and their ICT/I projects. Table 5.4 shows the results of these comparisons.

Table 5.4 Relationship between interviewee backgrounds and attitudes towards ICT/I projects

Company	Business	Interviewee	Background	Positive/Negative attitudes towards ICT/I?
A	Electricity asset management	Group General Manager	Engineering. - Mechanical - Project Manager - Commercial Manager - Contracts Manager - Networks development	Generally positive, but concerned about lack of business skills in ICT people.
B	Consumer electronic Retail	NZ General Manager	Retail industry in consumer electronics. No tertiary quals. but retail in-service training	Negative about ICT staff, but generally positive about project delivery.
C	Law Practice	General Manager	Management – primarily in legal industry. Experience in health industry.	Quite positive & confident about these projects
D	Training Provider	Company Owner, Director, & GM Special Projects.	IT programmer/developer in 1970s. IT Lecturer and Course Supervisor. Started present company in 1987. No work association with IT industry since then, & regards himself as way out-of-understanding present ICT business..	Generally positive and satisfied with project deliveries
E	Wine Manufacturing & distribution	Global HR Manager	General HR, then recruitment. BIS Manager for Telecom. HR Manager for Sky City. HR Manager International Wine Producer	Generally positive. Feels ICT people hung up on the technology & forget basic needs of the users.
F	Technical Services to industry	NZ GM Telecoms Division	Civil Engineer, mainly construction industry, management roles primarily, with some project management.	Generally negative about ICT people, but more positive about ICT/I project delivery.
G	Plastic film manufacturing	CEO	Finance and Law degrees. Generic background in variety of companies main experience.	Reasonably positive, especially about use of external resources to support in-house staff.
H	Independent Practitioners' Association	CEO	Originally sales and marketing. GM Communications for Midland Health, then into present role.	Negative about IT people but positive with ICT/I project delivery.
I	Electricity generator and retailer	GM	Civil engineer, mainly in construction industry. Management in that industry. Twelve years experience in electricity industry.	Fairly frustrated with technological performance, although more at software level than ICT/I level.
J	Medical Insurance	Operations Manager	Insurance company management. Software development management. Operations management.	Fairly negative. Feels lack of consistent success in meeting ICT/I project expectations
K	Pharmaceutical Company	NZ MD	Registered Nurse. Business degree, majoring in finance. Worked in insurance industry. Joined present company in 1992.	Satisfied with project delivery, frustrated with techno-staff & their lack of business understanding
L	Aged Care Service industry	CEO	Trained in Organisational Sociology. Full-time Social worker. 20 years setting up and running social services of one kind or another.	Fairly negative, given historical issues, and concern about ICT "oversell"
M	Law Firm	CEO	Various roles in law firms. Business degree and then an MBA. Worked up the chain to senior executive role.	Generally positive, with some negative feelings about the ICT project team
N	Pacific Primary Care organisation.	CEO	Education degree, Diploma in Teaching, and then Primary School teacher, then in adult ed. Diploma in Business and MBA. Masters in Public Policy. Moved into Policy development, in the Health Dept for 10 years. Chief Advisor in Policy area for Ministry of Health.	Generally positive, although concerned about technological isolation because of difficulties with some of the technical communication.
O	Education provider	CEO	Education degree and teaching diploma. Years of teaching posts moving up the scale of responsibilities. Principal of two high schools, then to current role for last 7 years.	Generally positive because of close involvement with ICT/I projects

The comparisons indicated a more positive view of the projects themselves than of the ICT staff responsible for them. An interesting point to note from this cross analysis of background and attitudes about ICT/I and ICT staff, was that two of those executives with technical engineering backgrounds, had the least tolerant views of their ICT staff and ICT/I project development process and technical language used. The results of this analysis are commented on further in Chapter 6.

The second comparative analysis carried out, was to explore any responses to questions that indicated possible differences between the level of executive engagement with these ICT/I projects, and attitudes about their outcomes. In the course of conducting the interviews and analysing the transcripts, it became clear there were a few of these executives who had a more positive view of their ICT/I projects than the others. It was worth examining the interview transcripts again, to see if there was any pattern to these different attitudes, and the perceptions of successful outcomes. Appendix 3 shows a tabulated summary of pertinent comments in reply to some of the key questions in the interviews. This summary was used to extrapolate these responses into relationships between executive involvement with ICT/I projects, overall attitudes about them, and perceptions of their success or otherwise. Appendix 8 condenses the summarised responses into a further table that clusters the interviewees into positive to negative responses about some of the questions. These tables are used in the next three chapters to help illustrate the way some trends began to show when questions asked at different points of the interviews were related to one another.

5.4 Inductive Theory Building – Emergence of Themes

At this point, the relationships between the major categories were indicating the emergence of three theoretical themes, which related back to the research problem and the first three research questions raised out of the problem. These category relationships and the analytic memos that guided them into the emerging themes are shown in Table 5.5. Initially, I had expected only one overall theme, to surface from the grounded theory analysis, so the persistent way the data flowed into the resulting codes and created the

three themes was unexpected, and quite enlightening.

Table 5.5 Major Categories and their relationships to the three theoretical themes.

Theoretical code (Theme)	Related Categories	Nature of relationship – (from the analytic memos)
<i>Executive Perceptions of ICT/I</i>	Jargon Barriers - ICT Professional Relationships	Jargon Barriers, along with significant cultural disconnects affect communications between ICT and executives, impacting their professional relationships and executive confidence in ICT.
	Jargon Barriers - Business of ICT/I	Jargon Barriers generate issues related to the perception that executive lack of technical knowledge about ICT creates issues of uncertainty about the position of ICT/I in the business. Impacts on attitudes of non-ICT executives who need to make technology decisions.
	ICT Professional Relationships - Business of ICT/I	Quality of ICT Professional Relationships affects Issues related to ICT/I, especially when executives perceive low business understanding on part of ICT staff, and poor ICT/User interfaces
<i>Strategic Alignment of ICT/I Projects</i>	Technical/Organisational Issues - Executive Engagement Issues	ICT performance and executive perception of technology seduction affecting ICT infrastructure recommendations, affects executive attitudes towards strategic technology adoption decisions and the business change implications they will cause.
	Executive Engagement Issues - Strategic Issues	Executive engagement issues such as concerns about their own business expertise to make strategic technology infrastructure decisions create business issue challenges. Affects level of executive involvement in strategic technology adoption even though ICT is recognised as a key business driver.
<i>ICT/I Project Life Cycle Outcomes</i>	Implementation Issues - ICT/I Project Success Factors	Failure to follow good project implementation disciplines can impede successful/effective project outcomes and affect overall ICT strategies and organisational buy-in to future ICT/I projects.
	ICT/I Project Skills Issues - ICT/I Project Success Factors	Lack of business capabilities of ICT staff affects ICT/I project scoping and organisational buy-in to these projects, even where executives recognise technical capabilities of the ICT staff.

There was now sufficient rigour, in the data collection and analysis of the interviews, to be reasonably satisfied that the three theoretical themes developed out of the theoretical coding stage would provide good guidelines for theory building. They certainly indicated relationships to the original research questions:

- Executive Perceptions of ICT/I – from Research Question 1:

What are executive perceptions of, and attitudes towards, ICT, and ICT/I projects in their organisations?

- Strategic Alignment of ICT Infrastructure Projects – from Research Question 2:
What are executive perceptions of, and attitudes towards, the strategic alignment of ICT/I projects with the business?
- ICT Infrastructure Project Outcomes – from Research Question 3:
What are executive perceptions of, and attitudes towards, the outcomes of ICT/I projects?

Dey (1998) had also noted that the whole process of data analysis allows further discovery of the dimensions of the research problem. Not only were these three themes emerging, but the previously identified theoretical coding linkages (Figure 5.2) were assisting in the reconciliation of the themes back to the research questions. The other nine interviews were then coded, and mapped against the data findings that had emerged from the first six. Some new open codes developed, and there was some movement in the relationship between lower level categories and their placing within major categories. However, there were no new major categories, nor changes in their relationships with one another. Thus with no change to the categories, and therefore to the emerging theory, I considered I had reached theoretical saturation, and was unlikely to get anything different should I continue with any more interviews. It was time to reflect on these findings, consider their implications, and compare them with the results of other research.

5.5 Chapter Reflections

As noted by almost everyone who has written about qualitative analysis, the amount of data was enormous, rich, and initially overwhelming. There were over eighty-five pages of data ‘nuggets’ and their associated grounded theory open codes. By developing a systematic process drawn from Klein and Myers (1999), Garvin (2000), and Miles and Huberman (1994), a reasonably ordered approach to the data extraction and analysis task was achieved. It stayed true to the overall principles of grounded theory, and Glaser’s preferred approach. The results of this process were that:

- The open codes were clustered into forty-three low level categories, which then generated nine major categories.

- Examination of the relationships between these categories produced some significant connections.
- These in turn drew out three theoretically coded themes, which reflected the key issues consistently raised by the executive interviewees.

These themes of **Executive Perceptions of ICT/I, Strategic Alignment of ICT Infrastructure Projects,** and, **ICT Infrastructure Project Outcomes** are explored in detail in the next three chapters. Table 5.6 shows the themes and the selective codes that generated them

Table 5.6 The theoretical themes and their related categories

Key Themes	Major Categories
Theme 1: Executive Perceptions of ICT/I	Jargon Barriers Business of ICT/I ICT Professional Relationships
Theme 2: Strategic Alignment of ICT/I Projects	Technical/Organisational Issues Executive Engagement Issues Strategic Issues
Theme 3: ICT/I Project Outcomes	ICT/I Project Skills Issues Implementation Issues ICT/I Project Success Factors

The work done by Klein and Myers (1999) relating to the evaluation of interpretive field studies in information systems was found to be particularly helpful during this whole process. This was especially so in the section dealing with ‘The Principle of Interaction Between the Researcher(s) and the Subjects’. Once again, given my own background experience in the field I was researching, I wanted to be scrupulous about how my “preconceptions about the participants still affect the construction, documentation, and organisation of the material” (Klein and Myers 1999 p. 74). Other principles they describe in this paper, especially those of ‘Abstraction and Generalisation’, and ‘Multiple Interpretations’, were also useful mental guidelines for the care with which I needed to

approach the data extraction process. Not all the principles fitted my situation. However the authors helpfully noted that “researchers need to work out for themselves how (and which of) the principles apply in any particular situation”, and recognise their interdependence, when choosing “what to say depending upon the audience and the story he or she wants to tell” (Klein and Myers 1999 p. 78). At all stages of the coding process I attempted to ensure that the developed codes and themes could always be tracked back to the original data extract (nugget) that was its grounded source.

CHAPTER 6

RESEARCH FINDINGS

Theme 1 – Executive Perceptions of ICT/I

6.0 Chapter Overview

6.1 The Role of ICT/I

6.2 Jargon Barriers

6.3 ICT Professional Relationships

6.4 Executive Perceptions of ICT/I Theme Summary

“Organisations may be conceived as both the system and socio-cultural life world of its members. The socio-cultural life world is the symbolically created, taken-for-granted universe of daily social activities of organisational members, which involves language social structures and cultural tradition as the background knowledge that members share”.

(Cecez-Kecmanovic, Janson et al. 2002 p. 218)

6.0 Chapter Overview

This chapter and the two following, present and discuss the three themes discovered in the data analysis process, namely:

- Executive Perceptions of ICT/I
- Strategic Alignment of ICT/I Projects
- ICT/I Project Outcomes.

They each consider one of the research questions posed in Chapter 3 and the overall Research Problem identified in Chapter 1:

Do non-ICT executive stakeholder perceptions of, and attitudes towards, delivery of ICT infrastructure projects influence the outcomes of such projects?

Chapter 6 considers the findings that are related to the first research question suggested by the analysis, namely;

What are executive’s perceptions of, and attitudes towards, ICT and ICT/I projects in their organisations?

Table 6.1 shows the main and low-level categories developed for this theme. The findings for each main category and the low-level categories it comprises are discussed in turn. Illustrative quotes are presented for the various categories, and the emerging theory is also discussed with reference to relevant literature. (The low level categories are *italicised* in the text for easy reference).

Table 6.1 Executive Perceptions of ICT/ I Theme Construction

Major Categories in this Theme	Low Level Categories
Jargon Barriers	<i>Jargon Issues</i>
	<i>Jargon Interpretation</i>
	<i>Mgmt ICT Understanding</i>
The Business of ICT/I	<i>Technology/Business balance</i>
	<i>Management Support</i>
	<i>ICT Business Understanding</i>
	<i>ICT Reporting Structure</i>
ICT Professional Relationships	<i>ICT/User Interface</i>
	<i>ICT Business Expectations</i>
	<i>ICT Comms Quality</i>
	<i>ICT Imperialism</i>
	<i>ICT Insularity</i>
	<i>Management Dissatisfaction</i>
	<i>Cultural Disconnects</i>

This first theme related to the executives’ general difficulties with the language of ICT. It

particularly focussed on ICT technical infrastructure and the subsequent impact on ICT professional relationships with the business people. It was created largely because of technical jargon barriers described by the interviewees, and was identified as an issue not resolved, in spite of many years of written advice around the more general areas of ICT/Business communications. Its overriding characteristics surfaced from the three major categories related to problems the executives had with:

- **ICT Jargon Barriers**, (the consequences of the actual language being used by ICT people);
- **The Business of ICT/I**, (general uncertainty about the technical nature of these projects); and
- overall **ICT Professional Relationships** (affected by the style of oral and written communications between ICT and the business); identified in relation to most ICT projects, and particularly the ICT Infrastructure ones.

In every category within this theme, the issues raised as a result of the technical jargon used by ICT people were key influencers on the executives' perceptions of both ICT staff and ICT/I projects. Brief summaries of the responses the interviewees made to key interview questions for this theme are drawn from Appendix 3 and detailed in Appendix 9 to assist understanding of the discussion here.

6.1 Jargon Barriers

The issue of their own lack of technical knowledge, and difficulties encountered in understanding ICT people, was epitomised by this category. It captured the interviewees' comments related to the specific language and technical terminology used, in both oral and written communications about ICT/I projects. The problems senior management had in understanding ICT in general, and ICT/I in particular, were exacerbated by their struggles to interpret the technical language (jargon) used by ICT people. This led to significant barriers of perception and understanding between the executives and their ICT staff. Three low-level categories arose from open codes in the comparative analysis process. Table 6.2 details the components of this category.

Table 6.2 Components of the Category ‘Jargon Barriers’

Major Category	Low Level Categories	Open Codes
Jargon Barriers	Jargon Issues	<i>Project Language, Message Blocks, Users Isolated, Industry Cross-over, Technology Mysteries, Technology Barriers</i>
	Jargon Interpretation	<i>Specs Too Technical, Technical Staff Reliance, Technical Understanding Difficulties, Clarification Responsibilities, Industry Specific, Terminology Bridge, Terminology Discomforts, Decision-making Issues</i>
	Mgmt ICT Understanding	<i>Board Understanding Difficulties, Business Case Clarity, Explanation Seeking, Technical Recommendations Trust, Executive Technology Discomfort, Personal Up-skilling, ICT Background Deficiencies, ICT/I Straightforward, Personality Effect, Simplification Importance, Visualisation Challenges, ICT Literacy Levels</i>

6.1.1 Jargon Issues

The issues for all interviewees were the same – constant struggles with technical terms used, that were completely outside their language framework. Typical of the types of comments made in direct relation to the specific technical ‘jargon’ used, and causing frequent *Jargon Issues* are

“We have to say ‘could you put this into language that people can understand, because you’ve gone way off as far as our understanding of what you are saying is concerned’ “ (Company M),

and

“I’m sitting here thinking, ‘what the hell am I doing? I don’t know anything about what they’re talking about?’ and it all becomes a barrier” (Company N).

These relate to *Project Language*, and express the frustration felt by these executives about the fact they can’t adequately understand what their ICT staff are saying. Then there are the *Technology Mysteries* created.

“The technical jargon is a bit of a barrier. It’s a mystery to us who don’t have a technical background” (Company E),

or

“So much technical jargon – some now appears in different industries with different meanings – even more confusing” (Company A).

Where the explanation isn’t clear, the prognosis for positive attitudes about these projects

is not good. What was consistent from almost all the interviewees, was their problem with *Technology Barriers* and their view that

“technical jargon is a barrier to understanding what is happening” (Companies F & B),

or

“Jargon is a barrier. The executive must always ask ‘What does this mean?’” (Company A).

Thus the level of jargon confusion grows, and with it a host of generally negative attitudes about ICT and ICT people, which flow on to similarly negative perceptions of ICT projects, especially technical infrastructure ones.

The literature reviewed about oral and written communication between business stakeholders and their ICT staff makes very few references to the problems created by the actual technical language, or jargon, used in these communications. Yet, this language issue appeared to be quite significant as far as the executives were concerned, and has effectively created barriers between these two groups. In order to function successfully, with a satisfactory level of mutual understanding of the language requirements of the other party, **both** ICT and business managers need to be sensitive to those language differences. They then need to make every effort to overcome them (Fogel 1998; Vann 2004).

6.1.2 *Jargon Interpretation*

Even for those executives who had made attempts to gain some understanding of the ICT terms used, and carry out some *Jargon Interpretation*, there was evidence of a continuing struggle to interpret reports from ICT staff. For example, acknowledging *Technical Understanding Difficulties* the CEO of Company M declared,

“I mean, even today, I had something in the monthly update on the progress of our projects, and there was some stuff in there that even with the work I have been doing to get familiar with this, I had difficulty understanding”,

along with this comment from Company N,

“The technical jargon does absolutely act as a barrier to me understanding what is happening”.

All the same, some of them did see that they had jargon *Clarification Responsibilities* with

comments such as.

It's management responsibility to get clarification from IT – and not let jargon become a barrier or misleading” (Company A),

and,

“all we need to do is get the IT people, (especially the vendors) to cut out all the technical garbage when they talk to me and give it to me in plain English” (Company K).

These comments reflect the fact that for some interviewees, there was a recognition that they had to take some responsibility for ensuring oral and written communication happened in plainer English. Alternatively, the executives themselves needed to improve their own understanding of the more common terminology used. In attempting to find a solution to the language divide between the business and ICT, one CEO suggested a function in the organisation that acted as a kind of *Technology Bridge*, feeling that,

“we need people who can act as a bridge between IT specialists and the business people” (Company H).

This was a company that was not large enough to justify the appointment of a Chief Information Officer (CIO), although, historically, the position of CIO was designed to fill that *Technology Bridge* role. The more positive comments on addressing these issues were mostly made by the executives who felt the highest levels of satisfaction with their ICT/I project development and delivery.

6.1.3 Management ICT Understanding

The same trend showed where general *Mgmt ICT Understanding* was explored. Those executives who felt some responsibility for their own level of understanding of what was going on in their ICT/I project area, had more positive comments to make overall than those who were either more distant from the projects, or felt the language and terminology barriers too hard to overcome. For instance, when *Explanation Seeking*,

“I ask probing questions and I get down to the nuts and bolts. If I don't understand, I just say 'I don't understand' ” (Company K).

was typical of comments from executives who consistently, through their interviews, demonstrated a high level of interest in their ICT/I projects. These people overall had generally more positive than negative attitudes about both the projects and their relationships with their ICT staff. However, there is still a particular need expressed by the interviewees, also found in the literature, for ICT managers to frame their ideas as much as possible in the idiom of daily life, and/or the idiom of the business they are in (Starling 1993). The literature notes here that “technical specialists are to a degree products of the culture they work in” (McManus and Kalugerovich 2002) p25. Like many people in technical disciplines, they create comfort zones of the jargon generated within their discipline, which then isolates them from their stakeholders. The executives interviewed recognised they needed to keep asking the ICT people to restate jargon-filled communications in terms they could understand, given that their backgrounds were so dissimilar. They were just frustrated at continually having to do this. Today’s business world needs effective communication about technical issues that enables non-technical people to understand what is being said to them (Pitman 1992). There is equally a need for business people to respond in a way that allows the ICT people to understand what is required of them.

More typical, as far as *Management ICT Understanding* was concerned, were comments from the interviewees about things such as *Visualisation Challenges*, where

“it’s hard to visualise the expected results, and understand or get to grips with them, during the project process” (Company A),

and,

“The average person in a business unit doesn’t understand the technology – at the level a discussion could be held with the ICT people” (Company F).

These reflected some of the anxieties felt about the potentially expensive unknowns inherent in these ICT/I projects. Then too there is significant *Executive Technology Discomfort*, where

“ICT projects are seen as part of the life-blood of the business, but I’d rather build a new building than deal

with a major ICT infrastructure project”.

This, from the CEO of Company G was a reasonably common expression of the discomfort felt about these projects in comparison to other business activities, as was

“The barriers are there, and it's really hard to get past them sometimes.” (Company N).

Again, there is concern about the barriers this lack of technical knowledge created, when it came to gaining a satisfactory level of understanding about these projects. Finally, there was a recognition of *ICT Background Deficiencies* where

“lack of understanding of what is really happening is very frustrating. We don't have the depth of technical knowledge to judge the situation properly” (Company F),

summed up the general feelings of the interviewees, and their concern about having to carry the overall responsibility of financial commitments they didn't fully understand.

6.1.4 Jargon Barriers Summary

Because the group of executives used for the interviews was deliberately chosen from a sample with non-ICT backgrounds, their comments on difficulties with the ICT technical language used were unsurprising. However, some of the executives who made the most, or the strongest, comments about this problem were from quite technical backgrounds in other disciplines such as engineering, (Company I, Company F). This finding indicated that there does not seem to be much crossover in their ability to feel comfortable with technical jargon from another, fairly similar, technical discipline. Table 6.3 (a subset of Appendix 8 and summary of equivalent question responses in Appendix 3), shows how strongly the executives felt about the Jargon Barriers issue. There is also a relationship showing between feelings about these jargon barriers and their views about the ICT staff who have generated the barriers created by that technical jargon. Ultimately, as the findings in the other themes show, there is an effect on the strategic alignment of these projects to business goals, and the executives' perception of ICT/I project outcomes.

Table 6.3 Responses to question on creation of jargon barriers and their effect on relationships.

Key Questions	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
Comfortable dealing with technical jargon?	C	D,K		A, E, G, I, L, M, O	B, F, H, J, N,
Comments made about ICT staff		D, G, I	A, C,	E, L, O,	B, F, H, J, K, M, N,

By far the majority of them felt strongly or moderately strongly that ICT technical jargon created barriers between them and their ICT people. Where the strangeness of the technical language is responsible for disconnects in the project development process, it is very hard to see how a level playing field situation for ICT/I projects can be achieved. In his paper on resistance to change in relation to large-scale ICT projects, Vann (2004 p. 48), referred to the phenomenon of “clashing grammars, which might occur as an unintended consequence of the communication environments of these projects”. The language of ICT projects and people is so different from that of the normal business environment and its people, that the development of “unintended language-based resistance”, (Vann 2004 p. 48) colours the attitudes towards, and perceptions about, these ICT/I projects.

In summary:

- ICT technical jargon creates language barriers for these executives, even if they have a technical background in some similar discipline.
- Some of these executives have recognised their need to up-skill in the language used by ICT people. A few are endeavouring to do that – with more positive views of their ICT projects and relationships.
- The literature notes that there is still a long-term language clash between ICT and business stakeholders that is a barrier to mutual understanding of business and technical issues within these ICT/I projects. This is supported by a number of comments made by the executive interviewees, who expressed concern that they

were responsible for projects which they didn't feel they properly understood.

Communication between these highly differentiated areas will continue to be a barrier to successful project completion until this is resolved (Tushman 1978). In particular, this “clash of grammars” is creating barriers to effective ICT/I project delivery. “Efforts to recognise and mitigate these clashes may enhance the prospects for success in ICT projects” (Vann 2004 p. 48), but given that the issue described by Tushman (1978) has been identified in literature for more than 20 years, the prognosis for this is not great.

6.2 The Business of ICT/I

When executives perceive barriers, they either move them out of their path, or remove them completely. This second category describes the situation where comments about actions taken to get a better *Technology/Business Balance*, addresses areas of *Management Support*, *ICT Business Understanding*, the *ICT Reporting Structure*, and *ICT/User Interface*. The open codes rolled up into this category related to the consequences of ICT communication style and use of difficult technical language. They describe the general executive perceptions and understanding of ICT/I projects, with potential implications for their strategic alignment with the business and longer-term project success implications. These codes and categories are listed here in Table 6.4.

Table 6.4 Components of Category ‘The Role of ICT/I’

Major Category	Low-Level Categories	Open Codes
The Business of ICT/I	<i>Technology/Business Balance</i>	<i>ICT Sophistication, CBA As Project Measure, ICT Project Consistency, Client Loss Risk, ICT Unknowns, ICT/I Cost Management, Technology Growth Effect, Technology Balance, Business/Systems Strategies, Business/Technology Skills, Operational Status, CEO Responsibilities, Technology Leverage</i>
	<i>Management Support</i>	<i>Executive Presence, Change Implications Involvement, Late Involvement Implications, User Convincing Need, Resource Commitment, Executive Buy-in, Seeking Understanding, Management Enthusiasm, Project Champion Criticality, Sponsor Involvement</i>
	<i>ICT Business Understanding</i>	<i>Business Needs Met, Business Criticality Issues, ICT/Bus. Staff Interactions, Business ‘Blinkers’, Technology Understanding Gaps, Tech/Bus Mismatch, Value-add Proposals, Comms. Translation, Joint Understandings</i>

	ICT Reporting Structure	<i>Upward Reporting Line, Reporting Line Reasons, CEO Technology Discomfort, Personality Issues, Multiple Operational Relationships, Structure Reflects Business Needs</i>
	ICT/User Interface	<i>Working Relationships, Ease of Access, Business Owner Involvement, ICT User Unfriendly, Customer Service skills, ICT Introverts, ICT as Enabler, Implementation Support, Staff Morale, Technology Understanding Gaps</i>

6.2.1 Technology/Business Balance

This was a key area within the **Business of ICT/I** category. Here the interviewees shared their feelings about the relationships between ICT (and ICT/I in particular) and the business. Firstly, there was a definite recognition of the importance of understanding the cost of ICT/I projects to the business. However, there was also uncertainty as to whether these infrastructure projects should just be considered routine operational costs or have some more specific form of *ICT/I Cost Management*.

“Project management, and infrastructure, are costs to a business, and have to be managed and balanced out. All businesses are trying to work through that”, (Company E),
and

“There’s a lot of money involved in this part of the business. I spend more per hour on IT than I do on any other part of the business” (Company H).

These were typical of the concerns felt at this senior executive level about the financial implications for the business of their ICT operations. Negative attitudes were being caused by the perception that, although ICT costs were a continual concern, ICT staff did not seem to have the business as a focus when considering ICT/I strategies and ICT/I projects. Some examples of these views on getting the *Technology Balance* right were

“A lot of technology isn’t adding value to the client. It is interesting in its own right, a nice to have, but isn’t actually adding anything to support the business” (Company M),
and,

“The ICT Manager needs to be aware of the business direction for ICT initiatives” (Company B).

In spite of all this, most interviewees felt that they had an ICT infrastructure in

place that was at about the right level of *ICT Sophistication* for where their business was positioned at that time. This was demonstrated by comments such as,

“The present amount of ICT and its level of sophistication is about right” (Company D),
and

“Our technology is currently the right mix because of the stage the business is at, but we are reviewing the level and sophistication of ICT because of our new business model” (Company A), following a recent company merger.

The point of the interviews, where many of these comments arose, was interesting. It was the moment where the executives were considering the differences between all ICT projects, and their ICT/I projects. The characteristics of ICT/I projects that made them different from software development ones became more clear in their minds. Their reflections on the whole *Technology/Business Balance* effect, of these projects, clarified the intuitive remarks they had been making, picked up in the **Jargon Barriers** category. Now they began to identify some issues that had specific connotations for ICT/I projects. These particular technology and management issues surfaced in comments about *ICT/I Unknowns* such as

“It’s a different sort of exercise from a straightforward software purchase, or a specific clinic-based operation. There is a fundamental lack of understanding of the capabilities of computer hardware, and how security is handled and all that sort of thing” (Company N),

and

“With ICT infrastructure projects we seem to get into a whole round of increasing costs, and then what’s the benefit going to be?” (Company L).

It was hardly surprising that in the roll-up of interview ‘nuggets’ to open codes and categories, the struggles being faced by these executives to find some balance between their business and their technology needs were beginning to surface. They recognised how critical this whole area of technology was becoming to their business, but were continually trying to determine if the *Business Criticality Issues* being addressed were also ensuring that the right ICT/I decisions are being made. For example,

“You have to play with the cards you have, and there’s no doubt that the use of technology is a critical business success factor” (Company G),

and

“Incorporating infrastructure technology strategies into our business plan has to be our next stage, and is going to be quite a mission for us” (Company L),

and

“Priorities of ICT infrastructure projects are related to the key ones that drive the business and have the biggest implications. ----- the business criticality of the project” (Company E).

The whole dilemma, that these executives were facing, was summed up in the comment about *Business/Systems Strategies* made by the CEO of Company G,

“You need to have the right technology in place if your business is going to survive and grow successfully – whatever that means for an organisation”.

They were faced with an unknown, yet recognisably critical, component of their business future, but held the perception that their ICT communications relationship was one that in most cases was not helping them fulfil their *CEO Responsibilities*, e.g.

“Don’t forget the CEO, because project teams are coming in and making significant organisational changes which the CEO is ultimately responsible for” (Company K).

6.2.2 Management Support

The views expressed in the second category of *Management Support* were, for the most part, somewhat more positive, although they were from only seven of the fifteen executives interviewed, and generally brief in nature. They were not included in the more general category of *Executive Involvement* (Chapter 7, **Executive Engagement Issues**) as I wanted to see if there was anything different, about these interviewees and their perceptions of ICT/I projects, from the other eight. Where the executives had, for one reason or another, become fairly closely involved in supporting particular ICT/I projects, they recognised the value this involvement brought to the whole project management process. For example, demonstrating some level of *Executive Presence* around these projects was seen to be useful.

"I do generally like to know where everything is at any time, so when an exception comes up I know about it".
(Company K),

and

"My being on-site during the final implementation (go live) helped the staff feel properly supported during that phase", (Company C).

These were comments made by CEOs who had no ICT background, but generally were among the interviewees who had the most positive attitude about the organisation's ICT/I strategies and projects. Another GM who also had a fairly positive attitude about their ICT/I projects and felt that *Management Enthusiasm* at implementation times was helpful, noted that

"It's important that they see I also have enthusiasm for the projects. I like them to know I appreciate the extra efforts they have been making, particularly if they have stayed late the night before" (Company O).

What this group of interviewees recognised, was the importance of key stakeholder and *Executive Buy-in* to these projects, with comments such as

"Executive buy-in is number one" from Company J,

and

"Success depends on key stakeholders being involved right from the beginning" (Company E).

Interestingly, and perhaps unsurprisingly, none of the 'nuggets' that ended up in this category came from those executives who had the most negative view of their ICT projects or staff.

6.2.3 ICT Business Understanding

Moving on to the area of *ICT Business Understanding* there were clearly some *Technology/Business Mismatch* issues faced by the business people.

"It's hard to get the ICT people to understand the difference between technical stuff and the business stuff"
(Company K),

and

“There need to be project workshops on what do we need, with the staff, in order for the IT people to understand what we, as the customers, really need from our IT systems and infrastructure” (Company L)

These were very common points made, and clearly influenced the executives’ perceptions about their ICT people’s ability to deliver quality technical solutions to their business problems. However, in those companies where some *Joint Understanding* had been reached, there also were softening attitudes towards the ICT people.

“We have review meetings which involve the IT people, so that communication works at the level that is necessary. I’ve not lately heard the word uncommunicative,” (Company I),

and

“Because of our culture (health organisation), these people are really willing to be able to do something that adds value to what the rest of us are doing” (Company N).

Such comments showed a better view of the ICT staff, and the positive impact this improved relationship had on the project outcomes. These particular interviewees appeared more actively involved in their projects than some of the others, often as a result of attempting to address unsatisfactory past experiences. Unfortunately, the positive comments were outweighed by the majority of interview ‘nuggets’. These identified a deep-seated concern on the part of the executives about the communications relationships with their ICT people, both internal and external. This concern was aptly summed up by one of the interviewees who clearly was struggling with *Communications Translation* issues.

“it’s the lack of technical knowledge, and the difficulty in understanding what the IT people say, that I think prevents us from getting the best out of the technology that’s around us” (Company L).

This, or a similar statement, was made often enough to show there is a definite communications barrier that affects the whole ICT/I project life cycle. Returning to the *Technology/Business Mismatch* issue some further disturbing comments were made. For instance,

"It creates a victim mentality with people who have a good understanding of their actual business and responsibilities to their clients and Boards, but have this whole other world paraded in front of them that is completely foreign, and they are made to feel right outside it" (Company H).

Finally, there were the *Technology Understanding Gaps* where

"The average person in a business unit doesn't understand the technology – at the level a discussion could be held with the ICT people" (Company F),

or

"It's hard to get the ICT people to understand the difference between technical stuff and the business stuff" (Company K).

There was little indication from the interviewees that they felt it was their responsibility to overcome this gap of understanding, given all the other issues they had to deal with.

6.2.4 ICT Reporting Structure

How this dilemma is being resolved is shown to a certain extent by the structural relationships the most senior ICT staff have within an organisation. For the most part, the ICT Manager or equivalent, (although not a CIO), is a direct report to a senior manager who reports to the CEO (or equivalent). Where there was a CIO position, this was in place specifically to bring a combination of technical and business skills into the most senior ICT role, and there was an ICT Manager reporting to the CIO. Of the fifteen executives interviewed, only six had the senior ICT person reporting directly to them. (Two of those were very small companies with correspondingly small ICT staff numbers. Two others were law firms, where the entire management structure was very flat, as is typical of those kinds of organisations). Two companies had the senior ICT position reporting to a CIO. These were international organisations, with big ICT departments. The other seven had a line manager between the CEO and the ICT Manager. In four cases this was to the Chief Financial Officer, in two cases to a Business Manager. The seventh company had the role reporting to the General Manager, but it was split between two people, one a Network Systems Manager, the other a Business Information Systems (BIS) Manager. This was the most innovative solution found to address the lack of business capabilities on the part of ICT people, although it was acknowledged that the CIO role was designed to deal with that

too. Some of the comments in response to the question regarding the *ICT Reporting Structure*, and the *Reporting Line Reasons* were quite illuminating.

“The IT Manager reports to the CFO. That’s just the way it was set up – for convenience more than anything else”, (Company L),

and

“This CEO is not comfortable handling technology. With a different one there may have been a direct report link.” (Company E),

were a couple of the explanations given for reporting lines which were not directly to the most senior executive in the company. However, there was an interesting observation made by one of the executives. In spite of concerns expressed elsewhere in his interview about the relationship with his senior ICT staff, he had recently made changes to the *ICT Reporting Structure* in his company. He gave his new *Reporting Line Reasons* as

“The IT Manager now reports to me as GM. Anything else is too low down. If the IT Manager reports to the financial manager and not the chief executive you’ll get a financial emphasis on your IS development, and that’s not what we’re looking for” (Company I).

The comment illustrates the dilemma this executive felt about the need for the senior ICT person to be an equal player on the executive team in spite of difficulties in the relationship. Other comments he made indicated he had unresolved issues about the communication and jargon issues that created angst for him and the other executives in dealing with such persons. This angst also showed in other interviewees’ comments made about the reporting structure, especially around ICT management *Personality Issues*.

“The IT Manager was previously a direct report to me. The personality and technical focus of the present IT Manager changed that to reporting to the Finance and Admin Manager, who is one of my direct reports” (Company B).

A number of the CEOs used their overall *CEO Technology Discomfort*, as an explanation for the distancing of the senior ICT role.

“This lack of comfort handling technology is not uncommon for CEOs of that generation. He uses the CFO to be the communications and reporting link” again from Company E.

The majority of the executives kept a distance between themselves and their ICT management. However, the CEO of Company A had an interesting solution to the difficulties dealing with the technical work, setting up a *Multiple Operational Relationships* situation. In the case of this organisation, the Network Systems Manager was seen as an operational role, and the Business Information Systems Manager had a more strategic position.

“ICT responsibilities are now split between the Network and Business areas, with two managers, with shared accountability. It has created better integration of business information and technology” (Company A).

6.2.5 *ICT/User Interface*

Finally, in the whole category of **The Business of ICT/I** within the organisation, was the area of the *ICT/User Interface*. A key issue for the executives was ensuring that they, their clients, and their staff, had the best possible *Ease of Access* to both the ICT/I and the applications running on it. A number of the interviewees made comments to this effect, such as

“Our clients need easy access, easy and speedy use, easy to understand, and minimal jargon” (Company D), and,

“It’s one thing to have the technology. It’s another to actually use it. It must be made as easy as possible for the users, or they will avoid getting involved” (Company N).

Regrettably, the same old issues about ICT staff communications appeared here too, with the majority of comments considering the staff to be *ICT-User Unfriendly*. Typical examples of this view were,

“They could do with work on their customer service skills. Pretty ignorant some of them. They do an essential support function, but they’re just not user friendly” (Company F),

and

“Users told just to stick with the systems and develop workarounds to be able to carry out their business” (Company J).

Most of the interviewees who commented on this area saw their ICT staff as quite introverted. While recognising this as a fairly typical characteristic of technical people, they were concerned that it was having a detrimental effect on the ability for their company to have the best possible outcomes from their ICT/I investments. The CEO of Company B noted in relation to his view that he had a bunch of *ICT Introverts* in the company,

“The IT bunch are more introverted, the other staff are extroverted. The two cultures have to meet and work together”.

This kind of situation may not be helpful for good project implementation or subsequent satisfactory ICT/I operational activities.

6.2.6 The Business of ICT/I Summary

“The lack of a systematic approach to managing technology hampers many companies in their drive for organisational effectiveness” (Farrukh, Fraser et al. 2004 p. 39), and this is reflected in the comments made by the interviewees. They did recognise the development of their ICT as being a key part of their business, needing senior sponsorship and support, and a more consistent strategic approach. However, they acknowledged that this often did not happen, and particularly so in the case of ICT/I projects. Much of the general ICT project-related literature reviewed reflects this need for a better approach, particularly where organisational ICT case studies are being described and analysed (Farrukh, Fraser et al. 2004; Grant 2003; Mustonen-Ollila and Lyytinen 2004; Tarafdar and Vaidya 2005). Although the majority of the interviewees felt that there was a good alignment between their ICT/I projects and their Business Plans, an equally significant number had a negative view about the differences between ICT/I projects and non-ICT projects. In many cases it was noted that the ICT project people were more focussed on project and technical efficiencies than business effectiveness benefits, especially strategic effectiveness (Bennington and Baccarini 2004). Table 6.5 (from Appendix 8 and summary of equivalent question responses in Appendix 3), shows the

clustering of responses to these questions.

Table 6.5 Responses to questions on the Business of ICT/I in these companies.

Key Question	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
ICT/I Project alignment to Business Plan?	A, B, D, G, H, I, M, O	C, J,	E, K, N,	F,	L,
Attitudes about ICT/I projects versus others?	B, M, O			C, D, E, F, G, H, J, K, N	A, L, I,

There is a real disconnect between the fact there is believed to be a good alignment between these projects and the business, and the attitudes about an ICT project versus a non-ICT one. Given the reluctance on the part of many senior executives to be involved with their technical infrastructure projects, this disconnect is likely to continue, with business difficulties arising as a result. In their study of project culture, Kendra and Taplin (2004) noted a comment made by one of their participants about the ICT staff - “if you don’t have people skills, and you don’t understand the business model, I don’t care how (*technically*) good a person you are, you won’t be successful”. The level of “business competence significantly influences the ability of IT professionals to develop partnerships with their business clients” (Bassellier and Benbasat 2004 p. 1). This reflected the views expressed by a number of the interviewees in this study, and was manifested by the role reporting structures they had put in place to deal with that.

In summary:

- Once the executives separated ICT/I projects from all general ICT projects, some of the characteristics of these technical projects began to surface. The difficulties of both identifying and understanding ICT/I issues affect executive perceptions about these projects.
- There is a reasonable level of management dissatisfaction with the actual delivery of ICT/I projects. Those executives who were more involved in this area, generally recognised the benefits that involvement brought, as far as the normal criteria for project success is concerned.

- While the technical language (jargon) used by ICT people was a problem, there was also considerable concern expressed about the lack of business understanding on the part of ICT staff. This affected the executives' perceptions of both their ICT staff and the ICT/I projects being developed and delivered.
- Business unit staff lack of technical knowledge contributes to their feelings of exclusion and isolation from any understanding of these ICT/I projects. The literature concurs. Generally it recommends levels and styles of communicative action that consider the "fundamental process by which mutual understanding arises with regard to the subject matter" (Varey and Wood-Harper 2002).
- While a few of the CEOs interviewed had the senior ICT person as a direct report, the majority had an executive position between them and the ICT manager (or equivalent). This was largely related to personality and issues surrounding the technology focus of the senior ICT staff.

6.3 ICT Professional Relationships

As described in the previous two categories, there is still a gap between the expectations and understanding of business users, and the ability of the ICT people to understand those expectations, then engage in mutually acceptable or recognisable communications about them (Beath and Orlikowski 1994; Jiang, Klein et al. 2002). As already noted in Chapter Two by a number of authors, effective communication is one of the most critical factors influencing and determining the success of ICT projects. This certainly appeared to be the case here, judging by comments made in all the interviews carried out. Attitudes about the style of communication during these projects were definitely influences on the people directly involved in them. The third component of this research theme, the category **ICT Professional Relationships**, arose out of open codes clustered together as a number of low-level categories that reflected general relationship issues. The open codes and their associated data 'nuggets', highlighted different aspects of the communications activities going on in and around ICT/I projects. They brought out issues raised by the interviewees relating to the consequences of the style of oral and written communication occurring among all the parties concerned. They are detailed here

in Table 6.6.

Table 6.6 Components of Category ‘Professional Relationships’.

Major Category	Low Level Categories	Open Codes
ICT Professional Relationships	<i>ICT/Business Expectations</i>	<i>Information Confidence, Changing Attitudes, Inconsistent Performance, Technical Advice Quality, Low Outcome Expectations, Unsatisfactory Project Outcomes, Inadequate Operations Norm, Project Value-add Concerns. Board Hijackings, Delivery Expectations Met, Technicality Bog, ICT/I Project Measures, ICT Resource Capabilities</i>
	<i>ICT Communications Quality</i>	<i>Comms Effectiveness, Comms Improvements, Comms Regularity, Comms Problems, Comms Expectations, Technical Briefings, Project Status Updates, Informal Contacts, Comms Confidence, Comms Detail</i>
	<i>ICT Imperialism</i>	<i>ICT Attitudes, Autocratic Decision-making, Unclear Justification for ICT Decisions, Poor Technical Comms. Arrogant Comms. Style</i>
	<i>ICT Insularity</i>	<i>Technology Focus, Blinkered Attitudes, Off on Tangents, User Unfriendly, Forget Support Role, System Not Business Passion, Silo Mentality, Cultural Mismatch. ICT Mystique Removal, Physical Isolation, Technical Isolation, Separate Entity, Interface Needs</i>
	<i>Mgmt Dissatisfaction</i>	<i>Information Confidence, ICT Personality Issues, Perception of Competence, Technical Advice Quality, Low Outcome Expectations, Unsatisfactory Project Outcomes, Inadequate Operations Norm, Project Value-add Concerns. Board Hijackings, ICT Glitches,</i>
	<i>Cultural disconnects</i>	<i>ICT/I Involvement Resistance, Operational Involvement Preferences, ICT Project Team Culture, Relationship Mismatches, ICT Non-alignment Issues, Social Skill Deficiencies, Staff Conflicts, Technology Adaptation Challenge</i>

6.3.1 ICT/Business Expectations

In this category, there were actually more positive than negative statements made by the interviewees. In spite of the lack of business understanding by ICT staff, and difficulties with their communications, there was seen to be some willingness on the part of these staff to meet business expectations as far as their ICT/I projects were concerned. This was particularly noted by those executives who had previously indicated close relationships with their ICT/I projects, who had good project performance measures in place, and were happier overall with the ICT/I project outcomes from their ICT staff. Remarks such as

“If we have something important on the next day, and it depends on them to get part or all of that working, they will just work until it is achieved” (Company O),

and

“Business expectations are that ICT infrastructure projects deliver what is agreed, on time, and within budget. These are generally consistently agreed” (Company D),

in regard to *Delivery Expectations Met*, came from executives who generally had more positive remarks to make related to the *ICT/Business Expectations* components of this theme. There were a number of comments that related to their perception of *Changing Attitudes* on the part of both the ICT and the business unit staff. For instance,

“Involving the IT people with the business operations has helped change attitudes” from Company I,
and

“The ICT staff have been involved right from the very beginning on this project, and been putting in ideas as to how the technology could contribute to the main goals we have” from Company O,

reflected a general softening of attitudes when considering these components of the whole communications area. All the same, there were familiar niggles being expressed, especially in regards to some *Inconsistent Performance* by the ICT people.

“I’m not sure we always get the best view of what the best product and provider are” (Company L),
and

“Some areas of ICT are working well, others not working at all. Mostly the organisation is just getting by” (Company J).

While these were negative examples of performance related comments, they were definitely in the minority for the ‘nuggets’ in this category. In particular, the *Delivery Expectations* with regards to ICT/I projects were being met, and consistently so. For example,

“Overall, ICT infrastructure projects are delivering organisational benefits”, (Company F),
and

“We have very high expectations around the delivery of the ICT team. We’re working in an environment where we’re doing things just the best we can, and they do the same”, (Company O).

There was the odd grumble over *ICT People Power*, such as

“The IT people have enormous power in organisations. They can either facilitate you, or they can screw you up” (Company I),

and

“Up to a few years ago there were some absolute charlatans out there, charging huge amounts of money and just not delivering anything like the quality they promised.” (*Company H*).

However, the overall feeling coming out of this category was one of satisfaction with, and confidence in, the **technical** performance of the ICT team.

6.3.2 *ICT Communications Quality*

There were some cases where the CEO had positive comments to make about ICT staff communications activities as far as *Technical Briefings* were concerned, where,

“Generally, as an executive group we’re reasonably well-briefed on the technical implications of projects”, (*Company G*), and

“We are well briefed on the technical implications of our ICT infrastructure projects” (*Company D*).

However, this issue of ICT communications was still likely to cause vexatious comments, and clear frustration, as more typically articulated by the GM of *Company I* in relation to *Comms. Translation* and understanding,

“Sure I can see the need for technical specifications, but what I want are intelligent comments from you guys”. (*ICT people*)

There was a similar comment on this area from the CEO of *Company H*,

“There are very few people who have both the technical and the communications skills to say clearly what the system can do or cannot do”.

Remarks such as these indicate a fairly high level of angst and suspicion about the oral and written communications going to, and through, these senior executives. For example,

“I’ve had this technical communication issue out with the IT people. They have to be able to convince the people here that what they want to bring in will be really helpful, in language they understand” (*Company*

N),

and

“Communicating the truth of the project progress status to all the stakeholders, in understandable language, especially if they’re running late. Thus no-one can claim ‘I didn’t know’” (Company D)

Reflected their *Communications Expectations*. There were similar issues articulated in relation to *Communication Translations*.

“We have a group called functional specialists who are currently in the IT area. I think maybe they should be in the business area – as the translators” (Company I),

and

“The partners are even worse off. They are being asked to make significant decisions on something they probably don’t understand, but hasn’t been presented to them in a way they could understand” (Company M).

These comments highlight the struggle business people have understanding what they are being told, even when they feel positive about the person doing the telling. There is substantial literature in both industry and academic journals about the critical nature of good oral and written communications during ICT projects, that pertains to both software and technical infrastructure ones (McManus and Kalugerovich 2002; Nicholas 1989; Tushman 1978). As recently as 2004 there was still empirical research being published (Willcoxson and Chatham 2004) reinforcing this belief that oral and written communication between ICT and its customer stakeholders was still unsatisfactory, and that ICT staff did not speak the language of the organisation.

There were a number of open codes created from the interview analyses that picked up these details of problems with communication style. In the area of *Communications Effectiveness*, the comments

“communication is not really as effective as it could be from my point of view” (Company B),

and

“Technical information needs to be communicated in such a way as it involves people, and proper sign-off for

everything" (Company L),

expressed an underlying worry that the communication is not helping business understanding of the technical issues being faced. There were also issues related to the need for *Communications Improvement*. Here the views that the

"IT Technical Manager could improve the written explanation of proposals so Mgmt team and Board are better informed prior to presentations and discussions" (Company D),

and

"We need much better business communication skills by the technical people" (Company H),

reflected the struggle the business and Board people have when trying to make informed decisions about these projects. There were, however, some positive comments made about these communications from a couple of interviewees, again in the area related to *Communications Effectiveness*.

"The better, regular communications were critical to the success of the latest big project" (Company C),
and

"In general, my ICT people are very good at explaining the technical details to me" (Company O),

recognised the benefits gained from efforts in this area.

6.3.3 ICT Imperialism

There were a number of examples of *ICT Imperialism* as perceived by the executives in relation to an *Arrogant Communications Style*,

"The ICT people don't believe anyone outside the IT dept understands IT" (Company F),

or

"Often the 'yes it can do that', or, 'no it can't do that', has no clear explanation as to why", (Company H)

which came across as quite bitter and negative comments. They reflected a poor working relationship between those executives and the ICT department. Other similar comments

were made about general *ICT Attitudes*,

“The attitude is that IT specialists know what we need better than we do, because of the specialist technology”
(Company L),

and

“These ICT people know absolutely nothing about the health sector. That really annoys me as they can be really intimidating”,

While perhaps more anxious than negative, these did not help the whole ICT/Business relationship situation.

6.3.4 *ICT Insularity*

As well as being seen as imperialistic, there were concerns about *ICT Insularity* and the *Technology Focus* of the ICT staff, where the view was that

“ICT people are just focussed on what can be done with the technology” (Company C),

and

“ICT are passionate about their systems rather than the business” (Company A).

This apparent blinkered attitude about the wider implications of projects that have a technology component increases executive concerns about the ICT staff’s ability to be valuable contributors. This would apply either to solving business problems, or to the development of important business strategies. There were also concerns expressed about a *Silo Mentality* developing, as a reflection of the insular attitudes still prevalent among many ICT staff;

“I still believe that the present IT structure leads to a silo effect where the project office people are out of tune with the business units and their needs, and are focused on the technology side of projects” (Company M),

and

“The infrastructure team created very narrow confines of how they would be told about software projects, for their component of that work” (Company J).

Some of the executives also talked about a *Cultural Mismatch* in this area, where the ICT staff seemed to have no understanding of the different way that the business people thought and operated. For example,

“One team member – young – just has no idea of how to deal with some of our senior (clinical) staff. He hates to deal with them, and his cultural shift to deal with that will be huge” (Company K),

and

“The problem is that these ICT-type people are living in a world of their own. They are just not user friendly. Not customer driven” (Company F).

One of the early issues that arose in the interviews was the feeling the business people had about the separateness, or physical and psychological isolation their ICT staff had from the rest of the business. While not many interviewees commented directly about this, those that did, made observations that reflected attitudes held about the ability of the senior ICT staff to be part of the business, as opposed to a rather distant technical entity. A couple of the comments included here were interesting reflections on how this ICT isolation impacted on overall perceptions about ICT staff. These perceptions had a consequential effect on the strategic alignment between what ICT was doing and what the business wanted. Firstly, with regard to the development of this *Separate Entity* culture and its effect on ICT/business alignment,

“The project management group are almost an isolated entity unto themselves, and I have some concerns about that, as far as the business relationships are concerned. I'm looking to move them back into the business unit areas where they originally came from”. (Company M),

and

“IT is locked away in a corner of the building, It needs to be brought out into the open areas with the other staff” (Company B).

More tellingly, with regards to perceived *Technical Isolation*.

“The IT Manager needs to be more involved with Management meetings. He's been isolated because of his technical leanings”. (Company B),

and

“There is limited interface with the IT group. IT staff need to build support and understanding with the executives” (Company A).

While these operational issues exist, the negative attitudes being generated by the business people may inhibit their willingness to work with their ICT staff, and see ICT/I project proposals in a positive light.

6.3.5 *Management Dissatisfaction*

Of the open codes created out of the interview analysis process that highlighted management issues and concerns, there were two or three which epitomised the bulk of *Management Dissatisfaction*. Firstly, there was a general feeling of *Unsatisfactory Project Outcomes*, where

“There’s always something. Either the hardware is not up to scratch, or the network isn’t right. We just don’t get, or would accept, that sort of response in any other situation, and yet there is an assumption that less than adequate operating is what will be the norm in this area” (Company L)

or

“When you’re using external people for your major software and hardware products, well you’re just the buyer. They own the product, and if we want anything fixed, or changed, or new, we have to talk, and get in line with, their people. I get frustrated with that” (company I),

or

“our ICT infrastructure projects didn’t consistently meet the Business Unit managers’ expectations” (Company J) .

These were comments typical of the frustration expressed over the systemic instability seen in much of the organisation’s ICT infrastructure when an ICT/I project is being developed and implemented. They linked to the problems these people expressed over their lack of ability to actually understand what they were being told by the project management team. Further, similar, and quite worrying comments, which have implications for long term ICT/Business success, related to a feeling of *Board Hijackings*, when

“Board members felt they were hijacked on ICT projects because they had no basis of judging whether their

decisions were good, bad, or indifferent" (Company J),

and also to *Project Value-add Concerns* where

"a lot of people are very concerned about the money being spent on technology, and whether it is adding value to the client" (Company M).

If executives and Board members are not confident about the robustness of the technology, or in the technical advice they are being given, or of the value they are getting from these investments, they may become quite risk averse as far as technological implementation is concerned. Consequently they might not take advantage of business opportunities that could be derived from the implementation of new ICT. It is also disturbing, that after reams of literature giving advice to ICT professionals on how to deliver successful and satisfactory ICT projects, comments such as

"When the IT Manager left I didn't replace him. I brought in a Business Information Manger instead" (Company H) about *ICT Personality Issues*,

are still being made.

6.3.6 *Cultural Disconnects*

Strategic and financial implications of the change being brought by their ICT/I projects were one facet of the general anxieties being expressed by the interviewees. Another big concern expressed was in the area of perceived *Cultural Disconnects* between ICT staff and the business unit people who were the ultimate users of the technological changes brought into the organisation. Comments on *Relationship Mismatches* were made by most of the interviewees.

"Overall, the issues we face are how to bring this amount of change into the organisation without causing major conflict between two quite culturally different sets of people", (Company K),

and

"As long as that culture and values mismatch is there, I feel they are not as good as they could be. They are not aligned and that is going to cause problems", (Company M).

These were fairly common concerns expressed about the fact that there are two different types of people in the organisation, with the consequent problems that this cultural difference generates. This latter comment was made by one of the CEOs who actually had a fairly positive view overall of the ICT/I project development and delivery process. Interestingly, a number of the interviewees did also recognize that they were frequently part of the *Cultural Disconnects* problems themselves. For instance,

“I can have a really important idea about how we can reduce the incidence of diabetes, and I'd jump at the chance to get involved with that. But I don't get excited when someone says, ‘I can develop this really cool piece of software’” (Company N),

on the matter of *ICT/I Involvement Resistance*, and

“personalities impact my involvement. I relate better to the operational store-type people than to the ICT people” (Company B),

on *Operational Involvement Preferences*, were honest reflections on their own place in these relationships.

There was no doubt that the executives felt some discomfort dealing with their ICT people, especially around the area of working relationships between their various groups of staff;

“We need people who can act as a bridge between ICT specialists and the business” (Company H),
and

“There's a gap between how they see life, and how the business sees life”, (Company F).

This cultural disconnect, and the consequences of working relationships that were not as comfortable as those with other parts of the business, is an inhibitor to gaining the best possible business advantages from developments in infrastructure technology.

6.3.7 ICT Professional Relationships Summary

While the executives appear generally happy with ICT staff technical competence, they just don't understand ‘ICT speak’. This becomes particularly important when dealing with very technical projects such as ICT/I ones. The lack of, or different, technical

backgrounds of these executives, gets in the way of their ability to feel comfortable discussing them, even at a relatively high level. As a flow on effect, the overall communications between the senior business management and ICT management will influence the way in which other parts of the business frame the context of such projects. They will use this as a point of reference for their own behaviour and understanding of the projects (Starling 1993). What became interesting in the development of this theme was the realisation that the technical language itself is a determining factor in attitudes about ICT/I projects. These are hard-edged pieces of work, with technical terms describing their components that do not easily translate into non-technical phrases or analogies. Even if the general oral and written communications are frequent and friendly, the use of obscure technical terms creates communications issues that affect the attitudes of business stakeholders towards ICT people and these projects. Differences of communication between these actors may be extreme enough to prevent “consensually oriented action” (Cecez-Kecmanovic, Janson et al. 2002 p. 220). Table 6.7 (from Appendix 8 and a summary of relevant question responses in Appendix 3), shows the generally negative clustering of these executives’ attitudes towards their ICT staff, even where they are relatively confident about the quality of the technical advice they receive.

Table 6.7 Responses to question on views about ICT staff.

Key Questions	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
Confidence about Technical advice, & own understanding of the projects?	B, D, E, I, O	A, C, G, J, K, M,		F, L,	H, N,
Attitudinal comments made about ICT staff		D, G, I	A, C,	E, L, O,	B, F, H, J, K, M, N,

In Summary:

- Oral and written communication from ICT people to management and front line users is generally falling short of the business people’s needs and level of

understanding. There is still a feeling that ICT people just don't understand the business, or business issues. This is consistent with the literature reviewed in Chapter 2. These two areas of quite different communication patterns still contain an impedance or mismatch which ultimately affects the success of these projects (Tushman 1978).

- There is a persistent feeling that ICT people are focused on technology for its own sake, not on the business, and are arrogant in the way they deal with non-ICT people.
- Absorption with the technology, and often a physical isolation from the business units, still negatively impact on the relationships ICT people have with the business. The business people see ICT staff as insular, involved with 'gadgets stuff', forgetting that not everyone else is in the same knowledge space.
- The view expressed by these executives is that ICT people lack an awareness of critical business issues in their organisation. There's a gap between how they see life and how the business people see life.
- In the cases where there was a reasonable level of satisfaction with this type of communication, those executives had a higher level of overall satisfaction with other aspects of their ICT project delivery. This is also supported by the literature where it was agreed that high performing projects did have a better match between their communication networks and project demands (Tushman 1978).

6.4 Executive Perceptions of ICT Theme Summary

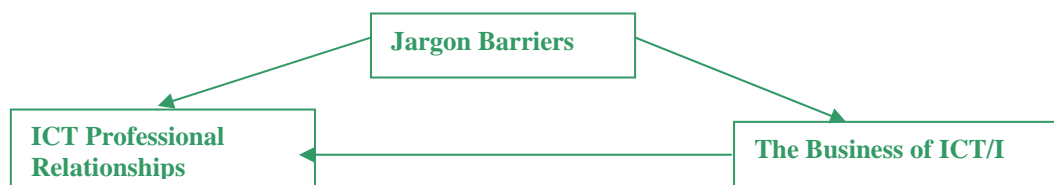


Fig 6.1 Theoretical coding linkages for Executive Perceptions of ICT theme (See also Appendix 7 for detailed diagram)

Within this theme, **Jargon Barriers** had a relationship to both **The Business of**

ICT/I and Professional Relationships. This was because of the jargon issues ICT people created, the difficulties of jargon interpretation faced by non-ICT people, and the executive difficulties in understanding ‘ICT speak’. These were summed up by comments about *ICT Background Deficiencies* where,

“there is so much background we just don’t have as non-ICT Managers which makes ICT information and advice hard to understand and believe”, (Company F).

The Business of ICT/I, which encompassed general *Technology/Business Balance, Management Support, ICT Business Understanding, ICT Reporting Structure, and ICT/User Interface*, was itself impacted by **Jargon Barriers** and **ICT Professional Relationships**. The *Business Systems Strategies* surrounding ICT projects, as expressed by one CEO, where

“the company has moved on from just selection and deployment of appropriate technology that met current needs, to technology that is aligned with business strategies” (Company A),

are dependent on the communication relationship between the senior ICT staff and the senior business staff. If this is dysfunctional for any reason, the opportunities for successful and satisfactory ICT projects are diminished, with significant management issues as a consequence.

Finally, the whole area of **ICT Professional Relationships** related both to **Jargon Barriers** and **The Business of ICT/I**. Here the standard of *ICT Communications Quality*, often brought about by poor *ICT Business Understanding*, caused *Management Dissatisfaction* and impacted on the overall *Technology/Business Balance*. This view routinely seemed to be driven from frustration as a result of *Communications Problems* such as,

“It’s difficult to get satisfactory responses when asked about problems and possible difficulties in these projects” (Company J).

These categories/codes linked together to become the first of the core themes detailing the aspects of **Executive Perceptions of ICT/I**. This ultimately affected the strategic alignment between ICT and the business, with a flow-through effect to the whole perception of successful outcomes or otherwise of ICT infrastructure projects. The expected, well researched, characteristics of oral and written communications issues were there, as noted in Chapter 2. However, the technical jargon issues that came up created barriers between the executives and their ICT staff. They definitely seemed to colour perceptions about ICT staff attitudes and competencies, and were worth further consideration. So, in spite of the abundant literature about the issues around ICT/Business communications, there were barriers created by technical jargon, and concerns expressed that ICT technical people lack the necessary ‘soft’ business skills, (Christenson and Walker 2004). These interviewed executives generally still saw communication issues as a major negative factor in dealing with ICT people. It was their view that this impacted on their attitudes towards ICT/I projects, and the ICT personnel involved with them. How they felt about ICT communication and language issues flowed on to other areas of their relationships with ICT staff. For the most part, it was an issue they felt the ICT profession needed to overcome, rather than the business personnel. This was re-enforced by the CEO of Company H, regarding the need for *Communications Improvements*, where

“We need much better business communication skills by the technical people”,
and was supported by a similar remark from the GM of Company B,
“IT should build better communications links with end-users and management”.

This might all be regarded as seriously ‘old news’ but is still happening, impacting attitudes and perceptions about ICT people, and affecting senior executives’ willingness to get involved with these technical projects. Situations like this do not indicate that chances of satisfactory and successful ICT/I projects are likely to be high. The interviewees’ views can be summarised by this final comment from the GM of Company K about the kinds of *Message Blocks* that cause **Jargon Barriers**,

“All we need to do is get the IT people, (especially the vendors) to cut all the technical garbage when they talk to me and give it to me in plain English”.

This view of whose responsibility it was to overcome these communication barriers was not specifically addressed in the literature reviewed. It tended to articulate what was needed, rather than identify who should be involved in solving any problems in this area and how this might be achieved. Consequently, an ‘ownership gap’ exists as far as resolving these issues, which have become fundamental to the attitudes expressed by these executives about both ICT people, and ICT/I projects.

The key points to take out of the findings in this theme are:

- There is a fairly high level of frustration on the part of executives about the quality of oral and written communications from their ICT staff. Much of this is centred around the difficulty they have understanding the technical language, or ‘jargon’ used by these people to describe their ICT/I projects.
- In spite of much scholarly and industry writing over the past ten years on the issues related to ICT people and their communications with business stakeholders, (Beath and Orlikowski 1994; McManus and Kalugerovich 2002; Varey and Wood-Harper 2002), the view of these executives, is that ICT staff communications behaviour is not perceived favourably.
- There is no apparent crossover relationship between those executives with highly technical backgrounds in some other field, and their comfort with ICT technical language. This “clash of grammars” (Vann 2004) is creating barriers to effective project delivery.
- Those executives who endeavoured to improve their own level of understanding of the technical language (jargon) being used by their ICT people, were also, on the whole, those who expressed more positive views about their ICT/I projects.

This theme brought together all the communications, language, and relationship issues that were impacting on the executives’ view of ICT/I projects and staff. As will be shown in Themes 2 and 3, these views affect the alignment of these projects with business strategies. Without a good alignment, there was a diminished likelihood of successful and satisfactory outcomes for ICT/I projects. It is the jargon characteristic of ICT/Business

communications, which made the inclusion of this theme in the theory generation process appropriate, since it appeared to be the starting point for the issues that surfaced in the next two themes.

CHAPTER 7

RESEARCH FINDINGS

Theme 2 –Strategic Alignment of ICT/I Projects

7.0 Chapter Overview

7.1 Technical/Organisational Issues

7.2 Executive Engagement Issues

7.3 Strategic Issues

7.4 Strategic Alignment of ICT/I Projects Theme Summary

“Describing IT infrastructure as a set of reliable services, allows business people and technologists to discuss business models, and their underlying infrastructure needs, because the two parties can speak the same language” (Weill and Vitale 2002 p. 3).

7.0 Chapter Overview

The Research Problem as described in Chapter One is:

Do non-ICT executive stakeholder perceptions of, and attitudes towards, delivery of ICT infrastructure projects influence the outcomes of such projects?

Chapter 7 considers the second theme derived from the grounded theory analysis relating to the investigation of the problem, and the second research question that developed from the analysis process, namely;

What are executive perceptions of, and attitudes towards, the strategic alignment of ICT/I projects with the business?

Thus, this theme considers the strategic alignment between ICT/I projects and the business, and the issues arising from that which affected executives’ attitudes towards, and perceptions of, their ICT/I project delivery. Table 7.1 illustrates the categories that developed from the selective coding process reflecting these strategic alignment or misalignment issues. There were some very powerful indicators coming through that clearly had an effect on the overall theme. These indicators had their beginnings in some interesting, and sometimes conflicting, statements made by the interviewees.

Table 7.1 ICT/Business Strategic Alignment Theme Construction

Major Categories in this theme	Low Level Categories
Technical/Organisational Issues	<i>ICT Responsibilities</i>
	<i>Infrastructure Challenges</i>
	<i>Technology Dependency</i>
	<i>Technology Seduction</i>
Executive Engagement Issues	<i>Change Management Issues</i>
	<i>Executive Involvement</i>
	<i>ICT/I Expertise concerns</i>
	<i>Technology Adoption</i>
Strategic Issues	<i>Business Value of ICT/I</i>
	<i>Organisational Leadership and Strategy</i>
	<i>Project Priority Conflicts</i>
	<i>Technology as a Business Driver</i>
	<i>Technology Opportunities</i>

As for Chapter 6, the findings for each major category and their low-level categories are discussed in turn, both in their own right, and in relation to the other categories.

The interviewees’ feelings about the **Strategic Alignment of ICT/I Projects** in the business became an interesting conduit for an overall attitude and perception process that could potentially influence the success or otherwise of ICT/I projects. The theme arose from issues related to the early communicative action relationships between ICT and the business. The responses to the interview questions have been loosely clustered into a table (ref. Appendix 3) to compare attitudes shown towards

the organisation's ICT staff and ICT/I projects by the fifteen interviewees. Brief summaries of the responses to key interview questions are drawn from Appendix 3 and shown in Appendix 10 to assist understanding of the discussion of this theme.

7.1 Technical/Organisational Issues

This code had been one of the five key elements explored in the literature review undertaken in Chapter 2. As a result of the data analysis process, it became clear it belonged within the larger concept of strategic alignment between ICT/I projects and the business, so was subsumed into this theme. Issues that surfaced during the coding process built a category consisting largely of expressions of potential problems and concerns about the technological challenges faced by an organisation. Comments made by the interviewees about ICT staff, reflected the situation with regards to the ICT challenges being faced, and the technology dependencies already there. Their concerns identified that the pattern of misalignment appearing, was affecting the executives' attitudes about whether ICT/I and the business were strategically partnered. For instance, typical comments about *Unforeseen Problems* within *Technology Challenges* were

"The nature of the technology can generate completely unforeseen and unexpected problems" (Company C),

and

"We had a global project that we were told had no infrastructure implications, and when it came to it, there were significant upgrade and other implications" (Company K).

Such comments reflect the feeling held by the interviewees that their ICT/I functions were not really under their control. They were seen to have a negative effect on the ability of both the executives and the business to operate in a confident and fully informed technical environment. The low-level categories within **Technical/Organisational Issues** all illustrate the conundrum being faced by the business executives when addressing not only the need for high levels of technical skills from the ICT staff, but also the need for a greater understanding of what this technology could deliver for them. Table 7.3 illustrates the breakdown of open codes that combined through

the comparative analysis process to form this selective code.

Table 7.3 Components of Category ‘Technical/Organisational Issues’

Selective Code	Low Level Categories	Open Codes
Technical/Organisational Issues	<i>ICT Responsibilities</i>	<i>Network Responsibilities, Project Responsibilities, ICT Management Responsibilities, Role Scope, Invisible Decision-making</i>
	<i>Infrastructure Challenges</i>	<i>Environment Issues, Unforeseen Problems, Customer Behaviour Expectation, Technology Outcome Questions, ICT/I Understanding, Systems Misalignment, Competitive Edge Needs, ICT Luddites, Technical Integration, Technical Complexity, System Flexibility</i>
	<i>Technology Dependency</i>	<i>Constant State of Change, Technology speed pressures, Capacity needs, ICT/I criticality, Off-line implications, ICT/I visibility</i>
	<i>Technology Seduction</i>	<i>Technology temptation risk, Technology Oversell, Advice Lacks Independence, Technology Hype, ICT Conflicts of Interest, Technology Costs, Raising Desire Levels</i>

7.1.1 *ICT Responsibilities*

The *ICT Responsibilities* for ICT/I projects held by the ICT Manager and staff, (as described by the interviewees), were primarily technical, (rather than business-related). It was here that the sense of misalignment between ICT and the business began to show up. (This is further reflected in the *ICT Reporting Structure* category discussed in Theme 1). Those technical responsibilities were closely related to the fact that the majority of the companies involved in this exercise did not have the senior ICT person reporting to the CEO or equivalent. The technical responsibilities for ICT/I projects were held by the ICT Manager but the overall project responsibilities, even for ICT/I projects, were consistently held by someone else. This was usually a business-related CIO or equivalent, or the company CFO. Typical responses to the questions about this *Role Scope* were,

“The overall responsibility for IT projects is still held by the CFO, who only gets me to sign off on something if it is a significant new project”, (Company L).

and

“From the business perspective, it’s the Business Manager’s responsibility for ICT/I projects, although he hasn’t got a holistic view of what ICT can do” (Company O).

With this separation of project responsibilities, there are risks of ICT/I projects potentially not delivering to their best capabilities, and of continued misalignment between the two areas.

7.1.2 *Infrastructure Challenges*

When the interviews moved on to discussion about how executives perceived ICT in relation to their business, the ground under these executives' feet definitely began to shift. There were quite unsettled and anxious comments being made, as far as their ICT perceptions and attitudes were concerned. While some of these comments related to cost implications for the company's current financial reports, more of them related to the fact that they felt overall that the business and its ICT were not well aligned. Therefore there were both operational and competitive positioning implications. These, of course, would have future strategic, operational, and financial effects, but there was no sense, coming from the interviewees, that a resolution was in sight. Interestingly, earlier in the interviews (Question 6, Appendix 1), when asked specifically about the alignment of their ICT/I projects to their business plans, most of the responses at that stage were quite positive. (This finding has already been commented on in Chapter 5, under the discussion of the **Business of ICT/I**.) However, typical of the unsettled feelings being expressed as a consequence of considering the true *Systems Misalignment* state the organisation was in, was this frustrated comment from Company I,

"We had a computer system that was totally not aligned with the way we ran the business. So we had to rebuild all of the operating processes, none of which were documented".

There was a similar comment from the CEO of Company G,

We have an out-of-date system, and it's just postponing the inevitable if we don't do something".

These expressed a common business-related concern about ICT/I along with the problems the executives already had trying to cope with their own limited *ICT Understanding*.

"I think we probably get it right, but we can't be sure",
from Company E, and also from company J,

“ICT/I is least known by business people, and hardest for them to know”.

It was also during this phase of the interviews that further reflections on the differences between ICT/I projects and other ICT projects surfaced. Commonly, writers and statistical collectors of ICT project results, have bundled them all into one arena. The characteristics of ICT/I projects as described by the interviewees, indicated that it might not have been appropriate or useful to do this. A number of comments about the different characteristics of ICT/I and other ICT projects were made, and can be summed up by the following extracts,

“Infrastructure problems are often assumed, when in fact the issue is really in the application. It’s hard to separate them out and find the real problem” (Company F),

and

“their technical complexity makes them different from other projects where you know what the future environment and activities are likely to be. There are real issues about how the technology is brought in, and we haven’t worked through any of that yet” (Company L).

These comments were generated as a result of the confusion created by the *Technical Complexity* of ICT/I projects.

7.1.3 *Technology Dependency*

However, when these *Infrastructure Challenges* are connected to the reality of *Technology Dependencies* already recognised by these executives, most of the interviewees acknowledged they had significant organisational dependence on ICT, and on ICT/I in particular. For example,

“A lot more ICT infrastructure projects are now critical to the business, but we haven’t scoped or checked that all that well, all the time”

was the comment from (Company E) when discussing *ICT/I Criticality*. This was supported by

“We must continue to bring in new technology. We can’t stop now.” (Company A)

and

“With the ICT infrastructure it’s terribly visible, and you know there’s nothing worse than going to do your emails and you can’t get in” (Company O),

both remarks quite typical of the views expressed.

7.1.4 *Technology Seduction*

This was an interesting and somewhat unexpected category. There were real concerns expressed about what they saw as *Technology Seduction*, shown in the comment about perceived *ICT Conflicts of Interest*, from the CEO of Company K;

“I believe there is too much conflict of interest in the IT industry, and in the advice we get given. I just had my PC built to my specs and there was a lot of pressure to have features in it I just didn’t need”.

When this is mirrored by other comments related to *Technology Oversell* such as

“I’m just cautious of being oversold by IT enthusiasts, who want the Rolls Royce solution in place all the time” (Company L),

and

“Working with IT people you find they have another ‘fabulous’ idea every day. Then I constantly say to them ‘is this going to help the business?’” (Company N),

the feelings about a good strategic alignment between ICT/I projects and the business are not very positive. These business executives feel that the disconnect, between what ICT wants, and what they feel are the best business strategies, won’t easily be overcome. There is a strong suspicion that the business is being driven towards further expensive investment in technology just to keep up with the interests of the ICT staff who are ‘seduced’ by the latest technological developments. This is happening whether or not bringing new technology into the company is in the best interests of the business stakeholders. As long as the views held by a number of these executives prevail, and are as summarised by the CEO of Company K,

“There’s a lot of hype about what new bits of technology can do for a project, and it’s hard to get through that. I suspect we get proposals for new technology because the ICT people want a chance to get their hands on it themselves”,

there is likely to be a continued technical/organisational misalignment. The executives’ harboured suspicions that the ICT/I recommendations coming from their ICT staff were more influenced by ICT, than business, interests.

It was interesting to return to a review of the literature on this area. As previously noted in Chapter One, most authors agreed with the comments made by Curry et al (2005) that “changes in technology, competition, and consumer demand have brought about the need to alter both strategies and infrastructure in most organisations”. For the most part, such a view was also supported by the executives interviewed for this research. They were concerned with a situation where there was a high risk that their business was being driven by ICT rather than the other way round, and they didn’t have good plans or structures in place to mitigate this. Kanellis et al (2005) wrote of how ICT is a proactive rather than a reactive agent. This means that it can influence the organisational context it resides in, as much as that context influences the way ICT can be deployed. A critical factor in the whole formation of a relationship between technology and organisational culture is the way that executives perceive their increasing dependency on their ICT/I and the technological challenges they face trying to utilise it effectively.

7.1.5 Technical/Organisational Issues Summary

Most organisations have multiple ICT platforms, and many are experiencing difficulties managing this environment. ICT is a significant cost to the business, and generates a number of management issues. This was a point also noted by a number of the interviewees. Technology-driven organisational change, or ‘technochange’ as Markus (2004) described it, provides opportunities for significant organisational transformation, but with a high risk component. This is more than the routine ICT/I situation where simple network or hardware upgrades go almost unnoticed by the users. It is about recognising the need for a different approach if significant organisational benefits are to accrue from ICT-driven organisational change. The authors also noted that the ICT staff

needed to be better informed from their business units and executives about the directions and changes in their organisations' business strategies. This was necessary in order to address project planning, budget, and performance issues if these changes were to be successful (Weiss and Anderson 2004). With an increasing dependency on ICT, organisations need to develop cultural frameworks that align organisational values with ICT project management values. These should improve ICT project performance, and generate a higher level of business satisfaction with the outcomes (McAleese and Hargie 2004).

In summary:

- Technical/Organisational issues have both a technical and strategic alignment relationship. This is particularly shown by coded comments around the issues of **Technology Challenges** in areas of *Systems Misalignment* or the general *Technical Complexity* of ICT/I projects. There are also issues such as *Technology Speed Pressures* and *Technology Hype* when considering organisational **Technology Dependency** or the temptation of **Technology Seduction**.
- There is a recognition, that business is increasingly dependent on technology. This brings a number of challenges for both the ICT and business staff, including a feeling that ICT people are seduced by technology without determining the most appropriate business issue resolution first.
- The literature reinforces this view of technology dependence, but does not seem to have made its way into the mental framework of the interviewees. They were articulating their problems with these technical/organisational situations without indicating any awareness of processes for dealing with them.
- In spite of all this, the executives did generally feel that their ICT/I projects were reasonably meeting their expectations in whatever way their outcomes were being measured. Table 7.4 (from Appendix 8 and summary of relevant question responses in Appendix 3), shows the general clustering of these executives' views about their ICT/I project delivery when measured against agreed project outcomes.

Table 7.4 Responses to questions on the delivery of ICT/I projects.

Key Question	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
Meeting Project Outcome measurement?	M,	A, B, C, D, E, F, G, H, I, K, N,O		J, L	
ICT/I Projects meeting expectations?		B, C, D, E, F, G, H, I, K, N, O	A,	J, L, M,	

7.2 Executive Engagement Issues

Given the comments coming out of the consideration of **Technical/Organisational Issues** it was interesting to look more closely at the executives themselves, and their own process of engagement with ICT generally, and ICT/I projects in particular. This was a particularly rich area to explore. As shown in Appendix 7 it had strong connections to the major categories in Theme 1 and Theme 3. Table 7.5 details the components of this code.

Table 7.5 Components of Major Category 'Executive Engagement Issues'

Major Category	Low Level Categories	Open Codes
Executive Engagement Issues	<i>Change Management Issues</i>	<i>No Change Control, Change Involvement, Change Decision Concerns, Growth Implications, Change Conflicts, ICT/I literacy, Cost/benefit Considerations, Organisational Implications</i>
	<i>Executive Involvement</i>	<i>Raising Questions, BU Needs, Stakeholder Success Factor, Project Success Expectations, Funding Issues, Exception Issues, Personal Involvement, Contract Issues, Project Sponsorship, Professional Input, Executive Team Input, Project Approvals, Late Project Involvement</i>
	<i>ICT/I Expertise concerns</i>	<i>ICT/I Understanding, Business Benefit Questions, Information Complexity, ICT Not Core Business, Specification Deficiencies, Technical Knowledge, Resource Skills Deficiencies, Technology Compromises, Victim Mentality, Project Outcome Concerns</i>
	<i>Technology adoption</i>	<i>Late Adopter, Cost-benefit Questions, ICT/I Project Priorities, Business Innovation, Long Term Critical Needs, Organisational Growth Issues, Ad Hoc Project Decisions, Competitive Pressures, Internal User Pressures, Current Status Satisfaction, Productivity Needs, ICT/I Project Experiences, Technology Obsolescence</i>

7.2.1 *Change Management Issues*

The executives acknowledged difficulties they had trying to reconcile their awareness of the importance to their businesses of their ICT/I base with their own low levels of technical knowledge. They also had concerns that this was an area quite outside their comfort zones, and sometimes outside their control. For example, the CEO of Company K, when discussing general *Change Management Issues*, commented in relation to the *Organisational Implications* of ICT/I projects,

“The ICT infrastructure implications of decisions are often just not recognised by the business units or at corporate headquarters”.

Similar concerns were expressed by the CEO of Company H,

“These projects are a change management issue that you are undertaking, and that has all sorts of non-IT as well as IT implications”.

There were further comments in regard to *Change Decision Concerns*,

“The rapid changes in technology, and the difficulty understanding technical people who don't know your business, means you can't easily tell if a proposed change is the right thing for your business”,

from Company E, and similarly from Company K,

“A lot of my colleagues just have no idea about the implications of a strategic decision on the ICT infrastructure parts of their organisations”.

However, in all cases, as well as feeling they were becoming aware of the implications for their organisations of the changes brought by their ICTI projects, these executives felt they now had reasonably good change management processes in place to cope with them.

7.2.2 *Executive Involvement*

How some interviewees saw their own *Executive Involvement* in these projects was quite encouraging. A number of the interviewees, in spite of their awareness of their

own lack of technical knowledge, saw these projects as so critical to their strategic direction that their *Personal Involvement* was quite significant.

“I’m quite involved with our ICT infrastructure projects because I like to know what’s going on. I would agree that most of the issues I have ever encountered are around the area of communication. I am in a better position now, where I am comfortable about asking for more explanation, until I am satisfied I understand what is going on” (Company O),

and

“I have a very close involvement with our ICT infrastructure projects because they are related to our overall business strategies” (Company B).

As would be expected from these people who have ultimate responsibility for the success of their organisations, there were also some very clear statements about their recognition of this, such as

“I want to know what the expectations of success, and problems, are, right up front, so I can deal with issues from a business perspective, and an overall accountability perspective” (Company K),

commenting on *Project Success Expectations*. Similarly from Company E,

“Success in these projects depends on key stakeholders being involved right from the beginning”.

This attitude was also reflected in comments about their position as far as *Project Sponsorship* was concerned.

“I’d be delighted if I wasn’t so close to the ICT infrastructure projects, but ultimately what happens here is my call, and so I can’t really, at this stage of our development, delegate that” (Company N),

and

“I need to have close sponsorship involvement in ICT infrastructure projects in order to keep focus on our business goals of better customer experience, speed to market etc. These are all related to ICT and its infrastructure” (Company B).

7.2.3 ICT/I Expertise Concerns

When discussing their own *ICT/I Expertise* some useful comments were made, which indicated that the biggest issue these executives faced was the highly technical nature of these projects. This was coupled with their own lack of technical expertise to

know whether the decisions being made by the technical people were the right ones for the business. Both of these situations had a very alienating effect on these executives. Some very typical examples of comments when considering their own *ICT/I Understanding* were,

“The technology behind this is very difficult for anyone to comprehend unless they have had a fairly high level of exposure to this area” (Company L),

and

“It is very difficult for me to know if what they are doing is correct, or the best approach, because of the very technical nature of them” (Company O).

With regards to general *Technical Knowledge Deficiencies*, some equally anxious comments arose;

“If you were a person with actual knowledge, you would probably ask much more penetrating questions” (Company I),

and

“Lack of understanding of what is really happening is very frustrating. We don't have the depth of technical knowledge to judge the situation properly” (Company F).

The reaction of some of the interviewees to the difficulties they had understanding what was going on in these projects, and their concern about what they were being told by the ICT professionals was quite interesting.

“I think my ICT requirements are a whole lot different from those of someone who had a bigger interest in it. I don't have that, and sometimes I feel that we make compromises because of that” (Company N),

and

“There have been some problems getting buy-in from senior management for allocating funds for some of these ICT infrastructure projects, and compromises have been made as a result which may have some longer term implications” (Company K).

These remarks appeared when commenting on the *Technology Compromises* the company seemed to be making as a result of lack of ICT expertise in the executive team. The CEO

of Company H was even more blunt about his own and the company's current ICT/I *Skills Deficiencies*, saying

"I'm likely to have less involvement with ICT or ICT infrastructure projects than non-ICT ones, because of my own lack of technical knowledge about them".

A similar comment came from the Operations Manager of Company J about his continuing concern over these kinds of deficiencies at the senior level.

"A full set of documents gets prepared, but I don't consider there is sufficient expertise to make suitable judgment on the quality of the papers – from the executive or the Board".

The most concerning reflective comment came from the CEO of Company N, over the issue of a *Victim Mentality* created as a result of the technological barriers between the executives and the ICT people.

"It creates a victim mentality with people who have a big understanding of their actual business and responsibilities to their clients and Boards, but have this whole other world paraded in front of them that is completely foreign, and they are made to feel right outside it".

7.2.4 Technology Adoption

All of these aforementioned concerns had a flow-on effect to critical aspects of strategic alignment between ICT/I and the business, when it came to making **Technology Adoption** decisions about how to move forward competitively, using technology for strategic gain. Company G, in choosing to be a *Late Adopter*.

"We're a late adopter, and up-grader, going for well-established and well-supported systems and hardware",

recognised that their leading position in their specialized market, influenced this. The CEO of Company L made a similar comment,

"There has been little use of technology in this area, because it has been so expensive to set up until now".

This company was in a similar position to Company G up to that time, but was also beginning to recognise that the world was about to change quite dramatically for them. There were *Long Term Critical Needs* they had to address both for the quality of their service delivery, and the growing competitive environment they were in. For Company L, although accepting that they had been a late adopter of technology,

“Technology is going to be a major function of this industry into the future. Current systems of patient management are not the real long term requirement of where we need to go”.

This awareness of oncoming change was already at a fairly heightened level for most of the other executives interviewed. They recognized that, irrespective of their feelings of comfort or discomfort with either the technology or the ICT people, they had to keep moving forward with technological developments to stay competitive, and to survive in their businesses. *Competitive Pressures* were pushing the executives along a path of **Technology Adoption** in spite of their concerns about their, and their fellow executives’, ability to understand and manage the changes. Typical comments about these *Competitive Pressures* were,

“Protecting our branding and reputation has a big influence on when we might risk bringing in a new system or piece of infrastructure – what marketing plan we have”, (Company K),

and

“We need to be aware of market trends, because some of our customers have become commoditised, and when that happens, it’s in part because of their use of technology”, (Company C).

The problem they were all trying to deal with, was the difficulty of trying to develop strategic directions for their organisations while neither properly understanding, nor being confident about, the technical advice they were being given. Their own engagement and involvement in these ICT/I projects was limited, because of the language and jargon barriers between them and their ICT people. This in turn affected the timing of technology adoption.

7.2.5 Executive Engagement Issues Summary

- Technology is a key business support function and organisations are very

dependent on it. However they are struggling to align its rapid change to their business strategies. ICT people have great power, and can either “facilitate the business or screw it up” (Company I).

- There are still concerns that business issues are not being well-translated into ICT project deliverables, and the executives have no way of knowing if their approval decisions are good, bad, or indifferent.
- There is, consequently, a feeling that frequently ICT/I projects don’t have the level of executive team sponsorship and informed executive involvement that they should have. This involvement is necessary to ensure good strategic alignment between their needs and technology capabilities. Only about half of the interviewees felt that there was good personal or executive team involvement in their ICT/I projects, but there was a more positive response to the question about their involvement in non-ICT projects. Table 7.6 (from Appendix 8 and summary of relevant question responses in Appendix 3), shows the general clustering of these executives’ comments about their, and their executive team’s, involvement in ICT/I and non-ICT projects.

Table 7.6 Responses to questions on executive involvement with ICT/I projects.

Key Question	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
CEO Involvement in ICT/I projects?	G, I, N, O,	A, B, C, F,	D, E,	H, J, K, L, M,	
Executive Team involvement in ICT/I projects?	G, I, M, O	A, E, N,	D,	C, J,	B, F, H, K, L,
CEO Involvement in non-ICT projects?	C, G, I, N,	A, B, F, H, K, L, O	D, E,	J, M,	

7.3 Strategic Issues

The comments that created the previous major category of **Executive Engagement Issues** were helpful in understanding the interviewees’ real involvement in the development of their ICT/I projects. They also helped understand the likely influence this

involvement had on their ICT/I strategic decision-making. This category of **Strategic Issues** highlighted some of the influences on the key decisions being faced by these executives when trying to align the sophisticated ICT/I available to them with the best strategic direction of their companies. It identifies more of the anxieties felt by the interviewees about their recognition that ICT/I was an important part of their companies' futures. However, it was an area where they did not feel fully confident about making strategic ICT/I decisions. Table 7.7 details the components of this category, and illustrates the business, leadership, and technology challenges facing the interviewees.

Table 7.7 Components of Major Category 'Strategic Issues'

Selective Code	Low Level Categories	Open codes
Strategic Issues	Business Value of ICT/I	<i>Upgrade Pressures, Business and Customer value, User and client focus, No technology strategy, Business profitability issues, Competitive strategies for ICT/I, Business process definition needs, Project priority dependencies, Infrastructure costs issues, Systems automation, Service differentiation, Opportunity costs</i>
	Organisational Leadership and Strategy	<i>Project champions, Project justification, ICT Mgmt strategic involvement, Operational competitiveness, ICT/I project alignment, ICT Mgmt skill needs, Future technology needs, Strategic need identification, Project approval process, Business Plan alignment, ICT/I project responsibilities</i>
	Technology Opportunities	<i>Technological advances, Technological flexibility, Technology leverage, Systems flexibility, Technology costs, Business issue decisions, Information needs, Technology developments, ICT planning involvement, Technology service value ICT measures, Intangibles, Project impacts</i>
	Project Priority Conflicts	<i>CBA-driven justification, Exec. Team input, Project Team leads, ICT/I project displacement, Project conflicts, Project costings, Project budget competition</i>
	Technology as a Business Driver	<i>Productivity benefits, Equipment needs, Change expectations, Improved customer experience, Technology gains identified, Business value creation, ICT/I project emphasis, Strategic aim fulfilment, Operational effectiveness needs, Sophisticated information management, Infrastructure consistency, Expertise leverage. Competitive edge</i>

7.3.1 Business Value of ICT/I

Every CEO or equivalent senior executive carries the major time and mind occupations of the business challenges being faced by the organisation. When ICT and ICT/I becomes part of this, the executive decision-making responsibilities increase quite dramatically. Every one of the executives interviewed struggled with understanding the value to be gained from increasing investment in ICT/I. All of them had similar concerns

to articulate. Some very typical examples when considering *Business and Customer Value*, were,

“For each project we ask ‘Why are we going to do this? What’s the business value we will get out of it? What’s going to have the biggest impact on our customer?’” (Company E),

and

“ICT infrastructure projects must meet the business objectives – that’s the only reason for doing them” (Company D).

These were followed by comments such as

“We have some quite significant infrastructural issues to be addressed, and while there could be some quite creative responses to the situation, it comes back to the issue of just how much money do you throw at a problem?” (Company L),

on *Infrastructure Costs Issues*, along with the other side of the coin,

“We must keep users and clients in mind when spending money on technology. Without them there is no business” (Company C).

There were also concerns about the *Opportunity Costs* of these decisions.

“I’m spending four or five hundred thousand dollars a year on ICT and ICT infrastructure now. What else could I do with that money? Where I’m sitting, those are the questions that need to be answered, and these are my issues that I need to face” (Company K), and

“What will throwing more money at a problem really achieve? Should we just find a different way to solve it rather than always look at technology solutions that pull funds away from other projects? (Company L).

These were clearly valid and important questions to be asking. The message coming out of such comments was that there was not a close enough connection between the strategies needed for the company, and the advice from, or involvement of, the ICT staff.

7.3.2 Organisational Leadership and Strategy

Some further warning signs about this less than optimum alignment between their ICT/I and their business strategies appeared in the area of overall *Organisational*

Leadership and Strategy. Here there were comments reflecting a concern that while the ICT teams were working well to deliver technical projects, they were less engaged when considering the bigger picture. This impacted on the quality of leadership being given to the organisation by the senior ICT people, and consequential strategic decision-making. For example in regards to *Strategic Need Identification*,

“ I really need them to work out for, and then tell, the clients what is possible for providing them with better information, and then make that possible” (Company C)

and,

“To have long-term competitiveness in a global market place, we must look at different ways to operate” (Company E).

Then there were views expressed such as

“It’s critical for them to have leadership and strategic thinking skills to supplement their technical capabilities” from Company A, and

“This is the first time I’ve felt I’ve got a really productive team in ICT. Some of that is due to the change of ICT Manager” (Company I)

when commenting on *ICT Mgmt Skill Needs* in strategic decision-making. These were typical summaries of a number of comments related to this desirable attribute of the ICT management team. There was a clear wish to involve the ICT management in the strategic decision-making process, and some definite attempts by a number of the interviewees to have this in place.

“Strategic Planning is done by me and the executive team. The ICT Manager is on that team” (Company I) and,

“The head of IT is on the group of people working on next year’s Business Plan” (Company O)

on the matter of *ICT Mgmt Strategic Involvement*. It showed recognition on the part of some of the interviewees that ICT management input to strategic decision-making was important. When these are seen alongside comments such as

“I believe it is most important that this organisation works out, from a business perspective, what it wants to achieve, and has that discussed and very clear before it goes forward with any technology development” (Company L),

about *Strategic Need Identification*, it became very clear that they viewed the expected business outcomes of any strategic decisions involving technology to be paramount. Even when they were commenting on this perceived lack of business and strategic focus by the ICT Managers, most of the interviewees acknowledged that the senior ICT people needed to be part of the business strategic planning activities. Many of them were putting processes in place that demonstrated definite efforts to get *ICT/I Project Alignment* to the business strategies, e.g.

“We are just recently trying to align our ICT infrastructure projects to our Business Plan” (Company F), and

“Our ICT infrastructure projects are now more closely aligned with our Business Plan” (Company G).

7.3.3 *Technology Opportunities*

Given the remarks related to the *Business Value of ICT/I* and some of the struggles noted in *Organisational Leadership and Strategy*, I expected to find that there would be a conservative approach to the *Technology Opportunities* available. Not so. The interviewees knew they needed to take advantage of these opportunities in order to survive and grow. They were just struggling with the process of understanding the best business alignment the technology could bring them, when they were not sure they were getting the clearest advice from their ICT specialists. Most of their comments about these *Technology Opportunities* were positive and forward-looking. For example, from Company I, when considering *Technology Developments* coming their way, the comment

“Infrastructure around e-business is our highest priority, because its time is coming”,

showed there was a very clear strategic view of what the business needed. The same view was held by the GM of company C,

“The e-Business project is our top priority, as increasing numbers of clients are demanding access to, and information about, their legal activities”.

Then there were comments about *Technology Service Value*, such as

“In the development of services to meet the big disease gap, there is a whole lot of ICT infrastructure that needs to be in place to grow our services. We know we don’t have that”,

from Company N, and

“When you can deliver a technology service that actually helps your client, then everyone can see the value it brings to the business”

from Company M, that identified the importance for them of this technology to their future successful operation and survival. Where they want their ICT specialist input to be understood and of value, is when trying to accommodate the Technological Advances happening around them, and gaining business leverage from them. For example,

“It’s all to do with how quickly technology advances, and the timing of decisions that commit the business to a particular technology choice” (Company E),

and

“We need ICT staff input for leveraging off technology. What new technology should we be getting?” (Company A).

7.3.4 Project Priority Conflicts

There was also recognition on the part of some of the interviewees that they now faced issues with *Project Priority Conflicts* as a result of their ICT/I projects beginning to have a higher profile than previously. In a number of cases, ICT Management was endeavouring to push more of this work into the overall business planning process. There were also some legacy issues they realized they needed to address, such as previous *ICT/I Project Displacement*,

“Having ICT projects displaced has now caught up with the company and is causing some big issues about its future. ICT projects were often displaced by priorities of “familiar” projects.” (Company G).

As well as that problem there were admissions of the reality of the perceived lower importance and influence of ICT/I projects, because they were rarely led from the most senior parts of the organisation. For instance,

“Our ‘technical’ projects are more likely to be ‘bottom-up’ led, with a project owner also at that level. Our ‘cultural’ projects are led by Corporate, with executive team input, with vigorous philosophical debate prior to agreement and ownership, and thus stronger chances of successful approval” (Company A).

This acknowledged that fairly low levels of *Executive Team Input* had an impact on the determination of approval priorities for ICT/I projects when set against more familiar business projects. These issues and attitudes definitely needed to be resolved if there was to be a beneficial alignment between the pure business, and the ICT/I, activities.

7.3.5 *Technology as a Business Driver*

Still, with all the above issues raised and acknowledged, there was a clear understanding that they were now in a business environment where Technology was a key business driver for organisational strategies. Again, in spite of their struggles with the whole **Strategic Alignment of ICT/I Projects**, the future was clear, and it was technology-focused. Firstly there was definite recognition of *Improved Customer Experience* needs, from Company B,

“Providing a better customer experience is a major ICT infrastructure driver”,
and

“We need up-to-date equipment in order to deliver courses to vendor and customer expectations” (Company D).

Then there was the *Business Value Creation* that ICT can bring,

“Technology is one of the largest strategic options to create business value” (Company A),
and

“ICT is going to play a big part in achieving our strategic aims of 100% growth in five years” (Company G).

These were typical examples of the comments made about this issue. Finally, a most telling remark from the GM of Company I relating to their *Operational Effectiveness Needs* seemed to reflect the feelings of all the interviewees.

“We just have to keep current and have operational effectiveness, or we will continue to lose customers” (Company I).

7.3.6 Strategic Issues Summary

All through the ‘nuggets’ that were analysed, compared, and grouped into higher level categories, the message was clear. These executives knew they needed to get a better strategic alignment between their business strategies and their ICT/I environment. However, their unfamiliarity with this technology and their discomfort with their ICT people who should be their greatest points of leverage for using ICT/I implementation to improve the business, were getting in the way. It was preventing a good strategic alignment between what the business needed and what ICT could deliver.

Thus:

- There was a definite recognition by these executives that ICT is a strategic influence on the business, and key to future business growth and success. However, they struggled with the high opportunity costs of these projects when trying to reconcile them against other business strategic decisions they had to make. This would explain the only moderately positive responses to the questions about their measurement of project outcomes, and their feelings about whether ICT/I projects met their expectations (ref. Appendix 8)
- There was a clear understanding that the senior ICT staff needed to be involved in the business strategic planning process. But, there were still concerns that while these people were good at delivering technical solutions they were not providing the strategic leadership needed to marry technology with desired business outcomes.
- There was a positive approach by the interviewees to the technology opportunities available, if they could just get a better understanding of the technical advice they were being given.

- The history of preferring to concentrate on more familiar business projects over less understood ICT/I ones was now causing problems. ICT/I projects had a legacy of low-level organisational sponsorship, and had often been displaced by other types of projects. Now, the previous lack of alignment between business strategies and the technology infrastructure needed to support them, was causing a major, and expensive, catch-up situation in a number of the companies.
- There was universal recognition by the executives interviewed that technology, and in particular their ICT/I, was becoming a key business driver for their organisations. It needed to be closely aligned with all strategic decision-making activities.
- The literature reviewed has for some time been emphasising the need for ICT and Business to develop better strategic relationships, in order to take advantage of the opportunities that the technology offers. This advice does not yet seem to be permeating through to significant behavioural changes by either ICT or business management.

7.4 ICT/Business Strategic Alignment Theme Summary

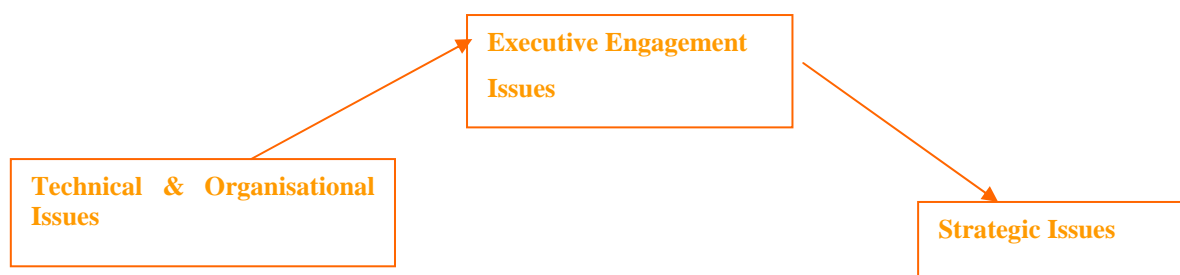


Fig 6.1 Theoretical coding linkages for ICT/Business Strategic Alignment theme (See also Appendix 7 for detailed Selective Code diagram)

Within this theme, **Technical/Organisational Issues** had a relationship with **Executive Engagement Issues** where unsatisfactory resolutions of issues related to technology adoption were often a result of low levels of executive involvement with their ICT/I projects. This was reflected by comments such as,

“I think there are major quality implications. I would see the ICT stuff as a critical part of internal communications, and there are a couple of projects where I should have taken a closer interest.” (Company L) in relation to *Executive Engagement* in their ICT/I projects, and

“ICT infrastructure projects – sometimes things don’t fit together as expected, and a technology problem arises. The

nature of technology can generate completely unforeseen and unexpected problems” (Company C)

when discussing *Technology Dependencies*.

Executive Engagement Issues also affected **Strategic Issues** within an organisation where *Technology Opportunities*, which could be drivers to address business challenges, aren’t incorporated into the strategic planning process. This is because of issues related to the *Cultural Disconnect* between the ICT staff and their executive colleagues. For instance,

“ICT projects are seen as part of the life-blood of the business, but I’d rather build a new building than deal with a major ICT project”.

This was a particularly honest comment from the CEO of Company G when discussing *Operational Involvement Preferences* that reflected much of the cultural discomfort the interviewees showed. Similarly, there were rather a large number of interviewees who admitted to less than satisfactory involvement of their ICT staff in the organisation’s strategic planning process when discussing their *Business Plan Alignment* with their ICT/I projects:

“ICT people not as involved with strategic planning as we would like” (Company E),

“No involvement by ICT staff in strategic business planning” (Company F),

“ICT has a moderate relationship with the strategic planning process” (Company B),

This theme focused on the issues related to the strategic alignment between ICT/I projects and the business. However, as mentioned before, there were some components of it that had a relationship with the codes and categories in the first and third themes. It is

sobering, if not a little depressing, to read academic papers of the early 1990's and see comments made about the whole area of **ICT/Business Strategic Alignment** that reflect much of what the interviewed executives expressed in this research, and which could have been written today. Discussions abound about the “significant differences in the perception of top-level management of the importance of IT in their organisation and the many inherent difficulties in measuring that importance” (Waema and Walsham 1990 p.29). They also comment that, “Considerable attention has recently been given to strategic applications of information resources (*sic. Information and communication technology*). Numerous frameworks to identify and categorise such applications have been proposed” (Sabherwal and King 1991 p. 191); being typical examples. Jarvenpaa and Ives (1991) wrote of the importance of executive support for fully exploiting the benefits of information technology. A survey carried out of 100 Australian organisations in 1992 (Broadbent, Butler, Hansell and Dampney 1995 p. 17), noted that the top two management issues were “gaining business value from current investment in IT, and achieving alignment between business and information technology”.

Many factors affect the desirable transformation of ICT from being a service role to that of strategic partner, and the three major categories discussed in this Chapter epitomise most of them. Hackney and Little (1999) made a very pertinent comment about this situation, and the problems being generated as a result -

“Existing models and frameworks for IS/IT planning are not robust enough to explain or predict strategic gains. They are focussed on measures reflecting the shorter term effects of methodologies for technical efficiency derived from technology, rather than the longer term gains in effectiveness which give rise to strategic opportunities”.

An earlier paper by Ives and Jarvenpaa (1991) on global information technology, discussed the key issues relating to the linkage between ICT strategy and business strategy. Among those listed were the need for ICT people to “assist senior management to understand the potential impacts of global IT on corporate strategy” (p. 42), and to determine the best IT strategy to align with the global business strategy (Ives and Jarvenpaa 1991). They also noted that some of their interviewees commented that data networks and

telecommunications became barriers to them if they had fallen behind their competitors. Alternatively these were seen as a competitive advantage if they perceived themselves as leaders. Roepke, Argawal and Ferratt (2000) also wrote of the demands business leaders were beginning to make on ICT to move away from its back office support role to that of a business partner and strategic enabler. This is exactly the feeling held by the interviewees, but they were still wrestling with the best way to achieve that outcome, as demonstrated by the comments noted in the categories that made up this theme. It was not clear then, and the issue still does not seem to be resolved, just how this human capital can be developed and leveraged to support the business' needs. Not long after the Roepke et al paper, Orlikowski and Barley (2001) in their paper on research on IT and research on organisations, commented on the impact that information technology was having on our lives, and the monumental period of social change that was being generated as a result. They particularly emphasised the need for “greater interaction between the fields of information technology and organisation studies” (p. 145). This would bring together the technological focus of ICT and the sociological focus of business and organisational studies. Further, they noted that “changes are occurring in the nature of work and organising that cannot be understood without taking into account changes in the technological infrastructure on which economic and organisational activity rests” (Orlikowski and Barley 2001 p. 147).

The executives interviewed all recognised this, and the challenges being brought to them as a result. They know that ICT and its human resources are critical for driving improvements in organisational performance. However, they feel that there is still a worrying potential for ICT solutions developed by the ICT technical people to be misaligned with important organisational characteristics and strategies (Markus 2004). Her proposals in that paper on the concept of *technochange* are interesting when considering the potential theoretical framework to be developed from this research that may address the executives' ICT/I attitude/perception situation. Finally, the more extensive literature reviewing carried out for this chapter produced some further disturbing results. The literature in both ICT and Management publications has been discussing both the impact that changes in technology have made on the way businesses need to operate, and the need for management to develop more strategic uses of information technology,

for over fifteen years. Yet, there is still a disconnect between what is being written in scholarly or industry journals, and the way technical/organisational and human resource issues are being addressed.

The key points to be taken out of the findings in this theme are:

- This theme provided interesting and important reflections on these executives' perceptions of the strategic alignment issues surrounding ICT/I projects and the business. It also showed some of the difficulties faced by these executives as they endeavoured to address the challenges of their own lack of understanding of ICT/I, while recognising the importance of this technology for the future of their businesses.
- There is an increasing dependence on technology to drive business strategies. However the problems of the mismatch between the ICT and business cultures, plus the concerns these executives have about their own technical expertise, are holding back opportunities for good strategic alignment between ICT and the business.
- This theme recognises this increasing dependency on technology, especially at the ICT/I level. It shows that these executives do understand the need for greater involvement by themselves in how their business and ICT/I strategies are aligned. They also feel that their senior ICT staff should be more engaged in the business outcomes of ICT/I developments, rather than just the successful technical outcomes of these projects.
- There is a common history of choosing projects for approval that had close fit with business understanding and culture, without understanding the relationship between these and the ICT/I in place. This has meant that many of these companies are now facing expensive 'technology catch-up' situations, in order for their ICT/I to be robust enough to support their overall business strategic direction.
- The literature has identified the issues for better strategic alignment between ICT and the business for many years. The executives interviewed showed good awareness of this, but still had issues about whether the technical decisions being

made were the best for their business, or just best for the ICT people.

Thus the issues, and the category relationships that had come from the data analysis and described in these first two themes, now led inexorably to the final theme on **ICT/I Project Life Cycle Outcomes**. It was influenced by this theme, and affected by the language and communications issues raised in the first theme.

CHAPTER 8

RESEARCH FINDINGS

Theme 3 – ICT/I Project Outcomes

- 8.0 Chapter Overview
- 8.1 ICT/I Project Skills Issues
- 8.2 Implementation Issues
- 8.3 ICT/I Project Success Factors
- 8.4 ICT/I Project Outcomes Theme Summary

8.0 Chapter Overview

The Research Problem as described in Chapter 1 is:

Do non-ICT executive stakeholder perceptions of, and attitudes towards, delivery of ICT infrastructure projects influence the outcomes of such projects?

Chapter 8 considers the third theme derived from the grounded theory analysis relating to the investigation of the problem, and the third research question that developed from that analysis process, namely;

What are executive perceptions of, and attitudes towards, the outcomes of ICT/I projects?

This theme came about as the culmination of issues relating quite directly to the success or otherwise, in these executives' minds, of their ICT/I projects. As with the previous themes, it developed by grouping related categories in the grounded theory analysis process. Success to these executives meant a number of factors, of which the technical completion of such work was only one. The concept of what makes for a successful ICT project has much literature around it as far as general software project development is concerned. However, the point was noted by some of the interviewees that successful software project implementation depended significantly on the quality of the infrastructure supporting it. The focus of this theme is entirely on the project life cycle factors seen by these executives, as they related to their ICT/I projects. Table 8.1 illustrates the major categories in this theme. The remainder of the chapter discusses the findings for each category, and the way in which the categories and codes grew from the grounded theory analysis of the comments made by the interviewees. It notes how they relate to the previous two themes, and the implications for development of a theoretical framework to improve delivery of ICT/I projects discussed in Chapter 9.

Table 8.1 ICT/I Project Life Cycle Outcomes theme construction

Major Categories in this Theme	Low Level Categories
ICT/I Project Skills Issues	<i>Business Capabilities</i>
	<i>ICT Project Skills Sourcing</i>
	<i>ICT Project Skills Dependencies</i>
Implementation Issues	<i>PIR Activities</i>
	<i>Project Delivery</i>
	<i>Project Expectations</i>
	<i>Project Management</i>
	<i>Project Progress Reporting</i>
	<i>Project Scope Change</i>
ICT/I Project Success Factors	<i>ICT/I Strategies</i>
	<i>Project Scoping</i>
	<i>Organisational buy-in</i>
	<i>Risk Management</i>
	<i>Training</i>

Also, summaries of the responses to key interview questions are extracted from Appendix 3 and shown in Appendix 11 to assist understanding of the discussion of this theme.

Having already been asked about their understanding of the difference between application and infrastructure projects, (covered in Theme 2 - Chapter 7), the interviewees became quite forthcoming in their comments about the business effects they now saw as consequential to problems in the ICT/I area. This situation is explored in more detail by looking at the results of the selective coding process that generated each of the categories for this theme.

8.1 ICT/I Project Skills Issues

The ICT/I project skills category reflected comments made about both ICT staff technical competencies and their general business capabilities as these applied to ICT/I projects. It found its way into this theme because of the direct relationship between its low level categories and the interviewees' perceptions of the relationship between their ICT staff people skills competencies and the outcomes of an ICT/I project. Table 8.2 details the components that made up this code.

Table 8.2 Components of the Major Category 'Project Skills Issues'

Major Category	Low Level Categories	Open Codes
ICT/I Project Skills Issues	<i>Business Capabilities</i>	<i>Lack of Bus. Understanding, Cross-issue Capability Lack, Recognise Org. benefits, Bus. Project Mgmt Skills</i>
	<i>ICT Project Skills Sourcing</i>	<i>ICT/I Project Responsibility, ICT Resourcing, In-house System Maintenance, Supplementary Project Resourcing. Skills-availability Gap, ICT Resource Network</i>
	<i>ICT Project Skills Dependencies</i>	<i>Resource Availability, Resource Expertise, Bus. Unit ICT Skills Development, Core Competencies Need, Back-up Skills Need, Resourcing Dependencies, Vendor Involvements, Technical Skill Requirements, Skill Development Needs</i>

The picture built of executive views about ICT project skills is around the comments on general business capabilities, and overall skills competencies. It illustrates the dilemma caused by the disconnects in these areas, and how they affect such projects.

8.1.1 *Business Capabilities*

Firstly, there were concerns about the lack of *Business Capabilities* shown by ICT staff, when scoping and implementing ICT/I projects. Typical comments about this *Lack of Business Understanding* were

“They are short on business skills and don’t understand some of the business issues as well as the technology ones” (company A),

and

“Maybe that’s a symptom of how ICT people are, but I’ve had people in my office in tears, just trying to deal with the fact that what is happening is just not the way it should”, (company M).

When these sorts of comments are followed by remarks such as

“IT people have to learn how to deal with specialist business people if they ever hope to be successful on a project team” (Company H),

and

“Our ICT people need the ability to work across wider business issues when doing these infrastructure projects” (company A),

when discussing *Business Project Management Skills*, the rumblings of dissatisfaction are quite concerning.

8.1.2 *ICT Project Skills Sourcing*

In spite of all this, the executives recognised the importance of the technical skills brought by ICT people. With a few exceptions they were generally more confident either in that component of their existing skill base, or the organisation’s ability for general *ICT Project Skills Sourcing*: Views expressed about *ICT Resourcing*, such as

“We are generally satisfied with actual resource availability and technical expertise” (Company F),

and

“We are generally satisfied with resource availability and expertise – we have a long-standing ICT Manager “ (Company B),

while not exactly high praise, were reasonably positive. Follow this with comments on *Supplementary Project Resourcing*, where

“We typically use our own people primarily, and call on specialists from the suppliers when we may need some extra technical support” (Company O),

was a fairly typical statement made during the interviews, and there is an indication of general satisfaction with the technical competency of the internal ICT department staff. There was an interesting reflective comment made by a CEO who had earlier expressed quite a high level of dissatisfaction about the insularity of their ICT staff. When discussing this issue of *Supplementary Project Resourcing*, he said,

“With ICT infrastructure projects, we can bring in other resources to them more easily than we can in the software development projects, where you have to know so much more about the business before you can contribute usefully to a project” (Company I).

This was the situation described for most of the companies. There was a feeling that the in-house ICT team had most of the technical knowledge needed for the technical projects carried out. The executives were also comfortable with using outside expertise for these projects, because it was easier for outsiders to contribute quickly and usefully to ICT/I projects than to software application development ones..

8.1.3 ICT Project Skills Dependencies

There were, however, some anxieties expressed about *ICT Project Skills Dependencies* issues, mostly around issues of availability of sufficient skilled staff to carry out these projects. They saw a *Skills-availability Gap* with

“Resource capability – yes. Resource availability – no” (Company E),

and

“The availability of required expertise is often an issue, because of workload pressures” (Company D).

There were other comments on overall *Resource Availability*, such as,

“Not freeing up sufficient, appropriate, resources rapidly impacts implementation plans” (Company D),
and

“It’s critical who you employ for a project – getting the right mix of skills and personality that will make a project successful” (Company K).

The fact that they recognised their *Core Competencies Need* for ICT/I skills highlighted their feelings that

“The difference between ICT infrastructure projects and other kinds, is that these projects **have** to be carried out by a few technically skilled people” (Company O),

and

“The core competencies of asset infrastructure and capital management, as well as ICT, are all needed in the business” (Company A).

All these views reflected the executives’ awareness of their dependencies on ICT technical expertise, and the effect these issues were having on the life cycle of any ICT project. They knew that the infrastructure components of these projects were often the most difficult. However, the consistently negative feelings about the ability of the ICT staff to understand the business implications of ICT/I projects, were causing most of these executives to keep their ICT management at a distance. This situation was affecting the ability of the executives to get the greatest organisational benefit they could from the opportunities available with a good ICT infrastructure in place.

8.1.4 ICT/I Project Skills Issues Summary

The views expressed by the interviewees, rolled up via the coding process into this major category, reflected some quite strongly expressed opinions, and it was interesting to return to the literature for comparison. The literature reviewed was consistent in its attitude that the skills required of ICT people in the 1990’s and beyond, were primarily business and interpersonal ‘soft skills’. They were no longer the technological ones that were needed in the 1980’s, where typically, ICT/I projects were driven by the desire to eliminate costly, unreliable, legacy systems that did not interface with each other

(Christenson and Walker 2004). In particular, it was felt ICT people now needed to have real empathy with business needs, and a greater loyalty to their organisation rather than to the ICT profession (Broadbent, Butler et al. 1995). However, the desire for these new skills becomes difficult to balance against the need for technical competencies when it comes to ICT infrastructure investment. This was something many of the interviewees did recognise when considering the particular characteristics of ICT/I work.

It is frequently hard to describe the role infrastructure plays in the overall ICT environment, and to justify investment in an area that appears to have little immediate payoff. There are also still challenges around finding ICT staff who have both the ‘soft’ and the ‘technical’ skills required for this type of work. Those people with the technical skills needed for good ICT/I investment often are poor communicators and lack empathy with the business people they are supposed to serve (McManus and Kalugerovich 2002). All this makes for well-documented poor relationships between the ICT department and the rest of the organisation, with strong arguments that this ‘relationship gap’ has a serious and detrimental effect on the outcome of ICT projects. This gap can only be narrowed if the ICT and business stakeholders adopt a ‘proactive’ rather than a ‘reactive’ approach towards their projects, (Clarke and Doherty 2004), and make real efforts to work closely together as equal partners in them.

Thus:

- There are still issues surrounding the kinds of relationships ICT people have with the business users of this technology. There is a need for them to improve their business capabilities in order to deliver better ICT/I project outcomes.
- However, most of the interviewees were satisfied with the technical competence of their ICT staff, and confident that skills needed for particular ICT/I projects could be sourced either internally or from contracted specialists.
- The literature also emphasised the importance of a strong business-ICT relationship. It did recognise the difficulty of finding ICT staff with both the technical and the ‘soft’ people skills described earlier that are needed to help reduce the ICT/Business ‘relationship gap’. Table 8.3 (from Appendix 8 and

summary of relevant question responses in Appendix 3), shows disconnects between the acknowledged ICT staff involvement with the business and strategic planning process. The executives had fairly negative views about those staff – most typically as a result of frustrations about their lack of business skills and ability to communicate technical issues in language the executives understood.

Table 8.3 Responses to questions on ICT staff involvement with planning, and executives’ views of their necessary business and communication skills.

Key Question	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
ICT people involvement with strategic planning?	A, H, M, O	B, C, I, K, N,	D, E, L,		F, G, J
Comments made about ICT staff		D, G, I	A, C,	E, L, O,	B, F, H, J, K, M, N,

8.2 Implementation Issues

The second of these Theme 3 categories arose out of interviewee discussions and reflections on the actual project implementation issues they had faced with these ICT/I projects. As this was a key area of investigation for the thesis, it was unsurprising that there was a very comprehensive and rich mine of data captured around the whole subject of ICT/I project implementation. After the selective coding process was completed, this major category comprised six comprehensive, low level categories as shown in Table 8.4.

Table 8.4 Components of Major Category ‘Implementation Issues’

Major Category	Low Level Categories	Open codes
Implementation Issues	<i>Post Implementation Review Activities</i>	<i>Ease Of Use Feedback, Productivity Change Measurement, Investment Delivery Uncertainties,, Infrequent Reviews, Roll-out Checks, Customer Satisfaction Check, Indirect Benefits Hard To Measure, Review Only</i>
	<i>ICT/I Project Delivery</i>	<i>On Time & Budget, Over-deliver On Expectations, Delivery Against Agreed Scope, ICT/I Project Visibility, Establish & Measure KPIs, Technical Implementation Problems, Decision-making Differences, Project Process</i>

		<i>Rules, Project Overruns, Project Size Understanding, Delivery Autonomy, Project Team Preparation, Resource Stability, System Roll-out Problems, Execution Criticality, Delivery Scheduling, ICT/I Familiarity</i>
	<i>Project Expectations</i>	<i>Project Outcome Expectations, Business Improvement Expectation, Deliver To Expectations, Business Involvement, ICT/I Operational Cost, Need ROI Check, Agree Priorities, Project Approach Principles, Project Process Control, High Project Costs, Operational Routine, ICT Project Approvals, Organisational Benefits Appearing, Project Problem Realities</i>
	<i>Project Management</i>	<i>Strong Change Control, PM Responsibilities, Co-ordinated Planning Essential, Supplier Management, PM Processes, PM Resourcing, Time Criticality, Steering Committee Role, Approval Process, External Resourcing, Clear Implementation Plan</i>
	<i>Project Progress Reporting</i>	<i>Progress Reviews, Project Milestone Requirements, Progress Status Checks, Project Debriefing, Progress Report Dissemination, Project Issues Feedback, Reporting Deficiencies, Not Outcome Focus, Milestone Measurements, User Feedback Issues, Inaccurate Progress Reporting, Issue Highlighting</i>
	<i>Project Scope Change</i>	<i>Minimal Scope Change, Scope Creep Prohibited, SDLC Scope Change Timing, Minimal Scope Change, Change Evaluation Process, External Change Implications, CEO Remoteness, Scope Change Implications, Technology-related Change, Technology Constraint Resistance, Outcome Expectations, Scope Change a Given, Technology Deficiencies</i>

The ‘nuggets’ that generated the open codes in these categories reflected different aspects of the ICT/I project life cycle. The rolled up categories summarise the issues relating to this, from these executives’ perspective.

As noted earlier in the discussion of all these themes, there was initially little difference in the executives’ minds between the two kinds of ICT projects, (infrastructure and applications software). This had to be worked through as part of the interview process. Once that was achieved, there were a number of implementation areas discussed where the two types of ICT projects were seen to be quite different. Equally, there were also areas where they were quite similar. All of these were useful for building a theory about the executives’ attitudes towards, and perceptions of, the ICT/I projects within their organisations.

8.2.1 *Post Implementation Review Activities*

One area where there was similarity between ICT/I projects, and application software ones, was that of *Post Implementation Review Activities* (PIR). All the interviewees described a reasonable, through to robust, pre-project approval process. However, not one of the companies carried out regular, systematic PIRs except for a financial one that measured final cost against original budget. Any other reviews such as user satisfaction, productivity improvements, and some checking of outcomes against original objectives, were irregular and informal. In only one case was there a comment that related to the organisation's ICT/I project implementation process where the CEO was commenting on the *Roll-out Checks*;

"When an operations person is part of project team leadership, there would be a review of the appropriateness of the roll-out" (Company B).

However, the same CEO did go on to note that,

"Although business and user reviews are not done on a regular basis, there will now be one done for our big PABX project".

Other than that, the more typical comments related to the characteristic of *No formal Reviews* such as

"We have no user reviews carried out on our ICT projects. There's no formal feedback process" (Company F),

or, at best,

"Business and user reviews done very infrequently" (Company B),

along with a general check of *Outcomes Versus Objectives*. This delivered comments such as,

"If it works and the expected outcomes are delivered, a project is considered successful. No other PIR or ROI done" (Company H),

plus

“Project objectives success is usually just measured by people’s informal feedback and ease of use”, (Company D).

These were consistent across all the executives interviewed. In one case, in relation to the *No Formal Reviews* situation, the comment was even made,

“A post-implementation review. What a good idea. I think we should do one of those” (Company N).

In all cases, the interviewees who did not carry out a PIR for their ICT/I projects, also didn’t regularly carry them out for other projects except for the ‘budget versus actual’ financial analysis. They recognised during this part of the discussion, that they had a gaping hole in their whole organisational project process. Only two of the interviewees had a process in place for carrying out a PIR on their ICT projects, which included their most recent ICT/I project. The others recognised the gap, with comments related to their *Infrequent Reviews* such as,

“A PIR and ROI check are supposed to be carried out, but we aren’t good at it. It’s definitely not one of our strengths” (Company B),

or

“PIR and ROI have not been done properly for these projects. We don’t know if some projects actually deliver on the investment” (Company E).

These findings are also reflected by literature on PIRs, where there is much written about a low uptake of PIR in practice. Some authors go as far as suggesting that “these benefits are not being valued, or that significant inhibitors to these practices are active in organisations” (Gwillim, Dovey and Wieder 2005 p. 308).

8.2.2 *ICT/I Project Delivery*

The subject of *ICT/I Project Delivery* also had some issues common both to general ICT projects and to specific ICT/I ones, but began to identify *Decision-making Differences* in executive perception of these kinds of projects. For example,

“The similarities to other projects would be the needs analysis work. After that, the decision-making gets different” (Company N),

and

“ICT infrastructure projects are easier to track, and costs are readily identifiable. Thus the decisions about time frames are more easily predicted than for software applications projects”, (Company F).

There were common issues of *Delivery Autonomy*, where

“once the goals are agreed and they are given the go-ahead to get on with it, they just have to do that. Although I do check that they are getting on with it” (Company O),

and

“Once the infrastructure team insisted on better preparation opportunities for new systems, and greater knowledge of time scales, resource requirements, etc, their delivery improved. In other words, they took control over that phase of the implementation process” (Company J).

There was also *Execution Criticality*, such as

“at the end of the day, it’s all how it goes in execution. You can plan until the cows come home; you’re only up against the rail when you actually come to execute it” (Company K),

and

“I actually don’t think that a lot of people understand the magnitude of any of these ICT projects, and having the resources there to help them through the first few hours was really helpful” (Company M)

which related to all types of ICT projects. However, other comments were made that clearly showed a differentiation in the interviewees’ minds between the delivery of software projects and infrastructure ones. Firstly, on the issues of *ICT/I Project Visibility*, fairly typical remarks were,

“ICT infrastructure projects are more physical; you can see if it works properly. Software applications constantly have ongoing problems preventing them working properly” (Company F),

and,

“the rollout of the new PCs for example. People understood basically what was going on, and what was behind it, even if they didn’t understand the technical part of the changeover. It’s not like that with new

applications implementation, which is much harder to grasp” (Company M)

Then there were differences in *Delivery Consistency* between the two kinds of projects, such as

“The ICT infrastructure projects are completed much more quickly than the non-ICT infrastructure or even non-ICT projects.” (Company O)

and

“Our ICT infrastructure projects actually go reasonably well. The problem is with the applications stuff. It’s just a big black hole” (Company F),

and

“We keep getting told, (about our applications projects) ‘there will always be issues, but essentially it does actually work’. The trouble is, the issues just seem to escalate as they’re rolled out to the regions. We don’t find that with the infrastructure changes” (Company K).

There was consideration of obviously discrete infrastructure projects like network or desktop upgrades, when reflecting on the interview questions about implementation issues. The interviewees did generally see the dependencies between a desired application’s implementation and the infrastructure changes that may need to be done to support that. They also recognised the implications for their overall ICT/I if the software implementation didn’t go to plan. In particular, comments related to *Delivery Scheduling* such as,

“Infrastructure work is usually done along with software implementation, and timing of deliveries and things gets really critical, because doing a major software upgrade requires days of ‘brown-out’ which has to be when it will have the least impact on the business and is scheduled well ahead” (Company I),

and to *System Roll-out Problems*,

“The payroll system was well spec’d out, and had a pretty good analysis of the business requirements. It seemed relatively straightforward to implement, but there were a whole host of problems that just seemed to go on for ages. We didn’t have that with the hardware when it was installed” (Company L),

were examples of this.

8.2.3 Project Expectations

A category, that developed from a cluster of open codes which didn't quite fit under the *ICT/I Project Delivery* umbrella, was that of the executives' general *ICT Project Expectations*, especially any that might be specific to ICT/I projects. Initially, when looking at these open codes and their 'nuggets', there did not seem to be much difference in the executives' expectations of either type of project. There were comments around *Business Improvement Expectations* such as

"was the project not only delivered on time and on budget, but did it improve the business as anticipated?"
(Company E),

plus,

"Does it work, and are the users satisfied that they have got what was supposed to have been delivered?"
(Company H).

These were typical of responses to questions on their expectations of all ICT project development and implementation. Looking closer at the original data 'nuggets' however, there were others pertinent to the overall expectation the interviewees had about their ICT/I projects. Again from the CEO of Company N when reflecting on *High Project Costs*,

"The workload is different, and so is the dollar value. The costs of ICT infrastructure projects are much more substantial and I think that is one of the differentiators".

Similarly, from the GM of Company I,

"Hardware purchases, because of the size of the purchase costs, are a big drama from the 'getting approved' point of view, but much less of a drama than software from the point of view of getting it done".

This was an interesting remark. He also commented about general *Business Involvement* in these projects, noting that

"ICT infrastructure projects are different from software projects in that they involve the business much, much less".

Thus, when looking at the differences between software and infrastructure projects, the executives did identify expectations of higher up-front costs. However, they also noted a more reliable operational process of actual implementation for the ICT/I projects. There was also less business unit involvement in the process, unless the ICT/I project was a component of a major software application implementation. It was interesting to hear the comment from the CEO of Company M that these ICT/I projects were really part of the *Operational Routine* of running the business.

“Mostly the view is that these infrastructure projects are actually more straightforward to run as projects than many of the others we have. They are operational and part of the routine of having IT around the place”.

There was a similar comment made by the CEO of Company M,

““With a new software application, there is never that intuitive familiarity with the outcome of the implementation, as there is with an infrastructure project like rolling out new PCs”.

Thus the expectations of ICT/I projects were that they may be much more expensive as far as up-front costs are concerned, but generally were less problematic to implement than software applications ones.

8.2.4 Project Management

The area of overall *Project Management* of all ICT projects, including ICT/I ones, interestingly generated only minor discussion. There was little negative comment on the quality of project management, with a generally held belief that the organisations had good *PM Processes* in place.

“We have a, if not rigid, at least a well-developed system for project management” (Company I),
and

“We have very strong change control procedures – tough on change requests” (Company D)

were typical examples of comments made about these. This applied to all their projects,

including the ICT/I ones, and flowed on into **Project Progress Reporting**. The only critical comment about overall **Project Management** was in the area of having a *Clear Implementation Plan*.

“New issues and infrastructural changes are not well managed because the infrastructure team are not always told what the requirements would be (when a software project is being implemented)”, came from (Company J),

where a number of frustrations about project management and delivery had been expressed during that interview.

8.2.5 Project Progress Reporting

Here, the majority of interviewees felt that there was reasonable *Progress Reporting Dissemination* to the executive team and Board, at the very least against agreed financial and time milestones. For example,

“We have monthly progress reporting to Executive Steering Group (dates, financial targets etc)” (Company A), and

“We agree on a plan and timetable, but reporting is more frequent and less formal than in a larger organisation” (Company G).

These were typically consistent comments, with recognition by some of the interviewees, that this was not as formal and as regular as it should be. They also acknowledged that *Progress Report Dissemination* was not carried out particularly well beyond the executive group that actually received the reports.

“ICT project progress reporting is not disseminated very well past the executives” from Company F, and

“Reports mostly occurred when milestones are to be met. Less frequently otherwise. Reporting has a low profile generally in the organisation. Not just in ICT” (Company J).

8.2.6 Project Scope Change

Less positive were the comments about *Project Scope Change*. As expected, this question generated some interesting observations that ranged from frustrated to philosophical, such as around the issues of *Technology-related Change* where,

“We had to reassess the whole PABX project process as we moved along - back to square three” (Company B),

and

“Yes, ICT infrastructure projects do change in scope, because the technology changes. It’s the possibilities of what you can do with that (*technology*) change, because of the time that has passed since your first decision” (Company O).

There was a view that there was *Minimal Scope Change* in ICT/I projects compared with software development projects,

“ICT infrastructure projects are more straightforward than software projects, so not nearly as much scope change as in the case of software projects” (Company G),

and

“Agreeing the level of criticality of a new issue has helped keep projects more under control, with considerably fewer scope changes” (Company E).

However, there was a recognition from most of the interviewees that the reality of ICT/I projects meant sometimes unforeseen *Technology Deficiencies* forced an ICT/I *Project Scope Change*. For example,

“Scope change can happen when planned technology can’t deliver desired results and another approach has to be worked out” (Company F),

and

“It happened in the XP rollout because of technical issues that came up during it, (like getting our new printer/fax/copier to work) that we weren’t told about at the beginning” (Company H).

Overall, the prevalent view coming from this part of the interviews was that the whole speed of technology change was constantly forcing rethinks of ICT/I projects. This

brought consequent pressure for scope change and potential budget and time overruns. *Technology-related Change* was thus having a major impact on their decision-making during project life-cycle activities,

“Typically it’s because of things that weren’t known at the outset. Things that have benefited the outcome, and are more likely to be technology-related than application-related”, (Company M).

Even where they were philosophical about the improvements new technology might bring to the project and the business, balancing this acceptance against time and cost budgets was not a space these executives liked being in.

8.2.7 Implementation Issues Summary

This section looked specifically at project implementation issues, such as project delivery, project management, and general scope change issues, rather than the broader consideration of overall project success factors. The literature reviewed had much to say about this aspect of the project life cycle, describing and analysing examples (Gillard 2004; Heeks 2002; Lyytinen and Robey 1999; Myers 1995). However few publications were found that detailed or promoted good models or frameworks that would have prevented the failures (IBM 1997; Smith 2001; Tasmanian Government Department of Premier and Cabinet 1998). There are some papers that look at the critical issues to be considered when implementing an ERP systems project (Al-Mudimigh, Zairi et al. 2001; Greci and Hull 2004; Krumbholz, Galliers et al. 2000) as examples. However, their papers were very much about the software rather than the infrastructure side of ERP system implementation. This was typical of most authors reviewed who although recognising that the implementation phase is a key factor in ICT project failures (Dhillon 2004; Jin 2000; Kwon and Zmud 1987), subsumed the ICT/I components of ICT projects into small and/or general statements in their writings. A number of the recommendations Al-Mudimigh et al (2001) make are pertinent to general ICT/I projects as well as the ERP software focus they have. Unfortunately, these are very general and skimmed over with little detail as far as the final infrastructure-related steps are concerned. The choice of approaches to implementation (step by step, big bang, or roll-out), the final preparation and testing, and actually going into production of any system, are all almost entirely

dependent for their success on the infrastructure supporting a software application. Consequently it is interesting that the literature silence on these areas is positively deafening. Most authors have paid scant attention to the nature of the infrastructure issues in any ICT implementation, and in particular those that are primarily infrastructure-related such as network upgrades/expansions, or new elements such as technical communications device improvements. It is hardly surprising that senior executives have little focus on this area either. Thus, the comment made by Kwon and Zmud (1987) about the general understanding of IS implementation being surprisingly incomplete is, apparently, as true today as it was nearly 20 years ago. It must be acknowledged, however, that “whatever its ultimate benefit for an organisation’s business, ICT implementation is likely to be a complex and difficult process involving both the technical and social systems of the organisation” (Levine and Rossmore 1993 p. 55). This is a view also supported by Markus (1983), Mitev and Kerkham (2001), and Myers (1994).

The whole area of Project **Implementation Issues** had initially been one of the original five project delivery elements identified and discussed in Chapter 2. In the process of analysing the data from the interviews, its significance with regards to the executives’ overall view of ICT/I projects increased. Project implementation issues became one of the characteristics that affected their views of ICT/I project success and therefore business success. Table 8.5 (from Appendix 8 and summary of relevant question responses in Appendix 3), shows the generally positive responses to questions about the decision-making process for new ICT/I projects, and the ongoing project reporting activities. However, in contrast, there is an acknowledgement of a very high level of project scope change activities, and almost no post-implementation reviews carried out to learn from these projects, which was also noted in the literature (Gwillim, Dovey et al. 2005; Serafeimidis and Smithson 2000),. Such activities could have avoided issues that arose during future ICT/I project implementations. It is therefore hardly surprising that there were only moderately positive responses to the questions about ICT/I project outcomes and their ability to meet expectations (ref Appendix 8).

Table 8.5 Responses to questions on ICT/I project implementation issues

Key Question	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
Rigour of decision process for new ICT/I projects?	A, E, M, N,	B, C, D, G, G, H, L, O		F, I, J, K,	
CBA, ROI carried out?	A, B, K,	C,, D, F, G, H, M, O	N,	J,	E, I, L,
ICT/I project communication & reporting process?	C, D, N,	A, B, E, G, I, K, M, O	H,	J,	F, L,
Project scope change?	A, H, K, L, M, O	B, G, I, J,		E,	C, D, F, N,
PIR carried out?				K,	A, B, C, D, E, F, G, H, I, J, L, M, N, O

- Few organisations had systematic, formal Post-Implementation Reviews (PIRs), or Return on Investment (ROI) assessments, of these projects upon completion. There was little organisational learning gained that could be applied to the next project of this kind. PIR activities, if carried out at all, were almost always related solely to financial targets.
- In spite of the years of experience in dealing with general ICT and ICT/I projects, plus the vast amount of literature, both scholarly and in the professional media, there are still fundamental issues around delivery of these projects that reduce satisfaction levels.
- Until the discussions on differences between ICT/I and software development projects happened during the interviews, none of the executives had thought about these differences. They had bundled all ICT projects into the same set of project expectations. Once these two kinds of ICT projects were separated in the executives minds, the view was reasonably consistent that ICT/I projects were more straightforward than software development ones, with high initial costs, but more consistent and reliable implementation.
- There was a general feeling that good project management and reporting processes were in place and were working well. This was largely because of

organisational experience with many other kinds of projects, with the same principles being applied to ICT/I projects.

- There was a philosophical acceptance that the rapid changes in technology would often cause scope change, but that it was probably better in the long run to accommodate the technology changes at the time. This was seen as preferable to the risk of not being able to take advantage of the improved functionality they brought.
- The literature had much to say about ICT project failure, but little to contribute in the way of models or frameworks for avoiding the problems that had caused the failures. ICT/I projects were rarely mentioned, and if so, bundled in with an overall applications software project.

8.3 ICT/I Project Success Factors

The final category in this theme, **ICT/I Project Success Factors**, could be seen as a ‘catch-all’ for some code attributes, but the way this category grew was quite interesting. Its components, (attributes), were developed out of comments made by the interviewees when they were reflecting on successful or unsuccessful ICT/I projects in their organisations. During the open coding process, these comments didn’t seem to belong in any of the original five elements, and had actually generated new ones to be considered. This category now included **Risk Management** of projects, staff **Training**, **Project Scoping**, (which now incorporated the original analysis issue, previously thought to be an important concept in its own right), overall **ICT/I Project Strategies** in the organisation, and **Organisational Buy-in** to the project. They were all noted by the executives as key success factors both for the business and for ICT infrastructure projects.

These low-level categories and their associated open codes are shown below in Table 8.6. Not only were they new characteristics surfacing out of the research questions, the interviewees, almost without exception, moved into a very reflective mode at the points in the interview where these issues were explored. A number of them noted that these parts of the conversation had caused them to think more about their own business

practices and attitudes when dealing with ICT projects, than they had done to date.

Table 8.6 Components of Selective Code ICT/I Project Success Factors

Major Category	Low Level Categories	Open Codes
ICT/I Project Success Factors	ICT/I Project Strategies	<i>Automation Needs, Business Plan Alignment, Specification Advice, Strategic Planning Involvement, Business Needs Research, Technology as Competitive Edge, Technology as Enabler, Key Strategy Consideration, Vendor Management, Business Leverage, Outcome Definitions, Technology Planning, Project Differentiation</i>
	Project Scoping	<i>Project Change Expense, Specification Requirements, Decision Consequences, Clear CSF, ICT/I Visibility, Project Sign-off, Requirement Reassessment, Objectives Measurement, Technology Change Implications, Non-ICT Focus, Project Structure, Project Approval Processes</i>
	Organisational Buy-in	<i>Stakeholder Involvement, Executive Enthusiasm, Executive Leadership, ICT/BU Agreement, Steering Committee Responsibility, BU Owner Responsibility, Project Value Understanding, User Feedback, Project Sponsorship, Planning Process Involvement, User Ownership, Technology Resistance Issues</i>
	Risk Management	<i>CBA Need, Set Project Expectations, Issues Escalation Process, Roll-out Success Checks, ROI Assessment Project Monitoring, Corporate Decision Effects, Regulatory Risks, Risk Profiling, System Support Issues, User Group Representation, Decision-making Rigour, Executive Responsibilities, Business Interruption Considerations, Poor Scoping Implications</i>
	Training	<i>Training Timing, Training Value, User Problems, Staff Capabilities</i>

8.3.1 ICT/I Project Strategies

Comments related to the whole area of *ICT/I Project Strategies*, were very enlightening. They showed the awareness these executives had about the critical business impact of these projects, but also that there were still chasms between good business processes and how they were being applied. Good *ICT/I Project Strategies* at the very beginning of a business and ICT planning process could have a positive effect on the outcome of all ICT/I projects. They could also benefit any software applications projects which depended on a robust infrastructure to work properly. This category was built on how these issues affected overall **ICT/I Project Outcomes**, along with their very close relationship with categories such as overall *ICT/I Project Scoping* and general project *Risk Management* processes.

In most cases the interviewees felt that their ICT/I projects did have a close *Business Plan Alignment*.

“ICT infrastructure projects are closely aligned with the Business Plan” (Company C and Company D),
and

“Our ICT infrastructure projects are very closely aligned to the Business Plan. The most closely aligned organisation I've been in” (Company I),

and

“Our ICT infrastructure projects are completely aligned to our business plans” (Company A),

were typical comments made. The companies that didn't feel their ICT/I projects and their business planning processes were particularly well aligned were the ones where difficulties in a number of other areas explored in the interviews had already been highlighted. For example, Company N, a recent start-up with a CEO struggling with anything to do with ICT/I work, made this comment in regards to Technology Planning;

“At the moment what we are doing with regards to our ICT infrastructure projects is not clearly planned out”.

A similar comment came from the GM of Company E, (who had stated earlier that it was easier to relate to the results of an applications implementation than to the very technical orientation of ICT/I projects).

“We're not sitting down and saying – ‘this is where we are thinking of going. What is the technology we need to help us”.

Apart from those couple of comments, there was general confidence that the ICT staff did have some *Strategic Planning Involvement*.

“IT staff are fairly involved with strategic planning, and regularly reminded about organisational goals and strategies” (Company C),

and

“When our business strategy develops, ICT asked how it can support that with required technology”, (Company F).

8.3.2 Project Scoping

The general confidence in *ICT/I Project Strategies* was carried through to the

actual ICT/I **Project Scoping** process; with clear, positive statements made about *Project Structure*.

“Typically these projects are pretty well structured and planned, because a good IT person is really process-oriented” (Company K),

and

“We don’t have to worry about the hidden things in ICT infrastructure projects, because they are physical and more visible” (Company F).

Then for the *Project Approval Process*, comments such as

“For any project requiring substantial capital investment, there are certain processes to be followed. ICT is no different” (Company K),

and

“All major projects need sign-off from the Business Improvement Team, and that includes a cost/benefit analysis” (Company F),

were examples of the feelings that good project scoping flowed from the good ICT strategy processes in place. Again, however, the companies who had the most difficulties with their overall ICT/I activities were less happy about their ICT/I **Project Scoping**. The CEO of Company L for example wasn’t very happy about their approach to ICT/I *Specification Requirements*, commenting

“I don’t think we really get our specifications right on what our product and outcome should be”.

A similar comment was made by the CEO of Company K. He had some frustrations with the fact that most of their ICT/I project work was imposed on them from their global Head Office,

“It comes back to the fact that we didn’t scope the project, and there’s an assumption that if it works in Australia it will work here”.

There was also more than one comment about *Technology Change Implications* on ICT/I projects.

“The constantly changing technology sometimes doesn't help a project go well” (Company B),
and

“Technological changes coming up might have been known in advance, but I'm not sure it would have been worth the expenditure to have known it, and the hours that would have been spent to find it out” (Company M),

where the frustrations of trying to deal with these kinds of technical environment changes were impacting on how these executives felt about the whole life cycle of ICT/I projects.

8.3.3 *Organisational Buy-in*

There was, however, an acknowledgement that there were some deficiencies in their own *Organisational Buy-in* to the whole ICT, and especially the ICT/I, project process. The principles of *Stakeholder Involvement*

“Set expectations at the right level with users and people paying for the project – i.e. all stakeholders” (Company C),

and

“The way we work is that we try to build everybody into an ownership position, and then they want to get it done, so they can see that they have contributed to something important in the overall plan”, (Company O),

were recognised, as were the needs for *Steering Committee Responsibility*.

“The people from the business who are on the Steering Committee, are the ones who should be asking such things as ‘how is this new process going to work?’” (Company I),

together with

“The Steering Committee set-up is headed by a Business Unit owner, comprising key stakeholders plus the Project Manager” (Company E),

showed growing awareness of the importance of this structure to aid *Organisational Buy-in*. There were also some reality reflections around areas such as *User Ownership*.

“Need to get the business hungry for a system, as opposed to lack of involvement and subsequent lack of interest” (Company A),

and

“There’s a reluctance from the BU owners to put stakes in the ground and say this is what will be measured – not only the IS delivery, but the rest of the benefit to the business” (Company E).

However, when attempting to get *User Feedback*,

“Staff say they are too busy to attend project progress sessions, then after implementation, complain because it isn’t doing what they expected it to” (Company L),

or

“There are still pockets of resistance in the organisation to the use of much of this technology – still work to be done to deal with that” (Company K).

These definitely indicated a gap between principles and reality. There was also the comment,

“Everything in the business will be affected by technology, but currently there is no real business ownership of that. It’s someone else’s responsibility. It belongs to “HIM” (IT)” (Company E).

This was indicative of a general view that the infrastructure part of any new developments would be dealt with by the ICT staff, and the business people did not need to get involved in this area.

8.3.4 Risk Management

The executives’ perception of *Risk Management* of these projects was another interesting area to explore. For some of them, it had clear links to the points raised over *Organisational Buy-in* and their general *ICT/I Strategies*. As one interviewee commented, there is a definite need to *Set Project Expectations*

“right from the start. Get staff and clients to understand things could go wrong, and unforeseen things may happen” (Company C).

Over the matter of *User Group Representation* on these projects, there was a widely held view that they should

“Always have representatives from the different user groups on a project team, to monitor the upgrade or whatever”, (Company I),

and

“Set project expectations right from the start. Get staff and clients involved as potential users, to understand things could go wrong, and unforeseen things may happen”, (Company C).

There was an acknowledgement from other interviewees that this didn’t always happen with ICT/I projects. Only one of them recognised the *Business Interruption Considerations*, where

“The differences between ICT infrastructure and other projects is probably around finding a time window when we can interrupt business to bring a new system on” (Company K).

However, most did see the need for their involvement in the decision-making stages of these projects, with recognition of the importance of their own *Executive Responsibilities*. A good example, from one of the CEOs who throughout the interview had shown a high level of interest and involvement in their ICT/I projects, was

“On a recent big project, I felt I needed to spend time getting familiar with it, get my finger on the pulse. The department leader and other staff were struggling to understand what the system was supposed to be giving them. It was an issue of risk management that I had to deal with, and make sure we were going to get what we believed we had commissioned” (Company M).

A similar comment was made by the GM of Company E, who had HR responsibilities

“I do check that a roll-out has worked successfully, because of legal implications around training, and communications issues related to any change being implemented”.

However, an interesting, reflective comment was made by the GM of company I, who, when commenting about *ROI Assessment* noted,

“We are constantly in a situation of crisis management. There have been situations where not enough rigour has been applied to decisions being made about these kinds of projects”.

There was a similarly self-critical remark from Company J, namely

“We have no systematic approach to measuring project success. No formal ROI.”

8.3.5 *Training*

To a certain extent, somewhat unexpectedly, because of earlier views on the technical difficulties users experienced with new technology, there were very few comments made about the implications of *Training* on the success of ICT/I projects. These came from only three of the fifteen interviewees. On a positive note, from one of the GMs who consistently showed a relatively high level of satisfaction with their ICT/I and other ICT projects, came the comment,

“train users, otherwise you don't get full value out of the project or the technology, and you won't meet cost and time expectations” (Company C).

There was a similar comment from the CEO of Company M,

“We have had significant training for the new systems, and that has worked very well”,

who showed a definite awareness of *Training Value*. However, from another executive, there was an interesting comment about recognition of problems being caused by issues of *Staff Capabilities* going forward with the impending implementation of new technology.

“We need to step up a whole big level in the way we handle the new control and other assistive care technology, and some of our current staff would be incapable of doing that, and I don't even think a process of education would alter that” (Company L).

For those interviewees where uncertainty about the whole ICT/I project business was most frequently expressed, this appeared to be a key issue in the whole area of what

made up these **ICT/I Project Outcomes**. Everyone acknowledged the need for moving forward with ICT/I developments, to support either competitive advantage strategies, or just straight out business survival. However, the highly technical nature of these projects reinforced their own uncertainties about their ability to learn about and competently use the new technology. This was coupled with the difficulties in understanding what ICT people were doing with the technology, and became definite barriers for many executives. New technology takes time to master, and with the rapid changes in technological development, training is increasingly important to maintain productivity in the use of the new tools, and to increase the user's self-efficacy (Appelbaum, Shapiro et al. 2004)

8.3.6 ICT/I Project Success Factors Summary

In the end, ICT/I projects are no different from any other ICT or non-ICT projects in that they are created to deliver business benefits (Bennington and Baccarini 2004). Companies continue to invest heavily in ICT solutions to their business problems, but “all too often the actual project benefits are at great variance with the expectations” (Gardner 2000 p. 21). Project scoping issues, especially scope creep during a project, were mentioned by a number of authors as having significant implications for project success. These were contingent upon the quality of leadership, both ICT and business, that occurs during a project (Christenson and Walker 2004). Once again, the executives showing the highest levels of overall satisfaction with their ICT/I projects were those who had taken the most proactive leadership roles for their ICT/I projects. This was in spite of the difficulties they encountered in understanding the intricacies of the technology. Table 8.7 (from Appendix 8 and summary of relevant question responses in Appendix 3) shows how the generally positive responses to questions about the executives' views of their recent ICT/I projects were aligned quite closely to those executives levels of involvement in these projects – and vice versa. There was also a reasonably strong relationship between their confidence in the technical advice they were given, (thus their own understanding of these projects), and their perceptions about their recent ICT/I projects.

Table 8.7 Responses to questions on executive involvement in, and understanding of, ICT/I projects, and subsequent perceptions of those projects.

Key Question	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
CEO Involvement in ICT/I projects?	G, I, N, O,	A, B, C, F,	D, E,	H, J, K, L, M,	
ICT/I Projects meeting expectations?		B, C, D, E, F, G, H, I, K, N, O	A,	J, L, M,	
View of recent ICT/I projects?	C,	A, B, D, E, F, G, H, K, M, M, O	I,	J, L,	
Confidence about Technical advice, & own understanding of the projects?	B, D, E, I, O	A, C, G, J, K, M,		F, L,	H, N,

“When a company rolls out a new application, there is only one opportunity to make a good first impression” as far as the users are concerned (Gardner 2000 p. 24). Gardner was presumably bundling the ability of the ICT/I to support the application into his comments. He goes on to discuss the criticality of adequate budgets for training and support, in order to be sure that the users will positively embrace the new technology. If they don’t, the project will not be a business success, and the negative consequences will find their way back both to the ICT team and to the executives with overall responsibility.

Therefore, the areas of *Organisational Buy-in*, *Risk Management*, and *Training*, in particular, need the business stakeholders to work closely with the ICT professionals. This would ensure that the organisational change, which will occur as a result of each of these projects, is properly managed (Clarke and Doherty 2004; Kendra and Taplin 2004; Leopoldi 2002). A fairly tough article in the September 2003 British Computer Society ‘Computer Bulletin’, directed at ICT professionals, noted at one point that “success as an IT department absolutely rests on the ability to directly deliver value to the business” (Smith 2003 p. 19). He goes on to say that this will very much depend on “delivering value from today’s technology and providing market edge through the timely adoption of new capabilities” (p. 19). This is precisely what the executives know is needed, but some

are still unconvinced that their ICT people are helping them achieve that. However, there are also some equally tough comments in the non-IT journals related to the Business Unit responsibilities. Writers such as Freedman (2003) noted that once the strategy was set, and a particular ICT project was thus approved and underway, evidence showed that “interest among top (*business*) team members falls rapidly away, ----- and operational behaviours and short term goals take over” (p27). So, there is work to be done on both the ICT and the business side to improve this situation. These executives all knew how critical their ICT applications, and the ICT infrastructure supporting those applications, were for them. They were struggling with both the issue of their own lack of technical knowledge when endeavouring to make the best strategic decisions for their organisations, and also with the barriers they saw between themselves and their ICT staff in that process. One of the executives made a very perceptive remark about the challenges he (and his peers) faced when dealing with the *Technology Planning* process.

“It’s not rocket science to get your numbers basically right. It is rocket science to get systems that leverage the business.” (Company I).

The systems that will leverage these businesses are increasingly infrastructure related or infrastructure dependent.

In summary:

- There is a growing recognition by these executives that ICT/I strategies and business strategies are inextricably entwined, if the business is going to succeed in its current competitive environment.
- There is a generally positive relationship between the levels of involvement in these projects, by the senior executives, their confidence in the technical advice given them, and their overall views of their recent ICT/I projects.
- Project scoping of ICT/I projects is easier and, apart from new technology developments, less likely to change because of alterations in user requirements, than software development projects.
- There are deficiencies in the area of organisational buy-in, largely because of the technical nature of these ICT/I projects.

- Awareness of risk management issues around these kinds of projects is fairly new, but growing in acceptability and importance.
- User training and confidence with new technical facilities and functionality is not something to which the majority of executives interviewed had given any thought. There were almost no comments at all about this area, in spite of training being generally seen as important to a system’s acceptance and successful utilisation.
- There is a need for ICT professionals to work with the business professionals to ensure that the best possible outcomes for an ICT/I project can be achieved. In particular, the issues of project scoping, risk management, and organisational buy-in, are seen as critical to the success of these projects and the underlying business strategies.

8.4 ICT/I Project Outcomes Theme Summary

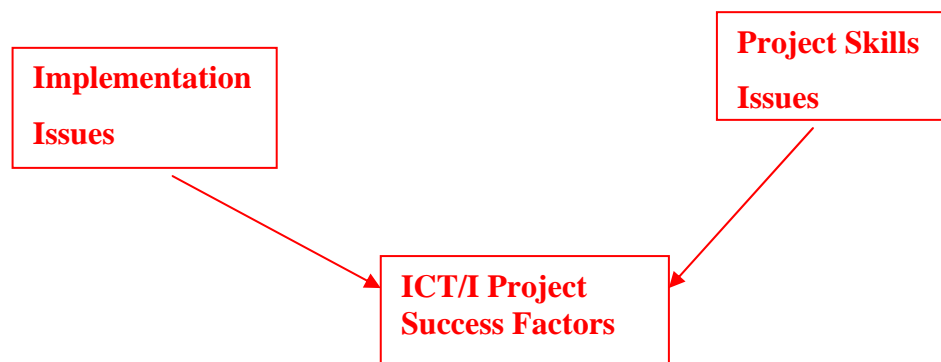


Fig 8.1 Theoretical coding linkages for ICT/I Project Outcomes theme (See also Appendix 7 for detailed Major and Low-level Categories diagram).

Within this theme, the category **ICT/I Project Success Factors** effectively had an “end of the line” relationship with the other two categories, both of which also had implications for the overall outcomes of an ICT/I project. Each of its components, *Risk Mgmt*, *Project Scoping*, *Organisational Buy-in*, *Training*, and overall *ICT/I Strategies*, are affected by **Implementation Issues**, and **Project Skills Issues**. These in turn are affected by some of the theme constructs (entities) in the second theme of the **Strategic**

Alignment of ICT/I Projects, which link though to them, (ref. Appendix 7). This was particularly the case for those in the category of *Executive Engagement Issues* in Theme 2. Also, most of the interviewees involved in this research had not, until this exercise, separated out their ICT/I functions from all ICT functions. This seemed to be related to the fact that these projects are highly technical, and outside the executives' normal comfort zones. Thus, it had been easier for them to focus on the business outcomes of the applications being developed, rather than the architecture and associated 'engineering' underneath them. The reflective comments, made once that separation was considered, were enlightening as much for the interviewees as for me the interviewer. Some examples of these comments, as the executives were considering the difference between the two types of projects were –

- “Umm. I think as a project, there's a lot that makes it different from any other project. Sometimes it's difficult to analyse an outcome, because it's less visible to the users than a software project” (Company C) on the issue of *Project Value Understanding* in ***Organisational Buy-in***.
- “Mmm. I don't know. Oh, I do now, actually. Like at the moment we are doing an ICT infrastructure project in our service division. ----- Actually, these sorts of infrastructure projects are easier to understand. They're relatively simple to track, and the costs are readily easy to identify. Whereas a project involving a new application --- well, to me it's just a big black hole” (Company F), when discussing *ICT/I Visibility* in ***Project Scoping***.
- “What springs to mind is the technical aspect. It's probably a little easier for me to understand the technical aspects of the infrastructure side versus the application side”, from Company B on the subject of *Technology Planning* in their ***ICT/I Strategies***.
- “So, if I separate out the software stuff, we're looking at just infrastructure projects, like some of the upgrading we've done” (Company E), also, when commenting on *Project Differentiation* in overall ***ICT/I Strategies***.

All the previous codes generated and connected into categories during the comparative analysis process, walked paths leading to this one. This theme effectively became the end of their story as far as the interviewees were concerned, when considering their attitudes towards, and perceptions about, ICT/I projects. Each of the other two selective codes in this theme had a direct effect on the factors that determined final project success, and they

in their turn were affected by codes in the other themes.

The way **Implementation Issues** (also influenced by *Technical/Organisational Issues* in Theme 2) such as *Project Management* and *ICT/I Project Delivery* were addressed, increased or reduced the *Risk Management* processes needed to ensure good ICT/I was in place, and also the level of *Organisational Buy-in*. The same situation was described in the discussions about **ICT/I Project Skills Issues**. Here ICT staff *Business Capabilities* affected *Organisational Buy-in* and the chief executives' approach to general *ICT/I Strategies*. In particular, the comments made about these projects indicated that very few of the CEOs had systematic Project Implementation Review (PIR), other than financial ones, or Return on Investment (ROI) processes in place. There was therefore little that would improve organisational learning and future approaches to ICT/I project implementation. This was in spite of the apparent recognition by these people that ICT is a key business strategic issue.

There was very little industry-related literature found on this aspect of ICT project development, which, apart from internal senior ICT staff advice, would be the primary source of executive information on this part of their business. The interviewees were intuitively aware of the importance of the infrastructure underpinning their software development projects when considering their overall ICT Strategies, but had generally given it little more thought than that. Their decisions about their whole ICT environment were, as would be expected, business decisions, not technical ones. The discussions in Themes 1 and 2 have shown that the executives found it difficult to understand ICT communications. They also show it was equally difficult to overcome the mismatch between the ICT and the business cultures in their organisations. Therefore, although the implications of ICT/I projects for business success were significant, they were often either overlooked, or bundled into a general view of all ICT project development and implementation success. This was the case even for obviously technical projects such as desktop systems, hardware, or network, upgrades

The academic literature reviewed for this theme was consistent in its sense of the

importance of good alignment between ICT and the business for project success (Agarwal and Sambamurthy 2002; Bennington and Baccarini 2004). While ICT is a key factor for driving organisational change, a number of authors emphasised the importance of general business principles such as risk management (Sumner 2000; Toney 1998). There was also plenty on good project scoping (Bullen 2001), and user training (Gardner 2000), as key factors which would influence the outcomes of these projects, and thus the stakeholders' views of their success. Wastell's (1999) paper in particular, made a pertinent note about ICT projects being "a process of organisational change in which IT systems are designed and deployed to enable more efficient operational practices" (p. 582). However, as already noted, there is little literature about the relationship between ICT/I projects and overall business success. What is published, for the most part, relates to the consequences of implementation of software applications (Clarke and Doherty 2004), or Business Process Reengineering exercises (Broadbent, Weill et al. 1999). Even in the case of the roll-out of major ERP systems across an organisation, any difficulties are typically only seen from the application perspective, not the infrastructure implication perspective. Writings about these systems e.g. Lee and Lee (2000), Somers et al (2001) usually focus on the effect of delivery and acceptance issues created by software changes carried out to meet business process requirements. This is rather than issues related to changes in the organisation's technical infrastructure that are needed to host and run such massive applications, although the papers by Weill and Vitale (2002), Broadbent et al (1995), and Broadbent et al (1999) were refreshing exceptions.

Overall this theme showed that:

- There was only moderate support for the successful and satisfactory outcomes of these projects. Of special concern, in spite of the sizeable investments organisations make in their ICT/I projects, is that there is little or no organisational learning about the outcome of these projects in the form of post-implementation reviews by any of these organisations. Thus the effects of the initial jargon barriers on the strategic alignment of these projects, and fairly low satisfaction levels with their life cycle outcomes are likely to persist, until both parties in this relationship make some procedural and behavioural changes.

- While the technical skills of the ICT staff were considered sound, they had a focus on what the technology could do rather than what the business actually needed. This generated a perception of lack of business capabilities in their dealings with business unit staff. This skills gap created a poor relationship and technical understanding environment, that prevented the senior executives from gaining full benefits out of the ICT/I opportunities available to them.
- There are some fundamental issues around the implementation of all ICT projects, in spite of the view held by these executives that they had good project management and reporting structures in place. However ICT/I projects were regarded as less problematic than applications software ones, in spite of the pressures brought by constant changes in technology that impacted on ICT/I project decisions.
- There is a need for ICT/I strategies and business strategies to be closely aligned, with an increased level of organisational understanding of these projects. This is a key success factor for ICT/I project development. While the interviewees recognised this, they wanted better technologically related strategic direction recommendations to come from the ICT professionals. Their reasons being that the technology was changing too rapidly for business executives to maintain appropriate technical currency.

The implications of a business outage, or the cost of lost productivity, if such infrastructure changes didn't go smoothly, had not been considered by many of the executives interviewed. There are consequences of:

- The combination of 'infrastructure blindness',
- The jargon barriers discussed in Theme 1;
- Difficulties of the cultural disconnects in executive engagement with these projects discussed in Theme 2; and
- A general bundling of ICT/I issues into an application implementation process.

There is a lack of awareness of the effect these problems around the 'engine room' of ICT could have not only on the applications hosted on the infrastructure, but also on the

overall future success of the organisation. Infrastructure problems can have a major impact on the ability of an organisation to continue functioning effectively. An obvious example is network performance degradation. This can happen when more applications are loaded on to the network without consideration of the ability of servers or the network to maintain expected performance levels. Another is new applications coming into the organisation with their own infrastructure, without ensuring appropriate compatibility with the existing infrastructure set-up.

Disconnects of language and attitude barriers between the ICT staff and the business unit staff still exist. Consequently, the desire and ability of non-ICT executives to understand, and take advantage of, technological developments available to their organisations, will influence their perceptions of these infrastructure projects. They may continue to be seen as difficult to understand, and too hard to get involved with. Such distancing from the life cycle of ICT/I projects in the organisation will have cost and missed opportunity outcomes. But, as far as these executives were concerned, the responsibility for communicating the likely cost and opportunity outcomes in a way the business staff can understand is clearly believed to be on the shoulders of the ICT professionals. Finally, these three themes discussed in chapters 6, 7, and 8, indicate that there can be serious implications for ICT/I project outcomes if there is not a good strategic alignment between ICT/I projects and the business. This misalignment is likely to have arisen as a result of poor executive perceptions of ICT in general and ICT/I issues in particular. There is a clear and consequential link between these three factors, reaching right back to some very fundamental communication issues, which are affecting the attitudes executives have about both ICT staff and ICT/I projects.

CHAPTER 9:

BUILDING THE THEORETICAL FRAMEWORK

- 9.0 Chapter Overview
- 9.1 Summary of Findings
- 9.2 Building the Theoretical Framework
- 9.3 Executive Perceptions of ICT/I: Key Findings
- 9.4 Strategic Alignment of ICT/I Projects: Key Findings
- 9.5 Relating Executive Perceptions to Strategic Alignment Issues: Key Findings
- 9.6 ICT/I Project Outcomes: Key Findings
- 9.7 Relating Strategic Alignment Issues to ICT/I Project Outcomes: Key Findings
- 9.8 Discussion on the emergent theory
- 9.9 Grounding the emergent Theory
- 9.10 Relating the Theory to the Literature
- 9.11 Chapter Summary

9.0 Chapter Overview

This Chapter reviews the key findings from the discussions on each of the three themes, and considers how they are interrelated. It builds the theoretical framework that emerges from the findings, elaborating on the relationships between the themes. It then explains what underpinned those relationships, describing the nature and direction of the relationships (Cavana, Delahaye et al. 2001). The framework is then grounded and related to existing literature. The chapter answers the final research question, which is the

logical outcome of considering the relationships between the three themes described in chapters 6, 7, and 8, namely:

Can executive perceptions and attitudes influence the strategic alignment of ICT/I projects with the business, and thus the overall life cycle and outcomes of these projects?

This research project looked at the detailed personal descriptions of the social practices these executives were engaged in, with regards their ICT/I projects. It attempted to understand how they experienced and explained their world. Two key influences for consideration of the research question at this point are the effect Jargon Barriers has on professional relationships between ICT staff and these executives, and the level of executive engagement with ICT/I projects.

9.1 Summary of Findings

This summary has been drawn from the nine major categories that generated the three themes discussed in Chapters 6, 7, and 8. These categories form the foundation for the theoretical framework, and a précis of the findings for each category is given below.

9.1.1 Jargon Barriers

While there are a number of overlapping, and/or consequential, issues that affect the way executive perceptions of, and attitudes towards, ICT/I projects influence their whole life cycle, the first, and most important of these, is the barrier created by the technical jargon used by ICT staff to describe this work. All other ICT/I project-related issues are affected and influenced by this one. Perceptions these executives have about ICT people and ICT/I projects are coloured by these jargon barriers, which inhibit executive understanding of what is going on in this area. These barriers, similar to the issues of ‘clashing grammars’ written about by Vann (2004) are key to the theoretical framework developed as a result of this research. The problems senior management have in understanding ICT in general, and ICT/I in particular, are exacerbated by their struggle to

interpret the technical language (jargon) used by ICT people. This then leads to significant barriers of perception and understanding between the executives and their ICT staff.

The language barriers, created by the technical jargon, are also creating barriers to ICT/I project approval and successful delivery. The executives struggle with the fact that they don't understand 'ICT speak'. If a communicative utterance is not comprehensible, every other component of action taken as a result of the communication will be influenced by this. Worth noting is that:

- The quite specific technology of ICT/I created barriers even for senior executives who had a technical background from similar disciplines such as engineering.
- There was no evidence of cross-over understanding from these disciplines to an understanding of ICT/I terminology. Thus, ICT staff cannot make any assumptions about senior executives who have backgrounds in other technical disciplines having a greater understanding of ICT jargon. The language is quite discipline-specific.
- In general, the executives did not see it as their responsibility to overcome the jargon barriers and their consequent gap of understanding the technology of ICT/I, given all the other business issues they had to deal with.

9.1.2 The Business of ICT/I

Issues arise that are related to the ability of ICT management to persuade organisations to move forward with new ICT/I projects which would improve the business. There is literature support for the view that firms with strong ICT capability exhibit current and sustained performance that is superior to average industry performance (Santhanam and Hartono 2003). Senior executive attitudes and behaviour influence the way in which other parts of the business frame the context of such projects, and use this as a point of reference for their own behaviour and understanding of the projects. There is a clear wish from the executives involved in this research, for ICT staff to frame their technical ideas, proposals, and reporting activities, in the language of daily life and the specific business they are in, rather than retreat into the comfort zones of their

own jargon. The executives know that the infrastructure components of these projects can be difficult. However, their consistently negative feelings about the ability of the ICT staff to understand the business implications of ICT/I projects, are causing most of them to keep their ICT management at a distance. This further reduces their understanding of these projects. The situation generated as a result of this disconnect is affecting the ability of executives to get the greatest organisational benefit they can from the opportunities available when a good ICT infrastructure is in place.

Alongside, and influenced by this, low levels of executive team input have an impact on the determination of approval priorities for ICT/I projects when set against more familiar business projects. The workload is different, and so is the dollar value. The costs of many ICT/I projects are much more substantial than most other organisational projects, and that is seen as one of the differentiators between them and other projects. It is difficult for executives to see a strategic value to the company beyond the costs of many of these ICT/I projects. The result was a negative effect on the ability of both the executives and the business to operate in a confident and fully informed technical environment. There is, therefore, a risk of ICT/I projects potentially not delivering to their best capabilities, and of continued misalignment between the two areas. ICT project people are seen as focussed more on project and technical efficiencies, than on business effectiveness benefits. While this may be fine, as far as delivering routine ICT/I projects is concerned, this perception will inhibit the approval process to get important ICT/I developments implemented, and have a consequent effect on both organisational strategy and ICT/I project success. ICT/I projects need to be recognised as strategically important in their own right, as well as being the foundation for successful implementation of software applications projects. This requires greater executive engagement than was indicated by most of the interviewees. Without it, organisations will continue to have difficulty ensuring their ICT/I project expectations will be met. A few points to note here are:

- In spite of the language issues, this research has discovered a reasonably strong relationship between the executives' confidence in the technical advice they were given, and their perceptions about their recent ICT/I projects.

- However, overall, the language-based influence does colour executive attitudes towards, and perceptions about, ICT/I projects. They are concerned about carrying overall responsibility for projects they don't properly understand.
- A number of executives noted that hardware purchases, because of the size of the purchase costs, are a big drama from the 'getting approved' point of view, but much less of a drama than software projects from the point of view of 'getting it done'. There are seen to be higher up-front costs for ICT/I projects, but a more reliable operational process of actual implementation.
- There is a fairly low level of business unit involvement in the ICT/I project approval process, unless the ICT/I project is a component of a major software application implementation.

9.1.3 ICT Professional Relationships

There is a strong relationship between the executives' feelings about jargon barriers, and their feelings about the ICT staff who created them. This has a flow-on effect to all aspects of their working relationships with ICT staff, particularly with regard to highly technical ICT/I Projects. Executives need technical advice and support, as they typically do not know enough about the organisation's technical environment to specify what is needed to meet a particular business goal. The technical professionals know a great deal about the computer environment, but often do not have a clear understanding of the user's needs. When these two groups talk at cross-purposes because they don't have a common understanding of the description of the issues at hand, the executives are the ones most likely to retreat in frustration and seek other means of decision-making support. Difficulties understanding ICT communications create difficulties in overcoming a disconnect between the ICT and business cultures in their organisations. This is especially so when ICT professionals display condescending attitudes towards users, or sometimes feign "ignorance of business issues to avoid becoming involved in them" (Pawlowski and Robey 2004 p. 605).

Executives know they need to get a better strategic alignment between their business strategies and their ICT/I environment. However, they are unfamiliar with this

technology and have some discomfort with their ICT people who should be their greatest points of leverage for using ICT/I implementation to improve the business. This is getting in the way of a good strategic alignment between what the business needed and what ICT could deliver. Interestingly, the results of the data analysis showed there is a more positive view about the ICT/I projects than the ICT staff responsible for them. The split in view is primarily because of the poor professional relationships resulting from the language barriers created by the technical jargon ICT staff constantly use. Resolving the professional relationship issues that arise from jargon and language barriers should improve organisational technology adoption decision-making and satisfaction. It should also help overcome the challenges of the 'adopt now or later' issues faced by executives. Effective application and deployment of ICT/I within an organisation, is a shared responsibility between ICT and business management. Therefore, both parties need to address the issue of technical jargon barriers that inhibit both a good flow of communication, and good professional relationships between them. If this is not addressed and resolved, there will continue to be a constrained effect on strategic alignment between ICT/I and the business, and a flow-on to the outcomes of ICT/I projects. The issues raised by Beath and Orlikowski (1994) about how users and ICT specialists confuse one another with their quite different language bases are still valid, and have now moved up to the most senior executive level. Worth noting is that:

- Continual use of technical jargon by ICT people exacerbates executive concerns about the lack of business skills and understanding on the part of their ICT people.
- Largely because of the language and jargon issues, plus perceived lack of business skills, ICT staff are seen as being insular and imperialistic with a gap between how they see life, and how the rest of the business sees life. This is a barrier in itself, and will continue to cause disconnects between the two groups.
- The perceived lack of business capabilities in ICT staff dealings with business unit staff created a poor relationship and technical understanding environment. This situation was preventing senior executives from gaining full benefits out of the ICT/I opportunities available to them.

9.1.4 Technical/Organisational Issues

Most senior decision-makers do not feel they can confidently and cost-effectively gain access to the ICT/I project information they need. Nor do they feel they can process it in a timely enough manner to ensure their ICT/I decisions are optimal for both the project and the business. The highly technical nature of these projects, and their own lack of technical expertise to know whether the decisions being made by the technical people are the right ones for the business, is a big issue. The technology is changing too rapidly for business executives to maintain appropriate technical currency. Therefore, better technologically related strategic direction recommendations need to come from the ICT professionals.

Consequently, senior executives are uncertain that their technology investments are really being used in a cost-effective and efficient way, which would satisfactorily meet their organisational aims and objectives (Carr 2004). There is also a lack of awareness of the effect problems around the 'engine room' of ICT could have not only on the applications hosted on the infrastructure, but also on the overall future success of the organisation. Infrastructure problems can have a major impact on the ability of an organisation to continue functioning effectively. Lack of confidence about the robustness of the technology, the technical advice being given, or the value they are getting from these investments, causes executives to become quite risk averse as far as technological implementation is concerned. Therefore they fail to see business opportunities which could be derived from the implementation of new ICT. This is particularly critical, given that ICT investments need to be made with long-term organisational goals as their drivers, and there is frequently a time-lag in seeing or obtaining benefits (Santhanam and Hartono 2003).

There was, however, an acknowledgement by the executives that there were some deficiencies in their own organisational buy-in to their whole ICT, (especially the ICT/I, project process), largely because of its technical nature. This was because of a general view that the infrastructure part of any new developments would be dealt with by the ICT staff, and the business people did not need to get involved in this area. Consequently the

tension between what ICT wants and what the executives feel are the best business strategies, won't easily be overcome. This is because there is a strong suspicion that business is being driven towards further expensive investment in technology just to keep up with the interests of the ICT staff. ICT people are seen to be 'seduced' by the latest technological developments, whether or not bringing them into the company is in the best interests of the business stakeholders. Thus, there continues to be a technical/organisational misalignment. Such misalignment is based on the executives' suspicions that the ICT/I recommendations coming from their ICT staff are more influenced by ICT, than business, interests. **Also**, ICT management needs to recognise any embedded company culture, and the links between it and the ability to introduce new technology or any other dramatic change (Appelbaum, Shapiro et al. 2004; Kramer, Dougherty et al. 2004). If there is a general culture of resistance to organisational change, attempts to bring in new technology will be difficult to get approved and accepted. This all ultimately impacts on an organisation's ability to maintain its competitiveness and viability.

Language and attitude barriers between the ICT staff and the business unit staff affect the level of desire and ability of non-ICT executives to understand, and take advantage of, technological developments. Thus, these projects are likely to continue to be seen as difficult to understand, and too hard to get involved with. This is even though the executives all knew how critical their ICT applications, and the ICT infrastructure supporting those applications, are for them. They were struggling with both the issue of their own lack of technical knowledge when trying to make the best strategic decisions for their organisations, and with the barriers they saw between themselves and their ICT staff in that process.

- Although the implications of ICT/I projects for business success are significant, they are often either overlooked, or bundled into a general view of all ICT project development and implementation success.
- The effect is that business units are gaining more independence in how they run their day-to-day ICT operations, because they don't believe the ICT dept understands their business culture or pressures.

- Unless this is addressed, there could be significant strategic decision-making implications, since a fragmented infrastructure will develop, that may not provide optimal efficiencies or effectiveness for the business.
- The overall feeling is that the business and its ICT are not well aligned, and therefore there are both operational and competitive positioning implications
- These, of course, would have future strategic, operational, and financial effects, but there was no sense coming from the interviewees, that a resolution was in sight. True technology-driven organisational change can only come about once it is recognised that a different approach needs to be taken if significant organisational benefits are to accrue from ICT-related organisational strategies.

9.1.5 Executive Engagement Issues

The very highly technical nature of ICT/I developments, coupled with uncertainties about their own ability to learn about, and competently use, the new technology, are definite barriers for many executives. They recognise the need for greater involvement by themselves in how their business and ICT/I strategies are aligned. However, they also feel strongly that their senior ICT staff need to be more engaged in the business outcomes of ICT/I developments, rather than just successful technical outcomes. They are trying to deal with the problem of developing strategic directions for their organisations while neither properly understanding, nor being confident about, the technical advice they are being given. Their own engagement and involvement in these ICT/I projects may be limited, because of the language and jargon barriers between them and their ICT people, but they are still accountable for the long-term success of their organisations.

A lack of senior management engagement in these projects is perceived to be a contributing factor to their documented low levels of success. This is largely driven from the jargon barriers the technology creates. Those executives who are less dissatisfied with their ICT/I projects and staff have made a definite effort to become involved in their ICT/I project processes and life cycle. In fact, the executives showing the highest levels of overall satisfaction with their ICT/I projects were those who had taken the most proactive leadership roles for their ICT/I projects. This was in spite of the difficulties

they encountered in understanding the intricacies of the technology. Although they were aware of their own lack of technical knowledge, a number of the executives saw these projects as so critical to their strategic direction that their personal involvement was quite significant. Where this occurred, there was a higher level of ICT/I project outcome satisfaction than where there was little or no executive involvement. Thus, worth noting is that:

- There is generally a relationship between the levels of involvement in these projects, by the senior executives, and their confidence in the technical advice given them, as well as their overall views of their recent ICT/I projects.
- The higher the level of ICT/I project engagement by these executives, the higher their levels of satisfaction about, and attitudes towards, their ICT/I projects.
- The contra situation is also true, and in general terms, is well supported by the literature (DeLone 1988; Hedelin and Allwood 2002; Jarvenpaa and Ives 1991; Palmer 2003).
- It seems clear from this research that senior executive distancing from the life cycle of ICT/I projects will have consequences of missed strategic business opportunities.

9.1.6 Strategic Issues

ICT teams generally work well to deliver technical projects, but they are less engaged when considering the bigger picture. This reflects on the quality of leadership being given to the organisation by the senior ICT people, and affects consequential strategic decision-making. Equally importantly, “effective IT governance is about the way senior management interacts and communicates with IT leaders to ensure that technology investments enable the achievement of business strategy in an effective and efficient manner” (Rau 2004 p. 35). If there are barriers to this communication, there will be implications for the satisfactory achievements of business strategies. Most executives were also beginning to recognise that the world was changing quite dramatically for them. There were long-term critical needs appearing that they had to address both for the quality of their business service delivery, and for the growing competitive environment they were in. They did have an intuitive understanding that they were now in a business

environment where Technology is a Key Business Driver for organisational strategies. However, they still had concerns about the business value of ICT/I, especially when trying to determine the opportunity costs involved in not committing their organisations to ICT/I developments. This was keenly felt where there was not a close connection between the strategies needed for the company, and the advice from, or involvement of, the ICT staff. There was a clear desire for ICT professionals to assume a larger role in their organisation's strategic and operational activities, creating new opportunities for learning (Pawlowski and Robey 2004). There was also the view that ICT staff did not seem to have the business as a focus when considering ICT/I strategies and ICT/I projects. Quite high levels of frustration were generated, especially for these executives who did recognise the critical importance of ICT/I to their business futures.

The senior executives who participated in this research know they need to take advantage of technology opportunities in order to survive and grow. They are just struggling with the process of understanding the best business alignment the technology could bring them, when they are not sure they are getting the clearest advice from their ICT specialists. Companies are becoming aware of the importance that their ICT infrastructure brings to their whole ICT capability and their need to leverage ICT for both tangible and intangible benefits (Bharadwaj 2000; Weill and Vitale 2002). Any constraints to this process, will have significant impacts on an organisation's ability to respond to competitive market forces or government legislation. The consequences are a negative effect on both organisational wealth and success. Even when commenting on the perceived lack of business and strategic focus by the ICT Managers, most of the interviewees acknowledged that the senior ICT people needed to be part of the business strategic planning activities. However, comments made during this research, and information from other recent industry research (KPMG 2005), indicate that there is an increasing trend to place some other senior manager between the senior ICT person and the CEO. Such a trend will undoubtedly diminish the ability of ICT staff to have a positive influence on the technological directions an organisation should be taking to successfully implement its business strategies.

There is an increasing dependence on technology to drive business strategies. However, the problems of the mismatch between the ICT and business cultures, plus the concerns these executives have about their own technical expertise, are holding back opportunities for good strategic alignment between ICT and the business. Of note in this section:

- Because ICT/I projects are often seen as ‘utility’ projects, insufficient executive and ICT Mgmt attention is given to their strategic importance. Thus there is a lack of available information to assist overall strategic business planning and decision-making that could be impacted by the ICT/I in place, or needed (Mintzberg 1994).
- This research has shown that there is a growing recognition by these executives that ICT/I strategies and business strategies are inextricably entwined, if the business is going to succeed in its current competitive environment.
- There will continue to be unsatisfactory implications for ICT/I project outcomes if there is not a good strategic alignment between ICT/I projects and the business.

9.1.7 ICT/I Project Skills Issues

There was little negative comment on the quality of project management, with a generally held belief that the organisations had good project management processes in place. However, there are still challenges around finding ICT staff who have both the ‘soft’ and the ‘technical’ skills required for this type of work. Those people with the technical skills needed for good ICT/I investment are often regarded as poor communicators lacking empathy with the business people they are supposed to serve (McManus and Kalugerovich 2002). Nevertheless, in spite of ICT staff lack of business understanding, and difficulties with their ICT to business communications, the ability and willingness of the ICT staff to meet business expectations as far as their ICT/I projects were concerned, was regarded as quite good. This was particularly the case for those executives who indicated close relationships with their ICT/I projects. Also, the ones who had good project performance measures in place were happier overall with the ICT/I project outcomes from their ICT staff.

9.1.8 Implementation Issues

Most authors have paid scant attention to the nature of the infrastructure issues in any ICT implementation, especially those such as network upgrades/expansions, or new elements such as technical communications device improvements. Thus it is hardly surprising that senior executives have had little focus on this area either. The impact of rapid changes in technology, affecting ICT/I projects, is often not recognised until very late in the ICT/I project process. This is frequently caused by lack of senior ICT personnel involvement in the routine business development process. This technology-related change is having an impact on decision-making during project activities. Organisations now face issues with project priority conflicts as a result of their ICT/I projects beginning to have a higher profile than previously, and ICT Management endeavouring to push more of this work into the overall business planning process. Generally, these executives did, however, see the dependencies between a desired application's implementation and the infrastructure changes that may need to be done to support that.

All the executives interviewed described a reasonable, through to robust, pre-project approval process. However, not one of their companies carried out regular, systematic Project Implementation Reviews (PIR) except for a financial one that measured final cost against original budget. Any other reviews such as user satisfaction, productivity improvements, and some checking of outcomes against original objectives, were irregular and informal. These executives now recognised that they had a gaping hole in their whole organisational project process. The literature reviewed also supported the conclusion that where organisations proactively managed and measured user expectations there was usually a positive relationship between that and successful project implementation (Jarvenpaa and Ives 1991; Lyytinen and Robey 1999; Markus and Benjamin 1997; Pijpers and Van Montfort 2005; Serafeimidis and Smithson 1994; Somers and Nelson 2001). Inadequate communication between ICT and the other stakeholders is a major factor in this. Again, worth noting is that:

- Generally speaking, good project management and reporting processes are in place, and are working well. This is largely because of organisational experience

with many other kinds of projects, and the same principles being applied to ICT/I projects.

- Overall, the prevalent view is that the whole speed of technology change is constantly forcing rethinks of ICT/I projects, with consequent pressure for scope change and potential budget and time overruns.
- The almost complete lack of PIR activities means there is little organisational learning gained that would be applied to the next projects of this kind. This must have an effect on their whole life cycle, from initial decision-making through to final delivery.

9.1.9 ICT/I Project Success Factors

The struggles these executives have with the issues of their own lack of technical knowledge are now becoming critical factors for ICT/I projects. Making the best strategic decisions for their organisation is inhibited by the jargon and professional relationship barriers they see. The low levels of reported success, still at typically below 34%, will continue until and unless these jargon barriers are overcome. The lower the level of executive involvement in these projects, the lower the likelihood of good ICT/I project strategies and organisational buy-in. Without these last two elements, (as well as most of the others) the chances of successful outcomes from these projects are severely diminished (Clarke and Doherty 2004; Freedman 2003). Survey results and academic writings are still indicating that “the average IT project exceeds its budget by 90% and slips off its schedule by 120%” (Keil, Tiwana and Bush 2002 p. 104). Even if ICT/I projects only accounted for half of these, the figures are still alarming.

There is almost no post-implementation review activity carried out, to learn from these projects, in order to avoid issues that arose during their implementation. This is in spite of the apparent recognition by these people that ICT is a key business strategic issue. The technical/organisational issues that arise during the life cycle of these projects affect the overall implementation process. They become critical success factors for these projects, and impact on executive attitudes about the quality of the final project delivery. Therefore:

- There is a critical need for ICT/I strategies and business strategies to be closely

aligned, with an increased level of organisational understanding of these projects.

- Companies that didn't feel their ICT/I projects and their business planning processes were particularly well aligned were the ones where difficulties in a number of other areas explored in the interviews had already been highlighted.
- Good ICT/I strategies at the very beginning of a planning process would have a positive effect on the outcome of all ICT/I projects and any software applications projects which depended on a robust infrastructure to work properly.
- Failure to understand, identify, and manage ICT project risks, is often cited as a contributing factor in ICT project failure (Keil, Tiwana et al. 2002). There seemed very little attention paid to this with regard to ICT/I projects.

9.2 Building the Theoretical Framework

The category findings and themes were then considered in relationship to each other. **Executive Perceptions of ICT/I** were contributing to issues related to the **Strategic Alignment of ICT Infrastructure Projects**, which in turn impacted on **ICT Infrastructure Project Outcomes**. Negative executive perceptions of ICT/I had developed from the executives' struggles with ICT jargon barriers and their subsequent overall professional relationships with their ICT staff. These created a misalignment with strategic technical initiatives because of consequent low levels of executive engagement with infrastructure projects. The flow-on effect was an impact on the ability of ICT/I project teams to address ICT/I project issues properly, and deliver project outcomes that were perceived to be successful and satisfactory. For instance, in one company, (J), full documentation about ICT/I projects was in fact prepared by the ICT project team. However, the executives had difficulty understanding the technical terms, and struggled to make informed judgements about them. Thus, the Business Unit Managers didn't look at ICT/I projects in detail, or monitor their progress the way they did for non-ICT/I projects. There was no systematic review process, and the executives held negative views about the level of success of the project outcomes. The framework can best be seen as a set of three wheel cogs, where each cog interconnects and affects the operation of another. As the wheels turn, the cogs at the point of connection affect the wheels on

either side. The categories within the themes not only defined the nature of the themes, but in some cases also formed connections between the themes. These connections helped to support the structural relationships of one theme to another, keeping the ‘cogs’ aligned. Figure 9.1 illustrates the themes and connections.

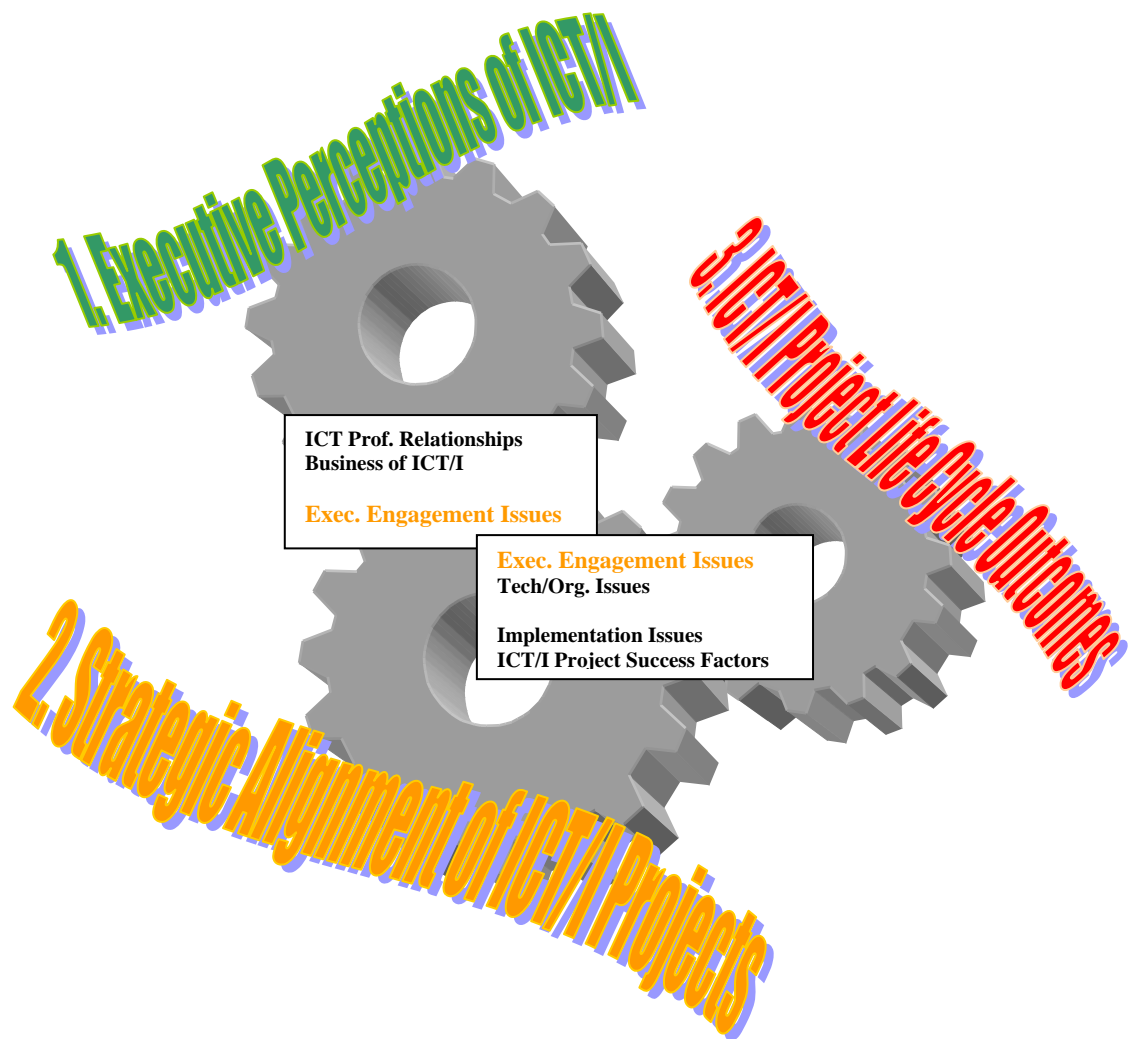


Fig 9.1 Theme to Theme connections. (Ref. Appendix 7 for diagrammatic illustration of theme to theme connectivity)

Both the low-level and major categories derived from the selective coding process were very much a part of the themes, the relationships between the themes, and the emerging theoretical framework. Table 9.1 shows how the analytic memos developed during the data analysis process helped illustrate the themes. In particular it illustrates the ways in which some of the embedded categories related to one another within and across the

themes. (It expands on Table 5.5 first shown in Chapter 5). The relationships were complex, but definitely helped the theory-building process, as the attributes of each category were compared with those in the other categories.

Table 9.1 Major Categories and their inter-theme relationships, (expanded from Table 5.5.)

Theoretical code (Theme)	Related categories	Nature of Relationship – (drawn from the original analytic memos)	Inter-Theme Relationship	Related Categories	Nature of Relationship – (drawn from the original analytic memos)
<p><i>Executive Perceptions of ICT/I</i></p> <p><u>Theme 1</u></p>	<p>Jargon Barriers – ICT Professional Relationships</p> <p>Jargon Barriers - Business of ICT/I</p> <p>ICT Professional Relationships – Business of ICT/I</p>	<p>Jargon Barriers affect communications. between ICT and Executives, impacting their professional relationships and Executive confidence in ICT.</p> <p>Jargon Barriers generate issues related to perception that executive lack of technical knowledge about ICT creates issues of uncertainty about role of ICT/I. Impacts on attitudes of non-ICT executives who need to make technology decisions.</p> <p>Quality of ICT Professional Relationships affects Issues related to ICT/I, especially when executives perceive low business understanding on part of ICT staff, and poor ICT/User interfaces</p>			
<p><i>Strategic Alignment of ICT Infrastructure Projects</i></p> <p><u>Theme 2</u></p>	<p>Technical/Organisational Issues - Executive Engagement Issues</p> <p>Executive Engagement Issues - Strategic Issues</p>	<p>ICT performance and executive perception of technology seduction affecting ICT infrastructure recommendations affects executive attitudes towards strategic technology adoption decisions and the business change implications they will cause.</p> <p>Executive engagement issues such as their own concerns about business expertise to make strategic technology infrastructure decisions causes business issue challenges. Affects level of executive involvement in strategic technology adoption even though ICT is recognised as a key business driver</p>	<p><i>Relationship between Executive Perceptions of ICT/I and Strategic alignment</i></p> <p><i>(Theme 1 to 2 connection)</i></p>	<p>ICT Professional Relationships - Executive Engagement Issues</p> <p>Business of ICT/I - Executive Engagement Issues</p>	<p>Form a connection between Themes 1 and 2 where the quality of the Professional Relationship affects amount of executive involvement, and raises concerns about level of expertise to make strategic decisions.</p> <p>Form a connection between Themes 1 and 2 where strategic decisions being made about the role of ICT/I related to business issues are impacted by amount of executive involvement in the ICT infrastructure activities</p>
<p><i>ICT Infrastructure Project Life Cycle Outcomes</i></p> <p><u>Theme 3</u></p>	<p>Implementation Issues - ICT/I Project Success Factors</p> <p>ICT/I Project Skills Issues - ICT/I Project Success Factors</p>	<p>Failure to follow good project implementation disciplines can impede successful/effective project outcomes and affect overall ICT strategies and organisational buy-in to future ICT/I projects.</p> <p>Business capabilities along with insular and imperialistic attitudes by ICT staff affect ICT/I project scoping and organisational buy-in to these projects, even where executives recognise technical capabilities of the ICT staff.</p>	<p><i>Relationship between Strategic alignment of ICT/I and project outcomes.</i></p> <p><i>(Theme 2 to 3 connection)</i></p>	<p>Executive Engagement Issues - ICT/I Project Success Factors</p> <p>Technical/Organisational Issues - Implementation Issues</p>	<p>Level of executive involvement in ICT/I project scoping depends on level of ICT/I expertise concerns. Influences overall organisational buy-in to these projects, and risk management strategies put in place to ensure their success.</p> <p>ICT performance dealing with issues related to technology challenges created by these ICT/I projects impacts on executive expectations of successful project management and final delivery.</p>

In order to understand the way the theory was now developing, it was necessary to refine the findings for each theme, and see how these findings flowed through each of the inter-theme relationships.

9.3 Executive Perceptions of ICT/I: Key Findings – Theme 1

Executive perceptions and attitudes in relation to these ICT/I projects were coloured by the professional relationships between them, and their ICT staff. The difficulties in these relationships were exacerbated by the technical jargon consistently used by ICT people when describing anything to do with ICT.

- Jargon Barriers are created between ICT staff and executives, because of the difficulties they have in understanding the technical language used by ICT people. This “clash of grammars” (Vann 2004) can create jargon confusion, and negative attitudes towards ICT people and projects, because of difficulties understanding what is happening.
- The business of ICT is affected by executive understanding of these projects, especially the ICT/I ones. Consequently, these projects are less likely to have either high levels of executive interest and involvement, or priority positioning in an organisation’s strategic planning, when compared with non-ICT projects.
- ICT professional relationships with senior executives are affected as a result of the jargon-ridden communication from ICT staff, particularly in relation to ICT/I projects. There is also a strong sense that ICT people just don’t understand the business, or critical business issues. These communication issues create an impedance, or mismatch, between the two groups which then affects the whole life cycle of ICT/I projects (Tushman 1978).
- *“Business people can’t come easily to a clear understanding of infrastructure. The challenge is to make it readily understandable to the ordinary business person” (Company J) **Jargon Interpretation.***

9.4 Strategic Alignment of ICT/I Projects: Key Findings – Theme 2

Less than satisfactory professional relations between executives and their ICT staff create a distance between the two groups. This affects the ability of ICT staff to have ICT/I issues seen as strategically important to the business.

- Technical and organisational issues arise as a consequence of the difficulties in understanding the technical environment of an organisation's ICT/I. They affect the ability of the senior executives to take advantage of technology-driven, or 'technochange' (Markus 2004) opportunities for organisational transformation.
- Executive engagement with these ICT/I projects is affected by two key factors. Firstly, the rapidly changing technology makes it difficult to keep up with the way these changes are likely to affect business strategies. Secondly, there are difficulties faced by the executives trying to understand the technical advice they are being given. Thus their engagement with these projects is limited by the language and jargon barriers existing between them and their ICT people.
- Strategic issues generated as a result, are of considerable concern to these executives. They have a generally positive approach to the technology opportunities available to them. However, they believe their ICT people are not providing understandable technical leadership that will adequately align the organisation's ICT/I with desired business strategies.
- The most significant consequences of this are lost opportunities for the business to take advantage of benefits a sound and strategically developed ICT/I could provide.
- *"ICT/I projects have less executive team focus, even though the whole business might be affected. They have one or two sponsors, where non-ICT projects have the full executive team as sponsors"* (Company A) **Executive Involvement.**

9.5 Relating Executive Perceptions to Strategic Alignment Issues: Key Findings

The quality of the professional relationships between ICT staff and executives is affected by the level of discomfort the executives have about the communication barriers caused by the technical jargon used by ICT people. Executives respond to this by limiting their engagement with ICT/I projects, beyond the initial approval process. As a consequence, the business of ICT/I is not readily recognised as strategically important to the organisation.

- *“The main thing here is that IT is not seen as part of our core business. We just need it to be working, so we can get on with our business”.* (Company L) *ICT/I Expertise Concerns.*

9.6 ICT/I Project Outcomes: Key Findings – Theme 3

Executive decisions about the ICT/I environment were business, not technical ones. With the difficulties they had understanding ICT communication there was a feeling that there was a disconnect between the ICT and business cultures in their organisation. This feeling flowed on to executive perceptions of and attitudes about these ICT/I projects.

- ICT/I project skills demonstrated by ICT staff, while technically satisfactory, are regarded as deficient in business capabilities. There is a belief in the literature that this lack of adequate business understanding or empathy by the ICT people, plus their poor communication skills, has a detrimental effect on the whole ICT/I project life cycle (Clarke and Doherty 2004; McManus and Kalugerovich 2002).
- Generally speaking, the executives feel that their processes for justifying and approving ICT/I projects are quite rigorous. However, there is concern about the high occurrence of project scope change, (often as a result of new or changing technology), which impacts on the final financial outcome. Yet, there is almost no incidence of systematic post-implementation reviews, apart from a financial cost versus budget report. Thus, there is little or no organisational learning coming out

of the implementation of these projects. This must have an effect on their whole life cycle, from initial decision-making through to final delivery.

- ICT/I project success factors were identified by these executives. They covered the whole life cycle from overall ICT/I project strategies, through project scoping, organisational buy-in to the work, risk management of projects, and the whole ICT/I environment. These executives have real struggles with the issues of their own lack of technical knowledge when endeavouring to make the best strategic decisions for their organisation. The barriers they see between themselves and their ICT staff are becoming critical success factors for these projects.
- *“There’s a danger that technology gets ‘talked up’ and I’m not sure that the benefits of constantly upgrading to the latest, smartest, stuff are really greater than the costs”.* (Company K) ***Technology Seduction.***

9.7 Relating Strategic Alignment Issues to ICT/I Project Outcomes: Key Findings

Low levels of executive engagement with the life cycle of ICT/I projects, as a result of concerns about their own understanding of the technical information given to them, create barriers to good strategic alignment of these projects with the business. Such barriers inhibit opportunities for the best use of an organisation’s ICT/I. Therefore, where there is little executive involvement in the overall life cycle there is an impact on executive attitudes about the quality of the final project delivery.

- *“We’re not sitting down enough and saying – ‘this is where we are thinking of going, what is the technology we need to help us?’ “.* (Company E) ***ICT/I Project Strategies***

9.8 Discussion on the Emergent Theory

The relationships between the themes form the emerging theory. The major aspects of these relationships are discussed below:

- There was a key relationship showing between Theme One and Theme Two.

This was the effect Jargon Barriers in Theme One had on the willingness or otherwise for the executives to engage with both ICT staff and ICT/I projects.

- When matters around Jargon Barriers and their effect on Professional Relationship Issues were being discussed by the interviewees, there surfaced a variety of factors which inhibited Executive Engagement Issues with these kinds of projects. These affected the visibility of ICT/I projects in regard to overall organisational Strategic Issues being considered.
- As long as there is reluctance on the part of senior executives to become engaged in their organisation's ICT/I projects, these projects will have difficulty forming an integral part of organisational strategic planning and decision-making. There are problems for ICT/I Project Outcomes if there is poor strategic alignment between the business and its ICT Infrastructure.
- The whole area of Executive Engagement Issues formed a further link from Theme Two to Theme Three, with regard to its effect on ICT/I Project Success Factors. There is a flow-on effect from low Executive Involvement in these projects because of issues such as Jargon Barriers and their own ICT/I Expertise Concerns. This consequently affects the likelihood of positive outcome measures on ICT/I Project Success Factors.
- The lower the level of Executive Involvement in these projects, the lower the likelihood of good ICT/I Project Strategies and Organisational Buy-in. Without these last two elements, (as well as most of the others) the chances of successful outcomes from these projects are severely diminished (Clarke and Doherty 2004; Freedman 2003).
- There is also a flow-on effect created from a variety of Technical/Organisational Issues that impact on Implementation Issues. These also affect the likelihood of successful and satisfactory ICT/I Project Outcomes.
- Unless these ICT/I projects are recognised as strategically important in their own right, requiring greater executive engagement than was indicated by most of the interviewees, organisations will continue to have difficulty ensuring ICT/I project expectations will be met. To make matters worse these projects are also the foundation for successful implementation of software applications projects,

Looking at the three themes, and the relationships between them, the Theory emerging is that -

Executive Perceptions of ICT/I (*affected by jargon barriers created by ICT staff, low levels of recognition of the actual business of ICT/I in the organisation, and poor can affect*

The Strategic Alignment of ICT/I Projects (*because of technical/organisational issues, low levels of executive engagement with ICT/I projects, and thus inadequate connections between these projects and strategic issues*):

that in turn impacts on

ICT/I Project Outcomes (*manifested by issues related to ICT/I project skills, perceptions about project implementation, and performance against ICT/I project success factors*).

9.9 Grounding the Emergent Theory – Tracing Jargon Barriers and Executive Engagement.

Jargon Barriers was a key driver of these executives' perceptions of their ICT people and ICT/I projects. Executive engagement in these projects was a link between Themes One (**Executive Perceptions of ICT/I**) and Two (**Strategic Alignment of ICT/I Projects**), as well as Themes Two and Three (**ICT/I Project Outcomes**). Figure 9.2 illustrates the different attitudinal outcomes for ICT/I projects in these executives' minds, and how they are both positively, and negatively, influenced by ICT jargon and levels of executive engagement in ICT/I projects. It relates to the organisational summaries in Appendix 8, and particular question responses in Appendix 3 that illustrate some interesting results with regard to feelings about jargon barriers and their effect on levels of executive engagement in ICT/I projects. Where executives made an effort to get over what they perceived as jargon barriers, and get involved with their ICT/I projects, they had more positive views about the outcomes of these projects. The opposite was also true.

Jargon Barriers/CEO Engagement/Attitudes to ICT/I projects

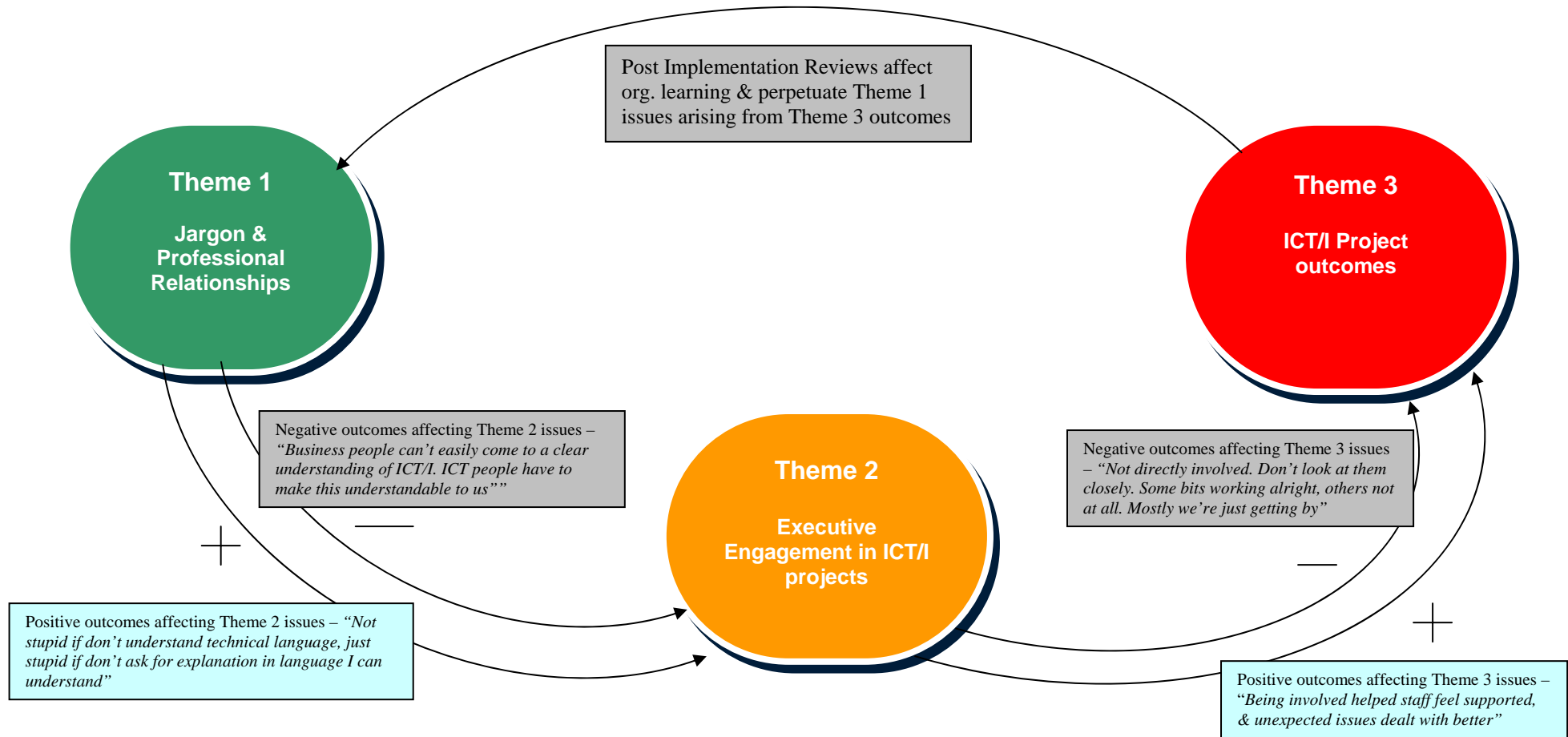


Figure 9.2 Cross-interview analysis of relationship between Jargon Barriers, CEO engagement in ICT/I projects, & ICT/I project outcomes

Both positive and negative situations are described in Figure 9.2. It shows the flow-on effects of the executives' perceptions about the jargon barriers and consequent professional relationships with their ICT management, through to their own engagement with their ICT/I projects. It finally illustrates their attitudes about the outcomes of these projects, which are elaborated further here with two examples.

- Company C – While there was recognition of the existence of technical jargon, this executive did not allow that to become a barrier. (*“I’m confident about the quality of technical advice, and will question if not clear about anything. I insist communications be put into language I can understand”*.) In this case the IT Manager reported directly to the senior executive, and they worked together to determine what was the most appropriate technology for particular organisational strategies. (*“We agree on what can actually be delivered, after IT staff have fully researched both the needs of the business and what technology can best meet them”*.) Consequently there was a positive view about the outcomes of these projects. (*“ICT/I projects are consistent in meeting our business objectives”*). However, even in this case, a PIR was not a regular activity following the completion of ICT/I projects, although a recent major one did have a productivity change measurement taken after implementation.
- Company J – Strong feelings were expressed about the impact of technical jargon. (*“I have a lot of difficulty understanding the technical terms around infrastructure projects, and so do the business unit managers. It’s a real challenge.”*). There was a very lukewarm view about the professional relationship between the executive and the ICT management. (*“It’s difficult to get satisfactory responses when asking about problems and possible difficulties”*). In this, as for many other similar cases, the executive involvement with these ICT/I projects was small. (*“Don’t really look closely at ICT/I projects, review them or monitor their progress. The lack of business unit ownership of these projects is actually a big problem”*). The consequential attitude of this executive towards the outcomes of these ICT/I projects was thus fairly predictable. (*ICT/I projects are not consistently*

meeting our expectations”). In spite of this low level of satisfaction about the project outcomes, there was no formal project review process in place. (*We have no systematic approaches to measuring project success*”). Thus, the cycle of barriers, poor relationships, little executive engagement, and unsatisfactory project outcomes continues, because there is almost no organisational learning arising from these activities.

In summarising the general comments made through the interviews about these factors, it is clear that there is a definite relationship between feelings about jargon barriers and feelings about ICT people. However, although not absolutely consistent across all interviews, there was a positive attitudinal trend showing for those CEOs who had an active engagement with their ICT/I projects, (in spite of the fairly strong feelings about jargon barriers created by their ICT staff). It was one that led to at least moderately positive views about their ICT/I project life cycles and outcomes. They were, (as noted in Appendix 8), largely negative about their ICT staff, and this related directly to the technical language and communication issues that generated the jargon barrier responses. However, the executives who had made efforts to become involved with their ICT/I projects recognised that the success of these projects would be improved by their involvement. As discussed in Chapter 5, they were willing to persist in their requests for information clarification, or answers to questions, until they got responses they could understand and work with. At the opposite end of the scale, there was a distinct trend showing negative views about ICT/I project outcomes among those CEOs who had little or no engagement with their ICT/I projects.

9.10 Relating the Theory to the Literature

9.10.1 Relationship to Literature on Executive Engagement with ICT/I

As noted in Chapter 3 the environment in which these executives operate is one that relates to the personal and social functions of their relationships with their ICT staff and their ICT/I projects. There has been much written over the years about the value that the personal participation of a CEO in ICT management contributes to the employment of

ICT as a strategic driver in the organisation. This participation also helps the organisation to be highly progressive in its use of ICT (Jarvenpaa and Ives 1991). Their empirical research, as well as synthesising much of the literature which had gone before it, found strong support for the premise that “a CEO’s personal participation in IT management, is associated with a firm’s progressive use of IT” (p. 216). They also found that executive involvement in ICT projects would be associated with a firm’s progressive use of ICT. Their views were supported by a number of more recent authors, with Palmer (2003), Thamhain (2004), Applegate (1994), Tallon et al (2000), Ahituv, Zviran and Glezer (1999), Hedelin et al (2002) being examples of writers who have discussed this issue. Given this consistency in the literature, barriers in the way of such executive engagement with ICT, and ICT/I projects in particular, become significant factors in the successful establishment of a progressive ICT/I environment. They also affect the projects that maintain and enhance this environment, to provide competitive advantage. Earlier research by DeLone (1988) also found a strong relationship between the successful use of ICT in an organisation, and the level of participation by the CEO in these projects. This was a theme that appeared consistently in other, later, writings as well. All of this literature, and the theories postulated there, support the findings of this research in relation to the issue of executive engagement, and the effect it can have on ICT/I project outcomes. For instance, Company F had a long history of low involvement by the ICT management in any strategic planning. ICT was normally asked just to supply technology that would meet separately developed strategic objectives, and the CEO had another line manager between him and the senior ICT manager. In this case there were major difficulties expressed by the CEO about his understanding of the technical information communicated to him. He had no involvement in the ICT/I projects, and he held generally negative views about ICT staff and the ICT/I project outcomes.

9.10.2 Relationship to Literature on Jargon Issues in ICT/I

Less widely researched was the issue of the impact of language, or jargon, barriers on the involvement of executives in ICT (and particularly ICT/I) within their organisations. This is in spite of the fact that the overall “relationship between IS and organisations has been a key theoretical issue since the early years of conceptual thinking

about the organisational use of IT” (Cecez-Kecmanovic, Janson et al. 2002 p. 215). The problem of understandability of technical language is not confined to the realm of ICT. It is equally problematic in other specialised disciplines such as medicine, law, architecture, and engineering, and by far the bulk of the literature found on this issue came from those other disciplines. One of the great difficulties executives have with the language of ICT is that it is constantly evolving, with a consequential growth of new technical terminology to describe developments within the discipline. It is especially prevalent among major ICT manufacturing or Research and Development companies who try to coin new terms to provide some competitive edge of apparent innovative functionality (Baker 1999). The whole issue of the executive/ICT interactions underpinning this theory, relates to their own “social world of values and norms, as well as to the subjective world of individual experiences, desires and feelings” (Cecez-Kecmanovic, Janson et al. 2002 p. 218). Thus, language complexity and message understandability, have considerable influences on the non-ICT executive’s perceptions of both the communicator and the message. The more difficult that is, the less inclined these senior executives are to engage with the ICT people. They therefore don’t carry out effective communications, understand the implications and opportunities of ICT/I developments, and/or make the best strategic decisions for their organisations (Joiner, Leveson and Langfield-Smith 2002; Martensson and Lee 2004). Complex technical concepts need to be distilled into simple, clear, language, framed in terms of their relevance to the business issues at hand, without the use of jargon. If this is not done, the communication is inaccessible to the non-ICT executive, and a barrier is raised between the executive and the technical communicator (Danziger 1998). There are consequential effects on professional relationships between the executives and their ICT people. These flow through the three themes developed as the theoretical framework identified by this research. If there is not a satisfactory level of understandability, or comprehensibility, of the communication, there is a diminished likelihood of positive outcomes resulting from it. This whole “inter-subjective understanding achieved through language, is a basis of action coordination” (Cecez-Kecmanovic 2001 p. 259). ICT people simply must have “sufficient interpersonal skills to communicate complex technical advice to lay clients, and do this in a way that enhances clients’ perceptions of their expertise and trustworthiness” (Joiner, Leveson et

al. 2002 p. 40). The situation of the CEO of Company N is a good example of this. The negative effect of the jargon barriers created by the ICT staff in their communications was so severe that the CEO had almost no confidence in the quality of the technical advice being given, or of understanding the ICT/I projects being proposed and implemented. In spite of trying to be involved with the project process, views expressed about recent ICT/I projects were only moderately positive, and comments about the ICT staff were quite negative.

9.10.3 Relationship to Industry Literature on ICT/Executive Relationships

Jargon barriers create a negative effect on the professional relationships between the executives and their ICT staff. They act as an inhibitor to addressing the issues important to an organisation about the strategic alignment of these projects with business strategies. The 2005 KPMG ‘Global IT Management Survey’ of over 600 organisations in 22 countries had some quite ominous findings out of its data analysis about the way senior ICT staff are positioned within organisations, and why. In its summary findings, the KPMG survey comments specifically on CIOs. These roles were originally created as a bridge between the technical ICT staff and the executive team, and expected to bring business as well as technical skills to the role. This view was also strongly promoted in a United States GAO paper (GAO 2000) which emphasised the importance of senior ICT staff demonstrating that they deserve the support of the CEO by clearly making a valuable contribution to the corporate mission. If they don’t, they will not be effective as a full partner in the corporate decision-making process. While the findings from this PhD research did not disclose many CIO positions, the KPMG survey comments are pertinent to the senior executives interviewed here, and the ICT staff in their organisations.

“For many organisations, integrating information technology has become a daunting and confusing duty for senior executives. Discussions on the subject are disjointed, laced with lingo, and muddled by unclear messages. As a result, the business value created when a well-governed IS function is aligned with overall business goals remains unrealised.Because so many CIOs and their colleagues struggle to clearly communicate, CIOs are regularly disconnected and isolated from senior management.They slip into techno-speak in discussions with non-

technical CEOs when simple declarative statements about costs, progress and projects would do” (KPMG 2005)

The KPMG survey results go on to show that there is a decline in the number of senior ICT staff reporting to the CEO. Their reporting relationships are increasingly to another member of the executive team. It was thus interesting that fewer than half of the executives interviewed for this PhD research had the senior ICT staff member reporting to them. It seems that the language and communication problems caused by the technical jargon issues have a significant consequential implication on ICT strategic positioning within organisations.

There is a consistently held view that technology-related initiatives are failing to deliver their expected outcomes, and that maybe little more than 10% of all ICT projects are meeting all their success criteria (BCS 2004; Evans 2006; Kontoghiorghes 2005; NZIM 2003). This supports the evidence displayed here in support of the theory this research has developed. The KPMG survey also makes observations about this situation:

“CEOs and board members must share in the blame for not demanding plain English from their CIOs and for not clearly articulating how they define the value they expect from their investment in IT.

CIOs frequently do not have, nor do they often seek, the kind of training in finance and business management that would serve them well in conversations with their non-technical colleagues. For their part, CEOs, and especially board members, all-too often cover their ears when the subject of anything even remotely related to IT is broached at meetings”. (KPMG 2005)

It is small wonder that industry publications are still commenting on problems executives have trying to “ensure their ICT investments deliver what the business needs both now and in the future” (Evans 2006 p. 28). There is awareness that getting ICT investment right will be hugely advantageous, but concern over understanding what ICT decisions are the right ones. This is especially so when trying to determine the ICT/I “that not only ensures a reliable ICT dial tone to conduct daily business, but also beds in a compelling strategic or competitive advantage” (Evans 2006 p.28)

9.11 Chapter Summary

The extensive review in this chapter of the three Themes, and the relationships between them, served to re-affirm the sense of the Theoretical Framework generated in answer to the fourth Research Question. While some original data ‘nuggets’ could have formed different Open codes, and some Open Codes could have been clustered or allocated into different Categories as a result of the Selective Coding process, I felt the same theory would surely have emerged. The interviewees were very consistent in their comments, and the subsequent data was very persuasive. There was also consistent support in the literature for the desired ICT/Business relationships articulated by the interviewees, but little evidence that there had been significant progress towards them. Most importantly, there was a link between these relationship issues, an organisation’s ICT and business strategic alignment, and the final success or satisfaction perceptions of these projects, by the senior executives.

CHAPTER 10:

CONCLUSIONS

- 10.0 Chapter Overview
- 10.1 Conclusions
- 10.2 Contributions to Theory and Practice
- 10.3 Limitations
- 10.4 Further Research Opportunities
- 10.5 Summary

“It is time to make a decision: do we want an endless repeat of what has gone before, or a different, more compelling future? It is entirely our choice. Most people would say the latter – and then go out and do what they have always done, hoping for a different result. If we do what we have always done, we will get what we have always got.”

(Taylor 2003) *The Naked Leader*

10.0 Chapter Overview

This research study investigated issues surrounding the delivery of ICT **Infrastructure** projects, (as opposed to software development projects) from a senior non-ICT executive perspective, and developed a theory related to the reasons for those issues. It addressed the four research questions raised in this study, namely:

Research Question 1: What are executive perceptions of, and attitudes towards, ICT and ICT/I projects in their organisations?

Research Question 2: What are executive perceptions of, and attitudes towards, the strategic alignment of ICT/I projects with the business?

Research Question 3: What are executive perceptions of, and attitudes towards, the outcomes of ICT/I projects?

Research Question 4: Can executive perceptions and attitudes influence the strategic alignment of ICT/I projects with the business, and thus the overall life cycle and outcomes of these projects?

The emerging theory, firmly grounded in the interviews with the executives, and as noted in Chapter 9, is the following:

Executive Perceptions of ICT/I are *affected by jargon barriers created by ICT staff, low levels of recognition of the actual business of ICT/I in the organisation, and poor professional relationships between executives and their ICT staff* (Research Question 1).

This can affect

The Strategic Alignment of ICT/I Projects *because of technical/organisational issues, low levels of executive engagement with ICT/I projects, and thus inadequate connections between these projects and strategic issues* (Research Question 2).

This in turn impacts on

ICT/I Project Outcomes *manifested by issues related to ICT/I project skills, perceptions about project implementation, and performance against ICT/I project success factors* (Research Question 3).

The substantive theory developed from this addresses Research Question 4 and is formed into the final theory this research study was seeking to develop, namely:

Jargon barriers created by ICT staff generate poor relationships between ICT staff and their executives,
which in turn can cause low levels of executive engagement with their infrastructure projects,

and consequently affect executive perceptions about the outcomes of these projects..

This chapter discusses the conclusions drawn from the findings that generated the theory, and comments on the contributions the research makes to both theory and practice.

10.1 Conclusions

The discussion presented in the previous chapter about the three themes, **Executive Perceptions of ICT/I, Strategic Alignment of ICT Infrastructure Projects, and ICT Infrastructure Project Outcomes**, and the relationships between them, provided the framework for the substantive theory. This now indicates that a more involved, engaged, and proactive relationship needs to be developed between these executives and their ICT/I people and projects to improve the executives perceptions of and attitudes towards their ICT/I project outcomes. This is desirably driven from an awareness that overcoming the barriers created by the technical language that goes with these projects is important for gaining good strategic alignment between a business and its ICT/I. Without this awareness, negative executive perception and attitudinal issues around technical projects are likely to continue. The consequences are likely to be ongoing issues with the whole ICT/I project life cycle, and more opportunities for authors in both ICT and Mgmt literature to bemoan the fact that ICT project issues identified more than 20 years ago are still present. Interestingly, although this thesis only researched executives and their ICT/I projects, it became clear from the interviews that the language difficulties highlighted here also occurred in other kinds of ICT projects. Thus, the theory put forward here could be scaled up to have a wider application than just ICT/I projects, with the relationship gap described here between ICT and the rest of the business having a detrimental effect on the perceived outcome of most ICT projects.

This gap can only be narrowed if the ICT and business stakeholders adopt a proactive rather than a reactive approach towards their projects (Clarke and Doherty

2004), and make real efforts to work closely together as equal partners in them. Getting an appropriate alignment between what the business needs, and what ICT can deliver, will improve both the delivery of ICT/I projects, and executive attitudes towards that whole infrastructural component of the business. Organisational frameworks need to be developed that align the business with ICT project management, improving all ICT project performance, and generating a higher level of business satisfaction with the outcomes (McAleese and Hargie 2004).

There were some interesting behavioural and attitudinal positions demonstrated by the executives in this study that reinforce the theory and the way it can affect ICT/I projects. Most of the executives held a common, somewhat negative view about their ICT staff (ref. Appendices 3 and 8). However, other questions illustrated a divergence in attitudes about ICT/I projects depending on the level of executive involvement in these projects. The relationship between attitudes towards ICT staff and ICT/I projects, project involvement, and views of ICT/I project outcomes, is not absolutely definitive. However, it is reasonable to conclude there is a connection showing between those factors that can be related back to the project life cycle described in Figure 9.2. Regrettably, as is shown in the clustering of responses in Appendix 8, it is worth noting there is no better than a moderately positive view about ICT/I projects by those executives who generally had tried to be involved with them. This is not an encouraging situation, when one considers that many of these projects should now almost be regarded as routine business operations (Hindle 2004).

10.2 Contributions to Theory and Practice

10.2.1 Contribution to Theory

This research has proposed a substantive theory about how executives influence the life cycle of ICT/I projects. There has been research carried out on the positive outcomes gained from increased executive engagement with ICT/I projects. However, this study has identified a significant influence on low executive engagement with such projects, and thus extends existing theory about such

engagement. The language barriers created from the use of technical jargon, and the flow-on effect for ICT/I projects, have had little focus in the literature on oral and written communication issues between business stakeholders and their ICT staff. The executives used in this research, identified them as significant early barriers to successful and satisfactory ICT/I project outcomes. In particular, the jargon barriers appear to cause lost business opportunities and thus impact on the potential strategic effectiveness of an organisation's ICT/I.

This study also makes a methodological contribution by providing an adaptation of grounded theory coding procedures. The preliminary step of clustering and coding chunks of text across all data sets enabled early sense-making of the interview transcripts. It gave some structure to the first formal grounded theory analysis step of open coding and expanded the traditional approach to grounded theory as a method of analysing rich text. The approach taken here for initial extraction of data for grounded theory data analysis could be regarded as a possible limitation to the application of pure grounded theory data analysis. It is, however, still focussed on the development of a theory directly from field data, and merely provides an extension to the guidelines provided by Glaser and Strauss (1967), Strauss and Corbin (1990), and Glaser (1992). It potentially makes the consideration of using grounded theory for analysis of qualitative data, more palatable to researchers, without compromising the integrity of the comparative analysis process. The study also relates to Walsham's (1995) discussion on the use of theory in interpretive studies, in the Orlikowski and Robey (1991) model he described where theory generation is a final product of the research process. The concepts that developed the theory, and the implications drawn from it, have synergies with Walsham's (2001) and Orlikowski and Baroudi's (1991) writings on interpretive studies. The "phenomena are examined from the perspective of the participants, they are analysed within a specific and detailed cultural and contextual perspective, and outcomes are regarded as non-deterministic" (Walsham 2001 p. 386). His guidelines for the use of interpretive case studies to build theory are fulfilled in this work. Namely:

- Development of concepts – the nine major categories developed from

the grounded theory data analysis of the executive interviews

- Generation of a substantive theory – developed as a result of the relationships these categories had with one another
- Drawing of specific implications – the study considers the implications of jargon barriers in terms of their impact on executive engagement and as such provides generative mechanisms for research beyond ICT/I projects.
- Contribution of rich insight - the process of drawing out the main issues these executives had with their ICT/I projects produced a new perspective on what was creating the negative views held by them about their ICT staff.

10.2.2 Contribution to Practice

Firstly, most small to medium sized companies do not have the luxury of appointing either CIOs or other technology bridge people to handle the language issues identified in the thesis. The following implications are important for practice:

- Both senior ICT staff, and senior executives, need to find a way they can communicate, in language that both parties understand and with which they are comfortable. Where this research found efforts had been made by executives to improve their own level of understanding of the technology, and the language used, there was a more positive view about the outcomes of ICT/I projects, and a higher level of executive engagement in these projects.
- The importance of executive sponsorship and governance of all ICT projects cannot be underestimated. Low levels of executive engagement with these projects as a result of their difficulties with the technology and the language used around it are identified as a significant cause of project outcome dissatisfaction. Because of the highly technical nature of ICT/I projects, top-level sponsorship and governance will help develop and maintain executive awareness of their complexity. Such involvement can also help improve executive understanding of the potential for ICT/I initiatives to support and enhance business strategies.

- This research shows that a more involved, engaged, and proactive relationship must be developed between these executives and their ICT/I people and projects. Overcoming the barriers created by the technical language that goes with these projects is critical to gaining a good strategic alignment between these two areas. Otherwise, the executive perception and attitudinal issues with these projects will continue. The consequences are likely to be ongoing issues with the whole ICT/I project life cycle.
- This research also discovered there is almost no incidence of systematic post-implementation reviews, apart from a financial cost versus budget report. Thus, there is little or no organisational learning coming out of the implementation of these projects. This will have an effect on the whole project life cycle, from initial decision-making through to final delivery. At the most fundamental level, such reviews should form a normal part of all ICT/I project practices.

An opportunity for overcoming the kinds of issues noted above about these projects could be the establishment of permanent ICT Steering Committees comprising both senior ICT and business unit staff, which approve every business project that has an ICT component. Such permanent steering committees would ensure every proposed ICT project fits within the approved business and strategic plans, is appropriately prioritised, and would then ensure the progress of all these projects is routinely monitored. One or two of the executives described internal committees that prioritised and approved project proposals, but took no further active role in the progress of the organisation's ICT projects. I have seen steering committees set up for specific projects, but none of the companies, at the time of conducting the executive interviews for this study, had anything in place at a senior level which systematically monitored all ICT project activity. Carrying such personal experience into this research helped form an early consideration of a potential test framework for the theory generated here. This consideration is congruent with the Strauss and Corbin (1990) and (1994) comments about the role a researcher's own experience could play when forming both the original research questions and later ideas for testing the resulting theory. This is the theoretical

sensitivity related to “disciplinary or professional knowledge, as well as both research and personal experiences, that the researcher brings to his or her inquiry” (Strauss and Corbin 1994). Since those interviews one of the CEOs who was consistently negative about the ICT/I operations in his organisation, has established such an ICT Steering Committee to have ongoing oversight of all ICT projects. It is planned to re-interview him after the steering committee has been operating for two years, to see if its existence and his presence on it has made any difference to the perceptions and attitudes he showed at the time of the first interview. It will be interesting to see what level of relationship there is between the theory and this experience.

10.3 Further Research Opportunities

There are a number of areas identified from this research that could usefully be explored:

- While the theoretical framework described here was grounded in responses from the executives, there would be value in applying it to the study of an ICT/I project. The organisational players, including the senior executives, would systematically follow the principles offered here. The outcomes could be compared with another similar project as a control, which had proceeded in the classical manner.
- It was not addressed in this research but the issue of the place of comprehensibility, as a validity claim, in the Habermas (1984) Theory of Communicative Action, or Discourse Analysis, and its place in a world that is becoming increasingly technical is a valuable, if substantial, area to explore. Dramatic changes have occurred in both technology, and movement of people, in the twenty-plus years since his theory was first developed. These changes offer opportunities to research the impact of comprehensibility, not only on fundamental understanding of a communication, but also on consequential relationships and actions.

- There were some differences that appeared in the perceptions, attitudes, and actions, of the executives interviewed, which were outside the scope of this research. In particular, there were responses to a number of questions that appeared to produce gender-related clusters. The possibility of differences in attitude and approach to technology in organisations, on gender lines, seems well worth further investigation.
- This research did not find any particular relationship between executive backgrounds and perceptions of, or attitudes towards, ICT/I projects. This was in spite of the fact that some of the executives involved came from technical backgrounds in other, apparently not too dissimilar, disciplines. A more rigorous investigation into the relationship between background and engagement in a variety of technological activities in an organisation could be interesting, and potentially helpful for considering how people are likely to behave when confronted with new technology.

10.4 Limitations

The conclusions reached here could be regarded as having some limitations. The most likely ones to be considered are, firstly, generalisability. As this is an interpretive Case Study, the conclusions do not claim to be generalisable. They are generalised to the theory, rather than to a population, and do not claim to be a final truth (Walsham 1995). The research could be regarded as being skewed, because only CEOs or equivalent from companies operating in New Zealand, where the interview participant was based in Auckland for interview convenience, were included. However, the research was, as stated in Chapter 1, deliberately focused on this group. It is an important group in its own right, with little previous literature considering the effect these people have on ICT/I project delivery. There was no comparison with other stakeholders, or CEOs in other countries, which may have generated some differences in responses. Further research could compare the theory developed from this research with perceptions and attitudes towards these types of projects of CEOs in different geographic locations, and also the views of other business stakeholders.

Further, the fact that the data collection ceased after fifteen executive interviews could be regarded as a limitation. However, since the approach was one of sampling until theoretical saturation was reached, as no new data was coming out of the later interviews, it was deemed appropriate to cease interviewing at that point. It is also possible that the adapted grounded theory approach used here could be seen as a limitation. The pre-coding phase of dividing the data into ‘nuggets,’ was outside the boundaries of the standard grounded theory approach to data analysis. It might have made a difference to understanding the actual context of the words being coded. However, what may have been lost there was compensated by the resulting cross-interview comparisons, which helped development of the theory.

10.5 Concluding Reflections

Do non-ICT executive stakeholder perceptions of, and attitudes towards, delivery of ICT infrastructure projects influence the outcomes of such projects?

The theory developed as a result of this research, which addresses this specific problem and is capable of being scaled up to a more general level, is that:

**Jargon barriers created by ICT staff generate poor relationships between ICT staff and their executives,
which in turn can cause low levels of executive engagement with their infrastructure projects,
and consequently affect executive perceptions about the outcomes of these projects..**

Key to this theory and the conclusions being drawn from this research is the effect Jargon Barriers have on professional relationships between ICT staff and these executives, and the subsequent level of executive engagement with ICT/I projects. A misalignment with strategic technical initiatives then occurs, largely resulting from low executive engagement with these infrastructure projects (Jarvenpaa and Ives

1991; Pijpers and Van Montfort 2005). Equally important is the closely related issue of low levels of organisational learning because of the lack of post implementation reviews following ICT/I project implementation. This factor helps to perpetuate the cycle of negative executive perceptions, low strategic alignment, and less than satisfactory project outcomes. There is then an impact on the ability of ICT/I project teams to address ICT/I project life cycle issues properly, and deliver successful and satisfactory project outcomes (Bullen 2001; Ives 2005). Where there were positive responses to questions about the executives' views of their recent ICT/I projects, there was a close alignment to those executives' levels of involvement in these projects.

An organisation's ICT/I has increasing importance for its overall business strategies and long-term success. This research has shown that ignoring the effect that technical jargon barriers have on the way these technical projects are viewed by the senior executives has a detrimental effect on most aspects of their life cycle. Issues related to executive engagement with all ICT projects have been quite widely researched and written about, (Evans 2006; Jarvenpaa and Ives 1991; Tallon, Kraemer et al. 2000) but the likely reasons for low levels of executive engagement in their ICT/I projects have had little attention. As can be seen by this work, there is a relationship between

- executive discomfort in dealing with technical jargon,
- their involvement with ICT/I projects,
- their ability to see the strategic alignment between these projects and the business, and
- their feelings about their ICT/I project outcomes.

There are responsibilities on all stakeholders in ICT/I project delivery, (particularly ICT staff and senior executives) to address the implications of jargon barriers on the ultimate outcomes of ICT/I projects, and their affect on the business.

There is a link shown by the theory developed in this thesis, between poor executive perceptions of ICT/I projects, strategic alignment between these projects and business strategies, and ICT/I project outcomes (Avgerou 2001; Bassellier and

Benbasat 2004). It begins with fundamental language barriers caused by the technical jargon ICT people use, which affect executive attitudes towards ICT staff and ICT/I projects. Only by overcoming these technical language barriers, and improving executive/ICT relationships, can there be any real improvement in senior executive perceptions of, and attitudes towards these projects. Without such improvement, there is little likelihood that project success and satisfaction rates will improve.

APPENDICES

- Appendix 1 Interview Outline
- Appendix 2 Organisational Information
- Appendix 3 Company responses to key questions – for consideration of ICT/I project success/satisfaction patterns
- Appendix 4 Example of one Interview ‘Nuggets’
- Appendix 5 Example of one initial cluster of Interview ‘nuggets’ and their assigned Open Codes.
- Appendix 6 Example of a code and its associated ‘nuggets’
- Appendix 7 Selective Coding Process Categories and their Relationships: *After all interviews coded*
- Appendix 8 Interviewee Responses to key attitudinal questions about ICT staff and ICT/I projects
- Appendix 9 Interview Response Summaries for Theme 1
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Appendix 1 Interview Outline

An Investigation into Issues related to ICT Infrastructure Project Delivery: The Executive Stakeholder Perspective.

Phase 1: Executive Interviews. (Interviewer copy)

Interviewee Name –
Name of Organisation? -
Position in Organisation –

Interview Questions.

Part A: Organisational

1. Main business activities carried out by your organisation? –
2. Your overall responsibilities in the organisation? –
3. Your professional/organisational background prior to this role? -
4. Approximate annual spend on ICT? –
 - The approximate split (dollar or percentage) between Application Development and Infrastructure? –
5. How involved are your ICT people with your strategic planning activities? –
6. How closely aligned are ICT/I projects to the Business Plan and/or Organisational initiatives? –
7. Who typically carries overall responsibility for ICT/I projects in your Organisation? –
 - From the business side? –
 - From the ICT side? –
8. What is the upward reporting line for the senior ICT person in your Organisation? –
 - The reasons for this structure? –
9. Considering the nature of your organisation and its business needs, do you feel you have in place the appropriate amount of ICT at the right level of sophistication? -
 - Could you stop now and do no more? -
 - What are the drivers to continue? –

Part B : Chartering a Project

10. How closely involved with your Organisation's ICT/I projects are you? –
11. What type of ICT infrastructure projects (ICT/I) has your company undertaken in the past three years? –
12. What types of non-ICT projects have been undertaken in your company in the past three years? –
13. What similarities/differences are there between the way ICT and non-ICT projects are approached in your Organisation? –
 - Is **your** involvement similar or different? –
14. What type of ICT/I projects do you have planned for the next three years? –
 - Your top priorities? –
 - Why? –
15. How is the decision made to proceed with an ICT/I project? –
 - Is a Cost/Benefit Analysis typically undertaken prior to ICT/I project approval? –
16. Is a Post Implementation Review ever done and an ROI calculated to see if a project has delivered its original projected benefits? –

Part C: Managing a Project

17. Are your ICT/I projects managed from within your Organisation? –
 - By whom? –
 - From where are project resources sourced? –
18. Do you find project scope ever changes during an ICT/I project life cycle? –
 - How often within a single project? –
 - How often across all ICT projects? –
 - What is normally the cause? –
 - Can you describe an example of an ICT/I project where scope change occurred?
19. What is the ICT/I project progress reporting mechanism?
 - Its frequency? –
 - Its deliverables? –
 - Business/user reviews carried out?
 - i. Frequency?
 - ii. Who leads these
 - iii. Who is involved?

Part D: View of how it all works

20. How is the overall success or otherwise of ICT/I projects usually measured in your organisation? –
21. Are you satisfied with the human resource availability and expertise for your ICT/I projects?
22. How effective/appropriate is the communication from your ICT people during ICT/I projects? –
 - What could be done to improve it? –

23. What are your business expectations around the delivery of the ICT team, and how well do you feel they are being met? –
- Consistency of your organisation's ICT/I projects meeting expectations? –
 - Organisational benefits resulting from ICT/I projects? -
 - What maximises success and minimises failure in ICT/I project delivery? –
24. Do you have anything else to add to what we have discussed? –

Appendix 2 Organisational Information

Company	Business	Main Activities	Interviewee	Background	Responsibilities	Project Activities	Top priorities ahead
A	Electricity asset management	Network, telecomms, IS provision to the electricity industry	Group General Manager	Engineering. - Mechanical - Project Manager - Commercial Manager - Contracts Manager - Networks development	Asset investment & performance. All ICT direction, choice, & provision. Regulation mgmt. Strategic framework for the business. CEO of joint venture.	Customer mgmt system implementation. Network modeling capability. Deployment of field devices & monitoring system for them. Company acquisition. Rebranding. Enhancing business technical capabilities. Asset construction.	Migration of financials from Oracle to SAP. System integration and migration following recent merger. “Bolt-ons” to enhance current technology infrastructure.
B	Consumer electronic Retail	Buying/selling electronic goods; i.e. taking new product to market in the consumer electronics field	NZ General Manager	Retail industry in consumer electronics. No tertiary quals. Retail inservice training	GM of NZ business reporting to GM of Electronics Group in Australia. Overall financial state, merchandising, and distribution activities of NZ company.	AS/400 upgrade. POS integration across stores. Email & desktop facilities.	Upgrade to PABX & store comms systems (No. 1). Customer Call Centre. EDI automatic ordering (supply chain initiatives).

Appendices: ICT Infrastructure Project Delivery

Company	Business	Main Activities	Interviewee	Background	Responsibilities	Project Activities	Top Priorities ahead
C	Law Practice	Provision of legal services, (commercial, property, litigation)	General Manager	Management – primarily in legal industry. Some experience in health industry.	Ensure lawyers have tools needed to deliver client services. Training & recruitment. Business Profitability.	Technology upgrades (mostly hardware that was too old & too slow). Network rationalization. Phone system upgrade. Premises relocation.	e-business (client access to their accounts etc via the Internet) Increase value from legal practice software.
D	ICT Training Provider	Applications training. Technical training. Commercial Software development. NZQA Certification.	Company Owner, Director, & GM Special Projects.	IT programmer/developer. IT Lecturer and Course Supervisor. Started Ace Training in 1987.	Special Projects. Overall strategic direction of company. Web development project oversight.	Web Services. NZQA Certification for courses. Upgrading hardware. Upgrading desktop systems.	Complete the web services project.
E	Wine Manufacturing & distribution	Grow & buy grapes, press grapes, manufacture wine, blend & bottle wine, distribute wine	Global HR Manager	General HR, then recruitment. BIS Manager for Telecom. HR Manager for Sky City. HR Manager Montana Wines.	Global HR responsibilities for the organisation, primarily in Aust/NZ but now also in US.	Server upgrades & site-to-site linkages. New PABX & introduction of new mobile phone technology. Building relocation.	Roll-out of Lotus Notes. Upgrading warehouse mgmt system and tracking movement of wine.

Company	Business	Main Activities	Interviewee	Background	Responsibilities	Project Activities	Top priorities ahead
F	Technical	Provision of	NZ GM	Civil Engineer,	Looking after the	Upgrade network	Implementing anational

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	Services to industry	contracted services to Electrical, Telecomms., Power generation industries, Transrail's fleet.	Telecoms Division	mainly construction industry, management roles primarily, with some project management.	telecoms business of Alstom in NZ. NZ Telecom is largest customer.	access around NZ. Upgrading the network. Moving infrastructure activities to Oxygen as an outsource service provider. Work Mgmt system functionality expansion	jobtracking database. Web based access by customers to company's reporting system & job status.
G	Plastic film manufacturing	Create plastic film from extrusion through to printing and conversion – mainly for industrial clients.	CEO	Finance and Law degrees. Generic background in variety of companies main experience.	Everything the organisation is doing. It's a privately owned company and the owner is looking to move it to a public listing.	Expansion of fibre-optic network into factory. Links through all parts of production process – tracking every step. The ERP project.	Links and tracking through all stages of the production process. Automated bar-coding of product.
H	Independent Practitioners' Association	Looks after the professional development and information management needs of MoH on behalf of its members.	CEO	Originally sales and marketing. GM Communications for Midland Health, then into present role.	Ultimately responsible for all activities carried out by CHS. Reports to CHS Board.	Upgrading communication systems. Ensuring infrastructure in place to meet govt. audit requirements.	Improving bandwidth to GPs. Getting shared information to all of them.

Company	Business	Main Activities	Interviewee	Background	Responsibilities	Project Activities	Top priorities ahead
I	Electricity generator and retailer	Facilitating supply of electricity to its customers	GM	Civil engineer, mainly in construction industry. Management in	All aspects of the electricity retail business.	Upgrading the Billing system to have more functionality. Move to Windows	Integrate all desktops over the Internet. Establishing common standards & protocols so all associated

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				that industry. Twelve years experience in electricity industry.		2000 OS. Cyclical hardware upgrades.	companies can become one operation and network. Infrastructure changes around e-business.
J	Medical Insurance	Managing medical insurance premiums and claims – corporate and individual memberships. Management of owned private surgical hospitals.	Operations Manager	Insurance company management. Software development management. Operations management.	General operations, including insurance systems and associated software packages.	Windows NT and thin-client distribution through organisation. (500 desktops) Installation of a CRM package. Changes to core insurance premium package.	Network and desktop upgrades.
K	Pharmaceutical Company	Develop, manufacture, and distribute pharmaceutical products.	NZ MD	Registered Nurse. Business degree, majoring in finance. Worked in insurance industry. Joined present co. in 1992.	All aspects of the business – operational results, organisational results, reputation of organisation.	Ad hoc operational replacements and upgrades. (Major projects driven at global level).	Complete office system upgrade. Operating system upgrade. Phone system upgrade.

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Company	Business	Main Activities	Interviewee	Background	Responsibilities	Project Activities	Top priorities ahead
L	Aged Care Service industry	Services to the elderly, including Rest Homes, Hospitals, Day Care Respite, Assisted Housing, Independent Living. Management of other complexes under Mgmt Contracts.	CEO	Trained in Organisational sociology. Full-time Social worker. 20 years setting up and running social services of one kind or another.	Organisation's strategic direction and operation. Also, look at opportunities for different ways the org. can move forward in aged care area.	Internet connectivity. Core administration systems. Web Site development.	Monitoring programmes and other functions that will improve service to residents. Technology for Independence.
M	Law Firm	Delivery of legal services to NZ Corporates and business clients.	CEO	Various roles in law firms. Business degree and then an MBA. Worked up the chain to senior executive role.	Running the business side of the Partnership – resourcing, operations, financial, IT, and business development. Also some client relationship work, with the partners.	Product upgrades. Improved branch to branch connectivity. Mobile operations products and services. Roll-out of new PCs.	Electronic document handling/management. Development of client management tools, to improve client access to their projects, documents etc.

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Company	Business	Main Activities	Interviewee	Background	Responsibilities	Project Activities	Top priorities ahead
N	Pacific Primary Care organisation.	Deliver general practice and nursing services to Pacific people in Auckland region. (It's still a 'start-up' operation in its first year).	CEO	Education degree, Diploma in Teaching, and then Primary School teacher, then in adult ed. Diploma in Business and MBA. Master's in Public Policy. Moved into Policy development, in the Health Dept for 10 years. Chief Advisor in Policy area for Ministry of Health.	CE of umbrella organisation that looks after a group of Independent General Practices. Provides clinical, IT, and business support to them, that is now necessary under present govt. funding and reporting mechanism.	Server consolidation and upgrade. New personal hardware and connectivity facilities for staff.	Tools to increase capability to extract information from their databases.
O	Education provider	Private Schooling for children from 3.5 to 19 years of age.	CEO	Education degree and teaching diploma. Years of teaching posts moving up the scale of responsibilities. Principal of two high schools, then to present school for last 7 years.	Running the organisation. All operational matters. Reports to Trust Board.	Installing wireless LAN. Upgrading operating system from '98 to '2000. Installing more Servers, and more PCs. Upgrading the email system.	Completing the wireless LAN. Completing the dissemination of handhelds to all pupils at all levels.

Appendix 3 Company responses to key questions – for consideration of ICT/I project success/satisfaction patterns – related to the major categories shown in Appendix 7

	Company A	Company B	Company C	Company D	Company E	Company F	Company G	Company H	Company I	Company J	Company K	Company L	Company M	Company N	Company O
ICT people involvement with strategic planning <i>(RQ2, Cat. 4)</i>	Intimately involved. Specific sessions around how technology aligns with strategic direction.	Moderate involvement. Closely linked with strategic plans via Finance Mgr reporting line.	Fairly involved, to stop them going off on tangents	They discuss with him and give advice & input to new directions.	Not as involved as we'd like to see them. Partly because of the dramatic growth of the company over past 3 years.	Not at all really	No, have one major manufacturing system, and one in-house network tech to keep equipment going.	Very involved. Success of org. depends on info. Mgmt. & this depends on ICT	ICT Manager on the Executive team which does all the strategic planning	Very limited	At local level, but not the strategic planning that is influenced by the international operations	As a line manager he takes part in the normal strategic planning and business planning process.	Very involved. They have their own business plans that link with overall business strategies.	Yes, were part of the recent strategic planning exercise carried out.	As involved as everyone else. Head of IT on the group working on the next year's strategic plan.
ICT/I Project alignment to Business Plan <i>(RQ2, Cat. 4)</i>	Absolutely aligned. One does not drive the other, just completely interconnected.	Very closely aligned.	Quite closely aligned. I kept IT topical because I was enthusiastic about it.	Directly aligned to the Business plan	They are now, in that we now say "that's what we want" and they work out how to deliver. Not sitting down & working this through together from initial ideas.	Just recently started to try to make that happen. Previously quite reactive. When strategy develops ICT are asked to supply technology.	Closely aligned, as key system drives the company and is being replaced with an ERP package. Rest of ICT support outsourced.	Virtually fully aligned with Business Plan. Major component of business planning.	Now very closely aligned. Convinced ICT people it would be good for them to be involved with the business as well as technology.	Quite good	Tends to bypass local people because of international nature of decision-making and purchasing power.	Don't yet have a technology plan, so it hasn't been a feature of the business planning process.	Very well aligned. Quite a strong focus on the technology platform, what's required, what's out in the market place.	It's ad-hoc, largely because the org. is still in 'start-up' mode. Need to do that better.	Very closely aligned. Nothing done unless it fits with the business plan.

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	Company A	Company B	Company C	Company D	Company E	Company F	Company G	Company H	Company I	Company J	Company K	Company L	Company M	Company N	Company O
ICT/I project responsibility <i>(RQI, Cat. 2)</i>	Network Information Systems, & Business Information Systems – two people.	Finance & Admin Mgr, & ICT Mgr	GM has overall responsibility	He (the Director) takes overall responsibility	The business unit manager, who carries resourcing & financial costs.	ICT Manager	CEO takes overall responsibility.	CEO for business side, Information Mgr for IT side. Don't have an IT Mgr any longer.	Project sponsor, who is mostly the ICT Manager.	Individual project manager, reporting to CIO	The CEO, with IT Manager having direct project responsibility	The CFO who only involves the CEO for sign-off on any significant new project.	CEO for all business activities, ICT Manger for technology side.	The CEOs in the client groups. This CEO for the group projects.	The Business Manager overall, and the Network Manager for the ICT side.
ICT reporting line <i>(RQI, Cat. 2)</i>	To the GM.	Finance & Admin Mgr (largely because of tech. Personality issues)	To the GM (CEO)	To the CEO	The CFO who has overall responsibility of how ICT dept. managed	To CFO	To the CEO.	Info. Mgr reports to Business Mgr as CEO is part-time & there needs to be a f/t reporting line.	To CEO. It's always been that way. Anything else is too low down.	To Operations Manager	To Australasi an IT Group, because of the global nature of the business.	To the CFO. A historical situation.. That needs to be reviewed once the technology plan is developed	To the CEO.	To the CEO.	To the Business Manager.
Barrier created from technical jargon <i>(RQI, Cat.1)</i> (Comfortable dealing with it?)	A little. Can get lost with the jargon. My responsibility to ask for clarification.	Yes it does.	I don't think it's a big barrier. People get a bit scared of the language, and they don't like to appear stupid. Not stupid if you don't understand. Just being stupid if you don't.	Not really. I am reasonably technical, and the IT Mgr is a trainer so he knows to be patient with people & to explain things.	There's a bit of that. It's a mystery to us who don't have a technical background.	Absolutely. One of the difficulties non-ICT people have is that you haven't a clue whether what you are being told is true or false.	Mostly able to deal with it. You just have to try to acquaint yourself with it.	Yes. Communication not good at all usually. Problems are caused because of the technical nature of these projects that aren't explained clearly enough in English.	Somewhat . You make a judgment based on the answers to your questions, rather than if you had the knowledge.	Yes. I have a lot of difficulty understanding the technical terms around infrastructure projects, and so do the business unit managers. It's a real challenge, how to make this more understandable to the ordinary business person.	Not really, because I find it very interesting . Like to find out what's happening with all this stuff, so read and learn about it.	In the detail, yes, but not in the overall decision. I just need to know enough to be able to make a decision, to be able to sign off on something .	Yes sometimes. Even with work done to get familiar with the jargon, constantly finds stuff (language) in reports that is difficult to understand.	Absolutely, but accepts, that not everything can be understood. Keep asking questions until confident understandable answer is given.	Not sure. If there is anything not understood, just ask for explanation. IT staff good at explaining technical details.

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	Company A	Company B	Company C	Company D	Company E	Company F	Company G	Company H	Company I	Company J	Company K	Company L	Company M	Company N	Company O
<p>Confidence about Technical advice, & own understanding of the projects</p> <p><i>(RQ2, Cat. 6)</i></p>	<p>Reasonably confident. Sometimes feel we need an independent, sanity check on some of the systems. IT people may not have thought widely enough beyond the actual technology.</p>	<p>Yes, because of confidence in F&A Mgr & ICT Mgr.</p>	<p>Feels well informed. Confident most of the time.</p>	<p>Feels well informed, & is confident about advice received</p>	<p>Yes, because has confidence in the people providing the information.</p>	<p>IT Manager is alright, but in general difficult to know if advice is right, because of lack of understanding the technology</p>	<p>Yes, pretty confident about what comes through.</p>	<p>Not well briefed on technical implications. IT people poor at explaining these things.</p>	<p>Yes, given that it is mainly incremental.</p>	<p>Yes, generally</p>	<p>Trusts the IT team. Feels they understand the work and the deadlines. Asks probing questions. If he doesn't understand just makes sure questions answered in simple non-technical terms</p>	<p>Not confident he was given the best, most clear, picture. Advice was alright, but not convinced it was neutral.</p>	<p>Pretty confident. Thorough about questioning what is told. Expects thorough presentation of any new project proposal, and makes sure it is understood before approval given.</p>	<p>Have to rely on the senior ICT people to know the right recommendations to make. Don't always feel advice is sufficient for good decision making.</p>	<p>Excellent. Never found technical advice contradicted by anyone else.</p>
<p>Approach & involvement in ICT/I & non-ICT projects</p> <p><i>(RQ2, Cat. 5)</i></p>	<p>Fairly involved at strategic level, not at any detail level.</p>	<p>Closely aligned because of their relationship to overall strategies. Not directly involved.</p>	<p>ICT side delegated because of technical issues, but heavily for other projects. Very present & involved at final 'go live' period of ICT/I projects.</p>	<p>Fairly involved, especially at Board level, for project approvals.</p>	<p>Involved in a variety of aspects because of HR implications.</p>	<p>Member of a Business Improvement Team that monitors ICT projects – meets monthly</p>	<p>Closely involved in the ICT/I projects because of implications of ERP direction.</p>	<p>Very closely for business benefits, not so much as far as technical side is concerned</p>	<p>All require Board decisions. Very involved at the beginning, because systems were out of control & needed close management.</p>	<p>Only those related directly to own business unit</p>	<p>Don't get involved with all IT projects. Does with local ones because of immediate effect on this part of the business..</p>	<p>Feels well briefed. Sits in on initial meetings and signs off the projects, but not involved on a day to day basis.</p>	<p>Same scoping for all projects. Not very involved unless the specific sponsor. Attends monthly project review meetings for all projects.</p>	<p>Has to be closely involved, because of the stage of org. development they are at. Looks at ways a proposed project would benefit the business, & what the downside of the purchase might be.</p>	<p>Quite involved, because wants to know what is going on. Continually asks questions of the ICT people. Also thinks it's important for ICT people to see CEO has enthusiasm for the projects.</p>

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	Company A	Company B	Company C	Company D	Company E	Company F	Company G	Company H	Company I	Company J	Company K	Company L	Company M	Company N	Company O
<p>Differences between ICT/I projects & others.</p> <p><i>(RQ1, Cat.2, and RQ2. Cat.6)</i></p>	<p>Greater unknown about ICT projects. Users don't understand the sophistication underneath or the underlying risks if it goes wrong. Non-ICT projects easier to understand conceptually.</p>	<p>The technical aspects. ICT/I is clearer than software projects for instance, because it's more physical. You can understand what you are buying, and it normally is clear what it is going to do.</p>	<p>Sometimes it is difficult to analyse an outcome, because it is less visible to the user than a software project. It's the nature of the technology, & the fact things don't always fit together the way you expect, & you get an unforeseen problem, because of the nature of the pieces of technology being used</p>	<p>It's more hidden from user's view, as it sits under the software they use. People don't see the technical stuff involved in the activities they carry out – until it fails on them.</p>	<p>PM of ICT/I projects looser than non-ICT projects because they aren't as familiar to us.</p>	<p>More control over non-ICT or ICT/I projects. Bus. Mgrs prioritise non-ICT projects, ICT Mgrs prioritise theirs.</p>	<p>ICT/I projects have tended to be displaced to get other more familiar projects done. Has now caught up with the company & caused some big issues about its future.</p>	<p>Availability & expertise for ICT/I projects more difficult than with others. In process of changing our Consultants, because of unsatisfactory work here.</p>	<p>ICT/I projects need very tight time controls & vendor coordination. All kinds of implications if things don't happen at certain dates.</p>	<p>BU Mgrs don't look at ICT/I projects, review them or monitor their progress, as they do for non-ICT projects.</p>	<p>At implementation. Must find a window when local work can be interrupted to bring new systems/technology on board. Can't afford to be "off the air" for any significant period of time..</p>	<p>The technical complexities. ICT/I projects need extremely clear definitions of what they will achieve. Having to go outside for specialized technical advice, so you know what you are asking for, to deliver the desired business outcomes.</p>	<p>ICT/I projects are the tools for staff to help them in their work. They are operational enhancements & typically the benefits can be seen immediately. They tend to be more straightforward than other projects.</p>	<p>These projects based on organisational needs, & are more broad than individual clinic or population needs. Also, costs are more substantial than most non-ICT projects.</p>	<p>ICT/I projects completed more quickly than others. ICT/I ones very obvious, because if anything happens on the network, everyone knows, & lots of people are affected.</p>

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Decision process for new ICT/I projects <i>(RQ1, Cat.2)</i>	Check where it fits with the strategy. Do a CBA, and sometimes a risk perspective exercise.	Informal CBA. Look at whether it will reduce cost of doing business, enhance customer experience.	IT looks at what's possible, then GM discusses with the partners	Driven by major supplier, & by customer demand for improved services. Then business case built for it.	CBA and business priority listing	CAPEX approval sign-offs, and check on payback. Process not particularly rigorous, although a CBA done for a recent big ICT/I project	A simple CBA and expected ROI. Also depends where it is on the business priority list.	Fit with strategy? Govt. requirements & need to provide better patient service.	Prioritised when things were needed but didn't do a CBA. Intend to do that going forward.	Full documents prepared, but insufficient expertise in executive team to make suitable judgment on quality.	How do we finance it? Comes down to a very narrow window of time & financial opportunity. Comes down to easiest way to finance the project.	Much the same for all projects. Defining what is needed, checking the market place, determine what has to be done and how to do it.	All projects brought to the Technology Committee, with formal presentation & CBA done.	Make out a business case for the Board. Also do a financial analysis, to measure expected ROI.	It evolves, as a by-product of a business need. Things move towards an inevitable point where the technology needs to be in place to support business growth. Proposal done and costed out for Board's Finance Committee.
Project scope change <i>(RQ 3, Cat. 8)</i>	Yes, usually where the capabilities of the product weren't understood, or another way of using it that is more efficient.	Not the overall scope, but often the detail – especially actual technology changes.	Not typically with these projects	Have been very rigid with that, & it hasn't changed much. No scope creep allowed.	Try not to, but sometimes something comes up that causes us to consider if it should be in scope, or could be deferred. Doesn't happen often though.	Not really. Mainly because they are more physical & stable.	Not as much as software projects. Mostly more straightforward.	All the time. Mainly because of technology changes while project in process.	Not so much for ICT/I projects, but it does for software projects.	Little with ICT/I projects, more with S/Ware ones	That's a given. Perhaps not overall, but certainly parts of an ICT/I project do change, a lot quite often. Usually because of changing technology.	Yes, speed of technology change. Also, if you don't ask right questions, you won't get right answers & that can cause a need for change mid-way through a project.	Yes, although not dramatically. Typically because of technology things not known at the outset.	No, been very careful about this. Once business case and finances agreed, the implementation was exactly according to the spec.	Yes., because technology changes. Wouldn't want to be constrained from bringing in new technology because something has been approved, if it is better.

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ICT/I project communication & reporting process <i>(RQ 3, Cat. 8)</i>	Quite good, but depends on the personnel. Some good, some aren't. Monthly reporting on milestones.	Pretty good. Monthly report from F&A Mgr, which includes a report from ICT Mgr on work in progress. Issues informed on a 'need to know' basis.	Good. Weekly progress meetings, & see IT manager virtually every day.	Good. Weekly project progress review against project plan	Quite good. Always depends on PM running the project. Project milestones reported on, but trying to improve on this.	Not very good. IT people need better bus. Comms. Skills. Monthly progress updates at BIT level, but nothing to business units.	Quite good at the moment. Comfortable with quality of communication. Project reporting is weekly at the moment because of stage of the project.	Informal on project progress. Monthly report to Board on milestones & status.	They communicate with the people they need to, and we also have review meetings which involve the ICT people. Also have written progress reports.	Reports at milestone points, but rather haphazard. Not regular, accurate, or honest.	Progress reports rolled up to the regional team, but available for CEO whenever he wants to see them. Also meets with local team weekly, then daily at final stage of implementation.	Could be much better. It's not at the level we get for other projects, & it needs to be done in such a way as it involves people, with buy-in & proper sign-off.	Wasn't going well with issues, milestone reporting etc. Set up new group headed by the Communications Manager, which now coordinates all project comms. Much better now.	Yes, quite satisfied with what happens here. The ICT people work hard to get CEO to understand what is going on. Also have Steering committee & project team report at its meetings on status & progress.	Pretty good. Not formal. Kept up to date with progress by IT people. CEO reports formally to Board monthly, and includes brief status and progress summary from ICT.
Executive Team involvement in ICT/I projects <i>(RQ 2, Cat. 5)</i>	Receive the monthly reports. GM the closest involved.	More with non-ICT projects as familiar & more visible	Monthly debrief sessions with the partners.	HoD's receive weekly progress report from Director	Have recently decided to have a Steering Committee for each major project, to ensure there is business oversight & responsibility.	Via the BIT, but nothing else, & that is distant	Quite strong, given the critical nature of the ERP project.	Very limited. Mostly only recipients of monthly report.	Good, as ICT Manager on Executive team.	Dependent on a BU manager champion. If that person goes, project negatively affected.	Only for projects where they are sponsors. Mostly overall there is little understanding of how IT & business affect each other.	Not high. Because it's IT, hasn't been a need to develop, conceptualise, & implement them, so involvement hasn't been the same as for other projects. Now have quality implications.	Chairman is very IT savvy, and thus there is a leadership which is attentive to what is available. Technology committee also has executive team members on it.	Quite good, as the client CEOs are all on the Board, and thus quite involved with what is happening in the projects.	Quite good as everything focused around ICT as a service to business issues, and that involves all the executive team.

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CBA, ROI, PIR carried out (RQ2, Cat. 6 & RQ3, Cat. 9)	CBA and ROI yes, some review against budget but no formal PIR.	Nothing formal, and not very good at that. F&A does a financial measure. No PIR done.	ROI carried out on recent project, measuring productivity changes. Don't normally do formal ones.	Brief CBA carried out. Informal ROI, no PIR	Not done these properly, & that is an issue	CBA done but not sophisticated. ROI for big projects only. No PIR.	CBA done, but no ROI or formal PIR. Would want to initiate that for this manufacturing project.	Informal CBA, no formal ROI or PIR. Just accept if system works.	No CBA, or formal ROI and PIR.	Usually, but not rigorous	Same process for all of them. Must have a business case, and compete for share of available money. Only financial ROI carried out – measure against budget. Do look at larger view to see if there is an improvement on results after project implemented.	No, not really, for any of those as far as an ICT project is concerned. Do them for other projects, just presumed these were O.K.	CBA always done. No formal ROI or PIR done, although milestones are measured throughout a project.	No formal PIR or return to ROI after project implemented.	No, although should really do this. However, hard to quantify some of the spin-off benefits from technology brought in initially for a different purpose.

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Project Outcome measurement done? <i>(RQ3, Cat. 9)</i>	Results achieved, e.g. specific cost savings, improvement in customer satisfaction & turnaround times. Internal metrics of staff surveys.	How they come out in terms of original objectives & scope, esp. costings	Productivity increases for staff and lawyers. Improved morale.	Informal – people’s ease of use, & feedback	Delivery on time, & on budget. Did it improve the business the way it was expected to?	Check against original desired outcome – performance measurements (KPIs)	Project delivers what it was supposed to, and users satisfied it’s meeting their needs.	That it works and users are satisfied they received what was supposed to be delivered	Measured by the level of ‘noise’ from customers. Low ‘noise’ higher success levels.	Nothing systematic	The feeling the first time it goes live after implementation. Then making the budget, & whether the project delivers what it was supposed to. Have a reward & recognition process where exceptional work gets rewarded.	Does it come in at or under budget? Does it deliver better information? Don’t really have a proper measurement of ICT project success.	Quarterly score cards on variety of business issues including these projects. Board requires reporting on annual objectives.	The noise/moans stop coming from the providers about getting the information they need. Staff have access to their needed information in a faster, more effective way.	That they work. That users are excited about the benefits the new technology has brought them, & people aren’t frustrated in their use of it.
What maximizes success, minimizes failure in these projects <i>(RQ3, Cat. 9)</i>	Communication & simplification of the tech. Demystify it & put it into business terms. Org. buy-in; hungry for product availability. Not just a selection process centred on ICT team.	Deliver a better customer experience as result. Also, improved speed to market with products.	Set expectations at right level with users. Agree with IT what is to be delivered, & try to over-deliver.	Good comms during the project. Successful delivery on time & budget. Having people committed to the project. Have CBA that becomes basis of the project.	There’s a much better relationship between the business and the technical side. That’s the main thing that made the difference.	Communication between ICT & Business will determine success or failure. ICT understanding what the business wants, & delivering that.	A clear understanding by stakeholders of objectives, with agreed timelines for delivery.	Systems doing what they are supposed to do. Make sure all stakeholders are involved. Know why it is being done & have a clear plan.	Everyone having a common expectation of the outcome.	Executive buy-in needed, & commitment to target outcomes	Right people, with right skills & personality to make a project successful. Having a good project brief. Delivering better service & better information than previously	Org. understanding its requirements & writing them out clearly. Major requirement to see what ICT can do for business, from a business, not a technical perspective.	A working system that meets its defined expectations, or more.	A good understanding of the business needs & the ability to translate that back into higher technology that will help the business.	Having user enthusiasm for tech.. People wanting to use it. Having users involved all through a project. Getting everyone, including ICT into ownership

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	Company A	Company B	Company C	Company D	Company E	Company F	Company G	Company H	Company I	Company J	Company K	Company L	Company M	Company N	Company O
ICT/I projects meeting org. expectations <i>(RQ3, Cat. 7)</i>	Generally, I suppose so. Not yet to the level I think is possible.	Yes. Pretty satisfied. Would be better with additional resources	Yes, pretty consistently	Yes. Pretty good.	Yes, given our expectations & the size of the team.	Present ICT Mgr better than some previous ones, and that helps. So, generally, yes.	Yes, now, because of own close involvement. However, historically, minimal and ad-hoc.	Generally yes. Definitely getting org. benefits from them.	Just starting to see that. Cost of ICT is very high – a high proportion of the business' fixed costs.	Not very high, some bits working well, others not.	Generally yes, because most are global projects & have been implemented elsewhere prior to NZ.	Not fully. Always seem to have implementation problems which drag it on too long, with impacts on other areas.	Satisfied business expectations being met, but still have concerns over how the ICT project group operates. There is still a mismatch between them and the rest of the organisation.	Generally yes. ICT people have good understanding of how ICT can improve the sector, & how to get systems to do that.	Have very high expectations of technology, and ICT staff typically rise to that. Will work until goals are achieved. However, they do take longer than promised to be completed.
Other comments <i>(RQ4)</i>	Have brought in a structure of two ICT managers – one technical, one business & strategy related.	ICT personalities are an issue. Culture clash between them & other staff. Need to get out among users more.	Best thing is to engage all stakeholders, & get them enthusiastic about what is happening.	Our whole business depends on having the ICT/I in place and maintained to s/holder satisfaction	The ICT people get hung up on the technology, and forget about the basic requirements of the users. They don't ask fundamental questions about how people want to	Company has good business systems & good IS in place to support that. Run by engineers, & thus quite structured, which flows through to ICT/I projects.	The use of technology is a critical business success factor. Therefore the right technology needs to be in place if business is going to survive and grow.	ICT projects need to be part of company strategy. Must have good comms. Lines & clear business objectives.	Relationship between ICT and rest of staff are quite good. IT Manager also a people manager, with great communication skills. Not so strong technically, but a	ICT/I least known & understood by business people	The IT guys & the vendors all promote the latest piece of technology, & then there's a heap of techno-change just to make it work. It's hard to get the ICT	Most important that an org. works out what it wants to achieve from a business perspective before going forward with any technology development. Big	The issue of the project team and its culture/values mismatch with the rest of the org. They aren't well aligned, & this creates problems.	The org. would have grown differently if an ICT person had been in the CEO role. Feel sometimes compromises are made because of that lack. It's quite a	Most of the issues encountered have been around communication. Better now since feeling more comfortable about asking for explanation until satisfied

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					use the technology.				good communicator.		people to understand the difference between technical stuff & business stuff.	temptation to be gathered in by the ICT people to bring in technology that may not achieve what business wants.		fearful area to get involved in & that makes a difference to how the technology barriers are overcome.	full understanding is reached. Technical communication does affect the quality of delivery of these projects.
Positive/negative view of recent ICT/I projects (RQ4)	Generally positive, but concerned about lack of business skills in ICT people.	Negative about ICT staff, but generally positive about project delivery.	Quite positive & confident about these projects	Generally positive and satisfied with project deliveries	Frustrated, and moderately negative. Feels ICT people hung up on the technology & forget basic needs of the users.	Generally negative about ICT people, but more positive about ICT/I project delivery.	Moderately positive, especially about use of external resources to support in-house staff.	Negative about IT people but positive about ICT/I project delivery.	Fairly frustrated with technological performance, although more at software level than ICT/I level.	Fairly negative. Feels lack of consistent success in meeting ICT/I project expectations	Satisfied with project delivery, frustrated with technostaff & their lack of business understanding.	Fairly negative, given historical issues, and concern about ICT "oversell"	Generally positive about the delivery outcomes, with some negative feelings about the ICT project team.	Moderately positive, although concerned about technological isolation because of difficulties with some of the technical communication.	Generally positive because of close involvement.

Appendix 4 Example of a start list of ‘Nuggets’ from one Interview

Technical and Organisational TORG

Having to go outside for specialized technical advice is what makes these projects different from others.

Their technical complexity makes them different from other projects where you know what the future environment and activities are likely to be.

Little use of technology in this area, because it has been so expensive to set up until now.

Technology is going to be a major function of this industry into the future. Current systems of patient management are not the real long-term requirement of where we need to go.

With ICT/I projects we seem to get into a whole round of increasing costs, and then what's the benefit going to be?

The technology behind all this is very difficult for anyone to comprehend unless they have had a fairly high level of exposure to this area.

Technology is only a tool, and unless you know how to use it you are going to have difficulty getting real success from its implementation.

There are real issues about how technology is brought in, and we haven't worked through any of that yet.

We have some quite significant infrastructural issues to be addressed, and while there could be some quite creative responses to the situation it comes back to the issue of just how much money do you throw at a problem?

The Payroll system should have been a simple one month programme, and has been going for over six months. That's my general experience of technology – my expectations are pretty low about smooth outcomes of any of this.

The temptation is there, when the IT people start getting into this, for us to be gathering in new technology that ultimately won't achieve what we want. I see that as a real risk.

Our technology needs will be very much driven from a base infrastructure that can have applications put on top that haven't even been developed yet.

Appendix 5 Example of one early cluster of Interview ‘nuggets’, and their initially assigned Open Codes.

Interview Coding – phase 1

Open Coding – Company B

Mgmt Issues

MI

Parent company involvement didn't go so well.

Parent Company Involvement

IT Mgr needs to be more involved with Mgmt meetings. Been isolated because of technical leanings.

Technical Isolation

Get better business data, move faster, with F&A Mgr as IT conduit.

Comms Effectiveness

Cost/benefits more clear than with s/ware applications projects.

Business Case Clarity

Project characteristics are more visible and it's easier to understand the deal.

ICT/I Straightforward

Involvement with ICT/I projects more towards the end of the project – for project cost/benefit and implications for business.

Late Project Involvement

No formal review or overall view of progress.

Progress Reviews

Non-ICT projects more familiar because of retail background.

ICT Background Deficiencies

Can't easily visualize what is happening with new piece of s/ware.

Visualisation Challenges

Appendix 6 Example of a code and its associated 'nuggets'

Code: Raising Questions

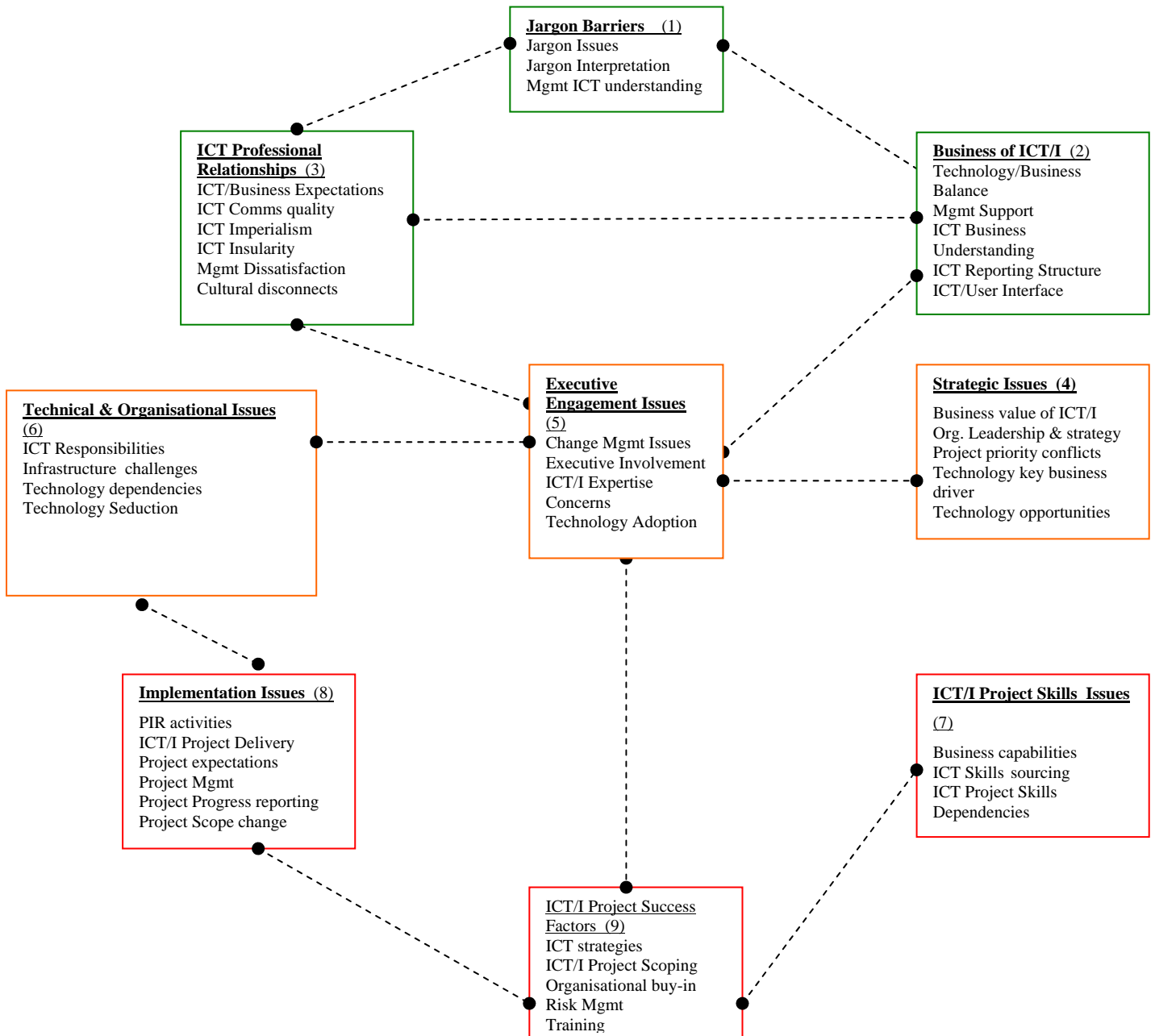
I always go back to the people involved if I have a question. As long as they don't talk to me like I'm a moron, the communications work fine.

The executives are asking harder questions, like "What is your objective? What are you hoping to achieve? Have you identified all the issues?"

I would agree that most of the issues I have ever encountered are around the area of communication. I am in a better position now, where I am comfortable about asking for more explanation, until I am satisfied I understand what is going on.

I want to know at the end of the day, that my nurses have got a tool that helps them deliver better health care. I need to feel confident that this will happen, and I'll keep asking questions until I feel I have got that answer.

Appendix 7 Selective Coding Process Categories and their Relationships: *After all interviews coded*



Appendix 8 Interviewee responses to key questions about ICT staff and ICT/I projects (colours/bolding show some patterns of responses)

Key Question	Companies with highly positive responses (definitely)	Companies with moderately positive responses (mostly)	Companies with neutral responses (sometimes)	Companies with moderately negative responses (not often)	Companies with highly negative responses (never)
ICT people involvement with strategic planning? (RQ2, Cat. 4)	A, H, M, O	B, C, I, K, N,	D, E, L,		F, G, J
ICT/I Project alignment to Business Plan? (RQ2, Cat. 4)	A, B, D, G, H, I, M, O	C, J,	E, K, N,	F,	L,
Are you comfortable dealing with technical jargon? (RQ1, Cat.1)	C	D, K		A, E, G, I, L, M, O	B, F, H, J, N,
Confidence about Technical advice? (RQ2, Cat. 6)	B, D, E, I, O	A, C, G, J, K, M,		F, L,	H, N,
CEO Involvement in ICT/I projects? (RQ2, Cat. 5)	G, I, N, O,	A, B, C, F,	D, E,	H, J, K, L, M,	
CEO Involvement in non-ICT projects? (RQ2, Cat. 5)	C, G, I, N,	A, B, F, H, K, L, O	D, E,	J, M,	
Attitudes about ICT/I projects versus others? (RQ1, Cat.2, and RQ2, Cat.6)	B, M, O			C, D, E, F, G, H, J, K, N	A, L, I,
Rigour of ICT/I project decision process? (RQ1, Cat.2)	A, E, M, N,	B, C, D, G, G, H, L, O		F, I, J, K,	
Project scope change? (RQ 3, Cat. 8)	A, H, K, L, M, O	B, G, I, J,		E,	C, D, F, N,
ICT/I project communication & reporting process? (RQ 3, Cat. 8)	C, D, N,	A, B, E, G, I, K, M, O	H,	J,	F, L,
Executive Team involvement in ICT/I projects? (RQ 2, Cat. 5)	G, I, M, O	A, E, N,	D,	C, J,	B, F, H, K, L,
CBA, ROI carried out? (RQ2, Cat. 6 & RQ3, Cat. 9)	A, B, K,	C, D, F, G, H, M, O	N,	J,	E, I, L,
PIR carried out? (RQ2, Cat. 6 & RQ3, Cat. 9)			C	K,	A, B, D, E, F, G, H, I, J, L, M, N, O
Project Outcome measurement done? (RQ3, Cat. 9)		A, B, C, D, E, F, G, H, I, K, M, N, O		J, L	
ICT/I Projects meet expectations? (RQ3, Cat. 7)		B, C, D, E, F, G, H, I, K, N, O	A,	J, L, M,	
Comments made about ICT staff (RQ1, Cat. 3)		D, G, I	A, C,	E, L, O,	B, F, H, J, K, M, N,
View of recent ICT/I projects? (RQ3, Cat. 7)	C,	A, B, D, F, G, H, K, M, N, O	I,	E, J, L,	

Appendix 9 Interview Response Summaries for Theme 1

Company	Barrier created from technical jargon?	Confidence about Technical advice, & own understanding of the projects?	ICT/I project communication & reporting process?	What do you feel maximises project success, minimise failure?
A	A little. Can get lost with the jargon. My responsibility to ask for clarification.	Reasonably confident. Sometimes feel we need an independent, sanity, check on some of the systems. IT people may not have thought widely enough beyond the actual technology.	Quite good, but depends on the personnel. Some good, some aren't.	Communication & simplification of the technology. Demystifying it & putting it into business terms. Org. buy-in – being hungry for product availability. Not just a selection process centred around the ICT team.
B	Yes it does	Yes, because of confidence in F&A Mgr & ICT Mgr.		Delivering a better customer experience as result. Also, improved speed to market with products.
C	People get a bit scared of the language, and they don't like to appear stupid. Not being stupid if you don't understand. Just being stupid if you don't ask.	Feels well informed. Confident most of the time.		Set expectations at right level with users. Agree with IT what is to be delivered, & try to over-deliver.
D	Not really. I am reasonably technical, and the IT Mgr is a trainer so he knows to be patient with people & to explain things	Feels well informed, & is confident about advice received		Good comms during the project. Successful delivery on time & budget.
E	There's a bit of that. It's a mystery to us who don't have a technical background.	Yes, because has confidence in the people providing the information.		
F	Absolutely. One of the difficulties non-ICT people have is that you haven't a clue whether what you are being told is true or false.	IT Manager is alright, but in general difficult to know if advice is right, because of lack of understanding the technology	Not very good. IT people need better Bus. Comms. Skills.	Comms between ICT & Bus will determine success or failure. ICT understanding what the business wants, & delivering.
G	Mostly able to deal with it. You just have to try to acquaint yourself with it.	Yes, pretty confident about what comes through.	Quite good at the moment. Comfortable with quality of communication.	A clear understanding by s/holders of objectives, with agreed timelines for delivery.
H	Yes. Communication not good at all usually. Problems are caused because of the technical nature of these projects that aren't explained clearly enough in English.	Not well briefed on technical implications,. IT people poor at explaining these things.		Systems doing what they are supposed to do. Make sure all s/holders are involved. Know why it is being done & have a clear plan.
I	Somewhat. You make a judgment based on the answers to your questions, rather than if you had the knowledge.	Yes, given that it is mainly incremental.		Everyone having a common expectation of the outcome.
J	Yes. I have a lot of difficulty understanding the technical terms around infrastructure projects, and so do the business unit managers.	Yes, generally		Executive buy-in needed, & commitment to target outcomes

Appendices: ICT Infrastructure Project Delivery

Company	Barrier created from technical jargon?	Confidence about Technical advice, & own understanding of the projects?	ICT/I project communication & reporting process?	What do you feel maximises project success, minimise failure?
K	Not really, because I find it very interesting. Like to find out what's happening with all this stuff, so read and learn about it.	Trusts the IT team. Feels they understand the work and the deadlines. Asks probing questions. Just makes sure questions answered in simple non-technical terms		Who is employed. Right people, with right skills & personality that will make a project successful. Having a good project brief. Delivering better service & better information than previously.
L	In the detail, yes, but not in the overall decision. I just need to know enough to be able to make a decision, to be able to sign off on something.	Not confident I was given the best, most clear, picture. Advice was alright, but not convinced it was neutral.	Could be much better. It's not at the level we get for other projects, & it needs to be done in such a way as it involves people, with buy-in & proper sign-off.	Organisation understanding its requirements & writing them out clearly. Major requirement to understand what ICT can do for a business, from a business, not a technology perspective.
M	Yes sometimes. Even with work done to get familiar with the jargon, constantly finds stuff (language) in reports that is difficult to understand.	Pretty confident. Thorough about questioning what is told. Expects thorough presentation of any new project proposal.	Wasn't going well with issues, milestone reporting etc. Set up new group headed by the Communications Manager, which now coordinates all project comms.	A working system that meets its defined expectations, or more.
N	Absolutely, but accepts that not everything can be understood	Have to rely on the senior ICT people to know the right recommendations to make. Don't always feel advice is sufficient for good decision making.	Yes, quite satisfied with what happens here. The ICT people work hard to get CEO to understand what is going on.	A good understanding of the business needs & the ability to translate that back into higher technology that will help the business.
O	Not sure. If there is anything not understood, just ask for explanation.	Excellent. Never found technical advice contradicted by anyone else.	Pretty good. Not formal.	

Appendix 10 Interview Response Summaries for Theme 2

Comp any	ICT people involvement with strategic planning	ICT/I project alignment to Business Plan	ICT/I project responsibility	Approach & involvement in ICT/I & non-ICT projects	Differences between ICT/I projects & others	Decision process for new ICT/I projects	Executive Team involvement in ICT/I projects
A	Intimately involved. Specific sessions around how technology aligns with strategic direction	Absolutely aligned. One does not drive the other, just completely interconnected.	Network Information Systems, & Business Information Systems – two people.	Fairly involved at strategic level, not at any detail level.	Greater unknown about ICT projects. Users don't understand the sophistication underneath or the underlying risks if it goes wrong. Non-ICT projects easier to understand conceptually.	Check where it fits with the strategy. Do a CBA, and sometimes a risk perspective exercise.	Receive the monthly reports. GM the closest involved.
B	Moderate involvement. Closely linked with strategic plans via Finance Mgr reporting line.	Very closely aligned.	Finance & Admin Mgr, & ICT Mgr	Closely aligned because of their relationship to overall strategies. Not directly involved.	The technical aspects. ICT/I is clearer than software because it's more physical. You can understand what you are buying, and it normally is clear what it is going to do.	Informal CBA. Look at whether it will reduce cost of doing business, enhance customer experience.	More with non-ICT projects as familiar & more visible
C	Fairly involved, to stop them going off on tangents	Quite closely aligned. I kept IT topical because I was enthusiastic about it.	GM has overall responsibility	ICT side delegated because of technical issues, but heavily for other projects. Very present & involved at final 'go live' period.	Sometimes difficult to analyse an outcome, because it is less visible to the user than a software project. Nature of the technology. Things don't always fit together the way expected.	IT looks at what's possible, then GM discusses with the partners	Monthly debrief sessions with the partners.
D	They discuss with him and give advice & input to new directions	Directly aligned to the Business plan	He (the Director) takes overall responsibility	Fairly involved, especially at Board level, for project approvals.	It's more hidden from user's view, as it sits under the software they use. People don't see the technical stuff involved in the activities they carry out	Driven by major supplier, & by customer demand for improved services. Then business case built for it.	HoD's receive weekly progress report from Director
E	Not as involved as we'd like to see them. Partly because of the dramatic growth of the company over past 3 years.	They are now, in that we now say "that's what we want" and they work out how to deliver.	The business unit manager, who carries resourcing & financial costs.	Involved in a variety of aspects because of HR implications.	Project Management of ICT/I projects looser than non-ICT projects because they aren't as familiar to us.	CBA and business priority listing	Have decided to have a Steering Committee for each major project, to ensure bus. oversight & responsibility.
F	Not at all really	Recently started to make that happen. Were reactive. When strategy develops ICT asked to supply technology.	ICT Manager	Member of a Business Improvement Team that monitors ICT projects – meets monthly		CAPEX approval sign-offs, and check on payback. Process not particularly rigorous.	Via the BIT, but nothing else, & that is distant

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Company	ICT people involvement with strategic planning	ICT/I project alignment to Business Plan	ICT/I project responsibility	Approach & involvement in ICT/I & non-ICT projects	Differences between ICT/I projects & others	Decision process for new ICT/I projects	Executive Team involvement in ICT/I projects
G	No, have one major manufacturing system, and one in-house network tech to keep equipment going.	Closely aligned, as key system drives the company and is being replaced with an ERP package	CEO takes overall responsibility.	Closely involved in the ICT/I projects because of implications of ERP direction.	ICT/I projects have been displaced to get other more familiar projects done. Now caused some big issues about its future.	A simple CBA and expected ROI. Also depends where it is on the business priority list.	Quite strong, given the critical nature of the ERP project.
H	Very involved. Success of org. depends on info. Mgmt. & this depends on ICT	Virtually fully aligned with Business Plan. Major part of bus. planning.	CEO for business side, Information Mgr for IT side. Don't have an IT Mgr any longer.	Very closely for business benefits, not so much as far as technical side is concerned		Fit with strategy, Govt. req. & need to provide better patient service.	Very limited. Mostly only recipients of monthly report.
I	ICT Manager on the Executive team which does all the strategic planning	Now very closely aligned. Convinced ICT people it would be good for them to be involved with the business as well as technology.	Project sponsor, who is mostly the ICT Manager.	All require Board decisions. Very involved at beginning, because systems were out of control & needed close management.	ICT/I projects need very tight time controls & vendor co-ordination. All kinds of implications if things don't happen at certain dates.	Prioritised when things were needed but didn't do a CBA. Intend to do that going forward.	Good, as ICT Manager on Executive team.
J	Very limited	Quite good	Individual project manager, reporting to CIO	Only those related directly to own business unit		Full documents prepared, but insufficient expertise in executive team to make suitable judgment on quality.	Dependent on a BU manager champion. If that person goes, project negatively affected.
K	At local level, but not the strategic planning that is influenced by the international operations	Tends to bypass local people because of international nature of decision-making and purchasing power.	The CEO, with IT Manager having direct project responsibility	Don't get involved with all IT projects. Does with local ones because of immediate effect on this part of the business.	At implementation. Must find a window when work can be interrupted to bring new systems/technology on board. Can't afford to be "off the air" for any significant period of time..	How do we finance it? Comes down to a very narrow window of time & financial opportunity. Comes down to easiest way to finance the project.	Only for projects where they are sponsors. Mostly overall there is little understanding of how IT & business affect each other.
L	As a line manager he takes part in the normal strategic planning and business planning process.	Don't yet have a technology plan, so it hasn't been a feature of the business planning process.	The CFO who only involves the CEO for sign-off on any significant new project.	Feels well briefed. Sits in on initial meetings and signs off the projects, but not involved on a day to day basis.	The technical complexities. ICT/I projects need extremely clear definitions of what they will achieve.	Much the same for all projects. Defining what is needed, checking the market place, determine what has to be done and how to do it.	Not high. Because it's IT, there hasn't been a need to develop, conceptualise, & then implement them, so the involvement hasn't been the same as for non-ICT projects. Now has major quality implications.

Appendices: ICT Infrastructure Project Delivery

Company	ICT people involvement with strategic planning	ICT/I project alignment to Business Plan	ICT/I project responsibility	Approach & involvement in ICT/I & non-ICT projects	Differences between ICT/I projects & others	Decision process for new ICT/I projects	Executive Team involvement in ICT/I projects
M	Very involved. They have their own business plans that link with overall business strategies	Very well aligned. Quite a strong focus on the technology platform, what's required, what's out in the market place.	CEO for all business activities, ICT Manger for technology side.	Same scoping for all projects. Not very involved unless the specific sponsor. Attends monthly project review meetings for all projects.	ICT/I projects are the tools for staff to help them in their work. They are operational enhancements & typically the benefits can be seen immediately.	All projects brought to the Technology Committee, with formal presentation & CBA done.	Chairman is very IT savvy, and thus there is a leadership which is attentive to what is available. Technology committee also has executive team members on it.
N	Yes, were part of the recent strategic planning exercise carried out.	It's ad-hoc, largely because the org. is still in 'start-up' mode. Need to do that better.	The CEOs in the client groups. This CEO for the group projects.	Has to be quite closely involved, because of the stage of org. development they are at.	These projects based on organisational needs, & are more broad than individual clinic or population needs. Also, costs are more substantial than most non-ICT projects.	Make out a business case for the Board. Also do a financial analysis, to measure expected ROI.	Quite good, as the client CEOs are all on the Board, and thus quite involved with what is happening in the projects.
O	As involved as everyone else. Head of IT on the group working on the next year's strategic plan.	Very closely aligned. Nothing done unless it fits with the business plan.	The Business Manager overall, and the Network Manager for the ICT side.	Quite proactively involved, because wants to know what is going on. Continually asks questions of the ICT people. Also thinks it's important for ICT people to see CEO has enthusiasm for the projects.	ICT/I projects completed more quickly than others. ICT/I ones very obvious, because if anything happens on the network, everyone knows, & lots of people are affected.	It evolves, as a by-product of a business need. Things move towards an inevitable point where the technology needs to be in place to support business growth.	Quite good as everything focused around ICT as a service to business issues, and that involves all the executive team.

Appendix 11 Interview Response Summaries for Theme 3

Company	ICT Reporting Line	Project scope change	ICT/I project communication & reporting process	CBA, ROI, PIR carried out	Project Outcome Measurement	Maximise project success, minimise failure	ICT/I projects meeting org. expectations
A	To the GM	Yes, usually where the capabilities of the product weren't understood, or another way of using it that is more efficient.	Quite good, but depends on the personnel. Some good, some aren't. Monthly reporting on milestones.	CBA and ROI yes, some review against budget but no formal PIR.	Results achieved, e.g. specific cost savings, improvement in customer satisfaction & turnaround times. Internal metrics of staff surveys.	Communication & simplification of the technology. Demystifying it & putting it into business terms. Org. buy-in – being hungry for product availability. Not just a selection process centred around the ICT team.	Generally, I suppose so. Not yet to the level I think is possible.
B	Finance & Admin Mgr (largely because of tech. Personality issues)	Not the overall scope, but often the detail – especially actual technology changes.	Pretty good. Monthly report from F&A Mgr, which includes a report from ICT Mgr on work in progress. Issues informed on a 'need to know' basis.	Nothing formal, and not very good at that. F&A does a financial measure. No PIR done.	How they come out in terms of original objectives & scope, esp. costings	Delivering a better customer experience as result. Also, improved speed to market with products.	Yes. Pretty satisfied. Would be better with additional resources
C	To the GM (CEO)	Not typically with these projects	Good. Weekly progress meetings, & see IT manager virtually every day.	ROI carried out	Productivity increases for staff and lawyers. Improved morale.	Set expectations at right level with users. Agree with IT what is to be delivered, & try to over-deliver.	Yes, pretty consistently
D	To the CEO	Have been very rigid with that, & it hasn't changed much. No scope creep allowed.	Good. Weekly project progress review against project plan	Brief CBA carried out. Informal ROI, no PIR	Informal – people's ease of use, & feedback	Good comms during the project. Successful delivery on time & budget. Having people committed to the project. Have CBA that becomes basis of the project.	Yes. Pretty good.
E	The CFO who has overall responsibility of how ICT dept. managed	Try not to, but sometimes something comes up that causes us to consider if it should be in scope, or could be deferred.	Quite good. Always depends on PM running the project. Project milestones reported on, but trying to improve on this.	Not done these properly, & that is an issue	Delivery on time, & on budget. Did it improve the business the way it was expected to?		Yes, given our expectations & the size of the team.
F	To CFO	Not really. Mainly because they are more physical & stable.	Not very good. IT people need better bus. Comms. Skills. Monthly progress updates at BIT level, but nothing to business units.	CBA done but not sophisticated. ROI for big projects only. No PIR.	Check against original desired outcome – performance measurements (KPIs)	Comms between ICT & Bus will determine success or failure. ICT understanding what the business wants, & delivering.	Present ICT Mgr better than some previous ones, and that helps. So, generally, yes.

Appendices: ICT Infrastructure Project Delivery

Company	ICT Reporting Line	Project scope change	ICT/I project communication & reporting process	CBA, ROI, PIR carried out	Project Outcome Measurement	Maximise project success, minimise failure	ICT/I projects meeting org. expectations
G	To the CEO.	Not as much as software projects. Mostly more straightforward.	Quite good at the moment. Comfortable with quality of comms.	CBA done, but no ROI or formal PIR.	Project delivers what it was supposed to, and users satisfied it's meeting their needs.	A clear understanding by s/holders of objectives, with agreed timelines for delivery.	Yes, now, because of own close involvement. However, historically, minimal and ad-hoc.
H	Info. Mgr reports to Business Mgr as CEO is part-time & there needs to be a f/t reporting line.	All the time. Mainly because of technology changes while project in process.	Informal on project progress. Monthly report to Board on milestones & status.	Informal CBA, no formal ROI or PIR. Just accept if system works.	That it works and users are satisfied they received what was supposed to be delivered	Systems doing what they are supposed to do. Make sure all s/holders are involved. Know why it is being done & have a clear plan.	Generally yes. Definitely getting org. benefits from them.
I	To CEO. It's always been that way. Anything else is too low down.	Not so much for ICT/I projects, but it does for software projects.	They communicate with the people they need to, and we also have review meetings which involve the ICT people. Also have written progress reports.	No CBA, or formal ROI and PIR.	Measured by the level of 'noise' from customers. Low 'noise' higher success levels.	Everyone having a common expectation of the outcome.	Just starting to see that. Cost of ICT is very high – a high proportion of the business' fixed costs.
J	To Operations Manager	Little with ICT/I projects, more with S/Ware ones	Reports at milestone points, but rather haphazard	Usually, but not rigorous	Nothing systematic	Executive buy-in needed, & commitment to target outcomes	Not very high, some bits working well, others not.
K	To Australasian IT Group, because of the global nature of the business.	That's a given. Perhaps not overall, but certainly parts of an ICT/I project do change, a lot quite often. Usually because of changing technology.	Progress reports rolled up to the regional team, but available for CEO whenever he wants to see them. Also meets with local team weekly, then daily at final stage of implementation.	Same process for all of them. Must have a business case, and compete for share of available money. Only financial ROI carried out – measure against budget. implemented.	The feeling the first time it goes live after implementation. Then making the budget, & whether the project delivers what it was supposed to.	Who is employed. Right people, with right skills & personality that will make a project successful. Having a good project brief. Delivering better service & better information than previously.	Generally yes, because most are global projects & have been implemented elsewhere prior to NZ.
L	To the CFO. A historical situation, but that needs to be reviewed once the technology plan is developed.	Yes, because of the speed of technology change. Also, if you don't ask the right questions, you won't get the right answers. That can cause a need for change mid-way through a project.	Could be much better. It's not at the level we get for other projects, & it needs to be done in such a way as it involves people, with buy-in & proper sign-off.	No, not really as far as an ICT project is concerned. Do them for other projects, just presumed these were O.K.	Does it come in at or under budget? Does it deliver better information? Don't really have a proper measurement of ICT project success.	Organisation understanding its requirements & writing them out clearly. Major requirement to understand what ICT can do for a business, from a business, not a technology perspective.	Not fully. Always seem to have implementation problems which drag it on too long, with impacts on other areas.

Appendices: ICT Infrastructure Project Delivery

Company	ICT Reporting Line	Project scope change	ICT/I project communication & reporting process	CBA, ROI, PIR carried out	Project Outcome Measurement	Maximise project success, minimise failure	ICT/I projects meeting org. expectations
M	To the CEO.	Yes, although not dramatically. Typically because of technology things not known at the outset.	Wasn't going well with issues, milestone reporting etc. Set up new group headed by the Comms Manager, which now coordinates all project comms. Much better now.	CBA always done. No formal ROI or PIR done, although milestones are measured throughout a project.	Quarterly score cards on variety of business issues including these projects. Board requires reporting on annual objectives.	A working system that meets its defined expectations, or more.	Satisfied business expectations being met, but still have concerns that there is a mismatch between ICT project group and the rest of the organisation.
N	To the CEO.	No, been very careful about this. Once business case and finances agreed, implementation was exactly according to the spec.	Yes, quite satisfied with what happens here. The ICT people work hard to get CEO to understand what is going on. Also Steering committee & project team report at its meetings on status & progress.	No formal PIR or return to ROI after project implemented.	The noise/moans stops coming from the providers about getting the information they need. Staff have access to their needed information in a faster, more effective way.	A good understanding of the business needs & the ability to translate that back into higher technology that will help the business.	Generally yes. ICT people have good understanding of how ICT can improve the sector, & how to get systems to do that.
O	To the Business Manager.	Yes., because technology changes. Don't want to be constrained from bringing in new technology if it does what is wanted better.	Yes, quite satisfied with what happens here. ICT people work hard to get CEO to understand what is going on.	No, although should really do this. Hard to quantify spin-off benefits from technology brought in initially for a different purpose.	That they work. That users are excited about the benefits the new technology has brought them, & people aren't frustrated in their use of it.	Having user enthusiasm for the technology. People really wanting to use it. Having users involved all the way through a project. Getting everyone, into an ownership feeling.	Have very high expectations of technology, and ICT staff typically rise to that. Will work until goals are achieved.

Appendix 12 Participant Information Sheet

PARTICIPANT INFORMATION SHEET

An Investigation Into Issues In ICT Infrastructure Project Delivery – The Executive Stakeholder Perspective

To: Executive Interviewee
name
Title
Company
Address

From: Gillian Reid

Dear *name*,

As you are aware, I am a staff member at The University of Auckland conducting research for a PhD Degree in the Department of Management Science and Information Systems. Together with my supervisor, Dr Cathy Urquhart, I am conducting this research for the purpose of my PhD Thesis, on the perspectives non-Information and Communications Technology (ICT) executives have of ICT infrastructure project delivery.

I have chosen this topic for two reasons. Firstly, project failure is a consistent theme in Information systems literature, and ICT projects still have a reputation for delivering less than their stakeholders expect. Secondly, while there is much literature available on issues related to general infrastructure project delivery, there is little that seems to have been derived from directly collecting and analysing the views of non-ICT business executives or end-users.

Thus this research has the following objectives:

- To investigate the issues, from the business stakeholder perspective, surrounding successful and satisfactory delivery of ICT infrastructure projects,
- To note any characteristics of this type of project that may differentiate it from other non-infrastructure projects.
- In particular, to look at disconnects between what the executive stakeholders perceive they are getting and what project teams deliver.
- To describe the results in a research report.
- To evaluate the results of the research against literature already published in this field.

A number of senior non-ICT executives will be interviewed in order to collect a reasonable sample of the views these people have about this type of project delivery, and their levels of satisfaction with both the process and the outcomes.

Both an academic and a practical contribution should emanate from this exercise. On the academic side, there should be the development of a theory about how and why these

disconnects occur. There should also be a further useful contribution to the whole research body of knowledge in this area, plus opportunities identified to extend the research results into other areas.

On the practical side, identifying the stakeholder issues, then developing a theoretical framework, should bring increased project delivery success rates and user satisfaction, plus a contribution to an overall reduction in the costs of project delivery. The flow-on effects should be an increased confidence in the implementation of ICT infrastructure changes within an organisation, and a greater willingness to invest in projects of this kind.

You are invited to participate in my research and I would appreciate any assistance you can offer me. Specifically, I would like to meet with you to gather your views about the success or otherwise of the implementation of ICT infrastructure projects. You would be interviewed for approximately three quarters of an hour to an hour and this would be conducted during work time at your office. A copy of the general questions I would like to cover will be sent to you at least one week prior to the interview.

I would prefer to audio tape the interview but this would only be done with your consent, and at any time during the interview you are entitled to have the tape recorder turned off. You will receive a written transcript of the interview, as soon as this has been done, and may withdraw any comments in there which you do not wish to be used in the research data analysis. In addition, you can withdraw information any time up to November 1, 2003. All information you provide in an interview is confidential and your name will not be used.

Thank you very much for your time and help in making this study possible. If you have any queries or wish to know more please phone me at 522-6022, or 021-781-081, or write to me at:

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For any queries regarding ethical concerns please contact:

The Chair, The University of Auckland Human Subjects Ethics Committee,
The University of Auckland, Research Office - Office of the Vice Chancellor, Private Bag
92019, Auckland. Tel. 373-7999 extn 87830

**APPROVED BY THE UNIVERSITY OF AUCKLAND HUMAN SUBJECTS ETHICS
COMMITTEE on for a period of years, from/....../....
Reference/.....**

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