Queensland University of Technology
Faculty of Information Technology

Exploring the Relationship of Organisational Culture to Enterprise System Success

PhD Thesis 2008
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Abstract

The doctoral research project is titled ‘An Exploration of the Relationship of Organisational Culture and Enterprise System Success and sought to address the research gap identified in the literature between organisational culture literature and Information System success literature. This is a research project which is funded by the Australian Research Council in conjunction with industry. The industry sponsors for this research were SAP AG, SAP USA and SAP ANZ.

The research project adopted a multi-method research design, grounded in practice, in order to surface any reported relationship between Enterprise Systems Success (ESS) and Organisational Culture (OC). A critical part of the study was to identify who could report on this relationship. Partners in implementation include internal change managers, internal consultants, vendor consultants and implementation partner consultants. Representatives from each of these constituents were interviewed, covering a range of industry sectors and Enterprise Systems vendor organisations. The first phase of the research was to qualitatively assess the perception of these participants on the role of culture to Enterprise Systems Success. This phase used open, axial and selective coding of the responses obtained in a semi-structured interview.

The next phase of the research was to gather quantitative measures of Organisational Culture and Enterprise Systems Success. The Organisational Culture Assessment Inventory (OCAI) of Cameron and Quinn was selected to gather quantitative data on Organisational Culture. The Enterprise Systems Success instrument of Gable, Sedera and Chan was selected to measure the perception of ESS because of its proven reliability and validity.

Each of these data sets were then analysed to determine if an association existed between the cultures of organisations that achieved most success with the Enterprise System as opposed to the culture types reported of organisations that achieved the least success with the ES. These findings then assisted in the development of a model of interaction between OC and ESS.

Finally, the relationship of OC to ESS was explored in a rich case study of one large firm, to determine if the consultant’s reported relationships could be identified in the subcultures of the organisation.

The key findings of this study were:
1. There was a relationship reported between culture type and success types. The findings a-e below represent findings using the culture definitions from Cameron & Quinn’s culture instrument:

a. clan cultures which emphasised the behaviours of development of others were related to reports of ESS
b. hierarchical cultures which emphasised the behaviours of control and coordination were related to reports of ESS
c. hierarchical cultures which were poor in the execution of control and coordination were related to reports of the least success with ES
d. market cultures which emphasised (internal) competitiveness were strongly related to reports of least success with ES
e. literature attributes of continuous improvement (CI), flexibility (F) and innovation (I), which are often described as antecedents to innovation success and are found in the culture type of adhocracy, were reported as strongly related to success of ES, but the culture type of adhocracy was not reported as being present in the quantitative data describing consultant experiences with enterprises which had implemented ES.

2. that the literature supported theoretical reasons for the above findings

3. that these patterns of association were found in the case study.

The research supports the proposition that there is a relationship between Organisational Culture type and ESS. Certain culture types practice behaviours that correspond to reported necessary behaviours for innovation success and ESS, whilst other culture types practice behaviours that correspond to behaviours for failure of innovation and of ES failure. A model of and explanation for this relationship was proposed as a result of the findings. Future research is now required to empirically test this model.

Keywords

Organisational culture, enterprise systems, enterprise systems success, measuring organisational culture, measuring enterprise system success, ES, ES implementation, information systems, multi-method research, erp,
Statement of Original Authorship

This thesis is presented to fulfil the requirements for the award of the degree of Doctor of Philosophy. The work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signed: ______________

Peter Birbeck

Date: 01/06/08
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For S and T
Chapter 1

Introduction
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1. Introduction

Information Systems (IS) research has been defined as ‘the systematic investigation of the development, operation, use and/or impact of an Information System in an organisational environment’ (Ives, Hamilton & Davis, 1980). An Enterprise System is a commercial package integrated Information System which brings significant change to organisations business processes, ways of working and workflows, in addition to often requiring high investment in upgrades to IT hardware infrastructure (Bancroft, Seip & Sprengel, 1998; Baskerville & Myers, 2002; Bingi, Sharma & Godla, 1999; Brady, Monk & Wagner, 2001; Garrity & Sanders, 1998; Karahanna-Evaristo, Straub & Chervany, 1999; Markus & Tanis, 2000; Parr & Shanks, 2000).

Enterprise Systems research has viewed implementations as socio-technical processes which involve significant change in organisational processes, structures and tasks. In addition, these packaged solutions are often accompanied by radical shifts in technology. Research into similar significant changes has reported that success was dependant upon culture, leadership, top management support and user support.

Organisational culture is defined in many ways, and its definitions will be explored in greater detail in the literature review. Organisational Culture has been defined as ‘the shared meanings – patterns of belief, symbols, rituals and myths that evolve across time and that function as social glue’ (Smircich, 1983). It is the ‘pattern of shared values and beliefs that help individuals understand organisational functioning and thus provide them with the norms for behaviour in the organisation’ (Deshpande, Farley & Webster, 1993). Organisational Culture is the medium within which organisational artefacts, functions and structures are embedded (Deetz, Tracy & Simpson, 2000); it is the organisational glue. Organisational Culture establishes the norms, values and beliefs that govern employee behaviour (Cooke & Rousseau, 1988; Schein, 1996) and Organisational Culture has been shown to influence change and the rate of change within organisations (Hannan & Carroll, 2003).

This PhD study’s cultural focus is Organisational Culture.

1.1. Motivation for Conducting the Research

Enterprise Systems are organisation-wide Information Systems that bring substantial changes to an organisation’s software platform, hardware infrastructure,
methods of working and information flows. The investment required in ES by an organisation is large, costing organisations much in time, money and effort, and failure is not unusual, with 45% reporting no additional business benefits.

ES have been adopted by over 60% of Fortune 500 companies in the USA (SAP, 2003). In Australia, the majority of state and federal government agencies has installed ES, with SAP R/3, Oracle, PeopleSoft and Mincom being most numerous. SAP is the largest vendor having secured the greater majority of market share both here in Australia and internationally. The market for Enterprise Resource Planning (ERP) packages has seen substantial growth, the global market is currently worth US$21 billion, with revenues of SAP alone, rising to US$9.2 billion in 2005 (Hamerman & Wang, 2005).

These commercial IS are designed to provide ‘seamless integration of all information flowing throughout a company’ (Davenport, 1998). There are many benefits that an organisation can, in theory, expect to achieve through a successful implementation of an ES. Shang & Seddon (2002) categorise these as: Operational benefits, Managerial benefits, Strategic benefits, IT Infrastructure benefits and Organisational benefits.

However, despite the potential benefits many organisations have reported less than satisfactory experiences with ES. For example, Foxmeyer went bankrupt in 1996 after attempting to implement SAP for over three years (Kalakota and Robinson, 1999). Unisource Worldwide Ltd and Dell Computer Corporation have both written off significant amounts invested in aborted SAP implementations (Bingi et al., 1999). Other worldwide brands have very publicly cited their failed implementations: Whirlpool and Gore-Tex blasted SAP and PeopleSoft in separate front page articles in Wall Street Journal articles, and Hershey Food Corp criticised its ES vendor SAP for order processing problems (Calogero, 2000). Several researchers have also found empirical evidence to support problems with ES. Wood and Caldas (2000) found low levels of satisfaction in their survey of firms that had actually implemented ES, with 45% of firms perceiving no improvements whatsoever from implementation and 43% claiming no cycle reduction.

Since the majority of the world’s largest companies have now installed ES, the vendors have sought to maintain revenue streams through extending the capabilities of the ES. During the past five years, the majority of vendor and implementation partner sales revenue has been generated through system upgrades and the selling
of additional system components, to their existing customer base. These extensions to the ES include:

- **Web Portals**
  
  Portals seek to provide users a single unified view of key information and applications that span the entire enterprise (SAP, 2004).

- **Customer Relationship Management (CRM) modules**
  
  Evolving out of traditional marketing concepts, CRM is a business strategy that goes beyond increasing transaction volume (Gray, 2001). The objectives of CRM are to increase profitability, revenue, and customer satisfaction. To achieve more effective customer relationships, a company-wide set of tools, technologies and procedures promote the relationship with the customer to increase sales (The Sweeney Group, 2000).

- **Business Analytics**
  
  These are applications that allow the business to use statistical data analysis to drive fact-based decisions about the business. The techniques involve data and text mining, forecasting, econometrics and modeling (Oracle, 2006). These applications include Decision Support Systems (DSS), Management Information Systems (MIS) and EIS (Executive Information Systems).

However, even as ES are maturing and evolving, problems with upgrades, modules, integration and extensions continue to be documented. The technology keeps improving, hardware and computer processing power increases, software becomes more sophisticated and capable yet organisations still experience significant problems with these IT innovations. Client firms have no choice but to continue developing their ES as the costs to uninstall or remove the system are prohibitive. Others report difficulties with failed upgrades and unsatisfactory overall system performance with the ES simply not meeting the organisation’s needs.

Questions therefore arise as to what are the reasons for these failures? What factors are influencing the success or failure of ES? What is the relationship between an ES and the organisation that is using the innovation? Why are some organisations successful whilst superficially similar organisations less successful with their ES?
Some suggested factors are project team configuration, executive support and change management (Bancroft et al., 1998).

Debate in the literature has suggested that there may be several factors that influence the success of an ES, and whilst no universal consensus has been reached, some researchers have however attempted to capture some of the factors. For example (Bancroft et al., 1998) presents nine critical success factors that emerge from case studies into SAP R/3 implementations:

1. Understand your corporate culture in terms of readiness and capability for change
2. Begin business process changes prior to implementation. Make the hard decisions early and stick to them
3. Communicate continuously with all levels of new users in business, not technical terms. Set reasonable expectations. Then communicate again
4. Provide superior executive championship for the project
5. Ensure the project manager is capable of negotiating equally between the technical, business and change management requirements
6. Choose a balanced (IS and business) team and provide it with clear role definitions. Expect to shift to non-traditional roles
7. Select a good project methodology with measurements
8. Train users and provide support for job changes, don't forget to train the project team
9. Expect problems to arise: commit to the change

Organisational Culture has also been shown in many studies to significantly influence processes operating within organisations (Cameron & Quinn, 1999; Cooper, 1994; Denison, 2001; Gregory, 1983; Hofstede, 1998; Rokeach, 1972; Schein, 1985; Smircich, 1983; Yeung, Brockbank & Ulrich, 1991). Elements of Organisational Culture also influence the manner in which technology is accepted by an organisation (Davis, Bagozzi & Warshaw, 1989). The social character of an organisation’s peer (employee) network affects the rate at which an IT innovation diffuses throughout an organisation (Rogers, 1995).

Ettlie (1998) observed that Organisational Culture may be a barrier to implementation success as culture bounds organisational change.
Kampmeier (1998), Scheider (1999) and Capron & Kuiper (1998) observed that ERP failures may be related to lack of attention to Organisational Culture.

Finally, Fisher (1997) observed that avoidance of failure in risk averse or risk neutral cultures leads to learned helplessness and thus may have contributed to failed implementations.

We therefore suggest that Enterprise Systems Success will be influenced in some way by Organisational Culture. The PhD study focuses upon the relationship between Organisational Culture and the success of the Enterprise System.

Identifying the nature of the relationship between Organisational Culture and IT innovations will provide significant benefits to both industry and the research community as it may surface barriers and enablers to success.
1.2. The Research Object

The research object in this study was the relationship between Organisational Culture and Enterprise Systems Success.

The study seeks to explore this relationship in order to help inform on the manner in which organisations interact with their IT innovations and what the role of Organisational Culture may be in this relationship.

Figure 1-1 below shows the focus of the study.

![Diagram showing the relationship between Organisational Culture and Enterprise System Success]

Figure 1-1. The focal relationship

The next section discusses the goals of the research study.

1.3. Research Aims, Objectives & Outcomes

The PhD research aims and objectives were as follows:

The aim of this research was to explore the relationship between Organisational Culture and Enterprise Systems Success. Enterprise Systems are examples of IT Innovations; Enterprise Systems once implemented may be considered more or less successful than originally anticipated, and so while success may be relative, the study sought to explore the nature of the relationship of OC to the ES success.

The objectives of this research were to model the relationship between Organisational Culture and Enterprise System Success.

This objective was achieved through the following methods:

1. A multi-method study of a representative sample of 20 stakeholders taken across public and private industry, drawn from vendor, client and implementation partner organisational settings using both qualitative and
quantitative techniques, based on established instruments for measuring culture and Enterprise Systems Success.

2. A revelatory case study in an organisation applying quantitative and qualitative methods

3. A cross case analysis comparing and contrasting the findings from the consultants, the organisational study and the literature.

The key outcome was an operant model of the Organisational Culture – Enterprise System Success relationship.

This research is focused in the domain of Enterprise Systems and their extensions since:

- the major source of IT investment occurring is now into the extended ES field
- failure of large system installations continue to be reported
- the scope of the research is focused upon Organisational Culture
- the study is framed within Australia, so national culture issues do not apply in this study, study of national culture was outside the scope of the research.

1.4. Research Significance and Importance

This research has developed a model that describes the relationship between organisational culture and Enterprise System success.

As early as 1993 researchers in the IS field had identified that future IS researchers needed to place greater emphasis on research on the relationship between IS related processes and the organisational environment (Cheon, Grover & Sabherwal, 1993). Several researchers have attempted to define the role that culture plays in the use of an Information System (Cooper, 1994; Ishman, 1998; Krumbholz & Maiden, 2001; Lau, Wong, Chan & Law, 2001) and these studies suggest that Organisational Culture impacts upon Information Systems (Davenport, 1998; Murphy & Simon, 2002; Myers & Tan, 2002). Yet, despite existing theory providing clues and possible explanations into the role that OC could or may play, no research to date has categorically been able to demonstrate how OC interacts with ESS. Leidner & Kayworth (2006) conducted an extensive literature review in an attempt to arrive at some meaningful propositions. The authors concluded that there were many challenges facing researchers into the area, not least caused by the complexity of the OC phenomenon. These complexities involve disagreements.
amongst researchers across a range of issues including such fundamental concepts as how to define OC, what level of culture to study and how to measure culture.

And yet, whilst indicating that culture does play a role, all the research to date fails to identify ‘how’ culture affects these unique IT innovations. This exploratory PhD research study has sought to address this gap, therefore representing a unique contribution to knowledge.

There is currently no model describing the role of Organisational Culture either in IT innovations or its operation in extended Enterprise Systems. Therefore this research has contributed new knowledge through the development of a model of the relationship of Organisational Culture to Enterprise Systems Success.

The research has made a significant contribution to the body of knowledge in that it is the first to explore the Organisational Culture – Enterprise System Success relationship. This study has shown that such a relationship exists and has identified key elements of that relationship. The work will now continue to build testable hypothesis and to further develop and test the model that has been developed.
1.5. Informing Theories

The research builds upon several existing models and theories, including the Technology Acceptance Model (Davis, 1989; Davis et al., 1989), Theory of Reasoned Action (Fishbein & Ajzen, 1975), Diffusion of Innovation Theory (Rogers, 1962), Information System Success Models (DeLone & McLean, 1992, 2003), the ES Success Measurement Model (Gable, Sedera & Chan, 2003) and various models of Organisational Culture. These models and instruments, identified in the literature review, have been validated and tested for reliability by many researchers and are underpinned by many empirically strong studies. Themes present in the literature suggest that these models capture the important constructs and successfully described the phenomenon that they purport to explain. In summary, the key informing theories from the literature are illustrated below:

![Figure 1-2. Informing theories from the literature](image)

The primary research goal was to explore and ultimately model the relationship between Organisational Culture and IT innovations in the context of Enterprise Systems. An IT innovation could be deemed to be successful or not successful, in terms of it meeting the client organisations’ needs. In the context of ES and their extensions, a measure of the success of the innovation would be Enterprise System Success. The literature review chapter presents a discussion on the definitions of IS success, what is success and how to measure success of an IS. Being able to measure ESS will assist in answering the higher research question of the relationship of Organisational Culture and IT innovations.

This PhD study also suggested new factors not yet identified that may influence the success of an ES.
1.6. Research Design Summary

The research design was driven by the primary research questions shown below:

**RQ1. What is the relationship between OC and ESS?**

Once this had been established key derived sub-questions were:

**RQ1.1. How can this relationship be explored?**

**RQ1.2. Who can inform on the OC-ESS relationship?**

**RQ1.3. What data will need to be gathered?**

**RQ1.4. How will the data be collected?**

The answers to these questions were used to drive the design of the study. The third chapter discusses the research design in detail giving the rationale and background justifications as to why certain design decisions were made. The design development itself took many months of effort, revision, development and adaptation before a suitably robust and strong design was completed. The overall final study design is summarised in the figure below, whilst each of the study components is discussed briefly in the next sections.

![Design Summary Diagram](image)

**Figure 1-3. Design summary**

Early data analysis during a study has been shown to assist the researcher in refinement of the design. The approach can be refined as the research progresses...
and lessons are learnt (Miles & Huberman, 1994), and this approach was adopted. Literature had indicated that by commencing data analysis early and by providing periods of review and reflection throughout the study, the design could evolve as the data was collected. To allow this refinement of the design, clear periods of review and reflection were purposefully incorporated into the study. The design, protocols and methods were modified as the experience of the researcher improved until a final robust design was completed.

In summary, the key learning’s from these early stages were:

1. the need to conduct a pilot study
2. the need to explore the broadest possible range of experiences of the OC-ESS relationship
3. the need to identify those who could inform on the relationship
4. the separation of the consultants into implementation, partner and vendor categories.

We shall now take each of these design elements in turn to understand how the study was developed. The first phase involved identifying how to explore the OC-ESS relationship; this was the first research sub-question to be addressed.

1.6.1. Research Design Summary: Early Design Phase

The design phase sought to address the key study sub-question, namely:

RQ1.1. How can the OC-ESS relationship be explored?

Due to the complexity of this relationship, the social nature of the problem and the components themselves, it was concluded that a rich understanding of the relationship was needed to fully investigate the problem. The first step in answering the research question was to identify at the highest level, which research approach was most appropriate to study the OC-ESS relationship. The design phase of the study is shown in figure 1-4 overleaf.
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

The early design phase identified the need to select a multi-method approach, incorporating both a qualitative sub-study and a quantitative sub-study. These studies were then to be validated in a case study.

Multi-method research approaches have frequently been recommended for exploratory research studies. Qualitative data can be gathered for discovery, exploration and building hypothesis building, these hypothesis can later be studied using quantitative methods (Miles & Huberman, 1994).

A review of the Organisational Culture literature had indicated that OC could be studied by either quantitative methods (Cooke, Rousseau & Lafferty, 1988; Denison, 1996; Hofstede, 1980; Hooijberg, 1996; Trompenaars, 1998), or qualitative methods (Alasuutari, 1995; Ashkanasy, Wilderom & Peterson, 2000; Langan-Fox & Tan, 1997; Reissner, 2005; Sackmann, 2001; Silvester, Anderson & Patterson, 1999). But many researchers had suggested that OC could and should be studied by both methods (Hofstede, 1990; Schein, 1997; Yauch & Steudel, 2003).

The IS literature also demonstrated support for the use of multi-method research, for example Galliers (1993, 1991) used survey and case study, Landry & Banville (1992) studied MIS via interview and survey, Orlikowski (1993) studied systems development through interview and study, and Gable (1994) recommended case study and survey for IS research. Others include Trauth & Jessup (2000) who used positivist and interpretivist methods to investigate group support systems (GSS), Markus (1994) who studied email use via survey and questionnaire, and Kaplan...
(c2006) who used both qualitative and quantitative methods for IS research in the healthcare industry.

There was very strong support from both research fields for using a multi-method approach in this study since:

1. different research methods generate different information about different aspects of the world (Mingers, 2001a). This was needed in order to fully explore the nature of the OC-ESS relationship

2. combining research methods can yield richer and more reliable research results (Mingers, 2001b). Richness of the data was sought so as to explore the dimensions of the relationship

3. multi-method has been used successfully in both OC and IS studies.

It was therefore identified that a multi-method approach was both feasible and desirable for the study into OC and ESS.

The need for a pilot study to test aspects of the study design, including the qualitative protocols and the quantitative instruments was also identified. Pilot studies can be used to test ideas or methods or to explore the implications of the methods (Maxwell, 2005). The next section discusses the pilot study elements.

1.6.2. Research Design Summary: Pilot Study

The pilot itself can be used to learn about the research process, interview schedule, observation techniques and the researcher themself (Gorman & Clayton, 2005). Other authors have argued that their research design would not have been finalised without some form of exploratory pilot research prior to the main phase (Light, Singer & Willett, 1990). They recommended that a pilot study should be carried out if any aspect of the design needs clarification or exploration.

The figure below illustrates the early research circle.
The pilot allowed revision and fine tuning of the research design to ensure that the study was not only asking the ‘right’ questions, but that the time frame for the study, the chosen data collection methods and the instruments were working as intended. In summary, a pilot was considered an important potential element of the study because it could be used to test:

- the suitability of the chosen data collection methods
- the language and content of the questions
- the length and appropriateness of the interviews
- the researcher’s interview and data analysis skills
- the understanding of the ideas and meanings collected
- the availability and access to research subjects
- the suitability of the chosen quantitative instruments.

The pilot was a valuable element to the study and one that we were keen to incorporate into the design. The actual revisions, changes and refinements that were made to the study during the pilot are discussed in Ch4. Following a period of review and reflection post pilot, during which changes were made to the protocols and study design, the main study phase commenced and continued the process of data collection.
1.6.3. **Research Design Summary: Main Study**

The purpose of the main study, following the pilot study, was to continue the collection of data from the participants. The aim of the main study was to continue gathering sufficient data in order to fully explore the OC-ESS relationship. The target number of interviews in the main study was 15, which would bring the total number of interviews carried out in the study to 20. In reviewing the literature both Yin (1994) and Miles & Huberman (1994) suggested that dependent upon the level of detail in the data, 15 to 20 interviews represented a good balance between data richness and manageability.

A technique useful for investigating ‘real world’ problems is the case study. The next design element to be considered is the case study which formed an important component of the study and was incorporated into the design for a number of reasons. The details and rationale for its inclusion is discussed in this section.

1.6.4. **Research Design Summary: Case Study**

A case study has been defined 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**’ (Yin, 1994).

Taking these characteristics in turn we can see that the OC-ESS investigation meets the case study requirements, i.e.

1. contemporary phenomenon – the study seeks to investigate a phenomenon that is happening in the present.
2. real life context – the OC-ESS is a phenomenon that is occurring in organisations at the present. It is not a problem that can be studied by experimentation in a laboratory.

3. boundaries between phenomenon and context are not clearly evident – the nature of the OC-ESS relationship is not fully known. The boundaries and interactions are not clear.

Case studies themselves have certain characteristics, these characteristics can be used to help understand what a case study is, but also to identify whether a case study is suitable for a particular study. Benbasat, Goldstein & Mead (1987) had identified eleven key characteristics of case studies.

The table below applies these characteristics to their appropriateness for the PhD study.

<table>
<thead>
<tr>
<th>Key Characteristic of Case Study</th>
<th>Suitability in the OC-ESS Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phenomenon is examined in a natural setting</td>
<td>✓ We wished to explore the OC-ESS in the real world, the results of research to have practical implications for industry.</td>
</tr>
<tr>
<td>2. Data is collected by multiple means</td>
<td>✓ Multi-method has already been identified as suitable for this research problem. Both qualitative and quantitative data was needed.</td>
</tr>
<tr>
<td>3. One or few entities are examined</td>
<td>✓ The two OC and ESS dimensions were examined</td>
</tr>
<tr>
<td>4. The complexity of the unit is studied intensively.</td>
<td>✓ An opportunity was available to spend some considerable time with an organisation in researching the OC-ESS.</td>
</tr>
<tr>
<td>5. Case studies are more suitable for the exploration, classification and the hypothesis development stages of the knowledge building process. The investigator should have a receptive attitude towards exploration.</td>
<td>✓ This research is an exploratory study, the problem is complex and needed to be fully explored prior to hypotheses’ development.</td>
</tr>
<tr>
<td>6. No experimental controls or manipulation are involved</td>
<td>✓ Not able to control for Organisation Culture</td>
</tr>
<tr>
<td>7. The investigator may not specify the set of independent and dependent variables in advance.</td>
<td>✓ Since the research was exploratory, no variable could be set in advance</td>
</tr>
<tr>
<td>8. The results derived depend heavily on the integrative powers of the investigator.</td>
<td>✓ Qualitative research methods are heavily dependent on the interviewer as part of the investigation.</td>
</tr>
<tr>
<td>9. Changes in site selection and data collection methods could take place as the investigator develops new hypotheses.</td>
<td>✓ Periods of review and reflection were made available to evolve the study. The study was designed to be flexible in the early stages.</td>
</tr>
<tr>
<td>10. Case research is useful in the study of ‘why’ and ‘how’ questions because these deal with operational links to be traced over time rather than with frequency or incidence.</td>
<td>✓ The study of OC-ESS is a ‘how’ question, i.e. how does OC interact with ESS?</td>
</tr>
<tr>
<td>11. The focus is on contemporary events.</td>
<td>✓ The events are current and the study wanted to focus on current, ongoing ES innovations.</td>
</tr>
</tbody>
</table>

Table 1-1. Criteria for case studies (Benbasat, Goldstein & Mead (1987) adapted from Yin, 1994)
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

These characteristics of a case study are aligned with both the objectives of the study and the nature of the problem. We can see that in the OC-ESS study, which sought to investigate the problem in its natural setting, to build hypothesis and examine using multiple means, a case study would be a very desirable element.

1.7. Research Design & Thesis Structure

The research method identified that a multi-method approach incorporating pilot and case study components would allow full exploration of the OC-ESS relationship. The thesis itself reports on these individual components in the following manner: This study design summary section has provided an overview of the major components in the finalised study design.

The next chapter is ‘Chapter 2: The Literature Review’. This chapter reviews and discusses the theories identified during the literature review phase of the study suggesting clues to what might be occurring in the OC-ESS relationship. The literature review covered research methodologies, Organisational Culture, Enterprise Systems, ESS, Technology Acceptance and Innovation Diffusion theories. Findings in the literature guided the study design, qualitative research methods and quantitative instrument selection.
Chapter 2

Literature Review: Measuring ES Success
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Measuring ES Success

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2.1. Introduction: Informing Theories

This chapter discusses the findings in the literature. The purpose of the literature review was to identify key theories in order to create a theoretical base upon which to position the study.

The literature contained many clues as to what may be happening in the OC-ESS relationship. Whilst the literature does not provide definitive answers as to ‘how’ OC interacts with ESS, it does nevertheless suggest possible points of interaction.

As shown in the first chapter, three distinct research areas were identified in the literature as potentially informing on the OC-ESS relationship.

In order to underpin the study with the most rigorous and validated theories, the literature review concentrated its efforts on the top tier journal, top tier conference publications and seminal texts. The three areas of the research are all reasonably sized in terms of the number of publications available in the three areas, none of the fields are particularly small and so finding publications was not an issue. A conscious decision was therefore made to select the highest quality papers that were representative of the actual field itself. Selecting representative publications from the top tier journals ensured that research decisions made based on the literature findings could be better defended whilst at the same time helping to build a

Figure 2-1. Reference disciplines framing the study
more robust, stronger research design. The majority of the literature was taken from the following journals:

<table>
<thead>
<tr>
<th>Top IS Journals</th>
<th>Top Business Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS Quarterly</td>
<td>Management Science</td>
</tr>
<tr>
<td>European Journal of Information Systems</td>
<td>Academy of Management Journal</td>
</tr>
<tr>
<td>Communications of the AIS</td>
<td>Administrative Science Quarterly</td>
</tr>
<tr>
<td>IS Research</td>
<td>Harvard Business Review</td>
</tr>
<tr>
<td>JAIS</td>
<td>Academy of Management Review</td>
</tr>
<tr>
<td>Information &amp; Management</td>
<td>Strategic Management Journal</td>
</tr>
<tr>
<td>Journal of Strategic IS</td>
<td>Organisational Science</td>
</tr>
<tr>
<td>Journal of Information Technology</td>
<td></td>
</tr>
</tbody>
</table>

Table 2-1. Sources of information

The readings from the above journals (and their associated conferences) formed the backbone of the literature review.

The first area to be reviewed in detail is the ERP/ES literature. The purpose of this section of the literature review was to identify the nature of ES, their historical development and the unique characteristics of these ERP’s. This is followed by a review of Enterprise Systems Success. The purpose of this section is to identify relevant theories of success and measures of success. Next follows a section on technology acceptance, as the adoption, implementation and use of an Information System is a form of technology acceptance. This is followed by a discussion on how TAM and Organisation Culture are related.

This literature review closes with a section on technology diffusion that discusses the manner in which IT innovations have been found to permeate into an organisation.
2.2. Enterprise Systems

ERP systems evolved out of Materials Requirements Planning (MRP) software from the 1960s and 1970s; in essence MRP packages were simple inventory systems. MRP functions were handled by mainframe computers allowing Electronic Data Interchange (EDI) to handle the purchasing process automatically (Brady, Monk & Wagner, 2001). EDI also allowed the manufacturer and supplier to predict and manage their production schedules in tandem leading to the introduction of supply chain management concepts.

Organisations and vendors quickly realised that the supply chain was not the only function with which the software could assist. A successful business generally has similar functions to its successful competitors. MRP developers realised that generic software could be applied to different organisations since most organisations have common functions and activities, revolving around finance, HR and manufacturing. The MRP vendors started to develop integrated systems that processed the data in real time and allowed users to view the same data whether they were in the marketing, production or payroll department. These integrated systems became known as Enterprise Resource Planning systems (ERP's) and later Enterprise Systems. A checklist for whether a piece of software can be considered an ERP (Gartner Group Inc, 1990) is shown below:

This table is not available online. Please consult the hardcopy thesis available from the QUT Library

Table 2-2. ERP characteristics (Gartner Group Inc, 1990)
In the early 1990s computing power was increasing rapidly and software vendors were keen to exploit the new power available to them, so the MRP and MRPII packages shifted from predominantly manufacturing and supplier based systems to organisation-wide IS. Vendors developed modules that sought to address the functional needs of the entire business in an integrated manner. These MRP packages evolved into ERP’s and ES that spanned across multiple functional boundaries within an organisation. These ERP’s have been defined as a packaged business software system that allows a company to:

1. automate and integrate the majority of its business processes
2. share common data and practices across the entire enterprise
3. produce and access information in a real time environment (Deloitte Consulting, 1999).

ERP’s are examples of large complex Information Systems that cross functional departmental boundaries integrating horizontally and vertically throughout an organisation (Bingi, Sharma & Godla, 1999; Brady et al., 2001; Parr & Shanks, 2000; Ross & Vitale, 2000; Umble, Haft & Umble, 2003). Evolving out of the ERP term – to indicate that these integrated systems were not just about resource management – came the term Enterprise Systems, defined as ‘an off-the-shelf package that provides an integrated suite of applications which provide transaction processing and management Information Systems for the common core of business processes found in accounting, human resource management, manufacturing and sales and distribution’ (Hernandez, 1999).

ERP solutions exist for finance, marketing, human resources, payroll, accounting and supply chain management, all interconnected to ideally create a seamless environment for information sharing (Bernard, 2004). Most large enterprises have an Enterprise System, indeed by as early as 1998, SAP sales have been made to 60% of Fortune 500 companies including seven out of the top ten pharmaceutical and petroleum companies (Kumar & van Hillegersberg, 2000). The ERP software allows these very large enterprises to effectively coordinate information across all their business areas, information can flow across the organisation via its business processes (Monk & Wagner, 2006).
Since organisations are not isolated entities, interacting with both their suppliers and buyers, vendors have been seeking to extend their ES to support the whole supply chain. This can extend the benefits of sharing information not just intra-organisational but inter-organisationally, i.e. suppliers and buyers sharing information.

Figure 2-2. Information and material flows in a business process model (adapted Monk & Wagner, 2006)

Figure 2-3. Information flows along the value chain
The ES vendor market is dominated by a few key players. The major software vendors and their products offerings (2006) are shown below:

Figure 2-4. Vendors of Enterprise Systems and their products

The next section identifies themes relating to the success of these IS within organisations.
2.3. Enterprise System Success

It was important to the study to have a clearly defined understanding of ESS, to understand how success was defined and how success (or failure) could be measured. Only through fully understanding the nature of ES ‘Success’ could the relationship between ESS and OC be properly studied. This first section of the literature review therefore sought to identify and learn from research into ESS.

Some researchers have sought to investigate how to evaluate an IS (of which ES are examples) from a business manager’s perspective (Shang & Seddon, 2002) and identified that different stakeholders and users may have very different system needs and subsequent perceptions of what the system means to them. Success can be referenced against many criterion, including the stated goals of the organisation, past performance, financial measurement or on-time delivery (Markus & Tanis, 2000).

Several models have been proposed that describe dimensions of system success. However, the most frequently cited model is the IS Success model (DeLone & McLean, 1992). This model is highly influential in the field underpinning many of the models. The IS Success (DeLone & McLean, 1992) model is shown below:

This figure is not available online. Please consult the hardcopy thesis available from the QUT Library

Figure 2-5. IS Success Model (DeLone & McLean, 1992)

DeLone and McLean developed the model following a review of 180 empirical studies. The studies were then organised according to dimensions of the taxonomy. The dimensions were subsequently drawn together to present the above descriptive
model of IS Success. The authors then presented researchers with a challenge to validate the model through empirical research. Indeed, many researchers took up the challenge with over 200 papers reviewing, exploring and testing the original model.

Some researchers have viewed the model with a critical eye. One paper questions the inclusion of ‘system use’ as a success variable in a causal model (Seddon, 1997). Seddon argues that ‘use’ precedes impacts and benefits, but it does not cause them, and that the critical factor for IS Success measurement is not system ‘use’ but that net benefits should flow from use. Seddon considers that the original IS Success model attempted to combine both process and causal explanations of IS Success in the one model, an approach that is flawed. Seddon proposed a redefined DeLone and McLean model, shown below:

![IS Success Model Diagram]

**Key:**
- Rectangular boxes: IS Success Model
- Rounded boxes: Partial behavioural model of IS use
- Solid line arrows: Independent (necessary and sufficient) causality
- Dotted line arrows: Influence (not causal, since observer’s goals are known)

**Figure 2-6. A re-specification of the DeLone & McLean model**
Seddon argued that ‘use’ can not be considered a measure of success since use may be mandatory, voluntary or coerced and should be thought of rather as behaviour than a success dimension. Several other success models have also been proposed that build on the IS Success model, for example Garrity & Sanders (1998) identify four dimensions of Information Systems success, proposing an IS Success model based upon these dimensions.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Task support satisfaction</td>
<td>This dimension is concerned with the fit among the system, the user and the task. Within business processes workers are asked to complete various tasks and sub-tasks in order to fulfil the goals and objectives of the role. However, when an Information System is implemented profound changes may occur that impact the workers ability to achieve those tasks. Garrity &amp; Sanders (1998) argue that constructs within this dimension attempt to measure how the system helps or hinders the worker in accomplishing the job requirements and fulfilling the task specifications.</td>
</tr>
<tr>
<td>B. Quality of work life satisfaction</td>
<td>In an attempt to assess how well the IS supports the basic social needs of the worker, Garrity &amp; Sanders (1998) proposed the quality of work life dimension. This dimension measures an individuals response to system, for example a system that is technically sound may still cause undesirable side effects such as employee turnover, absenteeism and political struggles in the organisation.</td>
</tr>
<tr>
<td>C. Interface satisfaction</td>
<td>This dimension is related to both task support and decision making satisfaction since improperly designed interfaces can cause unnecessary work, inappropriate work flows and an overall negative experience for the user. The human machine interface boundary maybe narrow but impacts can be high upon levels of satisfaction for the user.</td>
</tr>
<tr>
<td>D. Decision making satisfaction</td>
<td>Is the ability of the system to support decision making and problem solving activities, and is the belief the worker has in the degree that the system supports decision making in the control of business processes. Not all worker roles have the same levels of responsibility or discretion, and this dimension focuses primarily upon users who have some degree of responsibility.</td>
</tr>
</tbody>
</table>

**Table 2-3. Users of Enterprise Systems**

Garrity & Sanders (1998) summarised the dimensions in a model of IS Success as shown below:
In contrast Pitt, Watson & Kavan (1995) write about ideas of service quality that have been taken from the field of marketing and apply these notions of ‘service quality’ in an Information Systems arena. Pitt et al. (1995) use the SERVQUAL instrument (Parasuraman, Zeithaml & Berry, 1988) in an attempt to measure IS service quality, arguing that, since IS departments have always had a service role, measuring service quality is one possible measure of IS Success. Pitt et al. (1995) draw on Cameron & Whetten (1983) in relation to organisational effectiveness, whose latter work also underpins the Competing Values Framework (Cameron & Quinn, 1999) discussed in the next section. The IS Success model is also evidenced throughout and Pitt et al. (1995) suggest an augmented IS Success model that incorporates service quality as a dimension of IS Success. In concluding, Pitt et al. (1995) suggested that service quality can be both an independent and dependent variable in IS research, and that IS service is an antecedent of use and user satisfaction. The model of determinants of user expectations is shown below:
These are just some of the examples evidenced throughout the literature of the influence of the IS Success model on research into IS Success. Indeed, by 2002 over 285 papers had been published that referenced the original 1992 IS Success model. In light of this and further findings in their own research, DeLone & McLean (2003) published a 10-year update to their model. The updated model is shown below:

The authors concluded that 36 of the 38 original success factor associations had been found to be significant with the results supporting the causal structure of the model (DeLone & McLean, 2003). The most marked change to the model is the removal of ‘Individual Impacts’ and ‘Organisational Impacts’ and their replacement
with ‘Net Benefits’. Many researchers have suggested wide ranging IS impact measures and rather than seek to incorporate all these potential measures of impacts. DeLone & McLean (2003) sought to simplify the category and incorporate all impact measures into the single category of net benefits. In addition to modifying the impacts, service quality was introduced as a measure of success. System use is another measure that the new model extends, which has been variously studied, for example, self-reporting usage versus computer recorded usage (Straub, Limayem & Karahanna-Evaristo, 1995), initial and future intended usage, mandatory versus voluntary, effective versus ineffective use. However, whilst there is much debate about how to successfully measure system usage in the literature, there is general consensus that system use at some point is a key variable in understanding IS Success.

Taking a different approach, Markus & Tanis (2000) sought to identify the stages that need to be followed to enable a successful ES implementation. The key characteristics of an ES include integration, package typologies, client vendor relationships and ES life cycles. Markus & Tanis (2000) try to frame the analysis of ES Success and discuss: ‘What IS Success with ES? Why does it not always occur and what can be done to improve the chances of success?’

Success, Markus & Tanis (2000) argue, is multi-dimensional and relative; relative first to the time that it is assessed, relative to the organisation’s unique goals and relative to the average business benefits realised by similar firms in its industry. Markus, Axline, Petrie & Tanis (2000) identified several success measures for each of the different phases of ES implementation, and identified unique success measures relevant to different phases.

A. Success in the project phase
   1. Project cost relative to budget
   2. Project completion time relative to schedule
   3. Completed and installed system functionality relative to original project scope

B. Success in the shakedown phase
   1. Short term changes occurring after system ‘go-live’ in key business performance indicators such as operating labour cost
   2. Length of time before key performance indicators achieve normal or expected levels
3. Short term impact on the organisation’s adopters, suppliers and customers such as average time on hold when placing a telephone order

C. Success in the onward and upward phase

1. Achievement of business results expected for the ES project, such as reduced IT operating costs and reduced inventory carrying costs

2. Ongoing improvements in business results after the expected results have been achieved

3. Ease in adopting new ES releases, other new IT innovations, improved business practices, improved decision making, etc after the ES has achieved stable operations.

It can be seen from the literature that there are several views as to what is system success. However, based on research published to date it is clear that the majority of research is based in one way or another on the IS Success model. This was an important consideration in choosing an appropriate instrument to measure ES success. The IS success model which is used as the basis for the research is the Updated IS Success model (DeLone & McLean, 2003).
2.4. Measuring ES Success

In addition to understanding what constitutes ES success, an instrument was required that could measure the relative success (or failure) of an ES.

In the IS literature, the term “success” has been used in a number of contexts and somewhat loosely. However, Thong, Yap & Raman (1994: 252) state that effectiveness of an IS can be “defined as the extent to which an information system actually contributes to achieving organizational goals.”

Within the literature there are very few published instruments for actually measuring ES success. A few researchers, for example Zvarin et al (2005) have measured ERP systems success by using user satisfaction. A widely used instrument was developed by Ives, Olson, and Baroudi (1983), but this measures ES success from the perspective of the end user and by measuring satisfaction. The user satisfaction instrument was further developed, but its focus still remained on measuring user satisfaction, (Doll & Torkzadeh, 1988).

Tan & Pan (2002) developed a framework for ERP systems success assessment by including both technical and strategic valuation of ERP systems success; however this instrument has yet to be validated. To date the Gable et al (2003, 2004 and 2005) instrument provides the most comprehensive ES systems success measurement model.

The instrument selected for the PhD study was the ES Success measurement model (Gable, Sedera & Chan, 2003), which is a 27 item questionnaire based instrument. The model has been validated in several studies and has four quadrants: (1) Individual Impact, (2) Organisational Impact, (3) Information Quality, and (4) System Quality, which are based on the IS Success dimensions of (DeLone & McLean, 1992). The Gable et al. (2003) model has been adopted for this study since it is based on the IS Success model, previously discussed. The Gable et al. (2003) model has also proven itself to be reliable, robust and manageable in several recent studies.

The ES success model (Sedera, Gable & Chan, 2004) is shown below:
This measurement instrument has been selected for use in this study because it has shown to be:

1. Reliable,
2. Robust,
3. Validated and Manageable

DeLone and McLean (1992) suggest that in order to develop a comprehensive measurement model/instrument for a particular context, the constructs and measures should be systematically selected considering contingency variables, such as the organizational structure, size, or technology, and the individual characteristics of the system. This suggests that where the aim is to gain a full, overarching view of success, it is critical that the complete set of success dimensions be employed, not a selected subset, the ES Success model (Sedara & Gable, 2004) sought to achieve this.

Construct Validity

Construct validity seeks agreement between a theoretical concept and a specific measuring device or procedure. Construct validity comprises convergent validity and discriminant validity and it is evidenced by observed agreement among ratings gathered independently of one another, where theory suggests the measures should be related. Several sets of data were used to test construct validity during the development of the instrument by the authors. The results of the studies provided very strong support for the validity and reliability of the enterprise system success measurement instrument as an acceptable measure of contemporary information systems (Sedara & Gable, 2004).
The exploratory factor analysis results of the specification and the confirmation surveys suggested a very high factor structure for the ESS.
2.5. Summary

Research into the IS field guides us into the design of the investigation.

Resulting from a substantial review of the IS came the selection of an instrument for measurement of Enterprise System Success. As indicated the instrument selected was the ES impacts instrument developed by Gable et al. (2004). An instrument was required to measure the success of the ES in order to triangulate Organisational Culture against. An instrument was required to quantify the ESS component of the OC-ESS relationship. Much work was undertaken in reviewing the available literature before final selection of the Gable instrument. The instrument has proven to be an acceptable measure of contemporary information systems and research results provide very strong support for the validity and reliability of the enterprise system success measurement instrument. The construct validity of the ES Success measurement instrument has been thoroughly examined through a number of studies including confirmatory factor analysis. These analyses examined the fit of the theoretically based model to the data gathered from separate samples and confirmed a very strong fit (Sedera and Gable 2004). The results from the various studies indicate that the instrument is a reliable and valid instrument by which to measure ES Success.

The IS literature review, in addition to guiding ESS instrument selection also informed on the potential interaction with OC and ESS. In reviewing the guiding theories in the IS literature clear themes and patterns were seen to emerge. Many of the theories and models into IS introduce concepts of ‘behaviour’, ‘attitudes’ and organisational social structures playing some role in the organisations interactions with its Information Systems. It is the nature of the organisations human characteristics that need to be taken into account, not necessarily the type of innovation which is being adopted. As we shall see in the next section of the literature review, attitudes, beliefs and behaviours is the language of organisational culture.
Chapter 3:

Literature Review: Measuring Organisational Culture
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Measuring Organisational Culture

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3.1. Introduction: Organisational Culture

This section of the literature review is concerned with Organisational Culture, what it is, how it manifests itself and how we can quantify Organisational Culture. We then conclude with a section that highlights where we consider the points of convergence to be situated between Organisational Culture and ESS.

This section of literature discusses Organisational Culture and introduces the major theories that have arisen out of the empirical studies. Culture is a wide ranging concept whose theoretical basis spans several traditional fields of study including psychology, anthropology, management and other social sciences. The word ‘culture’ has been used to describe societies and ethnic or regional groups, (Hofstede, 1980). However, the phrase was taken up by early writers in organisational studies since it can be applied equally to other human categories such as organisations. Drawing on these theories from anthropology, sociology and social psychology, researchers have made a number of efforts to understand the behaviour of individuals and groups within organisations using concepts such as semeiotics, rituals, ceremonies, stories and language (Rowlinson & Hassard, 1993; Smircich, 1983; Trice & Beyer, 1993; Wilkins & Ouchi, 1983).

3.2. Organisational Culture Defined

To understand what culture is, it is useful to review the development of the field and to consider the major milestones that presented paradigm shifts in the way that researchers viewed organisations. The field had developed incrementally over a period of 30 years or so until a shift in focus during the 1980s. During the early stages of the field’s development the majority of researchers applied strict scientific measures to organisations in an attempt to understand them. Organisational studies in general were very much focused on outcomes such as productivity, fiscal measures and organisation effectiveness. This approach began to be questioned during the late 1970s and early 1980s as the concept of Organisational Culture began to develop. ‘Culture is altogether a much “softer” organisation characteristic than for example productivity, it is more about the social behaviour of individuals and groups within the organisation than machine efficiency.’ (Geertz, 1973). Definitions of OC evolved that reflected these ‘softer’ aspects which are:
Organisational Culture, ‘the collective programming of the mind which distinguishes the members of one organisation from another’ (Hofstede, 1990)

Organisational Culture, defined as the observable norms and values that characterise an organisation, influences which aspects of its operations and its members become salient and how members perceive and interact with one another, approach decisions and solve problems (Trice & Beyer, 1993) and (O'Reilly, Chatman & Caldwell, 1991)

Culture is taken to be the shared attitudes, values, beliefs and customs of members of a social unit or organisation (Martin & Siehl, 1983)

Organisational Culture … shared meanings – patterns of belief, symbols, rituals and myths that evolve across time and that function as social glue (Smircich, 1983).

Deshpande, Farley & Webster (1993) reviewed more than 100 studies in organisational behaviour, sociology and anthropology, defining Organisational Culture as ‘the pattern of shared values and beliefs that help individuals understand organisational functioning and thus provide them with the norms for behaviour in the organisation’.

It is clear from the above definitions, that whilst the language differs and there are subtle differences in emphasis, many of the writers are using similar phrases and terminology. Terms such as attitudes, values and beliefs keep recurring.

A definition of OC that captures the key elements from various models is described below:

OC is ‘a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think and feel, in relation to those problems’ (Schein, 1985).

The PhD study needed a positioning definition of what OC is and the above definition by Schein was taken as the formal definition for OC. This definition has been adopted for many studies and is the most widely used definition by number of cited works.

The manner in which OC manifests itself within an organisation has been the subject of much debate. For example, Peters & Waterman (1982) identified that culture can demonstrate its presence in six key ways:

1. the way in which people interact, their terms of address and the language and technical jargon they use
2. the way in which they dress, e.g. formal business suits versus smart casual wear

3. the norms which govern the way in which work is organised and conducted, e.g. reporting arrangements, preferences for written or verbal forms of communication

4. the organisation’s self-image and dominant values it espouses, both within and outside the organisation, e.g. the importance it places on particular organisational functions, the extent to which it wishes to be recognised as a ‘tough’ or ‘caring’ and/or environmentally friendly organisation

5. the way in which it treats its employees and responds to its customers. The rules for playing the organisational game, e.g. what it considers to be a ‘good’ employee or ‘effective’ manager

6. the climate as conveyed by its physical layout and general atmosphere, e.g. whether it receives its visitors or customers with warm friendliness or cold efficiency, whether it maintains executive only dining rooms and similar restricted facilities

How OC manifests its visibility within an organisation is discussed in greater detail in ‘Measuring OC’ discussed later in this chapter. However, the elements of culture that many of the definitions do describe are summarised in the model (Hofstede, 1998) shown below. Hofstede had sought to provide a summary model that incorporated the key components of culture surfaced by the field’s major research studies.

Figure 3-1. Values, attitudes and Organisational Culture (Hofstede, 1998)
Whilst no model has been universally adopted as the de-facto standard for describing OC, there is some consensus in underlying thinking. The mind map in Appendix 3.1 summarises the various manifestations found and the studies which surfaced these manifestations.

Another model that attempts to describe the various manifestations of OC within the organisation is the Cultural Web (Johnson, 2000). The web attempts to describe the ways in which the various manifestations of OC surface within an organisation, with the sum representing the OC paradigm for that organisation. The model is shown below:

![Figure 3-2. Interacting elements defining culture](image)

The language is similar to many models, identifying symbols, rituals, stories and power as being important cultural elements of an organisation.

The next section summarises some of the common concepts found in the OC literature, and again a mind map is shown in Appendix 3.2 that summarises the key findings from the literature.
3.3. Values: The Core of Culture

Social systems exist because human behaviour is not random, but to some extent predictable (Lewin, 1936). We each try to predict people’s behaviour around us based on our assumptions of that person’s mental programming. This mental programming leads to the same person showing more or less the same behaviour in similar situations. As early as the beginning of the 20th century researchers were recognising the benefit in being able to predict human behaviour to a wide range of applications. Lewin (1936) even proposed a mathematical formula to describe a person’s behaviour:

\[ B = f(P,S) \]

Where

\[ B \] = predicted behaviour
\[ P \] = a contribution of the person
\[ S \] = a contribution of the situation or environment
\[ f \] = some probabilistic interactive function, most likely not specifiable in exact mathematical terms

These mental programs are described as mental constructs. Mental constructs are ‘not directly accessible to observation but [are] inferable from verbal statements and other behaviours and useful in predicting still other observable and measurable verbal and nonverbal behaviour’ (Levitin, 1973).

In relation to the specific OC phenomenon several authors consider important mental constructs that individuals rely on to be ‘values’.

Several definitions of values are:

‘a conception, explicit or implicit, distinctive of an individual or characteristic of a group, of the desirable which influences the selection from available modes, means and ends of actions’ (Kluckhohn, 1951).

‘To say that a person “has a value” is to say that he has an enduring belief that a specific mode of conduct or end state of existence is personally and socially preferable to alternative modes of conduct or end states of existence’ (Rokeach, 1972).
According to Kluckhohn (1951) values have both intensity and direction. The intensity of the value is the degree of relevance that it holds for us and the direction is whether the outcomes of the value are good or bad.

The research by these authors, whilst introducing a variety of subtle differences in definition, do nevertheless confirm the importance of the role that an individuals’ values have in shaping the collective culture and social framework of the organisation to which they belong.

### 3.4. Levels of Culture within an Organisation

Within organisations OC has been suggested to operate at four levels (Denison, 1995; Schein, 1985). The four cultural levels are:

1. artefacts or symbols, i.e., the visible products of a culture
2. patterns of behaviour, the socially shared rules and norms/concrete actions
3. values and beliefs, which underlie these actions
4. basic assumptions about the world and how it is, which unconsciously underpin the other three levels

At the lowest level are basic assumptions, embedded within a person’s subconscious and invisible to observers. Basic assumptions are formed throughout childhood and help an individual make sense of the world around. Values and beliefs are at the next level defining patterns of behaviour in the individual. Only at the very highest level do we actually see the very visible manifestations of culture – the symbols present within the organisation that can give an indication of the culture of the society. It is in part because of these deep ‘hidden’ levels that culture can be very difficult to study.

The model overleaf describes the levels of culture and their interaction (Schein, 1985).
Schein (1985) distinguishes various levels of analysis, ranging from core assumptions that represent the deepest level of culture, to beliefs and values as an intermediate level, to norms and artefacts that are visible at the surface level. Schein does however warn the researcher of being lulled into a false sense of security into thinking that artefacts alone, whilst very easy to witness around an organisation, describe an organisation’s culture. A researcher can quickly consider that they have established an organisation’s culture solely from these artefacts. However, whilst the data is easy to obtain it is hard to interpret. It is easy to describe ‘how’ a group constructs its environment and ‘what’ behaviour patterns are discernible amongst its members, but not ‘why’ a group behaves in a certain way. The underlying logic is often hidden.

Trompenaars (1998) considers norms, defined as ‘the mutual sense a group has of what is right and wrong’, to be of particular importance. Trompenaars also emphasises three aspects of organisational structure as important in determining corporate culture, which are:

1. the general relationship between employees and their organisations
2. the vertical or hierarchical system of authority defining superiors and subordinates

3. the general views of employees about the organisation’s destiny, purpose and goals and their place in this

Katz & Townsend (2000) have sought to describe the role of Information Technology in the ‘fit’ between culture, business strategy and organisational structure. They proposed a framework for understanding how organisational structure and Information Technology will vary based on culture within the confines of the chosen competitive strategy.

Figure 3-4. Relationships between culture, strategy, structure and Information Technology (Katz & Townsend, 2000)

Cooke & Rousseau (1988) and Cooke, Rousseau & Lafferty (1988) also study culture from a positivist view and suggest that quantitative approaches may be more practical for purposes of analysing data-based change in organisations. Indeed, there are many studies of OC that adopt a positivist approach to studying the phenomenon, however in contrast other researchers adopt a different research methodology to studying OC.
3.5. Interpretivist approaches to measuring culture

There are many researchers who have studied Organisational Culture in an interpretive manner. Trice & Beyer (1984) write about myths, stories and rituals taking a more qualitative approach to studying Organisational Culture. They proposed a typology of rites and ceremonies, identifying six rites present within organisations. The six rites studied are those of: (1) passage, (2) degradation, (3) enhancement, (4) renewal, (5) conflict reduction, and (6) integration. Trice & Beyer also consider that culture is inherently symbolic emphasising the expressive side of human behaviour rather than the technical or practical side. They consider that symbolism plays a very important role in cultural communication and expression. Trice & Beyer (1993) consider that symbols are the most pervasive and general of cultural forms. Symbols manifest themselves in an organisation through myths, stories and rituals, symbols that can be studied qualitatively.

Inspired by Peters & Waterman (1982), Deal & Kennedy also study Organisational Culture through ritual, rites and heroes. Whilst Deal & Kennedy (1982) saw values as the bedrock of any corporate culture in contrast to some writers, Deal & Kennedy consider values to be visible indicators of culture. Slogans, phrases and advertising positioning statements they consider represent core values because they become the essence of the organisation’s philosophy; others would categorise these as artefacts, e.g. Schein (1985). Deal & Kennedy proposed a range of activities that the observer can undertake to diagnose an organisation’s culture. These include:

1. Study the physical setting
2. Read what the company says about its culture
3. Test how the company greets strangers
4. Interview company people
5. Observe how people spend their time
6. An insider can go even further, provided they try and view the culture through the lens of objectivity
7. Understand the career path and progression of employees
8. Question, how long people stay in jobs, particularly middle management
9. Look at the content of what is being discussed or written about
10. Pay particular attention to the anecdotes and stories that pass through the cultural network

An author very prominent in the field of Organisational Culture is Edgar Schein.

Schein studies culture very much from an interpretivist standpoint. Schein also talks about values, but introduces the other dimensions of artefacts, beliefs and assumptions. Schein considers that the essence of culture is the set of basic assumptions that people share regarding such things as human nature, social relationships and relationships among social institutions and their environment. Schein also discusses how organisations can influence culture but concludes that Organisational Culture is very difficult to change because:

1. much of Organisational Culture is taken for granted and it is difficult to change things that are implicitly part of people's thinking and behaviour
2. much Organisational Culture has deep historical roots
3. certain power groups have vested interests in the beliefs and assumptions and are unlikely to be willing to discard them
4. cultural changes lead to increased anxiety for group members

In trying to measure Organisational Culture, Schein (1999) states that culture surveys do not and cannot measure culture. He suggests that

'you don't know what to ask about or what question to design, even with utilising those methods that claim to have isolated a limited set of relevant dimensions. Asking individuals about a shared phenomenon is inefficient and invalid. Culture is a group phenomenon and should be measured as such'.

Schein (1996) airs his frustrations with the quantitative efforts to define culture.

'Particularly in relation to culture, when I see my colleagues inventing questionnaires to "measure" culture, I feel that they are simply not seeing what is there, and this is particularly dangerous when one is dealing with a social force that is invisible yet very powerful. We are in grave danger of not seeing our own culture, our assumptions about methods, about theory, about what is important to study or not study, and, in that process, pay too much attention only to what suits our needs.'

Rather, in trying to identify an organisations culture, researchers can gather data by using a combination of the following approaches:
1. Analysing the process and content of socialisation of new members, by interviewing socialisation agents, such as supervisors and older peers of new members

2. Analysing responses to critical incidents in the organisation's history by constructing a careful organisational biography from documents, interviews and perhaps even surveys of present and past key members. For each crisis or incident identified it is then necessary to determine what was done.

3. Analysing beliefs, values and assumptions of 'Culture Creators or Carriers'. When interviewing founders, current leaders or culture creators or carriers, one should initially make an open ended chronology of each person's history in the organisation – his or her goals, modes of action and assessment of outcomes.

4. Jointly exploring and analysing with insiders the anomalies or puzzling features observed or uncovered in interviews. It is a joint inquiry that will help to disclose basic assumptions and help determine how they interrelate to form the cultural paradigm (Schein, 1984).

Schein's approaches to studying culture are very different to the quantitative researcher's methods. Schein considers that to analyse why members behave the way they do, we should look for the values that govern behaviour (the second cultural level). However, values are hard to view directly and often it is necessary to infer them from interviewing key members. Even this analysis may be flawed because we are usually only noting the manifest or espoused values of a culture, i.e., what people say is the reason for their behaviour, what they would like those reasons to be and what are often rationalisations for their behaviour. The underlying reasons for their behaviour remain concealed or unconscious.

Schein goes a long way in convincing the reader of the underlying validity of his approach to understanding culture. In comparison, many of the positivist views of culture pale into comparison and look overly simplistic and superficial.

Regardless of the research approach, whether positivist or interpretivist, there are some common themes and patterns that emerge, which are discussed in the next section.
3.6. Common Themes

Some researchers study culture from the stance of norms, e.g. Cooke & Rousseau (1988). Harrison & Carroll (1991) studied social expectations that are based on underlying values, others study culture through the rituals, stories or myths found in organisations, e.g. Louis, Posner & Powell (1983), Martin & Siehl (1983) and (Trice & Beyer (1993). Thus we see many different points of departure for the evaluation, assessment and modelling of culture.

A study by Meyerson & Martin (1987) supports the view of Smircich (1983) in defining what culture is, i.e., that organisations are cultures, and that culture is not just a discrete set of variables to be manipulated. Martin & Meyerson’s view of organisations as patterns of meaning, values and behaviour is also similar to that described by Schein.

There are indeed many models present in academic literature that attempt to describe Organisational Culture. Some of the models are based on primary empirical research whilst others are based on secondary research and use other’s finding to pull together several concepts into one unified model. It is therefore difficult for a researcher to recommend one particular model has having captured the essence of Organisational Culture over the others. There does however seem to be consensus within several aspects of defining Organisational Culture and many of the models consider the following common aspects of organisations, i.e., elements of the culture of the organisation, as being important:

- Values
- Assumptions
- Artefacts
- Rituals

These dimensions of culture are repeated in many of the different models. It would therefore seem appropriate in considering organisational cultural models and their use to be mindful of these most common traits in choosing or proposing one particular model over another. Even though the overriding similarity in the Organisational Culture literature is referenced to a shared value system, there is further debate over such issues as the level of analysis and research methodology used (Cooke & Rousseau, 1988).
3.7. Organisational Culture and Leadership

It has been suggested that leadership is a variable and dimension of the culture system that greatly affects an organisation’s culture. Schein (1985) described five primary behaviours that leaders exhibit in their attempts to shape Organisational Culture:

1. **What leaders pay attention to, measure and control** – systematic and consistent attention to details, performance measures and control mechanisms congruent to organisational goals.

2. **Leader reactions to critical incidents and organisational crises** – the emotionally charged atmosphere surrounding a crisis provides members of an organisation an opportunity to observe leader reactions and behaviours and increases member learning intensity.

3. **Deliberate role modelling, teaching and coaching** – the visible, overt behaviour of a leader provides greater clarity and understanding of beliefs and values to observing members.

4. **Criteria for rewards and status allocation** – synchronising reward systems and status allocation to members whose behaviours represent espoused values, maximise the impact of culture derived from the leader’s vision.

5. **Criteria for recruitment, selection, promotion, retirement and excommunication** – culture perpetuates itself through the selection of individuals demonstrating a propensity for the cultural values that the leader exhibits.

Leaders’ behaviours interact with what Schein terms ‘secondary reinforcement mechanisms’: (1) the organisation’s design and structure, (2) organisational systems and procedures, (3) design of physical space, facades and buildings, (4) stories, legends, myths and parables about important events and people, (5) formal statements of organisational philosophy, creeds and charters.

Therefore leaders can heavily influence Organisational Culture both from a historical standpoint and in terms of shaping the current culture.

Whilst leaders can shape culture so too ironically can culture shape leaders. As early as 1992 Kotter & Heskett identified four factors that shape managerial behaviour: (1) the corporate culture, (2) formal structure, systems, plans and policies, (3) leadership and the efforts to articulate and implement a business vision and strategy, (4) the competitive and regulatory environment. OC has also been
shown to be a source of cues by which leaders make sense of their own organisations (Ravesi & Schultz, 2006). This complexity of relations is characteristic of Organisational Culture and represents one example of the difficulty researcher’s face in studying dimensions of culture.

### 3.8. Organisational Homogeneity: Sub-cultures

‘One of the great errors of the recent literature on corporate culture has been to assume that organisations are homogeneous’ (Goffee & Jones, 1996).

Organisations are rarely characterised by a single culture (Wilkins & Ouchi, 1983). The Competing Values Model (Cameron & Quinn, 1999) even states one of its cultural types as that of the clan culture, inferring an independent tribal type culture comprised of discrete cultural sub units. If an organisation has several sub-cultures present within, how does the Organisational Culture surface or be unearthed? The question needs to be asked, what writers and researchers are actually describing when they refer to the Organisational Culture?

One argument proposed by Beyer & Cameron (1997) is that when a researcher refers to the Organisational Culture frequently in these organisations they are often describing only the managerial sub-cultures subscribed to by those at the top level of an organisation. The presence of various sub-cultures in an organisation may not necessarily affect the practical search for the organisation-wide culture provided that the researcher is aware from the outset that there is a high probability that there will be sub-cultures present in the organisation. The organisation-wide culture based on the organisation’s espoused values and beliefs may still be present, possibly at a deeper level than an individual Business Units (BU) sub-culture. Certainly though it can be envisaged that in a large business there must be a highly complex and dynamic set of sub-cultures present within the organisation. In the light of this argument for the presence of sub-cultures within organisations some of the proposed models purporting to describe or measure Organisational Culture do indeed look decidedly simplistic.

The presence of sub-cultures within the one organisation has implications for the study. In order to effectively investigate the nature of the OC-ESS relationship we needed to identify the OC type present in the organisation. Without understanding the full cultural profile of the organisation we would be unable to draw generalised conclusions from the data, for example, if we only studied a particular BU, which had
a unique culture, then findings based on these results alone could be questionable. The possible presence of sub-cultures within the one organisation and the implications for the study is discussed in Chapter 4 Research Design.

The next section discusses the various approaches that have been undertaken in attempts to measure the culture of an organisation.

### 3.9. Measuring Organisational Culture

In comparison to the physical sciences, the social sciences, including OC studies, deal with systems at a much higher level of complexity. The General Hierarchy of Systems, Von Bertalanffy (1968) defines various systems in levels of complexity: (1) static frameworks, (2) dynamic systems with predetermined motions, (3) closed-loop control or cybernetic systems, (4) homeostatic, self-controlling systems like the biological cell, (5) the living plant, (6) the animal, (7) man, (8) human organisations and society, and (9) transcendental systems. Each higher level adds a dimension of complexity. Social sciences are considered to reside at level ‘8’ where the degree of complexity is overwhelming. At this level of complexity we use models to try and simplify the system in order to understand the system. However, in the simplification process we are subjectively choosing and discarding elements from the system and this is where our errors will occur. It is this level of complexity in social systems that create the difficulties, already discussed, in defining what culture is, what the constructs are that define the notion of culture, how these interact with each other, and as the next section discusses how one measures Organisational Culture.

In this PhD study it was necessary to have a clearly stated method for measuring Organisational Culture. As we have seen there are many definitions, models and views proposed, the same applies to research into how to measure Organisational Culture.

The complexity inherent in an organisational social systems means that Organisational Culture has many facets that together make the whole. Many studies appear able to validate their instruments by focussing upon only one or two of the dimensions of Organisational Culture. They may indeed be exploring aspects of an Organisational Culture, yet the models are either too simplistic or appear to be missing many dimensions or factors that other researchers have found to be important. As an example, Goffee & Jones’ model of Organisational Culture (1996) claims that OC can be analysed along just two dimensions sociability and solidarity.
Schein counters, that to rate an organisation along dimensions like solidarity or sociability may be accurate but irrelevant and superficial. A company may truly operate as a friendly network or as a fragmented collection of individuals as Goffee and Jones suggest, but that fact may not be very important to the company’s OC. The danger of the typology being that it will seduce managers into believing that they now understand their culture when, in fact, they may have only scratched the surface (Schein, 1997).
3.10. Organisational Culture Influencing Information Systems

This section will now discuss some of the perceived linkages between Organisational Culture and Information Systems as evidenced in the literature to date.

In the literature many have sought to define the role that culture plays in various organisational settings, processes and facets of organisational being, yet whilst many comment and describe the relationship in models, there is scant empirical evidence to support their hypotheses. In addition, the models themselves are suitably ambiguous and present the reader with a reasonable proposition, one that common sense would suggest appears reasonable, yet on closer examination are lacking in rigour and supporting evidence.

There are some researchers that have presented cases to indicate that culture should be important in socio-technical processes, just as it is important in many other business processes. For example, Moreton & Chester (1996) discuss many dimensions of IS and IT in the modern organisation and consider the interaction of the strategic elements for introducing change to the IS function; their ideas are based on the work of Rockart & Hofman (1992) and Rockart & Morton (1984). Initially, Rockart & Morton (1984) developed Leavitt’s model of the four social forces present in an organisation. Leavitt’s (1965) original model is shown below:

![Figure 3-5. Forces within an organisation (Leavitt, 1965)]

In the revised model Rockart & Morton (1984) take into account the impact of technology and define five elements of the business: (1) organisation structure and
culture, (2) strategy, (3) technology, (4) processes, and (5) people. These elements need to be harmonised so as to they ‘exist in a state of dynamic equilibrium’ (Rockart & Morton, 1984). The revised concept includes management processes at the centre and a ‘permeable membrane’ that allows the five internal forces different amounts of exposure to the two external forces provided by the socio-economic and technological environments.

The interaction of strategic elements in an organisation (Rockart & Morton, 1984) are shown in the figure below:

![Figure 3-6. Strategic elements within an organisation](Rockart and Morton, 1984)

Rockart & Hofman (1992) developed the model further to include the changes required to introduce a new technology into the IS function, and in this model the authors argue that Organisational Culture influences all the other constructs.

This model is shown overleaf:
In a wider ranging literature study Leidner & Kayworth (2006) sought to identify the nature of culture. Through a substantial literature review they proposed that a combined culture approach should be adopted.

The research that led to development of these and other models, does suggest that Organisational Culture has a role to play in IT innovation success. Yet none of the prior research defines how, to what extent and at what points Organisational Culture exerts itself on the IT innovation. The models did suggest that Organisational Culture would play a role but do not demonstrate ‘how’, the PhD research sought to answer this question.

The next section examines research approaches to studying and measuring Organisational Culture.

### 3.11. Research Approaches to Studying and Measuring OC

Distinguishing qualitative against quantitative methods in assessing OC may seem obvious; qualitative approaches are the opposite of survey type assessments (Davey & Symon, 2001). However, the distinction between the two approaches may not be that clear cut since even a method that does not involve the quantification of data may still be guided by a positivist understanding of the problem. Several
researchers introduce both methods into the one study; others advocate choosing one method, and remaining with that one method for the duration of the entire study. Nevertheless, regardless of the epistemological debate, most researchers clearly state the approach the have adopted.

### 3.12. Quantitative Research Methods

Quantitative research methods were originally developed in the natural sciences and examples of quantitative methods include surveys, laboratory experiments and numerical methods such as mathematical modelling. Quantitative research is about quantifying relationships between variables. The researcher measures variables in a sample of subjects, and expresses the relationship between variables using effect statistics, such as correlations, relative frequencies, or differences between means (Hopkins, 2000). Some of the characteristics of quantitative research are shown below:

<table>
<thead>
<tr>
<th>Strength</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Replicable, creating generalisations and enabling benchmarking</td>
</tr>
<tr>
<td>2</td>
<td>Reliability and validity may be determined more objectively than qualitative techniques</td>
</tr>
</tbody>
</table>

Table 3-1. Quantitative research features (Neuman, 2000)

This figure is not available online. Please consult the hardcopy thesis available from the QUT Library
Validity represents how well a variable measures what it is supposed to, and reliability indicates how reproducible results are on a re-test. There are three types of reliability that have been suggested by Neuman (2000):

1. Stability reliability – does the measure deliver the same answer when applied in different time periods?
2. Representative reliability – does the indicator deliver the same answer when applied to different groups?
3. Equivalence reliability – does the measure yield consistent results across different indicators?

Whilst both qualitative and quantitative researchers want a valid and reliable measurement, each method will treat the specifics differently. Quantitative data, generally in form of numeric data, lends itself especially well to tests of reliability and validity.

Strength 3: A quantitative research design allows flexibility in the treatment of data, in terms of comparative analyses, statistical analyses.

Since quantitative data and results are numeric, a whole range of statistical analysis techniques can be brought to bear on the study enabling in-depth exploration of the data. Descriptive statistics can be utilised to describe the numerical data, e.g. uni-variate, bi-variate and multi-variate analysis can be used to highlight associations between theoretical constructs.

However, quantitative research, like any other approach, does have certain limitations.

Limitation 1: Sample size

Sample size is an important factor in quantitative studies. Sample size has to be large enough in a quantitative study for the researcher to be sure that they are detecting the smallest worthwhile effect or relationship between variables. It is generally accepted that detecting the effect 80% of the time indicates statistical significance and ‘detecting’ means getting a statistically significant effect. This means that more than 95% of the time you would expect to see a value for the effect numerically smaller than what was observed, i.e., if there was no effect at all in the population (the ‘p’ value for the effect has to be less than 0.05).

If there are too few subjects in a study and yet a statistically significant effect is identified, most academics would regard this finding as invalid.
Limitation 2: Limited for exploration

The standardisation of questionnaires can limit testing to predetermined hypotheses. Questionnaires have respondents react to specific question and answer lists that are in fact created by the researcher, therefore there is an argument that the researcher is looking for something that they already know exists. The researcher may, albeit unwittingly, be directing the instrument to return a result that validates their predefined hypothesis.

3.13. Qualitative Research Methods

Qualitative OC studies use methods taken from both psychology and anthropology. Psychological approaches consider individual behaviours and expand these out into group culture dynamics, whilst the anthropological methods operate at the group level. As a field anthropology may have naturally closer ties to Organisational Culture. Qualitative research does have some distinct features summarised below:

Table 3-2. Qualitative research features (Neuman, 2000)

It has been argued that qualitative research approaches clearly have their strengths in developing grounded theory in regard to the issues under investigation. Such an approach is valuable when looking at for example cultural complexity within an organisation, since little knowledge will exist about issues such as multiple cultural membership, cultural context at the organisational level and the impact on performance. Little will be known about the messiness of the cultural context or about inherent contradictions and paradoxes (Sackmann, 2001).

Qualitative approaches also have other strengths, they are flexible and adaptable. As a qualitative study progresses new knowledge is generated, this new knowledge can be used to alter sampling techniques, data collection and research questions. Qualitative research can be very flexible in this regard.
Qualitative research is also very good where theory building is required, leading many researchers away from quantitative research. As Richards (1990) states, particularly where theory is sought and not merely tested, qualitative methods hold the promise of the ‘emergence of theory’. In grounded theory for example, the theory grows through theoretical sampling, recording comparisons with newly acquired data and developing paths that may be quite distinct from the original data; a process that cannot be matched by quantitative analysis (Strauss, 1987).

A further strength of qualitative research is the richness of data and information that can be obtained. A great deal of intangible factors and fuzzy and soft issues can all be surfaced in qualitative research, something that quantitative methods have difficulty exploring.

Other researchers also consider that qualitative data itself has some important strengths and make several claims as to the power of qualitative data. Typically, qualitative data focuses upon real life events and can give a strong insight into ‘real life’ phenomenon, and this is coupled with the fact that the data is generally collected in close proximity to the specific phenomenon being investigated (Miles & Huberman, 1994). However, qualitative approaches also have their limitations. The primary limitation with qualitative research being that the findings are bound to the specific case under investigation, there is no benchmarking or generalisation that can be drawn from the study and there can be no direct comparing of results gained from other studies. The results of qualitative research are very unique to the phenomenon being studied; this also limits the degree to which generalisations can be drawn and proposed.

There is also the issue of validity. Questions should be asked regarding do the reported findings really capture the essence of the research setting and to what extent do they reflect systematic biases of the researcher and his or her professional training (Sackmann, 2001).

Qualitative approaches can also have limitations in terms of time and cost. The time needed to be spent in the research setting and the time needed to condense and analyse the qualitative data can be extensive. In addition, data from interviews needs to be transcribed and the resulting transcripts themselves will require condensing.

A summary table of strengths and limitations of qualitative methods, particularly in relation to studying cultural complexity is shown in the table overleaf:
<table>
<thead>
<tr>
<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rich, detailed and meaningful descriptions of the cultural setting under investigation to develop grounded theory</td>
<td>Difficult to compare findings from the case study with other case studies</td>
</tr>
<tr>
<td>Insights about the dynamics of cultural complexity (e.g. contradictions, paradoxes, shifting group boundaries related to different issues)</td>
<td>Generalisations beyond the researched setting are not possible</td>
</tr>
<tr>
<td>Interactive – assessors get immediate feedback if their questions or research methods may not be adequate for the setting under investigation</td>
<td>No explanations or predictions can be made about the researched phenomena</td>
</tr>
<tr>
<td>Adaptive/Flexible – all methods, research activities and research questions can be adjusted as research efforts progress to respond to new insights</td>
<td>Remaining doubt: Has the researcher really captured the essence of the research setting or do the findings and interpretations reflect predominantly the researcher’s personal and professional biases?</td>
</tr>
<tr>
<td>Insights gained from the research lead to propositions/hypotheses grounded in organisational life</td>
<td>Costly in terms of time needed for data collection and data analysis</td>
</tr>
</tbody>
</table>

Table 3.3. The strengths and limitations of qualitative research approaches in regard to cultural complexity (adapted from Sackmann, 2001)

In summary qualitative research approaches and methods can be used to gain a better understanding of organisational life and can yield rich data about specific cases and can help develop grounded theory if needed or required.

### 3.14. Quantitative versus Qualitative Approaches

In terms of recommending quantitative over qualitative approaches to investigating or measuring Organisational Culture, it is not as clear cut as simply adopting a positivist or interpretivist approach and stating that your research is going to study the phenomenon from one perspective or the other. Organisational Culture is a very complex entity to try to describe and model, much less to even measure. This complexity has led to ambiguity and confusion within the field regarding how to define, model, interpret and measure Organisational Culture within an organisation.

Even Hofstede has come under criticism for his work because the results were based solely on statistical analysis of questionnaire data. He discusses the most common criticisms that are aimed at his work:

1. Surveys are not suitable to measure cultural differences
   
   Answer: They should not be the only way.

2. Any set of functionally equivalent samples can supply information about such differences.
3. The IBM data are old and therefore obsolete

Answer: The dimensions found are assumed to have centuries old roots. They have been validated against all kinds of external measurements; recent replications show no loss of validity.

4. Four or five dimensions are not enough

Answer: Additional dimensions should be statistically independent of the dimensions defined earlier. They should be valid on the basis of correlations with external measures; candidates are welcome to apply (Hofstede, 1998).

This confirms earlier discussions in this paper about the difficulty of measuring, identifying and modelling Organisational Culture and the debate amongst researchers as to the most appropriate method to adopt. Researchers cannot even agree on a research methodology let alone which tools to use to measure Organisational Culture. Yet Organisational Culture needs to be studied and researchers at some point, need to adopt and define a research approach that will allow them to investigate culture fit for their purposes. Many of the cultural instruments reviewed in this paper have proven merit confirmed by many separate studies taken across a broad range of industries, organisational types and sizes. Instruments that have been validated in this way by several research studies were considered for this study.

At this stage in the field’s development there is an argument for those wishing to study Organisational Culture to utilise a range of tools, taken from both quantitative and qualitative view points, to capture the key elements of a business’ Organisational Culture.

Denison (1995) demonstrates that studies can effectively utilise both qualitative and quantitative research methods to study Organisational Culture. Two linked studies formed the basis of that research; the first study undertaken involved five firms in a case study analysis. Each case was analysed by reviewing publicly available sources of information about the company, interviewing knowledgeable outsiders (30-40 people for each case) and direct interviews with between 25 and 100 individuals within each organisation. The interviews that were carried out focused upon interviewee’s identity and career history, the core values of the organisation, organisational history and power and prestige of different subgroups. The purpose of the first study was to facilitate theory building. Following the first case study analysis phase of his research a second study was undertaken to test the model.
and hypothesis that Denison had identified. A survey was developed and from 3,625 surveys that were sent to top executives across five industries, 764 completed surveys were returned. Factor analysis and multi-dimensional scaling were used to assess the validity of the questionnaire items developed to measure the four cultural traits. This approach importantly for the study confirms the validity of undertaking both qualitative and quantitative research to study Organisational Culture (Denison, 1995).

There have been other studies undertaken that have used quantitative and qualitative methods to study Organisational Culture. For example, Rousseau & Gundry (1994) whose research was based on a study into 149 recent employees in 12 electronics manufacturing firms. In particular the authors sought to investigate how new employees come to understand the culture with specific reference to behavioural norms. Although the initial research employed critical incidents methodology (a qualitative method), Gundry & Rousseau linked this to a quantitative assessment of behavioural norms, the study therefore supports the use of the two methods to investigate a problem. To study behavioural norms Gundry & Rousseau used the OCI developed by Cooke & Lafferty in 1989.

Many of the instruments are surveys based, adopting a positive quantitative approach whilst others adopt qualitative methods. With each methodology there are strengths, weaknesses, limitations and benefits. This section has discussed the various characteristics of the two different methodologies, quantitative versus qualitative. The next section discusses the instrument selection process for this research project.
3.15. Instrument Selection

In attempts to measure OC, many instruments have been developed. A starting point for a researcher in deciding which instrument to adopt is perhaps to consider the underlying research methodology adopted by the instruments and to consider the instruments based upon their approach. Once a thorough understanding of the various instruments has been obtained an informed decision can then be made as to the appropriate instrument to adopt for a particular study. It should be a decision and choice that can be defended by the researcher as being the most appropriate tool for the job in hand.

An in-depth review of the most validated and rigorously tested instruments used for measuring Organisational Culture was undertaken as part of the research. The details of the particular instruments are given in Appendix 3.5, but a summary of the instruments and rationale for suitability for the PhD study is presented here.

Many of the studies into Organisational Culture have sought to develop instruments to measure and quantify a firm’s Organisational Culture. However, regardless of the difficulties associated with identifying suitable instruments, ultimately my research needs to identify a suitable instrument that meets the needs of this study.

Looking at the research requirements, there are clear goals and objectives all set within the bounds of a 3-year PhD project. Therefore, the choice of instrument needs to reflect academic, research and project considerations. In arriving at any decision, a series of questions (criteria) are asked of the object, against which the suitability of that option can be judged and measured. This process was applied in assessing the different instruments. A summary of the criteria against which the numerous instruments were measured against is shown in the following table:
Table 3-4. Selection criteria for instrument selection

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grounded in theoretical rigor</td>
<td>The instrument should be clearly underpinned by strong academic research and theory. The theory underpinning the instrument should itself be supported by separate empirical studies.</td>
</tr>
<tr>
<td>Validity</td>
<td>Has the instrument been confirmed, through other studies and by statistical methods as measuring what it states to measure?</td>
</tr>
<tr>
<td>Reliability</td>
<td>Can the results be replicated repeatedly? Do the results from several studies confirm the reliability of the instrument?</td>
</tr>
<tr>
<td>Manageability</td>
<td>Several of the instruments take the form of very long questionnaires, in some cases over 100 items long. Consideration needs to be given so as to not overburden the subjects with an unwieldy number of questions.</td>
</tr>
<tr>
<td>Accessibility to Instrument</td>
<td>Can the authors/copyright holders be easily contacted and has the instrument yet been made available to be used by the academic community?</td>
</tr>
<tr>
<td>Copyright Implications</td>
<td>How publishable are the results and what are the restrictions, if any, to publishing the findings?</td>
</tr>
<tr>
<td>Prior number of studies used in</td>
<td>The more studies that have utilised the instrument the stronger can be argued the case for validity and reliability</td>
</tr>
<tr>
<td>Cost to purchase (if applicable)</td>
<td>Free to use for academic purposes or must a licence to use the instrument be purchased</td>
</tr>
<tr>
<td>National or Organisational Culture being measured</td>
<td>Some instruments measure one or the other, whilst a few seek to measure dimensions of both in the same instrument.</td>
</tr>
</tbody>
</table>

Clearly in some cases there has to be a trade off between what is desired and what can actually be achieved, for example, some instruments are licensed, protected by large fees required to be paid in order to use the instrument. Clearly in a research study such as this funding is limited and some instruments are simply too expensive to use. Some of these compromises that we have had to make are presented in the research limitations chapter.

However, from the instruments that were reviewed, clear candidates presented themselves that were strongly supported by empirical evidence, manageable to administer, affordable and well grounded in the theory that had been uncovered in the wider literature review.

The quantitative instrument that was chosen for the measurement of Organisational Culture is the Organisational Culture Assessment Instrument (OCAI) (Cameron & Quinn, 1999).
**Instrument Characteristics**

This section discusses the instrument and the rationale for its suitability in this study. A summary of the other instruments that were considered as prospective candidates is shown in Appendix 3.5.

Two prominent authors in the Management Research field, Cameron & Quinn (1999) developed an instrument to identify an organisation’s culture. The instrument, the OCAI, was based upon the Competing Values Framework (CVF), the purpose of which was to diagnose an organisation’s culture. The instrument takes the form of a questionnaire that requires individuals to respond to just six items. Each question has four alternatives and respondents are asked to divide 100 points amongst these four alternatives. A higher number of points is given to the alternative that the respondent considers is most similar to his/her organisation.

The Competing Values Framework itself was developed from a list of organisational effectiveness criteria first developed by Campbell (1977). Campbell had identified 39 indicators that were claimed to represent all possible measures of organisational effectiveness. Quinn & Rohrbaugh (1983) then submitted the 39 indicators to a statistical analysis and identified two major dimensions that organised the indicators into four main clusters. They found that clusters of values reproduced the dimensions developed by Jung (1923) and Myers & Briggs (1962) to describe psychological archetypes. One dimension differentiates effectiveness criteria that emphasise flexibility, discretion and dynamism from criteria that stresses stability, order and control. The second dimension differentiates effectiveness criteria that emphasise an internal orientation, integration and unity from criteria that highlight an external orientation, differentiation and rivalry.

These two dimensions form four quadrants which represent sets of organisational effectiveness indicators. These indicators then represent what people value about an organisation’s performance; they are in effect representations of the core values of the organisation. The CVF expresses three specific criteria that must be met in order to test its applicability to Organisational Culture analysis:

1. Organisational Culture must be described in terms of bipolar dimensions of shared values
2. Two of those dimensions must reflect values for control versus flexibility and values for internal versus external constituents
3. These two dimensions must bisect to form a 2x2 framework
Competing Values Framework (Cameron & Quinn, 1999):

1. **Clan**
   A friendly place to work where people share a lot of themselves. It is like an extended family. Leaders are thought of as mentors, even as parent figures. The organisation is held together by loyalty and tradition. Commitment is high. The organisation emphasises the long term benefit of individual development with high cohesion and morale being important. Success is defined in terms of internal climate and concern for people. The organisation places a premium on team work, participation and consensus.

2. **Adhocracy**
   A dynamic, entrepreneurial and creative workplace. People stick their necks out and take risks. Effective leadership is visionary, innovative and risk oriented. The glue that holds the organisation together is commitment to experimentation and innovation. The emphasis is on being at the leading edge of new knowledge, products and/or services. Readiness for change.
and meeting new challenges are important. The organisation’s long term emphasis is on rapid growth and acquiring new resources. Success means producing unique and original products and services.

3. **Market**
   A results oriented workplace. Leaders are hard driving producers and competitors. They are tough and demanding. The glue that holds the organisation together is an emphasis on winning. The long term concern is on competitive actions and achieving stretch goals and targets. Success is defined in terms of market share and penetration. Outpacing the competition and market leadership are important.

4. **Hierarchy**
   The organisation is characterised by a formal and structured place to work. Procedures govern what people do. Effective leaders are good coordinators and organisers. Maintaining a smooth running organisation is important. The long term concerns of the organisation are stability, predictability and efficiency. Formal rules and policies hold the organisation together.

The OCAI can also be extended to consider and incorporate other dimensions of organisational performance and Whetten & Cameron (1998) have extended the CVF to include mapping managerial behaviours into a culture change process. Whetten & Cameron (1998) developed the Management Skills Assessment Instrument (MSAI), which is based on prior research by the authors into critical management skills. Whetten & Cameron (1998) clustered the skills and competencies that emerged from these studies into a set of competencies applicable from mid-level to upper level managers.

Twelve competency categories are mapped into the CVF, i.e., three categories per culture type.
Figure 3-9. OCAI components (Cameron and Quinn, 1999)

The twelve competency categories are summarised below:

Table 3-5. 12 competencies of organisations (Cameron and Quinn, 1999)
**Strengths of the OCAI instrument**

Cameron & Quinn believe that this instrument provides practitioners with a useful tool to diagnosing an organisation's culture because it offers the advantages of being:

**Practical**
It captures key dimensions of culture that have been found to make a difference in organisation’s success.

**Timely**
The process of diagnosing and creating a strategy for change can be accomplished in a reasonable amount of time.

**Involving**
The steps in the process can include every member of the organisation, but they especially involve all those with responsibility to establish direction, reinforce values and guide fundamental change.

**Quantitative & Qualitative**
The process relies on quantitative measurement of key cultural dimensions as well as qualitative methods including stories, incidents and symbols that represent the right brained ambience of the organisation.

**Manageable**
The process of diagnosis and change can be undertaken and implemented by a team within the organisation, usually the management team. Outside diagnosticians, culture experts or change consultants are not required for success implementation.

**Valid**
The framework on which the process is built not only makes sense to people as they consider their own organisation, but is supported by extensive empirical literature and the underlying dimensions have a verified scholarly foundation.

Several large studies have utilised the CVF in Organisational Culture studies, these studies provide evidence of the instruments’ reliability and validity.

Some of these studies are discussed overleaf.
One study that tested the reliability of the CVF was carried out by Quinn & Spreitzer (1991), in which 796 executives from 86 different public utility firms rated their own organisations’ culture. Cronbach alpha coefficients were calculated for each of the culture types being assessed by the instrument, and the results confirmed that respondents rated their organisations’ culture consistently across the various questions in the instrument. Another large study conducted by Yeung, Brockbank & Ulrich (1991) involved 10,300 executives in 1,064 businesses; many of these were Fortune 500 companies. The respondents were human resource executives and senior managers. Again Cronbach alpha coefficients were calculated to test reliability. The results showed clan culture reliability was .79, the adhocracy culture reliability was .80, the hierarchy culture was .76 and the market culture reliability was .77. These more than exceeded satisfactory levels. A large study carried out in 2005 sampled 6,869 employees from 55 manufacturing companies using the CVF (Patterson et al., 2005). The study concluded that the CVF was a robust instrument that could be used as the basis for empirical study of an organisations culture.

Zammuto & Krakower (1991) also used the CVF to investigate the culture of higher education levels. Over 1,300 respondents rated the culture of their organisations, resulting in reliability coefficients of clan reliability .82, adhocracy reliability .83, hierarchy reliability .67 and market reliability .78. More recently Kwan & Walker (2004) used the CVF in an inter-educational study measuring the culture across a range of institutions.

In Australia, several studies have used the CVF to investigate Organisational Culture of specific organisations, but at the same time these studies have also sought to test the suitability of the CVF to be used in the context of the Australian culture (Igo & Skitmore, 2006; Lamond, 2003). These studies concluded that the CVF was indeed a valid and reliable instrument and one that was appropriate to be used in the Australian culture.

Further research that has tried to explore direct relationships between specific construct of culture and a particular culture type has been undertaken by Homburg & Pflesser (2000). The research approach included elements of qualitative and quantitative research. The study results support the existence of a market oriented culture and identify key values that are present within the CVF cultural paradigm.

We therefore see strong support in the literature for the reliability, validity and strength of the CVF and the OCAI instrument. All of these factors contributed to the decision to select this instrument for use in the PhD study.
3.16. Summary Findings in the Literature

As we have seen, the literature informs on possible aspects of the relationship between OC-ESS. However, the literature does not explain how Organisational Culture interacts with Enterprise System Success. This is the problem identified as the primary target for the PhD study.

The literature review also highlights that the relationship between OC and ESS is a challenging phenomenon to study for several reasons.

Firstly, the relationship between Organisational Culture and ESS is a complex system and complex social systems are notoriously difficult to study. Many studies have sought to explore research problems in social settings and have failed in their attempts to adequately describe or answer the problem that they initially sought to address.

Secondly, regarding Organisational Culture, researchers still cannot agree on suitable definitions of ‘what’ Organisation Culture is and ‘how’ it can be measured. This presents problems of context and clarity for the study.

Thirdly, the literature on ESS also experiences difficulties with meanings. ‘What is ESS?’ and ‘How to measure ESS?’ are questions that are yet to be fully answered in the literature. These conflicts within the ESS literature are in part a result of the relative ‘newness’ of the field, the field is simply in its early stages of evolution. The research domain has not been thoroughly or completely investigated and so the various models published may not be entirely complete or be in the early stages of development.

However, just as the literature identified the relationship between OC and ESS as challenging to study, it did suggest possible strategies for moving forward with the design of the investigation.

The next sections briefly summarises the key findings of this chapter.

Organisational Culture Literature

Research into the OC field, whilst frequently in disagreement or providing conflicting findings, does have agreed areas of consensus and commonality that are relevant to the OC-ESS study.

1. Research does confirm common themes and language; terms such as values, beliefs and assumptions are continually surfaced in research studies.
2. OC has been shown in many studies to influence organisational performance and effectiveness.

3. OC can be investigated in the one study through combined quantitative/qualitative methods.

4. External and internal stakeholders can both inform on a particular OC.

5. OC has been shown in many studies to influence organisational change and can operate as either an enabler or inhibitor to a successful change process.

**Enterprise System Success Literature**

Research into this field clearly represents a ‘work in progress’. Suitable definitions and measures of ES Success have yet to be agreed upon by researchers operating in the field. However, studies to date have shown that:

1. ESS can be measured quantitatively - instruments to measure ESS quantitatively have been developed

2. ESS literature supports the notion that beliefs and attitudes may play a role in the success of an ES

3. Multi-method studies have been successfully undertaken in IS research

4. Beliefs and attitudes are critical constructs in the
   a. Technology Acceptance Model;
   b. Theory of Reasoned Action and Theory of Planned Behaviour, upon which TAM is based, indicate that attitudes and beliefs affect a users use and perception of an IS.

It can therefore be seen that the literature informs on many aspects of the study, whilst there are differences of opinion amongst researchers, there are also important areas of agreement. There are clearly areas of convergence within the published studies with commonalities in the fields being observed. The literature very strongly indicates that OC should play a role in the success of an ES.
Chapter 4

Research Design
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4. Introduction: Research Design

This chapter describes the research design and methodology for the study. The rationale for various design issues is discussed in relation to meeting the research questions and the objectives of the study. The study was driven by the primary research question

**RQ: What is the relationship between Organisational Culture and ESS?**

Once this had been established key derived sub-questions were:

RQ: How can this relationship be explored?

RQ: Who can inform on the OC-ESS relationship?

RQ: What data will need to be gathered?

RQ: How will the data be collected?

The relationships between these questions are shown in the figure below:

![Diagram showing primary and sub-research questions](image)

**Figure 4-1. Primary and sub-research questions**

Answers to these questions are found in the following sections. The first phase of the study was concerned with framing the study. The final goal of this phase being to
develop a research design that was robust, rigorous and methodologically sound. The guiding study questions were used to build up the various elements of the design. Each of these questions formed a critical element to the study – ultimately defining how the OC-ESS relationship was to be explored. Each of these questions is discussed in detail in the next sections.
4.1. **RQ: How can we explore the OC-ESS relationship?**

The objective of the study was to explore the OC-ESS relationship and build theory based on the findings. Therefore in developing the study design, the methods selected were those that would allow the widest exploration of the relationship and all its facets.

In order to fully explore the relationship a number of guiding criteria were developed that could be used to assist in the selection of particular methods for the study. Clearly there are many ways in which the study could have been undertaken, but by applying these criteria a design was built that was strong, robust and aligned with meeting the primary study aim:

**To explore the relationship across the widest possible organisational and industry settings**

There may have been different experiences of the OC-ESS relationship across different industries, public and private settings, and different market sectors. The aim was to identify as many experiences and variations of the relationship as possible. A decision was therefore made to not limit the study to a particular industry or indeed a single organisation.

**Capture the experiences from experienced participants in the relationship**

Again in order to explore the relationship as fully as possible, it was identified that by selecting experienced actors in the relationship a wide, thorough and detailed insight in the relationship would be afforded. Experienced actors would be able to recount a range of experiences over a number of years.

**Explore the relationship across a range of degrees of success**

To avoid selection bias, i.e., to not only study the most successful ES experiences (Denrell, 2005), the study sought to investigate the relationship across both successful and least successful Enterprise Systems. Studying ES at the two extremes of success would surface the full range of experiences of the relationship and capture all experiences of the OC-ESS relationship, both positive and negative. Capturing the widest variations was important to the confidence with which conclusions could be drawn from the data.
Building the study based on these criteria would allow for the fullest investigation of the nature of the relationship.

There is a wide variety of research approaches available to researchers to investigate a problem. The difficulties encountered with selecting one approach over another are numerous, not least because researchers, who have studied OC and ESS, have used quantitative and qualitative methods. There are powerfully held beliefs about which approach is most appropriate. The richness and depth of information that the data can contain means that qualitative data is well placed for exploratory research methods. This view is further supported by van Manen (1977), who argued that qualitative data can elicit people’s ‘perceptions, assumptions, prejcidgements and presuppositions’.

One technique that has been used in complex social studies is to apply a multi-method approach, i.e., both qualitative and quantitative methods combined in one study. Within organisational studies, it has been identified that a diversity of methods is often necessary in studies that deal with organisational contexts due to the complexity of the problems (Cheon, Grover & Sabherwal, 1993). Within IS research, combining several research methods into a single study, can provide a richer understanding of a research topic with each method focussing upon different aspects of the problem (Mingers, 2001). Mingers (2001) argues that the results themselves will also be more reliable if different research approaches are combined.

Mingers (2003) undertook a review of the major IS journals in order to identify how many published studies between 1993 and 2000 had adopted multi-method approaches. Empirical papers represented 66% of total papers published, and of these 20% used multi-method in the one study.

Support for a combined method approach is also present in the Organisational Culture literature. Several researchers promote the use of qualitative research methods as the better way to fully understand and appreciate Organisational Culture. Researchers that have adopted combined multi-method approaches in Organisational Culture studies include Ashkanasy, Edwin & Earnshaw (2002); Ashkanasy, Wilderom & Peterson (2000); Bagchi, Cerveny, Hart & Peterson (2003); Bernard (1998); Cameron & Quinn (1999); Collins (1998); Davey & Symon (2001); Heales & Cockcroft (2003); Hofstede (1990); Hooijberg (1996); House, Javidan & Dorfman (2001); House, Javidan, Hanges & Dorfman (2002); Langan-Fox & Tan (1997), and Meyerson & Martin (1987).
The literature review chapters covered the various philosophical debates associated with qualitative and quantitative research methods, but in summary there is strong support both in the IS and OC literature, particularly in exploratory studies, for the adoption of a multi-method approach. A multi-method approach was therefore adopted for this PhD study which included the following three elements.

1. **A qualitative sub-study**

   Aim: to explore the OC-ESS relationship across a range of industry, organisational and perspective settings

   Objective: to identify the nature of the OC-ESS relationship and allow theory building to be undertaken based on the findings within the data

2. **A quantitative sub-study**

   Aim: to measure the level of ES Success experienced and the culture type

   Objective: to measure the level of ES Success and OC type, using suitable quantitative instruments to allow benchmarking and statistical analysis of the relationship

3. **The study was then validated in a case study**

   Aim: to validate and benchmark the findings from the consultant elements

   Objective: to explore the relationship between Organisational Culture and IT innovations in the context of Enterprise Systems and their extensions in a revelatory case study

Having established that a multi-method approach was desirable, the next question to be addressed was ‘who’ could inform on the relationship.
4.2. **RQ: Who can inform on the OC-ESS relationship?**

In our study there are two components to the relationship:

- Enterprise System Success
- Organisational Culture

When studying culture and its relationship to ESS, attention was given to:

- Who do we ask to describe a firm's Organisational Culture?
- Who do we ask that can comment on the role of both Organisational Culture and ESS?
- From whose perspective do we measure a successful ES?

Each of these design components needed to be addressed separately in terms of ‘who can inform on each’ before being brought together. The first component to be discussed is the ES Success element.

4.3. **RQ: Who can inform on ES Success within the target organisation?**

Typically, when an organisation implements an ES it will call upon expertise from a variety of agents to assist with identifying a suitable product, testing, customising and implementing the ES. The whole process from discovery and implementation to exploitation can take many months. The project will be complex and very time consuming for the organisation, typically involving three process stages as shown in the following table.
Table 4-1. Informants per stage of Enterprise Systems lifecycle (SAP 2006)

The various participants in the processes will change dependant upon issues such as vendor/product selected, functionality required, in house technical expertise, the current phase and method of adoption. However, three partners have been identified in numerous studies as being highly critical to the success of the ES irrespective of the ES stage. These three partners are:

1. Client organisations
2. Vendors
3. Implementation Partners

These three partnering agents typically are extensively involved in all three phases working closely together for extended periods of time (Bingi, Sharma & Godla, 1999; Mabert, Soni & Venkataramanan, 2003; Parr & Shanks, 2000; Umble, Haft & Umble, 2003).

These participants would be defined as stakeholders (Freeman, 1984) since they are

‘individuals or groups with an interest in the success of an organisation in delivering intended results and maintaining the viability of the organisation's
products and services. Stakeholders influence programs, products, and services.

Thus, these groups are well placed to comment on the success of the Enterprise System. The relationship of these groups to ES Success is shown in the following figure:

![Figure 4-2. Stakeholder groups informing on ES Success](image)

Having established who informs on ESS, the next question considers the OC component of the OC-ESS relationship.

**4.4. RQ: Who can inform on OC external to the organisation?**

The Organisational Culture element of the OC-ESS relationship requires identification of the participants (called ‘actors’), who are able to inform on the OC dimension within the target organisation. The literature review chapter discussed who could inform on the culture of an organisation, the various ways to measure OC, and the strengths and weakness of the different approaches. Applying these findings to the study identifies ‘who’ can inform on the OC part of the OC-ESS relationship.

Clearly the client organisation can inform on its own culture, and information can be gathered by either qualitative or quantitative means. Certain participants within the client organisation can be examined in order to obtain a picture of the culture present within the organisation. In addition to members of the target organisations...
themselves being studied to form a view of the Organisational Culture, researchers have identified that external, third parties should also be studied since these actors can inform on the Organisational Culture perceived from an ‘outside looking in’ perspective (Schein, 1996). These external stakeholders (Freeman, 1984) of the organisation should be close enough to the target organisation that they understand the culture present within the target organisation, but not so close that they ‘become’ part of the culture. Typical examples of these stakeholders include consultants, suppliers, buyers and even competitors – all these groups can provide strong insights into the Organisational Culture of the client organisation.

These stakeholders are shown in the figure below:

![Figure 4-3. Stakeholders informing on the Organisational Culture of the target organisation](image-url)

We can see that there are common participants, shown in figure 4-3 in yellow, that are also present in the ESS framework; these are the client organisation, ES vendor and implementation consultants.

Thus we can see that these participants, client organisation, implementation partners and vendors are well placed to provide insight into both the ES Success and OC elements of the relationship. They are able to inform on the OC-ESS relationship itself.
Having identified these important actor groups we now need to identify ‘who’ in these sets are best able to inform on the OC-ESS relationship. The identification of the individuals (defined by role), located within these three stakeholder groups, was guided by the primary research aims and objectives. Since we needed to focus on the relationship rather than the part, the question specifically becomes, who can inform on the relationship from these groups. The first actor group participant to be addressed is the client organisation.

Client organisation: Who within client organisations can inform on the OC-ESS relationship?

The client organisation was defined for the purposes of this study as ‘those organisations that have implemented an ES application or ES extension, either enterprise wide or in selected business units’. The client organisation could provide clues to the relationship, in particular, the level of ES Success achieved, the culture of the organisation, sub-cultures present in the organisation, the stage of diffusion reached, issues relating to ES Success and issues relating to the ES product.

Within client organisations, not all employees will be in a position to inform on the OC-ESS relationship to the same extent. Factors such as role, seniority, prior experience and exposure to the ES come in to play. Yet there are internal ‘consultants’ that are in a unique position to inform on the OC-ESS relationship. Internal consultants are known variously as Change Managers, Strategic Managers and ES Project Managers; and they will have some key experiences to report. These types of roles will be involved in ES implementation, adoption and diffusion,
typically across a range of business units and across various stages of software roll out.

Individuals in these roles will be able to comment on a range of aspects of the relationship, for example, sub-cultures present throughout the organisation (business unit specific and geographic specific), observations of an ES Success across different business units and the specific product, functionality and ES implemented. These internal change consultants (CC) were therefore identified as suitable actors able to inform on the OC-ESS relationship.

The next participant group to be investigated was ES vendor firms.

ES vendor firms: Who within ES vendor firms can inform on the OC-ESS relationship?

Vendors were defined as ‘those organisations that develop and sell the ES applications and their extensions’ and include such organisations as SAP, Oracle and Mincom. The vendors can obviously inform on the product features and its functionality, but also the OC of the client organisation and the level of success achieved for the ES.

Actors present within the ES vendors who may inform on the OC-ESS relationship are:

**Vendor Implementation Consultants (VC):** These employees are employed within the vendor firm, are specifically involved with the selection, development, implementation and evolution of the ES package within the client organisation. The VC’s are not only to provide insight into the ES itself but also the OC of the client organisation and the level of success achieved by the ES.

The Vendor Implementation Consultants were therefore identified as suitable actors able to inform on the OC-ESS relationship.

Who within Implementation partner firms can inform on the OC-ESS relationship?

The final actor group were the implementation partners which are considered next.

**Implementation Partners:** The implementation partners were defined as ‘those firms that the client organisation has partnered with in order to implement and diffuse the ES through the organisation’. These participants were identified as being able to provide insights into the level of ES Success achieved, the culture of the client organisation, any sub-cultures present, the diffusion stage reached and issues relating to the ES product.
However, again, within implementation partner there were clear roles that would be better positioned than others to inform on the OC-ESS relationship. It was identified that experienced implementation consultants (IC), employed within an implementation partner firm, who have been involved in a range of ES implementations across different organisations, industries and even ES products, would be ideally placed to provide clues into the relationship.

The IC’s were therefore positioned to inform upon the OC-ESS relationship, in particular dimensions of the Organisational Culture of the client organisation, the relative level of success achieved, the stage of success achieved and possibly the culture of the vendor firm.

The analysis has specified the precise roles (internal change consultants, implementation consultants, and vendor consultants) within each agency (client organisation, implementation partner and vendor consultant). The selected roles are summarised in the table below:

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Participant role type and location within the OC-ESS relationship</th>
<th>Informing Upon</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OC</td>
</tr>
<tr>
<td>Internal Stakeholders</td>
<td>Internal Change Consultants within the target organisation</td>
<td>✓</td>
</tr>
<tr>
<td>External Stakeholders</td>
<td>Implementation Consultants</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Vendor Consultants</td>
<td>✓</td>
</tr>
</tbody>
</table>

Table 4-2. Roles within participant groups informing upon OC-ESS

Once the consultants types had been identified, a strict selection criteria for participation in the study was developed in order to ensure that the study satisfied the overarching criteria of:

1. exploring the relationship across the widest possible organisational and industry settings
2. capturing the experiences from experienced participants in the relationship
3. exploring the relationship across a range of degrees of success.
All the consultants participating in the study were required to satisfy the following criteria:

<table>
<thead>
<tr>
<th>Consultant Type</th>
<th>Selection Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Have experienced at least one implementation of an Enterprise System ✓</td>
</tr>
<tr>
<td></td>
<td>Are still involved with the client organisation ✓</td>
</tr>
<tr>
<td></td>
<td>Have experienced both successful and less successful ES ✓</td>
</tr>
<tr>
<td></td>
<td>Have a minimum of four years experience ✓</td>
</tr>
</tbody>
</table>

Additional criteria for individual consultant categories

<table>
<thead>
<tr>
<th>Internal Change/Project Managers</th>
<th>Currently employed within client organisation ✓</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hold Middle to Senior Management positions ✓</td>
</tr>
<tr>
<td></td>
<td>Experienced at least two ES innovations (for experience) ✓</td>
</tr>
<tr>
<td></td>
<td>Employed in medium to large businesses ✓</td>
</tr>
<tr>
<td></td>
<td>Have experienced ES innovations across at least two business units ✓</td>
</tr>
<tr>
<td></td>
<td>Are in a position to comment on how successful/unsuccessful that ES is two to four years from ‘go live’ ✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation Consultants</th>
<th>Currently employed with implementation partner ✓</th>
</tr>
</thead>
</table>

| Vendor Consultants               | Currently employed in a vendor firm ✓                                               |

Table 4-3. Consultant selection criteria

In summary, the actors, stakeholders and entities that were identified as best placed to report upon experiences of the OC-ESS relationship are shown in the following conceptual framework.
Having identified the pivotal role that consultants play in the system, consideration was then given as to how best explore their experiences and what data should be collected. The first phase was to identify what data should be collected that could best allow exploration of the OC-ESS relationship. The next section will first discuss how the qualitative data was collected, followed by the quantitative data.
4.5. **Data Collection Methods**

This research applied a multi-method approach using both qualitative and quantitative data. The next section discusses the qualitative data collection. This is followed by a section on the quantitative data collection.

4.6. **Qualitative Data Collected**

An interview was used to extract and probe issues related to the OC-ESS relationship. This allowed for rich data to be gathered, clarifying statements and probing of the participants experiences of the relationship.

Sampling strategies in qualitative research differ from those employed in quantitative research. Typically qualitative researchers work with small samples of people situated in the study context (Miles & Huberman, 1994). Too many data sources and the study will become unwieldy, too few and the richness of data is lost. In reviewing the literature, both Yin (1994) and Miles & Huberman (1994) suggest that dependent upon the level of detail in the data, 15 to 20 points represent a good balance between data richness and manageability. The sampling size also needed to recognise the constraints of time and resources present in all PhD projects. The study protocol was therefore built up around the need to conduct a minimum of 15 and up to 20 semi-structured interviews.

In the current literature there is no universally accepted theory and practise to conducting a qualitative research interview. However, Steinar (1996) has attempted to summarise the various aspects of a qualitative research interview presenting twelve common aspects. In evolving the interview protocols these aspects helped guide the development. We shall now take each of the aspects and consider how they apply to the OC-ESS study.

1. Centred on the interviewees' life world, the purpose is to describe and understand the central themes the interviewee experiences.

   Application to the OC-ESS study: Consultants and actors were identified as being able to inform on the OC-ESS relationship through their own experiences. That is the interviewees' life world.
2. Seeking to understand the meaning of phenomena in his/her life world, the main task is to understand the meaning of what is said.

Application to the OC-ESS study: The semi-structured interview permitted probing and clarification of the responses.

3. Qualitative – neither in the interview phase or the data analysis phase is the primary purpose to obtain quantifiable responses.

Application to the OC-ESS study: The purpose of this element to the study was to explore the relationship and the individual’s unique experiences. The focus was in observation of the role of culture rather than the collection of statistics.

4. Descriptive – the qualitative research interview aims at obtaining uninterrupted descriptions.

Application to the OC-ESS study: The semi structured approach allowed extensive probing. The questions themselves facilitated uninterrupted descriptions of the phenomenon.

5. Specific – seeks to describe specific situations and actions

Application to the OC-ESS study: Specifically exploring the OC-ESS relationship in the context of Enterprise Systems

6. Presupposition less – rather than the interviewer coming with ready made categories and schemes of interpretation, the implication is one of openness. The interviewer should be curious and sensitive to what is said.

Application to the OC-ESS study: No categories or schemes of description were pre prepared prior to interview data being collected. Probing and articulation questions were used in the semi-structured interview.

7. Focused upon certain themes – not strictly structured and not entirely non-directed but focussed on certain themes

Application to the OC-ESS study: The interviews were designed to be semi-structured. Focussed on the OC-ESS theme but full exploration was allowed of the interviewees’ experiences with OC, ES and OC-ESS.

8. Open for ambiguities – contradictions and ambiguities are common in research interviews

Application to the OC-ESS study: These were surfaced and probed in the semi-structured interview.
9. Depends upon the changes – during an interview an interviewee may discover new aspects and relationships which he/she may not have been aware of before, the process of reflection caused during the interview is acceptable

Application to the OC-ESS study: The use of extensive questioning allowed the pursuit of new aspects of the relationship in the OC-ES to be discovered.

10. Sensitivity of the interviewer – interviews by different interviewers using the same interview guide may be different due to varying sensitivity by the interviewer.

Application to the OC-ESS study: Sensitivity of the interviewer was improved as the interviewers skills improved. However, the one interviewer conducted all the interviews.

11. An interpersonal interaction – interviewee and interviewer react in relation to each other; the interviewer needs to be conscious of the inter-personal dynamics within the interaction and take it into account in the interview analysis

Application to the OC-ESS study: The semi-structured interview allowed extensive interaction to occur, it was not simply the interviewer delivering a set of scripted questions.

12. May be a positive experience – the interview may be a favourable experience for the interviewee and can be an enriching experience for the interviewee.

Application to the OC-ESS study: After the interviews many of the interviewees commented on the positive experience that they had.

Qualitative data was therefore collected via a semi-structured interview.

After the qualitative data collection, quantitative data was collected.
4.7. Quantitative Data Collected

The purpose for the collection of quantitative data was two fold:

1. to gather further data regarding the individual examples given by the interviewees, the data collected informing further on OC-ESS relationship
2. to further elaborate upon the relationship between Organisational Culture and ESS. The quantitative data allowed for the benchmarking and quantification of the Organisational Culture type and the level of ESS experienced

Two sets of quantitative data were collected. The quantitative instruments themselves are detailed in Chapter 2.

First Quantitative Data Set: Consultants (Pilot + Main)

Each consultant was asked to complete the OCAI culture instrument for each of the ES innovations (1x successful and 1x least successful) discussed during the interviews. Therefore a total of two responses from each consultant was collected; twenty consultants giving a grand total of 40 completed OCAI. The OCAI allowed quantification of the actual culture type the consultants were describing for their least successful and most successful ES examples

Second Quantitative Data Set: Revelatory Case Study

Whilst quantitative data was collected from the consultants a further collection of data was undertaken through the revelatory case study. The revelatory case study is fully detailed in Chapter 5. Both the OCAI and ESS instruments were administered to the organisation, with the purpose of conducting a cross-case analysis.

In summary, both qualitative and quantitative data was collected from the consultants. The qualitative data collected was interview transcripts of the consultants' experiences of the OC-ESS relationship. The quantitative data collected was survey data of the OC-ESS relationship. The figure below summarises the data types collected from the participants in the study:
The next section discusses how the data was collected at the various points in the study design.

Figure 4-6  Data collected from the various participants in the study
4.8. RQ: How was the data collected?

This section describes how the qualitative and quantitative data was collected. Each of the data collection phases resulted in separate outputs. The key data collection phases for the study were the consultant’s (pilot and main) phase and the revelatory case study. The extract from the overall design shown below identifies the key data collection points for the study:

![Diagram showing data collection points for the study]

Each of these phases resulted in further data being collected that could be used in the cross-analysis phase to inform on the relationship. The outputs from each phase are shown in the following figures.
4.9. Pilot Study Data Collection

The pilot study was designed to provide six interview transcripts for analysis and 12 completed OCAI surveys (two from each consultant). A key purpose of the pilot study was to begin the process of collecting data.

In addition to assisting with meeting one of the primary research objectives, the pilot study was also undertaken in order to test the reliability of the field study protocols, the appropriateness of the interview questions and to provide an opportunity for testing proof of concept. As can be seen from the design the pilot study allows not just for data collection but also periods of review and reflection. This ability to fine tune and adapt the protocol accordingly was an important objective of the pilot study and an important part of the overall study, the findings from the pilot did not just inform on the research objective itself but also the suitability of the design in enabling the meeting of those objectives.

4.10. Main Consultant Data Collection

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Chapter 4: Research Design 4-23
The next data collection phase was from the consultants forming the main consultant study. This second round of data gathering was designed to provide a further 14 interview transcripts and 28 completed OCAI surveys (again two from each consultant). The full data collection process and protocols are discussed in Chapter 6: The Consultant’s Study. The interview and data collection protocols were evolved following the pilot study – see Chapter 5 for details. However, the fine tuning resulted only in minor changes to the interview questions. The core elements remained the same and no changes were made to the quantitative instruments.

4.11. Revelatory Case Study Data Collection

![Figure 4-10. Design sequence: revelatory case study location](image)

The final round of data was collected during the revelatory case study. Quantitative and qualitative data was again collected but with the addition of the quantitative ESS instrument. Change managers were interviewed and experienced users were invited to complete the OCAI and ESS instruments. The full data collection protocol is discussed in Chapter 6: The Revelatory Case Study.

The various elements to the study were designed to capture data in such a way as to assist with answering the primary research question, whilst capturing as a broad a range of experiences of the OC-ESS relationship as possible.

Protocols

Yin (1994) has stated that having a protocol for qualitative research is essential and assists in the clarification, data collection and analysis of the data. Full data collection protocols and interview protocols were developed for the study. The specific protocol items developed for the study were adapted from those identified by Yin (1994) and are shown below:

1. An overview of the project
2. Field procedures (credentials and access to the study sites, general sources of information and procedural reminders)
3. Interview questions (the specific questions that the case study investigator must bear in mind in collecting the data and the potential sources of information for answering each question)

4. A guide for the report

Pre-Interview Instrument, Interview Questions and Script

To encourage implementation firms, client firms and vendor firms to participate in the study, consideration was given with regard to the confidentiality and anonymity of the research participants. It was felt that whilst the implementation consultants may be comfortable in giving details of their own firm and themselves, they would be unwilling, or unable, to divulge specific identification of the client organisation. Change consultants similarly were unlikely to be able to divulge details that could lead to the identification of their organisation. In reality, the identity of the individual or the organisation was not required to explore the OC-ESS relationship. The exploration was of the relationship, not the individual, and so total anonymity whilst beneficial for the participants did not affect the research aims. The exploration of the OC-ESS was not influenced either positively or negatively by reporting on the individual consultant or organisation.

Instruments to assist the consultants in thinking about their experience prior to the interview were sent one week prior to the interview. The pre-instrument simply sought to help the respondent think about the extended ES IT innovations that they had experienced. The protocol called for examples of ES that were at least two years post ‘go live’.

The purpose of providing the instrument was two fold, firstly, to avoid the respondent feeling ‘put on the spot’ and struggling for examples in the interview. Secondly, it gives the interviewee some time to really consider which the most and least successful examples were. Internal, vendor and implementation consultants were sent different packs to reflect the different organisational settings in which they operate. However, all interviewees were asked the same questions in the interview.

The formal field procedures, interview questions are shown in Appendix 4.1, 4.2, 4.3, 4.4 and 4.5.
4.12. Research Design Summary

The previous sections have discussed how the various elements of the research design evolved in order to complete a robust research design that would allow the researchers to fully explore the OC-ESS relationship. The key characteristics of the design were:

- Widest possible variations in the experiences were actively sought
- Implementation partner, vendor partners and client organisations were identified as the key stakeholder groups within the relationship
- The need for a pilot, main and revelatory case study elements was identified
- Experienced individual consultant types were identified as being able to inform on the OC-ESS relationship
- Fifteen to twenty interviews was identified as being the suggested number
- A multi-method approach was chosen in order to capture qualitative and quantitative data of the experiences of the relationship
- Avoid bias

Each of the guiding study questions was addressed as summarised in the following table:

<table>
<thead>
<tr>
<th>Guiding Study Research Questions</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can we explore the relationship between Organisational Culture and ES Success in the real world?</td>
<td>Multi-method approach, capturing actors experiences of the OC-ESS relationship</td>
</tr>
<tr>
<td>Who can inform on the OC-ESS relationship?</td>
<td>Change consultants from client organisations Implementation consultants from ES vendors and partner consultants</td>
</tr>
<tr>
<td>What data will need to be gathered?</td>
<td>Semi-structured interviews and surveys and OCAI + ESS survey data, capturing the respondents’ least and most successful ES experiences</td>
</tr>
<tr>
<td>How will the data be collected?</td>
<td>Pilot study, consultant study and revelatory case study</td>
</tr>
</tbody>
</table>

Table 4-4. Guiding study questions addressed in the design

The next chapter discusses the first data collection phase, the pilot study, and reports on the actual data collection, analysis and findings from this first phase.
Chapter 5

Pilot Study
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5. Introduction: The Pilot Study

This chapter describes the analysis and findings from the pilot study, the reflections of the interview questions and protocol plus the subsequent changes that were made to the study design as a result of the pilot. The pilot collected both qualitative and quantitative data, the findings and results are shown in the following sections. The first component to be discussed is the qualitative component. The following figure shows the location of this chapter in the overall study design:

![Figure 5-1. Study design](image)

The pilot study comprised the following components of the research program design:

![Figure 5-2. Pilot study elements](image)

As can be seen from the design, the pilot study includes data collection and periods of review and reflection. This ability to fine tune and adapt the protocol accordingly was an important objective of the pilot study and an important part of the overall study. The findings from the pilot did not just inform on the research objective itself, but also on the suitability of the design in enabling the meeting of those objectives.
5.1. Qualitative Data Collected

The pilot study protocol called for the collection of data from six interviews taken from the following consultant categories. Interviews were digitally recorded and the files transcribed. The table below shows the number of interviews conducted with the various consultant categories.

<table>
<thead>
<tr>
<th>Consultant Category</th>
<th>Targeted</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation Partner Consultants</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Vendor Consultants</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Public Sector Internal Consultant</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Private Sector Internal Consultant</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 5-1. Interview numbers by consultant category

Due to access considerations a total of five interviews were completed in the pilot phase. The interview times varied in length with the longest interview taking 58 minutes, whilst the shortest was completed in 25 minutes. The transcript lengths also varied; the longest transcript was 9,699 words in length (17 pages) and the shortest 3,544 words in length (7 pages). Details for all the pilot interviews are shown in the table below, the interviews are sequenced in chronological order:

<table>
<thead>
<tr>
<th>Interview</th>
<th>Time (mins)</th>
<th>Words</th>
<th>Passages</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>26</td>
<td>3544</td>
<td>126</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>3782</td>
<td>133</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>38</td>
<td>5923</td>
<td>206</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>51</td>
<td>7249</td>
<td>346</td>
<td>15</td>
</tr>
<tr>
<td>5</td>
<td>58</td>
<td>9699</td>
<td>228</td>
<td>17</td>
</tr>
<tr>
<td>Min</td>
<td>25</td>
<td>3544</td>
<td>126</td>
<td>7</td>
</tr>
<tr>
<td>Max</td>
<td>58</td>
<td>9699</td>
<td>346</td>
<td>17</td>
</tr>
<tr>
<td>Average</td>
<td>40</td>
<td>6039</td>
<td>208</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 5-2. Pilot interview statistics

The interview statistics show some reasonably large variances in the length and duration of the interviews. In particular, we can see that interviews one and two were the shortest whilst four and five were the longest. There was a noticeable trend of increasing length and word count with each successive interview.

As more interviews were conducted it was noticed that there was a distinct increase in the interviewers own skills as a qualitative researcher. Since these early
interviews were the first attempts at conducting qualitative interviews, the researchers own skills gradually improved with each interview. The first interviews were rather mechanical, the questions were read out to the interviewee, who then responded and the next question was asked.

However, as the researcher became more comfortable with the process and the questions, probing and exploration of the interviewee’s responses was increasingly undertaken. The interview, whilst still semi-structured, became a lot more engaging and discursive.

During coding of the transcripts the number of manifestations, utterances and patterns identified increased dramatically from interview two onwards. The data became richer and fuller, as a direct result of the improvements in the researchers own skills. This does not diminish the findings from the first interviews, they have still contributed to the research, but the data that was being collecting from later interviews became richer and more informing on the OC-ESS relationship.

Not only were the pilot interviews a good test of proof of concept of the research design, they were an excellent opportunity for the researcher to hone his own skills as a qualitative researcher.

We shall now consider the methods used in the analysis of the interview transcripts.
5.2. Qualitative Data Analysis

Many researchers place great emphasis upon the manner and method in which the data is analysed. It has been argued that it is important to have a general analytic strategy from the outset since the overall goal is to treat the evidence consistently and to produce compelling conclusions (Yin, 1994). Conducting qualitative data analysis can be carried out in a number of different ways. Miles & Huberman (1994) suggest that there are nine ways as shown in the table below:

<table>
<thead>
<tr>
<th>Qualitative Analysis Method</th>
<th>Adopted for the OC-ESS study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contact summary sheet – a simple way to summarise time limited data, the researcher reviews written up field notes and answers each question briefly to develop summaries of the main point in the contact.</td>
<td>✓</td>
</tr>
<tr>
<td>2. First level coding</td>
<td>✓</td>
</tr>
<tr>
<td>3. Second level or pattern coding</td>
<td>✓</td>
</tr>
<tr>
<td>4. Memoing</td>
<td>x</td>
</tr>
<tr>
<td>5. Case analysis meeting</td>
<td>x</td>
</tr>
<tr>
<td>6. Interim case summary</td>
<td>x</td>
</tr>
<tr>
<td>7. Vignette</td>
<td>x</td>
</tr>
<tr>
<td>8. Pre-structured case</td>
<td>x</td>
</tr>
<tr>
<td>9. Sequential analysis</td>
<td>x</td>
</tr>
</tbody>
</table>

Table 5-3. Qualitative analysis method

This study adopted coding for the qualitative data analysis. Coding data in qualitative research has a different meaning and role to quantitative data coding and analysis (Neuman, 2000). A researcher organises the data in qualitative research into conceptual categories and creates themes and concepts. 'Codes are tags or labels for assigning units of meaning to the descriptive or inferential information complied during a study. Codes usually are attached to “chunks” of varying size – words, phrases, sentences or whole paragraphs, connected or unconnected to a specific setting' (Miles & Huberman, 1994). To code data into themes a researcher needs to be able to first identify the themes running through the data and it requires four skills to accomplish this:

- recognise patterns in the data
think in terms of systems and concepts
posses tacit knowledge or in depth background knowledge
have the necessary relevant information (Neuman, 2000)

Once the researcher is able to decipher and identify themes in the data the production of codes can begin. According to Boyatzis (1998) codes comprise five parts:

1. a one to three word label
2. a definition
3. a flag description of how to recognise the code in the data
4. any exclusions or qualifications
5. an example

Strauss (1987) describes three kinds of coding; the researcher reviews the data three times and on each occasion uses a different code, so that the same data is coded in three separate passes. Strauss’ approach was adopted for this study.

First Pass - Open Coding

The themes in the data were surfaced based on the initial research question and concepts that had been identified in the literature. Some researchers suggest that the researcher should begin the coding with a pre-defined list of concepts (Miles & Huberman, 1994), whilst other researchers suggest that the first pass coding should be undertaken with no preconceived concepts, (Glaser & Strauss, 1967). However, Neuman (2000) argues that regardless of whether or not the researcher begins with a list of themes, a list of themes should result out of the first pass coding. The data was coded inline with the research question and the themes identified in the literature as per Miles & Huberman (1994).

Second Pass – Axial Coding or Pattern Coding

A second pass was then undertaken to identify clusters of categories. This is in contrast to the initial open coding. Whilst first level coding is a way of summarising segments of data, pattern coding seeks to group those summaries into smaller sets of themes (Neuman, 2000).

The second pass resulted in categories that were clustered around central themes.
Third Pass – Selective Coding

Selective coding was then undertaken. This involved scanning the data and the previous codes, looking for cases that illustrated the themes or patterns identified in the first two passes. By comparing and contrasting these patterns the major themes identified were further consolidated.

These qualitative analysis techniques were applied to the pilot study data. The interview transcripts were analysed using the NVivo Software package, developed by QSR (Bazeley & Richards, 2000). NVivo is a powerful research tool that assists with pattern coding of the transcripts. The researcher documents text at nodes to track emerging theories, themes and concepts. Nodes can then be organised into sets, clusters and hierarchies as the researcher progresses through the data on subsequent passes.

On the first pass, the transcripts were analysed looking for key themes and assigned initial codes to form the data into broad categories in a semi-open manner, i.e., informed in part by findings in the literature. The themes were based on the researcher’s understanding of the problem, broad concepts that had been identified in the literature review and the researcher’s own prior experience.

Once the first pass had been completed, a second pass was conducted beginning with the organised set of initial codes. This axial coding further consolidated the themes into clustered groups and hierarchies.

The data was then subjected to a third pass, selective coding. This was not carried out until all the interview data for interviews 1 to 15 had been collected. Additionally, it was carried out before the OCAI data from the interviews and case study had been analysed. This was to ensure that no propositioning of the results was incurred. Here, both the data and previous codes were scanned for cases that illustrated the themes and patterns specifically identified in the OCAI and ESS literature. The cases that demonstrated the themes were compared and contrasted with each other in order to further complete the major themes that had been identified.

It became clear from the pattern coding during the first and second passes, that visible manifestations of the OC-ESS relationship were being surfaced from the pilot interviews. Themes and patterns emerged that described the components of the relationship. The figure below summarises the steps taken during the pilot interview data collection and analysis:
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

Verification or truthfulness

According to Glaser and Strauss, the researcher and the reader, “share a joint responsibility’ for establishing the final value of the qualitative research product’, (Glaser & Strauss, 1967: 232). Patton has stated that the, ‘pragmatic validation means that the perspective presented is judged by its relevance to and use by those to whom it is presented: their perspective and actions joined to the researcher’s perspective and actions’, (Patton, 1990: 485).

Strauss & Corbin (1990: 250) believe that when judging qualitative work, the ‘usual cannon of good science require redefinition in order to fit the realities of qualitative research and the complexities of social phenomena, significance, theory observation compatibility, generalisability, consistency, reproducibility, precision and verification’. Verification involves, ‘looking for evidence in the data to verify our statements of relationship’ whilst ‘also looking for instances when they might not hold up’, Strauss & Corbin, 1990: 108). The developed theory is actually verified by the rigorousness of the research process (Strauss & Corbin, 1990:109). They argue that the steps within the data analysis offer verification, ‘throughout the course of a research project, rather than assuming that verification is possible only through follow up research’ (Strauss & Corbin, 1994: 274).
The reliability of qualitative research in general refers to the replicability of results, ‘if another researcher repeated the research project, what is the probability that he or she would arrive at the same results’, (Booth 1992: 64). However this may not be a reasonable question to ask, since the intricacies of the method applied by different researchers will not be the same, (Marton & Svensson, 1985). Data analysis involves a researcher constituting some relationship with the data and the researcher’s unique background is an essential part of the relationship.

Clearly the qualitative researcher bears much of the burden for discovering and interpreting the data and drawing conclusions. However utilising sound and established research approaches and building a strong research design the researcher can offer up the results and the design as true to the data. In this study evidence for the trustworthiness of the data and the analysis was the coding approaches taken and the analysis of the data with the involvement of the research team and the participants at various stages.
5.3. Qualitative Results: First Pass – Open Coding

At the highest level, manifestations emerged from the transcripts that presented a distinct hierarchy. For example, one of the broadest themes that emerged was 'management influences'. This is the manner in which 'management' was influencing, impacting or otherwise interacting with the relationship between Organisational Culture and ESS. Many of the statements that interviewees made concerned the role of management in the OC-ESS relationship, statements such as:

‘... but I also think that management or whoever runs the company needs to be, I guess, helping to sustain a particular culture.’

and

‘I believe a more positive management supported implementation creates a positive environment where users learn more quickly and retain the knowledge because it is seen as important.’

‘SAP was seen as something for admin staff, not for use at managerial level, and so consequently, that negativity perpetuated through the system.’

Looking at statements such as these through a cultural lens indicates that 'management' is an important component in the OC-ESS interaction. The role of management could be seen as an enabler or inhibitor to the success of the ES. From an Organisational Culture perspective, the 'environment' that management helped to foster appears to affect the relative success or not of the ES.

This process of coding through the pilot transcripts continued during the first pass coding until no more high level themes could be identified in the data. As per Boyatzis (1998) each major theme had its attributes described by:

1. a one to three word label
2. a definition
3. a flag description of how to recognise the code in the data
4. any exclusions or qualifications
5. an example

The final result of the first pass coding is shown in table 5-4 overleaf.

Following the table is a discussion on the how the themes emerged from the data.
<table>
<thead>
<tr>
<th>Label</th>
<th>Definition</th>
<th>Looking for</th>
<th>Not</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Management Influences</td>
<td>The manner in which 'management' was influencing, impacting or otherwise interacting with the relationship between Organisational Culture and ESS</td>
<td>Management, managers, leader, owners, managerial, leaders</td>
<td>Users</td>
<td>‘… but I also think that management or whoever runs the company needs to be, I guess, helping to sustain a particular culture’</td>
</tr>
<tr>
<td>2. Change Management</td>
<td>Organisational change management is the process of developing a planned approach to change in an organisation</td>
<td>Change, change management, change process</td>
<td></td>
<td>‘I think one of the major reasons for the success was strong management commitment and also strong focus on change management. I think those were the factors clearly identified at the beginning of the project which would probably lead to success or failure.’</td>
</tr>
<tr>
<td>3. Employee Development</td>
<td>The way and manner in which the OC is supporting, developing and nurturing employees</td>
<td>Development, support, training, education, training</td>
<td></td>
<td>‘They never spent much money on training.’</td>
</tr>
<tr>
<td>4. Admin Policies Procedures</td>
<td>How does the organisation conduct its admin policies and procedures and in what way do these activities: A. demonstrate the OC type B. influence the success of the IT innovation</td>
<td>Admin, policies, procedures, manuals, documentation</td>
<td></td>
<td>‘Agreed, it is seen as an administrative tool for the secretary or sales assistant to enter orders and produce reports. Consequently, even with specialised training and help guides there is a resistance to use the system, together with a general lack of enthusiasm.’</td>
</tr>
<tr>
<td>5. Learning Organisation</td>
<td>Learning organisations are corporations that overcome inherent obstacles to learning and develop dynamic ways to pinpoint the threats that face them and to recognize new opportunities (Senge 1994).</td>
<td>Learning, innovative, creative, training, knowledge, learnt</td>
<td>Just referring to training</td>
<td>‘And they just started expanding their own solution based on this success, and were using the principles they learnt in the first one.’</td>
</tr>
<tr>
<td>6. Project Management</td>
<td>Project management is the discipline of organising and managing resources in such a way that these resources deliver all the work required to complete a project within defined scope, time, and cost constraints.</td>
<td>On time, deadlines, budget, project, project management, cost, resources</td>
<td></td>
<td>‘That’s an integral part of the project and it’s addressed right up front and money is budgeted towards that.’</td>
</tr>
</tbody>
</table>
| 7. Business Processes | A specific ordering of work activities across time and place, with a beginning, and an end, and clearly identified inputs and output (Davenport 1993).
A collection of activities that takes one or more kinds of input and creates an output that is of value to the customer (Hammer & Champy 1993). | Business process, BPM, BP reengineering, models, modelling, process view, processes | | ‘You can’t drag them along to that; they’ve got to take the step. In a lot of cases their not integrated in their business processes, this is before they put an integrated package in.’ |

**Table 5-4. Themes identified during first pass open coding**
Discussion

Within many of the comments made by the interviewees the statements indicated at the broadest level that the general influences of what we called Management Influences were numerous. This very high level category covered a very broad range during the first pass. Subsequently this high level category was broken down into many categories such as Leadership, Vision, Style and Control. But from the first coding this general theme of Management Influences proved to cover a wide range of manifestations.

Change Management (CM)

This category was removed in the main study – since on reflection it was more concerned with the diffusion of the innovation, learning organisation, TAM dimensions.

Employee Development (ED)

A theme surfaced out of the data that reflected issues of employee support, nurturing and development of the employees in the organisation. The interviewees surfaced issues of the OC supporting the users along a whole range of issues – these included change programs, skills development and training. The way in which the OC not just supported but also enabled these support structures to be active seemed to be important to the OC-ESS relationship.

Statements were made such as:

‘An understanding of integration of systems, whether they’re IT or otherwise and the training and implementation requirements surrounding them.’

‘We had training teams, I think about sixteen people just writing and then delivering over 2000 going, we did over two thousand training sessions.’

‘But there are support mechanisms in place so that when people are using the system, it doesn’t lead to frustration.’

Discussion

The ED theme itself was identified as a top level since the statements made in the interviewees were hinting at particular aspects of ED as being important in the relationship. Employee Development encompassed more than just training, it was also concerned with the level, type and method of support in which the organisation and management were supporting employees with the diffusion of the innovation.
ED contained statements about the nature of the Information System and the employee support for knowledge, use and general Management attitude towards user support.

**Admin Policies Procedures (AP)**

Another broad theme that surfaced during early analysis of the pilot interviewee data was that of Admin Policies and Procedures (AP). References were made that the method, nature and degree of ‘administration’ was influencing the OC-ESS relationship. Several broad themes were raised:

1. The way in which the organisation conducted its administration policies and procedures
2. The amount and reliance on administration
3. The importance that management placed on compliance with the admin policies and rules

Statements were made in regards to AP such as:

’SAP was seen as something for administration staff, not for use at managerial level, and so consequently, that negativity perpetuated through the system.’

‘before you do an installation they have all these wonderful spreadsheets and custom built systems, and they're so used to it’

‘It's like using old, years ago we used to have old paper payroll, we used to have pay cards with everyone's name on it. Now it's just, everything is like automated including, even our leave forms.’

‘We had to have a lot of infrastructure to help people get to accept the system and I think that was the success of the system because it was not only the technical part but there was a lot of policy procedure, work practice reviews as well.’

**Discussion**

We can see from the above statements that general observations were made that reflected administration issues. There were many statements made similar to these that indicated the organisations manner of administration was involved in the OC-ESS relationship. How the organisation managed the policies and procedures of
their systems, looking through these via a cultural lens, suggested that some components of these were indicative of cultural dimension within the organisation.

**Learning Organisation (LO)**

A further theme also emerged during the early coding of the pilot interviewees, this was the Learning Organisation. The pilot interviewees surfaced issues involved with an organisation's ability to learn and the nature of the organisation's culture in allowing learning (and mistakes) to take place. For example, following statements were made:

‘... but the users wanted to learn and I think that that's essential’

‘Users had a longer term view of becoming a learning organisation, with skilled resources and the implementation was viewed as an opportunity to increase skill.’

‘Everyone’s learning.’

‘We actually worked very well and I think that created the success, because we used some of their learning’s, but we also used some of our learning’s as well.’

**Discussion**

Issues such as obstacles to Learning or a culture enabling Learning seemed important in a number of the examples discussed during the pilot interviews. High level themes were identified that suggested the role of Learning within an organisation appeared important in the OC-ESS relationship. The statements suggested that the degree to which the organisation fostered, supported and enabled learning within the organisation were important. This first pass was again a high level pass through the data but a large theme category formed around this category.

**Project Management (PM)**

The literature had already indicated that implementation, exploitation and embedding of an ES within an organisation are a complex ongoing project. We would therefore expect to find some references made to PM type issues, and in the pilot data there were early indications of PM elements being active in the OC-ESS relationship. Much has been written on the nature, management and success of projects, the PM literature is a wide ranging, mature, well established research field.
During the first pass, these were clustered at the highest level under the general category of project management. This was identified in the first pass as being a very high level category that would require subsequent passes to fully surface themes. However, during the first pass of the pilot data PM was identified as a broad general category. Statements made included:

‘From what I’m seeing, most cases where projects are perceived to have failed, very, very few are because of the technology didn’t fit the business. But it’s because like change management issues and the culture of the organisation wasn’t sufficiently studied and addressed in terms of the project.’

‘And the six month implementation turned into a two-year project and millions of dollars lost.’

‘IT drove the project and IT was involved in evaluating the software and also implementing it.’

Discussion

Project management statements were made by interviewees, generally in regards to implementations that occurred over 2 years previously or comments made as to the issues of project administration such as budget, cost or time issues. From a cultural perspective these aspects were suggesting that PM aspects were a reflection of possible culture features. At this first pass however the statements were clustered around PM items.

Business Processes (BP)

Initial analysis of the data surfaced issues relating to business processes being present in the OC-ESS relationship. Statements were made such as:

‘I was surprised because of the amount of effort that the process owners had put in, the amount of workshops.’

‘We changed the business process and used SAP as a tool to now implement or embed that new process design change.’

Discussion

BP issues appeared as some important manifestations of the OC-ESS relationship and were surfaced early in the analysis. Statements or comments about business events, functions or ways of working (work flow) were categorised around the BP
theme. Processes or a process way of working was being surfaced as a theme running through the data.
5.4. Qualitative Results: Second Pass – Axial Coding

During the second pass of coding, more themes were identified and the process of clustering the themes began. As more themes were identified, in conjunction the broad themes identified in the first pass, clusters were formed. The clusters were formed in the context of each other rather than on the basis of a theory or framework. In this way hierarchies of the categories started to emerge. Conceptual formation of the clusters may use (1) related characteristics, (2) identification of an underlying construct, or (3) a causal or development hierarchy (Boyatzis, 1998).

In the process of forming cluster therefore, key words and phrases were used to identify similarities or relationships between the various themes. Often the interviewee was discussing an issue that was clearly linked to a theme or one that was clearly sub-ordinate to higher themes, which began the development of hierarchies within the clusters.

For example, the ‘management influences’ (MI) node could be further categorised down into the two further distinct themes ‘Champions & Sponsors’ and ‘Leadership’. Frequently the interviewee for example would be relating to specific issues with sponsorship of the ES throughout the organisation. Sponsors therefore represent a sub-category within a more overarching theme of general management influences. The table overleaf shows the themes further categorised and clustered during the second coding passes for the pilot study interviews.

However, it should be noted here, that clearly not all the themes, categories, patterns or hierarchies were identified during the pilot. During the later interviews, as more data was gathered, more themes were surfaced until eventually no more new themes were being identified. However, the themes identified during the pilot study represented only a small set of the final categories. This is discussed in the following chapters, but it is important to note that the pilot was serving more as a proof of concept and that the design, data collection methods and methods of analysis were working as intended.

Hierarchies Forming

As the second pass coding progressed, clear hierarchies started to emerge, from the broad themes identified in the first pass. The most noticeable clusters emerged within the MI categories. Many statements and utterances were made that
suggested that within MI there were several core elements at work. The first of these was 'Champions & Sponsors' (C&S).

Management Influences (MI)

> Champions & Sponsors (C&S)

For example, the following statements were made:

> ‘And the people knew that if X said this is the way it’s going to be, well that’s the way it’s going to be and that’s the way we are going to do it.’

> ‘There’s either purposefully introduced or an implicit understanding of business process owner and that there is a business process and someone has the authority to drive it.’

> ‘We had directors here who went like, okay this is a major change. We’ve got to be able to communicate it to the users.’

Discussion

Within the OC-ESS relationship actors were reporting that the role of champions and sponsors was highly important.

Champions present in the organisation were positively influencing the outcomes of the ES. Looking at these statements from a cultural perspective was suggesting the OC was in some way enabling or inhibiting aspects of the Success of the ES. However for the purposes of the pilot, it was clear that these themes were forming around this category.

A second category formed within MI and this reported on the important role that leaders played in the relationship.

Management Influences (MI)

> Leadership (L)

Dimensions of the how the leader behaved were also seen as key elements within the relationship. A further category was therefore identified within MI which was the leadership category. Examples of statements made include:

> ‘there’s a strong management team.’
‘Understanding the need to have somebody who actually had leadership skills and understood the people part.’

‘We had it described to us by one of the directors, in driving this change.’

Discussion

In addition to hierarchies starting to form, as more analysis and coding were undertaken, new themes were identified by the amalgamation of previous themes. As a deeper understanding of the data became known, the patterns emerged and the relationships between the various themes surfaced.

New high level themes surfaced

In the second pass through the first pilot interviews new themes emerged as the categories were continued to be evolved.

Organisational Structure & Infrastructure (OS)

Organisational structure surfaced in the interviews as being a component of the OC-ESS relationship. In particular the manner in which the ES spanned across functions, and from an OC view point, whether the organisation was ready for this way of working.

“So there was this huge IT department who kind of, pretty much ran all the systems.’

“So we were one of the first in Queensland and we had this integrated system, so we took care of all their finance needs. It was a blanket system across both, their human resource needs, their payroll needs.’

‘I think they were empowered, I guess it’s a purely flat organisational structure, nobody had to go seeking levels of approval for anything and I think that’s a big differentiator, is that culture that says, you’re the decision maker.’

Knowledge Management (KM)

The next new theme that surfaced was ‘knowledge management’. Quotes include:

‘And not only that, like at that point it was just the beginning of the ERP cycles, so very little knowledge, but others believed they could do it in house without consultants.’
‘The information from it was so much more intelligent, you can actually you know, press a few buttons and get some good data and we could make good business decisions.’

Discussion

KM is defined in the literature as ‘a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information’ (Davenport & Prusak, 2000). Issues relating to KM appeared in the OC-ESS relationship. The data surfaced some important aspects of KM that appeared to be a component of the relationship. KM themes were emerging around data and information use and the manner in which OC was supporting these aspects of the business.

User Support (US)

The final new theme that emerged during the pilot was the notion of ‘user support’ (US). Examples include:

‘Access to people with the understanding of the system. Like the helpdesk and that kind of stuff.’

‘A lot of communication to staff at the grass roots, this is what you do now, this is what you will do in the future.’

Discussion

Utterances were made in regard to the way in which users were supported and the manner in which some OC types seem to enable US to function more successfully than others.

The table overleaf summarises the themes and the hierarchy beginning to emerge from the data.
<table>
<thead>
<tr>
<th>Label</th>
<th>Definition</th>
<th>Looking for</th>
<th>Not</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Management Influences</td>
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<td>Management, managers, leader, owners, managerial</td>
<td></td>
<td>‘And the people knew that if X said this is way its going to be, well that’s the way its going to be and that’s the way we are going to do it.’</td>
</tr>
<tr>
<td>1.1. Champions &amp; Sponsors</td>
<td>Any individual who made a decisive contribution to the innovation by actively and enthusiastically promoting its progress through critical stages in order to obtain resources and/or support from top management (Roure, 1999). The sponsor is a senior executive champion of change who by his or her actions and communications helps in maintaining project credibility, momentum and committed support throughout the company (Kale, 2000, in Esteves 2002).</td>
<td>Champion, sponsor, senior executive, enthusiastic, expert</td>
<td></td>
<td>‘… but its more than them, yes you have to have champions and sponsors, but they have to be seen to be driving, not passive, not yes we support these, they have to be driving it.’</td>
</tr>
<tr>
<td>1.2. Leadership</td>
<td>The ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organisations of which they are members (House, 2004: page 15).</td>
<td>Leader, leadership, style, control, vision, direction, goal setting</td>
<td></td>
<td>‘I’ve travelled to Pakistan twice for training, and felt management were united with users to make it as successful as possible.’</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>‘They are still resisting but with top management support there is a change in the overall attitude.’</td>
</tr>
<tr>
<td>Label</td>
<td>Definition</td>
<td>Looking for</td>
<td>Not</td>
<td>Example</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2. Change Management</td>
<td>Organisational change management is the process of developing a planned approach to change in an organisation.</td>
<td>Change, management, change process</td>
<td>change</td>
<td>‘I think one of the major reasons for the success was strong management commitment and also strong focus on change management. I think those were the factors clearly identified at the beginning of the project which would probably lead to success or failure.’</td>
</tr>
<tr>
<td>3. Employee Development</td>
<td>The way and manner in which the OC is supporting, developing and nurturing employees</td>
<td>Development, support, training, education, training</td>
<td></td>
<td>‘They never spent much money on training.’</td>
</tr>
</tbody>
</table>
| 4. Admin Policies Procedures | How does the organisation conduct its admin policies and procedures and in what way do these activities:  
A. demonstrate the OC type  
B. influence the success of the IT innovation | Admin, policies, procedures, manuals, documentation                        |                                                                      | ‘Agreed, it is seen as an administrative tool for the secretary or sales assistant to enter orders and produce reports. Consequently, even with specialised training and help guides there is a resistance to use the system, together with a general lack of enthusiasm.’                                                                                                                                                  |
<p>| 5. Learning Organisation | Learning Organisations are corporations that overcome inherent obstacles to learning and develop dynamic ways to pinpoint the threats that face them and to recognise new opportunities (Senge, 1994). | Learning, innovative, creative, training, knowledge, learnt                |                                                                      | ‘And they just started expanding their own solution based on this success, and were using the principles they learnt in the first one.’                                                                                                                                                                                                 |</p>
<table>
<thead>
<tr>
<th>Label</th>
<th>Definition</th>
<th>Looking for</th>
<th>Not</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Project Management</td>
<td>Project management is the discipline of organising and managing resources in such a way that these resources deliver all the work required to complete a project within defined scope, time and cost constraints.</td>
<td>On time, deadlines, budget, project, project management, cost, resources</td>
<td>‘That’s an integral part of the project and it’s addressed right up front and money is budgeted towards that.’</td>
<td></td>
</tr>
<tr>
<td>7. Knowledge Management</td>
<td>Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations it often becomes embedded not only in documents or repositories but also in organisational routine processes, practices and norms (Davenport, 2000).</td>
<td>Knowledge, knowledge transfer knowledge base, expert systems, knowledge repositories, knowledge management, intellectual capital, knowledge storage</td>
<td>‘Nobody had complete knowledge and nobody was sharing knowledge, so that the organisation per se didn’t know how to do anything.’</td>
<td></td>
</tr>
<tr>
<td>8. Business Processes</td>
<td>A specific ordering of work activities across time and place, with a beginning and an end, and clearly identified inputs and output (Davenport, 1993). A collection of activities that takes one or more kinds of input and creates an output that is of value to the customer (Hammer &amp; Champy, 1993).</td>
<td>Business process, BPM, BP reengineering, models, modelling, process view, processes</td>
<td>‘You know, most of them in the market right down require a certain degree of integration of business process to be successful in its use and a lot of smaller companies are not integrated prior to implementation of that package.’</td>
<td></td>
</tr>
<tr>
<td>Label</td>
<td>Definition</td>
<td>Looking for</td>
<td>Not</td>
<td>Example</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
<td>-------------</td>
<td>-----</td>
<td>---------</td>
</tr>
<tr>
<td>9. Organisational Structure &amp; Infrastructure</td>
<td>The manner in which the OC reflects the organisation’s structure and form of the organisation and the manner in which this interacts with the IT innovation. Organisational structure: The organisation’s formal framework by which job tasks are divided, grouped and coordinated (divisional, simple, matrix, organic, mechanistic). Elements of structure describe formalisation, centralisation and specialisation, departmentalism, chain of command, span of control.</td>
<td>Structure, form, departments, organisational chart, work groups</td>
<td>‘They were not integrated in the structure of the business, very dynamic organisation, had lots of things going on all the time. So they had all the reasons to fail, they didn’t because they were dynamic enough to deal with the change.’</td>
<td></td>
</tr>
<tr>
<td>10. User Support</td>
<td>The manner in which and the extent to which the OC supports the user.</td>
<td>User, support</td>
<td>Training</td>
<td>‘... and what it takes to get the users comfortable with the system. So, that’s an integral part of the project and it’s addressed right up front and money is budgeted towards that.’</td>
</tr>
</tbody>
</table>

Table 5-5. Themes emerging in the second pass pilot data
5.5. Qualitative Results: Third Pass – Selective Coding

Third pass selective coding of the data was not undertaken on the pilot data until all the interviews from both the pilot and the main study had been completed. The third pass results for the pilot interviews are shown in the next chapter along with the main consultant results.

In the next section we review the pilot study results.
5.6. Pilot Results

5.6.1. Quantitative Component

A total of eight (four successful and four least successful) OCAI radar plots were produced as a result of the completed OCAI surveys from the pilot study participants. Although five interviews were conducted, only four fully completed OCAI surveys were received from the participants. The results gave an early indication of some of the culture typologies associated with the most successful and least successful ES innovations.

However, the quantitative results were not analysed until all the survey data had been collected from both the pilot, main and case study elements of the study. This was an intentional decision, designed to ensure that the researcher was not guided by knowledge of the quantitative results in the qualitative analysis. It was important during the qualitative data analysis and coding that the theories emerged as much as possible from the data without undue influence from the quantitative findings.

The pilot study, from the quantitative perspective, was more designed to test, generate familiarisation with the instrument and identify any issues early on with the OCAI and ESS instruments themselves. We needed to test the instruments in the ‘real world’ for suitability, manageability and reliability early in the research study in order to make any changes to the instruments should this be required. The results presented below are the results gathered from the pilot study participants alone, but it must be reiterated, the quantitative results were not analysed until all the data had been collected from the pilot, main and case study components.

5.6.2. Quantitative Results Pilot Study

Completion of the 24 item OCAI gives an individual score to each of the each of the four culture types. The combined scores for all of the four culture types always total 100.

Balancing the ratios of the individual scores out of a total of ‘100’ score is one of the OCAI’s strengths. Cameron & Quinn (1999), the developers of the instrument, found in their studies, that organisations have an element of each of the four culture types. It is the relative ratios of these to each other that are important. In some
organisations, one is clearly very dominant, in others two are seen as being overly strong.

For example, we may see an environment in which all the cultures are roughly equally represented, in this case the survey may report on scores for the each of the four types, as shown in the table below:

<table>
<thead>
<tr>
<th>Culture Type</th>
<th>Organisation A</th>
<th>Organisation B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cultures equally strong</td>
<td>Market most dominant culture type</td>
</tr>
<tr>
<td>Clan</td>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>Market</td>
<td>26</td>
<td>65</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>25</td>
<td>13</td>
</tr>
<tr>
<td>Total Score</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 5-6. OCAI example scores

The individual scores indicate the relative strength (or not) of that particular culture type within the organisation. A ‘Zero’ is the lowest possible score whilst ‘100’ is the maximum possible, a figure of 25 for each of the culture types indicates that none is dominant or stronger over the others, i.e., evenly balanced. Variances above ‘25’ indicate that a particular culture type is stronger, whilst a score below ‘25’ indicates that the culture type is relatively weaker than some or all of the others.

The survey asks the respondents a number of questions, in all six questions for each of the four culture types. The results are then presented in a table and visualised in a radar plot. The mean OCAI results for the pilot study are as follows:
Table 5-7. OCAI mean results from pilot study

<table>
<thead>
<tr>
<th>Successful ES</th>
<th>Score</th>
<th>Least Successful ES</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan</td>
<td>31.25</td>
<td>Clan</td>
<td>17.71</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>21.88</td>
<td>Adhocracy</td>
<td>14.17</td>
</tr>
<tr>
<td>Market</td>
<td>16.46</td>
<td>Market</td>
<td>26.04</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>30.83</td>
<td>Hierarchy</td>
<td>42.50</td>
</tr>
<tr>
<td><strong>Total = 100</strong></td>
<td></td>
<td><strong>Total = 100</strong></td>
<td></td>
</tr>
</tbody>
</table>

When the results are plotted into a radar graph we see a visual representation of the findings. The radar plot for the pilot surveys is shown in the figure below. The blue plot represents the OCAI for the successful ES innovation whilst the red plot represents the least successful ES innovation.

Reviewing the radar plot we find some clear cultural differences between successful and least successful ES innovations.

A. Least Successful: Hierarchy 42.50:

The most striking feature identified in the radar plot is the influence of hierarchy cultures. The hierarchy culture was clearly the dominant culture typology identified in the organisations that had experienced least successful innovations with a mean...
score of 42.50. In organisations that had least successful innovations the hierarchy was consistently seen as being the dominant culture type. The quantitative data suggested that the organisations that were predominantly hierarchy culture biased were those that experienced the least successful innovations.

B. Least Successful: Market 26.04:

The second culture typology that was strongly evident in the quantitative data set for the least successful ESS innovations was the market culture. The market culture has a strong emphasis on external aspects of the environment centered on customer service, competitiveness and fostering competitive capabilities, and an aggressive orientation toward exceeding competitor’s performance (Cameron & Quinn, 1999).

C. Most Successful: Clan 31.25:

The quantitative data from the pilot study indicated that the most successful cultures were those of the clan culture types. Clan cultures are defined as enabling, effective, cohesive, smooth functioning, high performance teamwork, facilitating effective interpersonal relationships including supportive feedback, listening, resolving interpersonal problems, assisting individuals to improve their performance, expanding their competencies and obtaining personal development opportunities (Cameron & Quinn, 1999).

The clan is a supportive, developmental culture that may provide employees with the training and support necessary to fully adopt, embed and exploit the innovation in the workplace.

D. Second Most Successful: Hierarchy 30.83:

On the surface there appears to be a certain paradox here. The hierarchy culture also featured in being the second most successful culture types – which appears to be at odds with hierarchy culture as the least successful culture with a score of 42.50. The hierarchy culture appears to have the potential to be a successful culture in terms of the exploitation of the ES innovation, but at the same time it has the potential to be the least successful culture type and one that will struggle to fully accept and adapt to the innovation. For possible reasons to this apparent duality it may be beneficial to firstly revisit the features of the hierarchy culture:
Hierarchy features include, helping individuals become clear about what is expected of them, what the culture and standards of the organisation are and how they can best fit into the work setting also ensuring that procedures, measurements and monitoring systems are in place to keep processes and performance under control (Cameron & Quinn, 1999).

In many regards to a first time user an ES innovation might appear to be a heavily procedural and controlling administration tool. Within the ES there are clearly defined ways of working, and very hierarchical organisations of the data, even the menus themselves are hierarchical, drill down interfaces that allow the user to access information through successive layers of data. The ES innovation itself may be described as having its own ‘culture’ – one which is predominately hierarchical. The quantitative results from the pilot study suggest that an ES innovation situated within the hierarchy culture has the potential to either be a highly successful or a highly unsuccessful innovation due to the nature of the ES innovation itself and the unique requirements of the hierarchy culture organisation.

The next section discusses some reflections on the instruments themselves from the experiences of the pilot study.
5.7. **Pilot Qualitative Protocol Reflections**

The results from the pilot study were very positive, both in terms of the interview questions capturing the richness of data needed and the soundness of the design in surfacing manifestations of the OC-ESS relationship. The pilot interviews did provide the required richness of data needed in the exploration of the OC-ESS relationship. At the end of the pilot though a period of review and reflection was carried out to consider the success of the design and the overall robustness of the questions and protocols we had been using. This period of reflection was an important component of the pilot phase and a break point that had been very specifically and very deliberately incorporated into the study design.

5.8. **Pre-Interview Instruments**

These instruments were not collected and had been provided to the participants one week prior to the interview to assist them in considering their least and most successful ES examples. However, in discussions with the interviewees to whether they had found the instruments helpful, the feedback was very positive. The interviewees found the instruments aided their preparations, helped them to clarify their thoughts and provided a useful guide for them during the interviews. The layout and design of the instruments was felt to be clear, useable and appropriate.

In all the pilot interviews the participants used these instruments often referring to them during the interview. Because the instruments were working so well it was decided to continue with the instruments in their existing form for the remainder of the consultancy interviews.

5.9. **Existing Question Changes**

Since the existing questions were surfacing clear components and manifestations of the OC-ESS relationship, it was considered that no changes to the existing questions needed to be made. The interviewees’ reactions to the questions had been favourable; the questions did not appear to be overly threatening, too restrictive or too leading. In all cases the interviewees appeared to be comfortable
and relaxed in answering the questions. No questions were declined or answered with a high degree of difficulty. The consultants were able to report on their experiences of the Organisational Culture manifestations; the OC dimensions, describing the OC, the ES innovation and components of the OC-ESS relationship. Because of the richness of the data being collected, the interviewees’ positive reactions to the questions and the ease with which the consultants were able to report on their experiences, the existing questions were not changed.

5.10. Question Addition

Even though the existing questions had been working well there was one area in which it was felt that the data being gathered was a little ambiguous. When the consultants were reporting on success factors and dimensions of the relationship in their successful example, the interviewees were almost reporting on what they considered to be components in the ‘best’ or most supportive culture that allowed ES innovation success. Upon reflection it was felt that this was an important view to surface because it would serve as a focussing final statement that could be used as a summary statement by the consultant. The benefit to the researcher was that it pulled together many manifestations that were otherwise scattered throughout the interview.

The most direct way to surface this ‘perfect’ Organisational Culture was to simply ask the consultants what they considered to be components of the perfect culture. Therefore it was decided to include an additional question into the interview protocol:

‘Describe the perfect supportive Organisational Culture for achieving success with ICT innovations.’

The question was presented at the end in the concluding questions section in order to provide a summary statement that brought together into the one statement the consultants experiences previously dispersed throughout the interview.
5.11. Interview Duration

The interviews were being completed in a reasonable time – in about an hour – and even with the addition of the extra question the duration of the interview was still felt to be manageable and not too onerous or time consuming for the consultants. All the participants completed the interview questions with no one having to leave part way through because the interview was taking too long.
5.12. **Summary**

In summary the pilot phase confirmed several aspects of the design and protocol.

<table>
<thead>
<tr>
<th>Design Aspect</th>
<th>Impact on Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol tested for manageability, robustness,</td>
<td>Therefore no changes necessary</td>
</tr>
<tr>
<td>reliability and Validity</td>
<td></td>
</tr>
<tr>
<td>Questions capturing OC-ESS manifestations</td>
<td>Yes, with the addition of one extra question</td>
</tr>
<tr>
<td>Pre-Interview instruments working as intended</td>
<td>Yes, no changes necessary</td>
</tr>
<tr>
<td>Interview duration manageable</td>
<td>Yes, no changes necessary</td>
</tr>
<tr>
<td>Consultants able to engage with the process and</td>
<td>Data gathered was informing on the relationship.</td>
</tr>
<tr>
<td>return experiences of the OC-ESS relationship</td>
<td>Interviews were active exchanges with consultants keen to recount their experiences. No changes to design identified.</td>
</tr>
<tr>
<td>Appropriate richness of data</td>
<td>The level of detail sufficient for detailed analysis.</td>
</tr>
</tbody>
</table>

| **Table 5-8. Summary of changes to study following pilot** |

The qualitative element of the Pilot had been a useful proving ground both in terms of the data it yielded and as a test of the interview protocols. The next component of the Pilot to be reviewed is the quantitative element. Again the purpose of the quantitative Pilot was to gather some data and also test the reliability, usability and suitability of the quantitative instruments we had selected for the study.

5.13. **Reflections on Instruments**

The OCAI instrument worked well in the pilot study. The instrument was given to the consultants at the end of the interview. The interviewees could then complete the survey in their own time and return it in an envelope provided.
Five pilot interviews were completed of which four completed their instruments. This represented a response rate of 80% which is very high for any survey regardless of sample size.

In terms of effort involved to complete the instrument, a test run was conducted in the research centre prior to the pilot, which indicated the instrument took no more than 15 minutes to complete. Feedback from the pilot interviewees confirmed this, with interviewees stating that on average the instrument took 12 minutes to complete; the maximum completion time being 20 minutes. The respondents did not consider the instrument to be overly complex or time consuming and felt comfortable with the survey questions.

The feedback, response rate and manageability experienced in handling the instrument indicated that the instrument was a suitable choice for the study.

The next chapter considers the main consultant data collection exercise following the pilot phase of the research.
Chapter 6

Main Study
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6. The Consultant’s Study

This chapter describes the analysis and findings from the main study. The main consultant’s study collected both qualitative and quantitative data, the findings and results are shown in the following sections.

The following figure shows the location of this chapter in the overall study design:

![Figure 6-1. Main study phase](image)

The purpose of this phase of the study was to:

1. Reveal the qualitative influences in the OC-ESS relationship
2. Identify OCAI distributions in order to reveal any quantitative variations of OC

The aim of the main study was to continue gathering sufficient data in order to fully explore the OC-ESS relationship. The target number of interviews in the main study was 15, which would bring the total number of interviews carried out in the study to 20.
6.1. Study Participants

The original protocol targeted specific numbers of consultants from the various categories. At the conclusion of the study, the following consultants had been interviewed:

<table>
<thead>
<tr>
<th>Consulting Firms (Implementation Consultants)</th>
<th>Vendor Firms (Vendor Consultants)</th>
<th>Private/Public Sector Clients (Internal Consultants)</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot Study Numbers Actual (Targeted)</td>
<td>0 (2)</td>
<td>3 (2)</td>
<td>5 (6)</td>
</tr>
<tr>
<td>Main Study Numbers Actual (Targeted)</td>
<td>4 (5)</td>
<td>4 (5)</td>
<td>12 (14)</td>
</tr>
<tr>
<td>Total No. of Consultants Actual (Targeted)</td>
<td>4 (7)</td>
<td>7 (7)</td>
<td>6 (6)</td>
</tr>
</tbody>
</table>

Table 6-1. Total interviews conducted

During the data gathering exercise, the original numerical target of consultant type was followed as closely as possible, i.e., capturing data from consultants that met the criteria whilst at the same time ensuring they were drawn from the correct consultant type categories. The target number of consultants for the study was between 15 and 20. A total of 17 consultants were interviewed. The frequency and categories of these consultants are shown in table 6-1. Perusal of this table shows that a representative sample from each category was included.

In addition, during the main data collection element interviews were carried out with implementation consultants (5 targeted - 4 actual) and vendor consultants (5 targeted - 4 actual), with six internal consultants also interviewed (6 targeted - 4 actual). The total number from both the pilot and main elements was therefore 17.

Interview length stabilised around 60 minutes duration and 18 pages in length. The interviews themselves were on average of greater duration, passage length and word count than the pilot interviews.

The tables overleaf indicate the actual durations:
6.2. Qualitative Analysis

The analysis continued in the same manner as the analysis undertaken for the pilot interviews. Analysis was undertaken as each interview was gathered and the patterns and nodes built up. The process was evolutionary; as new categories were discovered, the list developed becoming fuller and more 'complete' as more of the interviews were conducted. As the coding continued, the list of categories increased, reaching its peak at 122 manifestations at the end of open coding. The second pass which applied the axial coding technique, consolidated this list as the manifestations were built up into their hierarchies.

The coding was undertaken through a cultural lens, and effort was made to keep the focus on the observation through this lens, rather than becoming clouded by other aspects of organisational theory such as Project Management theory, Strategy or
Knowledge Management theory. So, for example, when an interviewee made a statement concerning control issues – the coding and analysis was directed through our cultural lens which asked what OC components were influencing this control.

The number of new manifestations raised declined as the number of interviews increased. For example, by interview 12 significantly fewer new categories were being identified. Indeed, by interview 9 over 75% of all the final categories had been identified and by interview 12 85% of the final categories had been discovered. By interview 14 no new manifestations were being raised from any of the interviews. This was supportive of the literature findings which suggested that by approximately interview 14 most manifestations of a social phenomenon would have been identified, (Miles & Huberman, 1994).

Although this first and second pass coding sounds relatively simple, in reality the process was very time consuming, and to completely code the total 17 study interviews took well over 14 months. The average interview was an hour plus in length and 20 pages long. The average number of words per interview was 6,039 and in total there were 111,359 words to be encoded. Due to the nature of the qualitative analysis the researcher is detecting subtleties and nuances within the transcripts that are not always immediately visible. So in addition to the sheer volume of words and passages to code, the manifestations are not always easily identified and may take some time before they are raised, let alone categorised. This combination of factors led to the coding taking a substantial amount of time.

It was also identified that an additional pass through the categories was required because, on reflection, some of the statements were less about the Organisational Culture components and more about an individual’s skills. As an example, consider the statement below which reflects more about a particular manager’s skills, rather than elements of Organisational Culture in the OC-ESS relationship:

‘So he was an up and out man, as opposed to a controlling and insight consolidating organisation, the CEO was in the same sort of context and there was actually holding and binding these guys together and providing a strong guidance and leadership for this project.’

Once the additional pass had been completed, the remaining OC manifestations represented the final categories of description for the consultant interviews. The final OC manifestation categories are shown in figure on the next page.
Table 6-3. Categories of the OC manifestations found

While one of the possible measures of a category’s importance could be to count the number of times this was uttered, there are other possible measures that may be used.
At the most basic level, interviews are conversations (Kvale, 1996). Kvale defines qualitative research interviews as 'attempts to understand the world from the subjects' point of view, to unfold the meaning of peoples' experiences, to uncover their lived world prior to scientific explanations.' Patton (1987) points out that any face-to-face interview is also an observation. The skilled interviewer is sensitive to non-verbal messages, effects of the setting on the interview and nuances of the relationship. While these subjective factors can sometimes be considered threats to validity, they can also be strengths because the skilled interviewer can use flexibility and insight to ensure an in-depth, detailed understanding of the participant's experience.

Passage count is therefore only one indicator of a manifestations importance. Simply because a phrase is repeated less frequently does not mean that its influence or relative importance is any less than one repeated many times (Patton, 1987).

Other attributes of a phrase need to be taken into consideration (Kvale, 1996), and may include:

- **Clarity of expression**
  
  A phrase may have been stated just once but very clearly, outright and with conviction. A strong, simple, single statement may have been made but just not repeated many times, but that does not mean that the OC manifestation is less influential or important in the OC-ESS relationship.

- **Passage duration**
  
  A long statement, as opposed to a short statement in regard to one OC manifestation could be indicative of its influence.

- **Frequency per interview**
  
  Repeated reference to one OC manifestation by one interviewee may indicate it is considered highly important to that one consultant.

- **Notes**
  
  During the interviews notes were taken as comments to non-verbal expressions that the interviewees made.

Nevertheless, counting the number of passages for a given category is a useful exercise that gives some measure of the strength of its involvement within the OC-ESS relationship.

The table overleaf summarises categories by passage count.
<table>
<thead>
<tr>
<th>1st Tier</th>
<th>2nd Tier</th>
<th>3rd Tier</th>
<th>No. of Passages</th>
<th>No. of Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Influences</td>
<td></td>
<td></td>
<td>251</td>
<td>10,651</td>
</tr>
<tr>
<td>Level 2 Champions</td>
<td></td>
<td></td>
<td>19</td>
<td>796</td>
</tr>
<tr>
<td>Sponsors</td>
<td></td>
<td></td>
<td>28</td>
<td>1,173</td>
</tr>
<tr>
<td>Leadership</td>
<td></td>
<td></td>
<td>146</td>
<td>5,541</td>
</tr>
<tr>
<td>Level 3 Control</td>
<td></td>
<td></td>
<td>24</td>
<td>940</td>
</tr>
<tr>
<td>Vision</td>
<td></td>
<td></td>
<td>37</td>
<td>1,619</td>
</tr>
<tr>
<td>Style</td>
<td></td>
<td></td>
<td>78</td>
<td>3,560</td>
</tr>
<tr>
<td>Diffusion Process</td>
<td></td>
<td></td>
<td>195</td>
<td>8,977</td>
</tr>
<tr>
<td>Level 2 OC of Change Acceptance</td>
<td></td>
<td></td>
<td>40</td>
<td>1,868</td>
</tr>
<tr>
<td>Exploiting the ES</td>
<td></td>
<td></td>
<td>21</td>
<td>1,030</td>
</tr>
<tr>
<td>User Involvement in DP</td>
<td></td>
<td></td>
<td>22</td>
<td>992</td>
</tr>
<tr>
<td>User Support</td>
<td></td>
<td></td>
<td>65</td>
<td>2,501</td>
</tr>
<tr>
<td>Managerial Support for the DP</td>
<td></td>
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<td>35</td>
<td>1,488</td>
</tr>
<tr>
<td>Management Understanding</td>
<td></td>
<td></td>
<td>14</td>
<td>763</td>
</tr>
<tr>
<td>TAM</td>
<td></td>
<td></td>
<td>6</td>
<td>404</td>
</tr>
<tr>
<td>Employee Development</td>
<td></td>
<td></td>
<td>48</td>
<td>2,320</td>
</tr>
<tr>
<td>Admin Policies &amp; Procedures</td>
<td></td>
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<td>1,261</td>
</tr>
<tr>
<td>Learning Organisation</td>
<td></td>
<td></td>
<td>55</td>
<td>2,680</td>
</tr>
<tr>
<td>Project Management</td>
<td></td>
<td></td>
<td>9</td>
<td>4,302</td>
</tr>
<tr>
<td>Knowledge Management</td>
<td></td>
<td></td>
<td>24</td>
<td>994</td>
</tr>
<tr>
<td>Business Processes</td>
<td></td>
<td></td>
<td>21</td>
<td>1,095</td>
</tr>
<tr>
<td>Org Structure &amp; Form</td>
<td></td>
<td></td>
<td>65</td>
<td>3,858</td>
</tr>
<tr>
<td>National Culture</td>
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<td>10</td>
<td>567</td>
</tr>
<tr>
<td>Level 2 Time Orientation</td>
<td></td>
<td></td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Gender Masculinity/Femininity</td>
<td></td>
<td></td>
<td>10</td>
<td>580</td>
</tr>
<tr>
<td>Sub Cultures within the Dominant</td>
<td></td>
<td></td>
<td>47</td>
<td>2,552</td>
</tr>
<tr>
<td>Ideal Culture</td>
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<td></td>
<td>27</td>
<td>1,425</td>
</tr>
<tr>
<td>Org Maturity &amp; Size</td>
<td></td>
<td></td>
<td>7</td>
<td>365</td>
</tr>
<tr>
<td>OC of Imp Partner</td>
<td></td>
<td></td>
<td>5</td>
<td>336</td>
</tr>
</tbody>
</table>

Table 6-4. Passage count results
The word and passage count data shows some interesting results.

The categories can now be sorted by passage counts, as shown in the following table:

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Passages</th>
<th>No. of Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Influences</td>
<td>251</td>
<td>10,651</td>
</tr>
<tr>
<td>Diffusion</td>
<td>195</td>
<td>8,977</td>
</tr>
<tr>
<td>Leadership</td>
<td>146</td>
<td>5,541</td>
</tr>
<tr>
<td>Style</td>
<td>78</td>
<td>3,560</td>
</tr>
<tr>
<td>Org Structure &amp; Form</td>
<td>65</td>
<td>3,858</td>
</tr>
<tr>
<td>User Support</td>
<td>65</td>
<td>2,501</td>
</tr>
<tr>
<td>Learning Organisation</td>
<td>55</td>
<td>2,680</td>
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<td>Employee Development</td>
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<td>2,320</td>
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<tr>
<td>Sub Cultures within the Dominant</td>
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<td>2,552</td>
</tr>
<tr>
<td>OC of Change Acceptance</td>
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<td>1,868</td>
</tr>
<tr>
<td>Vision</td>
<td>37</td>
<td>1,619</td>
</tr>
<tr>
<td>Managerial Support for the DP</td>
<td>35</td>
<td>1,488</td>
</tr>
<tr>
<td>Sponsors</td>
<td>28</td>
<td>1,173</td>
</tr>
<tr>
<td>Ideal Culture</td>
<td>27</td>
<td>1,425</td>
</tr>
<tr>
<td>Admin Policies &amp; Procedures</td>
<td>24</td>
<td>1,261</td>
</tr>
<tr>
<td>Control</td>
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<td>940</td>
</tr>
<tr>
<td>Knowledge Management</td>
<td>24</td>
<td>994</td>
</tr>
<tr>
<td>User Involvement in DP</td>
<td>22</td>
<td>992</td>
</tr>
<tr>
<td>Business Processes</td>
<td>21</td>
<td>1,095</td>
</tr>
<tr>
<td>ES a Change Process</td>
<td>21</td>
<td>1,030</td>
</tr>
<tr>
<td>Champions</td>
<td>19</td>
<td>796</td>
</tr>
<tr>
<td>Management Understanding</td>
<td>14</td>
<td>763</td>
</tr>
<tr>
<td>Gender Masculinity/Femininity</td>
<td>10</td>
<td>580</td>
</tr>
<tr>
<td>National Culture</td>
<td>10</td>
<td>567</td>
</tr>
<tr>
<td>Project Management</td>
<td>9</td>
<td>4,302</td>
</tr>
<tr>
<td>Org Maturity &amp; Size</td>
<td>7</td>
<td>366</td>
</tr>
<tr>
<td>TAM</td>
<td>6</td>
<td>404</td>
</tr>
<tr>
<td>OC of Imp Partner</td>
<td>5</td>
<td>336</td>
</tr>
<tr>
<td>Time Orientation</td>
<td>1</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 6-5. All categories sorted by passage count
In table 6-5 we see that the largest category by number of passages identified in the interviews was ‘Management Influences’ (MI) at 251 passages or 18% of the total number of passages. MI related to statements about the way managers, leaders and supervisors interacted in OC-ESS relationship. Many of the statements in this category recounted experiences of the manner in which management, at its broadest level of description, interacted in the relationship. For example,

‘the managers that managed their team, and they were quite I guess scared, in terms of not knowing how to make their staff use it’.

We also see that within the higher order MI category, the sub-category of ‘Leadership’ represented a major category. Within MI utterances about leadership accounted for nearly 60% of the total statements. Clearly, MI and its sub-categories were an important influential component within the OC-ESS relationship based on number of statements made in the categories.

The second largest high order category by number of passages was ‘Diffusion Process’ (DP). A total of 195 passages were identified that formed this cluster. This category related to the manner in which the innovation being discussed diffused throughout the organisation. However, within the DP category a clear hierarchy emerged, the most populous sub-category being ‘User Support’ (US) within the DP, which accounted for 33% (65 of 195) passages.

Other large passage counts were seen for ‘Employee Development’ (ED) 48, ‘Learning Organisation’ (LO) 55, ‘Organisation Structure’ (OS), ‘Business Processes’ (BP) 65 and ‘Sub-Cultures’ (SC) 47 categories.

Looking at different levels of categories we also see different values for the number of passages associated with the categories.

These are shown in the tables overleaf.
At the highest level category, Tier 1, the most populous categories were:

<table>
<thead>
<tr>
<th>Category – Tier 1</th>
<th>No. of Passages</th>
<th>No. of Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Influences</td>
<td>251</td>
<td>10,651</td>
</tr>
<tr>
<td>Diffusion</td>
<td>195</td>
<td>8,977</td>
</tr>
<tr>
<td>Org Structure &amp; Form</td>
<td>65</td>
<td>3,858</td>
</tr>
<tr>
<td>Learning Organisation</td>
<td>55</td>
<td>2,680</td>
</tr>
<tr>
<td>Employee Development</td>
<td>48</td>
<td>2,320</td>
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<tr>
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<td>Admin Policies &amp; Procs</td>
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<tr>
<td>Knowledge Management</td>
<td>24</td>
<td>994</td>
</tr>
<tr>
<td>Business Processes</td>
<td>21</td>
<td>1,095</td>
</tr>
<tr>
<td>National Culture</td>
<td>10</td>
<td>567</td>
</tr>
<tr>
<td>Project Management</td>
<td>9</td>
<td>4,302</td>
</tr>
<tr>
<td>Org Maturity &amp; Size</td>
<td>7</td>
<td>365</td>
</tr>
<tr>
<td>OC of Imp Partner</td>
<td>5</td>
<td>336</td>
</tr>
</tbody>
</table>

Table 6-6. Rankings by passage count top level categories

The largest categories identified accounted for the larger portions of statements made by a significant amount. It can be seen that there is a large range from 251 for the largest to just 5 utterances for the smallest category. Looking at the next level down for categories, the tier 2 categories, again a clear ranking emerged for the number of passages, shown in the table below:

<table>
<thead>
<tr>
<th>Category – Tier 2</th>
<th>No. of Passages</th>
<th>No. of Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
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<td>5,541</td>
</tr>
<tr>
<td>User Support</td>
<td>65</td>
<td>2,501</td>
</tr>
<tr>
<td>OC of Change Acceptance</td>
<td>40</td>
<td>1,868</td>
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<tr>
<td>Managerial Support for the DP</td>
<td>35</td>
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<tr>
<td>Sponsors</td>
<td>28</td>
<td>1,173</td>
</tr>
<tr>
<td>ES a Change Process</td>
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<tr>
<td>User Involvement in DP</td>
<td>22</td>
<td>992</td>
</tr>
<tr>
<td>Champions</td>
<td>19</td>
<td>796</td>
</tr>
<tr>
<td>Management Understanding</td>
<td>14</td>
<td>763</td>
</tr>
<tr>
<td>Gender Masculinity/Femininity</td>
<td>10</td>
<td>580</td>
</tr>
<tr>
<td>TAM</td>
<td>6</td>
<td>404</td>
</tr>
<tr>
<td>Time Orientation</td>
<td>1</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 6-7. Rankings by passage count 2nd level categories

The next section discusses the individual categories themselves and how these categories were developed.
6.3. Qualitative Open and Axial Coding

As per the pilot study, the categories were built up iteratively over a number of passes as the interview data were gathered. Using Strauss’ (1997) method, three separate passes were carried out through the data. These passes are:

1. first pass – Open coding;
2. second pass – Axial or pattern coding;
3. third pass – Selective coding

The categories were then described again following the method prescribed by Boyatzis (1998), where codes comprise five parts:

1. a one to three word label
2. a definition
3. a flag description
4. any exclusions or qualifications
5. an example

Once the lowest level categories had been discovered in the 3rd pass, the OC manifestations were finally categorised into the successful and least successful examples. It was at this point that the OC manifestations were informing upon the differences between the successful and least successful OC and surfacing differences in ‘how’ OC influences the success/failure of an ES.

Each of the 1st pass top level categories and its corresponding sub-categories will now be taken in turn.

The first set of codes to be discussed is situated in the ‘Management Influences’ category.

Management Influences

A key theme emerged from the data was Management Influences (MI). This was formally defined as ‘the management practices that focused upon changing the culture to accept the innovation’.

The literature indicated that various aspects of ‘Management’ ranging from Leadership Theories through to Management structures play a significant role in shaping an organisation’s culture. The analysis of the interviews suggested the very wide ranging and complex manner in which the many various dimensions of ‘Management’ appeared
to be influencing OC-ESS. The second level axial coding sought to further examine this issue and identified sub-categories of ‘Champions’, ‘Sponsors’ and ‘Leadership’. Leadership was further coded into ‘Leadership Style’, ‘Vision’ and ‘Control’.

Examples of MI statements include:

‘With a successful implementation, there is generally a high level of managerial support’

‘I believe a more positive management supported implementation creates a positive environment where users learn more quickly and retain the knowledge because it is seen as important.’

‘It was successful because it was driven from the top.’

‘You say, stuff it, I’m not doing it. And the boss would have to say well, stuff it, you are going to do it.’

Discussion

Here we see statements that firstly suggest the component parts of the category ‘Management Influences’, and then comments around the nature of the influence upon the relationship. The interviewees indicated that high levels of managerial support were important and that success was driven by the top. The last example statement indicates that the style, ‘you are going to do it’, is important in some way.

We can see from the above examples that at the high level the MI category comprised many different dimensions of ‘Management’. The subsequent coding passes through the MI category identified strong clusters around ‘Sponsors’, ‘Champions’ and ‘Leadership’.

The figure below shows the top level ‘Management Influence’ category with its component 2nd pass sub categories:

Figure 6-2. Management influences sub-categories
Examples of these are shown in the section below.

Sponsors are the Executive and Senior Managers responsible for sponsoring and supporting the ES. Literature on champions, top management support (TMS) and executive sponsorship of projects has been well documented as a success factor in Project Management, Management Theory and BPM. In various forms many statements were made as to the importance of executive sponsorship for the ES program.

Each of these were analysed in terms of their contribution to or reaction from Organisational Culture, as distinct from the actual behaviour required as a critical success factor. In discussing these themes, firstly the desired behaviours for success are discussed, followed by behaviours associated with least success, and closed with the relationship of the theme to Organisational Culture.

At the final level of coding the themes were tagged into the successful and least successful examples. The purpose of keeping the successful and least successful tags was to enable variances not just in the OC experiences to be identified but also manifestations of the dimensions of success. In this way we would be able to identify variances within the OC-ESS relationship in terms of level of success.

Taking firstly sponsors, this is defined as:

‘The sponsor is a senior executive champion of change who by his or her actions and communications helps in maintaining project credibility, momentum and committed support throughout the company’ (Kale, 2000 in Esteves & Pastor, 2002).

Consider the following extract as an example of the presence of sponsorship as a requirement for success:

‘The key to every successful implementation all that I have ever worked on is not just the executive sign off or the executive buy in, but the executive driving of the project and driving of the outcomes.’

Here we see a clear statement of the executive driving the innovation success. Another example of the role of the sponsor in positioning the organisation to have success with the Enterprise System is as follows:

‘[The] strength of the executive and that the executive is a driver, not a set the objective and walk away and expect someone else to make it happen.’

‘Top down support, so basically, very much it has to be sponsored from the business.’
As a counterpoint to positive sponsor behaviour, note the following sponsor least successful example:

‘I you don’t have someone strong that’s guiding and advocating the change, or the innovation, I’m not sure that you can actually ever achieve it.’

These examples indicate the requirement for sponsorship within the relationship. Further analysis revealed differences in the types of behaviour displayed by the sponsor and the influence on the relationship in successful and least successful innovations.

**Sponsor successful**

‘Its **executive driven** to say we are going to appoint that person and that person will have the say and it will get disseminated down.’

The executive were seen to be driving the innovation and actively appointing key personnel to drive that through the organisation.

‘They **knew they were going to have problems**, so the decision was from the executive we’ve got to do it anyway, we’re six months into a new start-up company, it’s got to be in place.’

Here a statement is made about the sponsors understanding the nature of the organisation and acting accordingly to ensure that the innovation is successfully implemented.

‘**You have to have champions and sponsors but they have to be seen to be driving, not passive, not yes we support these, they have to be driving it.**’

The sponsors must not only be present but they must be visible to the organisation, actively giving support to the innovation.

**Sponsor least successful**

‘He had a mindset of we need to go and do this, let’s just do it. But he forgot that the culture in his organisation doesn’t operate that way.’

Whilst the sponsor recognised that something needed to be done, the manner in which he went about this caused failure – because he did not understand the culture of the organisation.
‘When the new CEO came on board for X he went through it and he said the same, this is our one factor that will differentiate us from the other banks, but the message never got down.’

The sponsor did not drive the message through the organisation and push the innovation rather the message was weak and poorly communicated.

From these examples one concludes that effective sponsorship behaviour is required for ES success. These behaviours are: strong sponsorship, i.e., it must be present; and clear direction and communication from the sponsor.

The behaviours which are related to OC are: understanding the organisational culture, a culture that enables the sponsor to operate in, and a culture that values and listens to the sponsor direction when this is present.

The behaviours which are related to individual leadership are: strong leadership, clear direction, and visible support for the innovation.

Thus, one concludes that the sponsor is an important figure in the OC-ESS relationship. Much of the literature on Organisational Culture stresses the importance of Executives driving the cultural attributes of exhibiting certain behaviours. Schein (1985) described five primary behaviours that leaders exhibit in their attempts to shape Organisational Culture:

1. What leaders pay attention to, measure and control
2. Leader reactions to critical incidents and organisational crises
3. Deliberate role modelling, teaching and coaching
4. Criteria for rewards and status allocation
5. Criteria for recruitment, selection, promotion, retirement and excommunication

Leaders' behaviours interact with what Schein terms ‘secondary reinforcement mechanisms’ and include formal statements of organisational philosophy, creeds and charters. OC has also been shown to be a source of cues by which leaders make sense of their own organisations (Ravesi & Schultz, 2006).

Looking at the role of the sponsor through a cultural lens, whilst an effective sponsor may be a critical success factor to an ES project, the data suggests that a sponsor may be more effective in certain culture types.

‘There’s a managerial support for that change.’

A culture of change is present within the organisation.
'We had directors here who went like, okay this is a major change. We’ve **got** to be able to communicate it to the users.'

The sponsors were able to communicate the change – there was a culture that allowed this communication. The statement below indicates the result if the sponsor and culture are at odds with one another.

‘The person might’ve been a maker and a shaker… aggressive CEO, that’s all I heard about him. He had a mindset of **we need to go and do this**, let’s just do it. But he forgot that the culture in his organisation doesn’t operate that way. So his mandate and his vision was one but he didn’t include the culture within that organisation.’

The sponsor was a change manager and wanted rapid change but the Organisational Culture was not a change culture. Those cultures that are particularly used to change or have a project management approach appear to be more successful. The sponsors in these cultures are more effective at driving the message down through the organisation and supporting the ES diffusion process.

The figure below visualises the findings in the data. A sponsor is required but the specific culture type is enabling/inhibiting the success of the sponsor and the ES.

![Figure 6-3. Sponsor interaction in OC-ESS](image)

The sponsor role is clearly important in the OC-ESS relationship, the next high level category that was identified in the data was the champion and this is discussed next.

**Management Influences>Champions**

This section presents and discusses the relationship of a champion as a critical success factor and the relationship of Organisational Culture to champion behaviour and effect.
Champions have been documented in the literature (Gartner, 2005) as being important to the success of many organisational activities including Project Management, Business Process Reengineering and Change Management Programs. However, in the context of this study, champions appear to be important in the OC-ESS relationship for different reasons. This section shows the data analysis and the rationale for this assertion.

The definition of a champion is:

‘Any individual who made a decisive contribution to the innovation by actively and enthusiastically promoting its progress through critical stages in order to obtain resources and/or support from top management’ (Roure, 1999).

An example of championship behaviour from the data is given below.

‘The people who really say, this is fantastic, I’m going to advocate the system and I’m going to you, and people, I guess generally people that you know, are well respected by others. So, they use it and other people think, oh you know, it might be pretty good.’

Above we see an example from the data of a champion present who is actively and enthusiastically supporting the innovation. Other examples from the data are:

‘And the people knew that if Mr X said this is the way it’s going to be, well that’s the way it’s going to be and that’s the way we are going to do it.’

In the above example the champion has some clear power and influence within the organisation, power to make the decision and also to enforce the decision.

The data revealed insights into the differences between the successful and least successful examples.

**Champions successful examples**

‘There’s either purposefully introduced or an implicit understanding of business process owner and that there is a business process and someone has the authority to drive it.’

Within the successful ES there are ES process owners that have the power to drive change. In addition, in successful ES, if the champion is not present they can be purposefully introduced.
‘But its more than them, yes you have to have champions and sponsors but they have to be seen to be driving, not passive, not yes we support these, they have to be driving it.’

Not only should the champion exist, but in successful ES they are visible and active.

‘Sometimes you’ve got individuals that really stand out because they’ve been there a long time or people really like them, or people see them as an authority and believe what they say, or are scared of them.’

Whilst champions were visible, they were also a reflection of OC. In the statement above we see comment on the length of time that the champion had been present; this suggests they are part of the culture and that they have shaped the culture through their presence.

‘Solution champions within the organisation, and they grow the circle of users piece by piece’

Once a cohort of champions has been established they appear to organically persuade and influence users around them. A culture that fosters this changing, learning and evolving environment appears important.

‘Very strong core of champions who wanted change’

Again a core of champions driving, promoting and supporting the ES through the organisation is present in the successful ES.

The behaviour of champions was different in those organisations that were seen to be least successful as demonstrated in the following extracts:

**Champions least successful example**

We also see examples from least successful ES:

‘The ones that you see fail they’ll almost certainly be, if you don’t assign the process owner.’

‘Champions are not assigned within the organisation.’
‘The business owner who was sacked, and the analyst, business analyst... So there was no one in the organisation now with the drive.’

The champions and the process drivers were not valued by the organisation. In this example the organisation felt threatened and reacted accordingly.

Champions absent

Finally, the absence of champions was also seen to be associated with organisations that were least successful in ES as shown in the following extract:

‘In most cases they don’t even have business process change agents. You can’t drag them along to that, they’ve got to take the step.’

Thus, the data shows the correlation of the presence and positive behaviours of champions to ES Success and the absence or negative behaviours of champions to ES least successful.

In addition, the cultures which appear to be most supportive or foster the existence of champions were seen to experience success. This behaviour can only occur in certain culture types. These culture types need to support champions contained the following elements: readiness to accept change, open communication, directed sponsor support for the seeding of champions throughout the organisation.

The data therefore indicated the key role and influence to ESS played by the champions in the organisation. The presence (or absence) of a group of champions driving forward the exploitation and adoption of the ES in a particular OC serves not only to confirm the important role they play – as confirmed by many studies into project management success. But, from an OC perspective the fact that champions exist and flourish in a particular organisation, whilst not in another, indicates that the champions maybe both a driver of continued ESS and also a product of the OC that allows them to exist. The data suggested the important role that champions play post implementation in the continued success or an ES. Even though ‘go live’ may have occurred over two years ago, and the implementation project team had been long since disbanded, the role of ES champions in the continued diffusion of the innovation throughout the organisation appeared to be of continued importance.

The figure overleaf summarises the findings for the role of champions in the OC-ESS relationship.
The next category to be discussed is the Management Influences>Leadership sub-category.

Figure 6-4. The role of champions in the OC-ESS relationship
Management Influences>Leadership

The third sub-category to be identified within MI was ‘Leadership’. The coding raised many dimensions of leadership with multiple themes and issues emerging, and thus indicating that leadership was a complex category. However, during the second pass coding the themes clustered around three distinct areas. These were ‘Leadership Control’, ‘Leadership Vision’ and ‘Leadership Style’, as summarised in the figure below:

![Figure 6-5. Sub-categories within MI>Leadership](image)

The initial label definitions, examples and tags for leadership were based upon the following attributes:

**Label:** Leadership

**Definition:** ‘The ability of an individual to influence, motivate, and enable others to contribute toward the effectiveness and success of the organisations of which they are members’ (House, Javidan, Hanges & Dorfman, 2002).

**Leadership Example:**

‘However, gaining the support of top level management altered the message and added the weight of authority to the message that non-commitment would not be tolerated, and anyone that wasn’t doing the right thing, they’d be named openly.’

The role of leaders in many organisational activities has been well researched and documented. The general category of leadership itself covered a wide range of issues with a large number of statements being in reference to Leadership in the OC-ESS by the interviewees.
Within the data there were clear statements that reflected the leadership dimension. Examples included:

‘with a successful implementation, there is generally a high level of managerial support’

Showing leadership support for the innovation.

‘I’ve travelled to the site twice for training, and felt management were united with users to make it as successful as possible’

Showing Leadership attitude towards the ES.

‘poor support leadership and no representative management involved in the project’

A lack of leadership or poor leadership for the project.

‘This negative view of SAP has been promoted, however this is being addressed by a change from top down management due to the large investment, the MD has promoted the system and is insisting on its utilisation to improve efficient operations.’

Leadership directed at promoting and mandating the use of the ES.

‘communicating to your employees what the nature of the business is’

Leaders openly communicating with their staff.

‘This one had strong leadership and the other one didn’t, so where you have obviously a highly siloed organisation or an organisation with widely divergent cultures, you’ve got to have some, something’s got to hold it together.’

Leadership coordinating the cultures and holding the organisation together.

But within leadership patterns did emerge on the 2nd pass that suggested three particular leadership dimensions were strong influences in the OC-ESS relationship.

These three patterns were ‘Control’, ‘Vision’ and ‘Style’, these are discussed in detail in the following section.
The first sub-category to be discussed is the ‘Control’ category.

**Management Influences>Leadership>Control**

The control characteristics that the organisations and leader exhibited.

**Label:** Control

**Definition:** Control has two components

1. Chain of command: An unbroken line of authority that extends from the upper levels of the organisation to the lowest levels and clarifies who reports to whom.

2. Span of control: The number of subordinates a manager can supervise efficiently and effectively (Robbins et al., 2006).

**Example:**

> 'restrict and reinforce discipline to round the processes but not stopping them from being maverick and entrepreneur in terms of getting the sales'

Within the data we see statements as regards the line of authority and the numbers of subordinates that a manager coordinates.

**Control successful examples**

> 'There was a clear line of communication from the top, they knew who was doing what and where it was coming from.'

In successful ES there were clearly defined and understood chains of command.

> 'Managing a small number of team leaders meant they could get things done quickly.'

A narrow span of control appeared to aid decision making in the OC-ESS relationship.

> 'I think there were only two layers of management to get to top management, the guys on the ground knew they could get guidance easily.'

In a successful ES statement one of the success factors identified was the short change of command.

Therefore we see in these leadership examples that short, open communication channels were aiding the success of the ES. Looking at these through a cultural lens it
appears that these characteristics present in the culture assist the organisation in its diffusion of the innovation.

The next MI>Leadership sub-category to be identified was the ‘Style’ sub-category.

Management Influences>Leadership>Style

Label: Style

Definition: The style adopted and displayed by the leader. Leadership style is a combination of task behaviour and relationship behaviour displayed by the leader (Hershey, Blanchard & Natemeyer, 1979). Task behaviour refers to the leaders directions, relationship behaviour is the two way communication, including listening and support by the leader.

Examples:

‘Within the organisation, the area itself, it was a small, tightly knit group, similar to a family environment, managerial staff fully supported the process generating enthusiasm for the change within the group’

Examples for the category Management Influences>Leadership>Style sub-category were:

Leadership style successful example:

‘I believe a more positive management supported implementation creates a positive environment where users learn more quickly and retain the knowledge because it is seen as important.’

The leadership style, in this case positive and supportive, created an environment where users could develop. Other statements were made in regards to the style of the leaders, such as:

‘strong management focus on commitment to success’

The leadership style here is focused upon the outcomes and goal oriented.

‘A bit dictatorial in some ways’

Within a success full ES the leadership style was telling and somewhat directing.
‘The CEO was in the same sort of context and there was actually holding and binding these guys together and providing a strong guidance, direction and leadership for this project. He was a very straight shooter.’

Through a strong and closely articulated style the CEO was holding the organisation together though a difficult change period.

‘The Director used to walk around’

A very visible leadership style supported the ES diffusion.

**Leadership style least successful example:**

Within the least successful examples style of leadership were also raised.

‘They were coming into the implementation with an in house system development mentality and the executive wasn’t strong enough to drive that down to say, we’re going to do a package and you are going to have to adjust your working practices to work within the package.’

In the above example the Executive is not strong enough to push the message through the organisation. Rather the style is too consensual and not autocratic enough.

‘So it was really just culture of the organisation, it was almost a fear of making a decision. They were almost incapable of doing it, the culture was every decision was made by a committee so they couldn’t rely on one person.’

The style of leadership here is focused upon negotiation and committee resulting in a lack of decision making. The cultural lens would suggest that the fear of making a decision for fear of the repercussions indicates a culture inhibiting the success.

‘I don’t understand why they were unable to make a choice and to move forward. Maybe they, they themselves, the leadership can’t see the path, can’t see a clear path, so we’re not going to lead you anywhere.’

The leadership style is one that is lacking clear direction. Without clear goals the leadership were unable to find a path through.
Discussion

From the ‘Leadership Style’ categories above we see that leadership within an organisation that supports the ES openly can lead to actively encouraged users. The leadership style that openly reinforces the organisation’s commitment to the ES appears to be successful. This suggests that one of the components of the OC-ESS relationship important in successful ES is a culture where open communication can take place between management and users.

The least successful leadership style statements do suggest that a ‘weak’ Executive not openly supporting the ES can inhibit the success of the ES. This not only confirms the key role of top management support (as identified previously and in the literature), but when viewed through a cultural lens, further supports the suggestion that an OC that enables open communication between management and users is required for an ES to be successful. The final sub-category within leadership was that of ‘Vision’.

Management Influences>Leadership>Vision

Label: Vision

Definition: A vision is a description of the business as it wants to be. It is defined as ‘a mental image produced by the imagination’. It involves seeing the optimal future for the business, and vividly describing this vision. The description might include how things will be, where, who with, what you'll be doing and how you'll feel (Hamel & Prahalad, c1999).

Example:

‘Having a vision of where you want to take the organisation who is using it’

Examples for the Management Influences>Leadership>Vision sub-category are shown below.

Vision successful statements:

‘The message of that vision communicated through the organisation’

The statement indicates that not only in the presence of a clear vision necessary but that the vision must be communicated effectively through the organisation.

‘It’s a vision driven organisation, so they repaint the vision and everyone works towards it, and that’s down to everyone working in the office.’
The leadership of the organisation were constantly repainting the vision for the enterprise. However, simply having a vision it suggests is not enough, the organisation must ensure that at all levels the users are working towards the same goal.

There were statements in the data as regards the lack of a vision or a poorly defined and communicated vision in the least successful examples.

**Vision least successful statements:**

We also see statements made in regards to vision in the least successful examples:

‘If you don’t have a clear reason for being there and something you’re delivering that’s going to make a difference, then you’re in trouble.’

‘When the new CEO came on board for X bank he went through it and he said the same, this is our one factor that will differentiate us from the other banks, but the message never got down to the people who were making the decisions.’

**Discussion**

Whilst having a vision for the organisation is clearly important – and this has been well documented in the literature, the cultural aspect of the manifestation indicates that it is more about the manner in which the vision is communicated (or not) throughout the organisation that is important for ESS. In addition to communicating the vision, the vision also has to be continually repainted and communicated down through the organisation.

So the data is showing that having a vision is very necessary and without it the ESS will not be as successful, but it is in conjunction with open communication – articulating the vision throughout the organisation – that the vision is most influential in the relationship. The findings from the data are summarised in figure below:
The data indicated another high level category during the 1st pass around ‘Diffusion Processes’. Diffusion is defined as ‘the process by which an innovation is communicated through certain channels over time among the members of a social system’ (Rogers, 1995), and is discussed in the next section.

**Diffusion Process (DP)**

Statements were made by interviewees with regard to how the ES is diffused (or not) through the organisation. At the top level the broad statements related to how the Enterprise System diffused through the various Business Units. During the 2nd and 3rd passes through the data, further coding revealed sub categories and themes present within this overarching category.

**Figure 6-7. Diffusion Process and its sub-categories summarised**

The ‘Diffusion Process’ sub-categories are discussed in turn in the following sections. The table overleaf the passage counts for categories above.
<table>
<thead>
<tr>
<th>Category</th>
<th>No. of Passages</th>
<th>No. of Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diffusion Process</td>
<td>195</td>
<td>8,977</td>
</tr>
<tr>
<td>OC of Change Acceptance</td>
<td>40</td>
<td>1,868</td>
</tr>
<tr>
<td>Exploiting the ES</td>
<td>21</td>
<td>1,030</td>
</tr>
<tr>
<td>User Involvement in DP</td>
<td>22</td>
<td>992</td>
</tr>
<tr>
<td>User Support</td>
<td>65</td>
<td>2,501</td>
</tr>
<tr>
<td>Managerial Support for the DP</td>
<td>35</td>
<td>1,488</td>
</tr>
<tr>
<td>Management Understanding</td>
<td>14</td>
<td>763</td>
</tr>
</tbody>
</table>

Table 6-8. Diffusion Process and sub-categories counts

The first category to be found in the data within the larger ‘Diffusion Process’ category was the ‘Change Acceptance’ category, and this is discussed in the next section.
Diffusion Process>OC of Change Acceptance

The most prominent theme that was raised in the DP, as measured by number of utterances was ‘Change Acceptance’. Interviewees recounted that through their experiences they had seen differences between successful and least successful ES influenced by the degree to which the OC was accepting of change.

**Label:** OC of Change Acceptance

**Definition:** How readily the OC accepts the change and the degree to which the OC allows or inhibits change to take place.

**Example:**

*Culturally I think clearly, the branches that were successful were the ones who just adopted the change, understood it and knew what value it was going to do and felt comfortable.***

The ‘Change Acceptance’ category was not only one of the largest 2nd pass categories identified when measured by passage count but it was also one of the largest when viewed by numbers of consultants making statements in this category. The table below shows the frequencies for this category.

<table>
<thead>
<tr>
<th>Consultants making Statements</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Study Interviews</td>
<td>17</td>
<td>100</td>
</tr>
<tr>
<td>Successful Examples</td>
<td>17</td>
<td>100</td>
</tr>
<tr>
<td>Least Successful Examples</td>
<td>14</td>
<td>82</td>
</tr>
</tbody>
</table>

**Table 6-9. Consultant interviewees stating change acceptance example**

**Change acceptance successful examples:**

Within successful examples we see statements such as:

‘and also the ability to communicate which is the change management and the communication back to the business about what’s happening’

‘So, accepting, cooperative, a learning environment, they’re prepared to learn and adopt new things’

‘The culture would be one that accepted ICT innovations and understood the importance of change management to system acceptance and success.’
The ‘Change Acceptance’ category indicates that a culture that enables and supports change and is comfortable with change can influence the OC-ESS positively. The data showed clear evidence of the importance of this manifestation on the OC-ESS relationship. Further statements were shown:

‘All the change, adoption of change, whatever that change is and you can make someone use the system and they can do all the right things, hit the right buttons but **have they adopted it** in the sense of they radically changed the way they do their job?’

The statement above suggests that an ES will change the way people work but that there also needs to a move to the next step which is embracing the change and adopting the ES.

‘**whereas here people were actually looking forward to the thing**’

In this organisation the staff were positively awaiting the change. The least successful examples also indicated ‘Change Acceptance’ as being influential.

**Change acceptance least successful examples:**

Within least successful examples we see statements such as:

‘the export sales area in particular, we had a situation where people had been with the company a long time, very resistant to change… had a system which they were already using which they did not want to change, and they were constantly comparing it with the new system’

This statement illustrates that the people were resisting the change and trying to make the IS work to the ‘way we’ve always done it’. The OC was not one that encouraged or fostered change – users preferred to do things the way that they had always done things.

‘Perhaps it’s because they’re not working across boundaries, they put less emphasis in some of that whole cultural innovation and change management across those boundaries.’
The culture of the organisation is not organised to allow change to span the internal boundaries, rather the focus internally within the particular units, whereas the change should be adopted across the organisational boundaries.

‘Predominantly because I think there’s a resistance to change. There’s not a great drive for them to change, they don’t feel the need and the culture is very much well, you tell me what I, the customer is saying to the implementation team, you tell me what I need to do’.

Here we see a very clear statement that identifies a ‘resistance to change’ as a response to the ES. This resistance was evident in other least successful examples.

‘I just think there are those who are out there and those who just wanted to shrink back and do things the way they always did.’

Some users want to continue to work the way they always have. Within the management layers there was also resistance to change.

‘now, it’s that, it’s the middle management that don’t want to change.’

‘The upper management want to change, the young gunghos want to change because to adopt technology, you know, they can’t believe we’re not, haven’t got the technology now, so they’re chomping at the bit. We’ve got middle management on the project I’m working on at the moment saying, which was sort of on the fence.’

Discussion

An Organisational Culture that resists change seems to resist the ES innovation in its day to day use by inhibiting its successful communication amongst its members. The successful ES examples are used to change, thereby allowing them to be flexible, accepting and open to the ES, whilst at the same time openly communicating the ES throughout the Business Units. There also appear to differences in management layers in resisting the changes, and in particular middle management are the most resisting.
The next DP sub-category that was identified is 'User Involvement in the DP'.

**Diffusion Process>User Involvement in Diffusion Process**

**Label:** User Involvement in the Diffusion Process

**Definition:** Involving users in the Diffusion Process through the organisation

**Example:**

‘However, it is my belief where someone is forced to use a system or process, their attitude is quite different to the situation where they personally identify the benefits to themselves and choose to use it.’

Within ‘User Involvement’ there were no positive statements made in the successful example, rather the comments were made in reference to the least successful example.

**User involvement in DP least successful example:**

‘If you haven't got the staff are not prepared and been communicated to, you are in trouble.’

‘In the operational side of the business they weren't willing to buy into, everyone in their branches using it. So it became not compulsory.’

Least successful ES cultures do not appear to pay heed to the involvement of the user in the Diffusion Process. In addition to support and training, the active process of involvement may be required to foster a more positive attitude to the ES. The user gets to identify the potential benefits for themselves.
Involvement in the DP may also assist in creating pockets of power users and champions throughout the Business Units. Conversely a lack of user involvement in the DP may lead to possible lower levels of engagement and buy in to the ES.

The Organisational Cultures that seem to encourage these manifestations may be more successful than those that do not. Several statements were made that indicate that this is the case:

‘We had a business transition plan. We worked closely with managers, a lot of communication was happening.’

‘Again it’s the communication and I believe that created the success.’

The above statements indicate that the Diffusion Process and communication is important. Open communication, engaged and visible Diffusion Processes and a culture that fosters these components seem to assist in ES successful exploitation in any Organisational Culture.

Figure 6-9. User support in the Diffusion Process in the OC-ESS relationship

In addition to involving users in the Diffusion Process directly, there was also evidence to suggest that managerial support and understanding for the Diffusion Process itself was also important. This is the next coding category that was identified in the data.

**Diffusion Process>Managerial Support for the Diffusion Process**

Organisational Cultures that can foster support for the diffusion process both at the user and managerial level seem particularly successful in exploiting the ES. The data presented here indicates that direct visible support from management sends a very clear message throughout the organisation.
Label: Managerial support for the Diffusion Process

Definition: The extent to which management understand and support the Diffusion Process

Example:

‘Management understood the benefits of the system changes to their workgroups and what this meant to the organisation.’

Managerial support for the DP successful example:

‘Managerial representation is essential for success on an SAP project. This sends a positive message that the organisation is committed and believed in the project’

Managerial support for the DP least successful example:

‘But the engineering and management group there avoided using the system.’

‘Particularly, communicating it in such a way that the middle management actually knows and understands and are embracing it, hasn’t been done and that’s why the culture is so resistant.’

We see here statements that indicate the important place that managerial support for the diffusion process has in the OC-ESS relationship. Without an understanding of the Diffusion Process managers will not be able to support the ES successfully. In the least successful examples not only were managers not supporting the users in the Diffusion Process they were also demonstrating little understanding of ‘how’ to enable the Diffusion Process to occur successfully. The negative aspects of lack of user support in the Diffusion Process were exacerbated by management not having an understanding of the Diffusion Process itself. The figure below combines the user support and managerial understanding findings into the one framework.
A further high level theme was identified in the data, the category of ‘Employee Development’ and this is discussed next.

**Top Level Category > Employee Development**

The notion of Employee Development in the context of the study and the OC-ESS relationship does not refer simply to training. Adequate and extensive training has been well documented to be an important success factor in many projects including overall ES success (Bancroft, Seip & Sprengel, 1998). In the context of the OC-ESS, Employee Development is concerned with the training, but also the manner in which the employee is developed, seeks development and is supported by the organisation in achievement of this. The attributes (Boyatzis, 1998) are shown below:

**Label**: Employee Development

**Definition**: The degree to which the users are equipped with the skills to exploit the ES

**Looking for**: Development, support, training, education, training

**Example**:

‘There was a high demand for training and real enthusiasm from users.’

**Employee development successful examples**:

‘They’ve upgraded a couple of times and they’ve really understood that they needed to change their business processes and to train, **train their people and to raise the skill sets**, to where they could.’
Here we see clear identification of the role that employee training played in the success of the relationship.

‘But I guess in terms of silos of culture, I guess that whole HR strategy and policy and how they treat their people is something that needs to be considered.’

‘But that is where they sit down and say, oh it’s affecting me in this way and therefore I would like my questions answered, or I would like half an hour with my manager, or I would like this particular training course, or I don’t want that training course, or whatever it is.’

‘But I think in some way individualising the approach so, individuals feel that they actually are enabled to, and it’s good too because we need people to prepare for themselves.’

Employee development least successful examples:

‘You know, I think a lot of workers were sort of do I have to use this, because they were quite scared of it.’

‘Underneath the ERP system, when we look at their work processes, in the redesign of it we often, paint that end to end process and then train people in their specific bits and pieces so they understand where things are coming in and where, and how it goes out and to who it goes, and what they do with it. That often is a big change in itself because they don’t know or mostly they don’t care, and even when they have that insight they still don’t really care because they can’t sort of internalise it.’

In this last statement, we can see that in the Least Successful examples, the employees were disinterested and unconcerned about the innovation. The particular culture the employees were engaged in had fostered or created this negative, ambivalent attitude to the ES.

Most of the organisations that interviewees discussed provided training to a lesser or greater extent for their employees. The training whilst an important success factor in its own right, however, says more about the OC and the ESS relationship in terms of the way it was provided. It might be that certain Organisational Cultures are better able to provide the support necessary to employees, not in terms of the actual training, but the providing of the appropriate supportive environments to assist with the full diffusion and
exploitation of the ES. The fact that training is given is relevant, but what is more important in the OC-ESS context is the manner, delivery and importance that is placed on the training by the organisation since this is indicative of the organisation’s commitment to the ES. The data suggest that perhaps certain culture types are better able to provide individuals with the opportunities for development, a supportive environment and recognising the importance of developing employees above and beyond simply providing lots of training and workshops. The figure below summarises the findings so far in the data:

![Figure 6-11. Employee development component in the OC-ESS relationship](image)

Another high level theme emerged that was linked to but discrete from the ED, which was the ‘Learning Organisation’ (LO).

**Top Level Category> Learning Organisation**

Learning organisations have been defined in the literature as ‘corporations that overcome inherent obstacles to learning and develop dynamic ways to pinpoint the threats that face them and to recognize new opportunities’ (Senge, 1994). Organisations that display some of these characteristics appear to have higher levels of success with the ES rather than those that do not. Many of the interviewees described some of these ‘learning’ attributes to be significant in the OC-ESS relationship. The Boyatzis (1998) attributes are shown below for LO:

**Label:** Leaning Organisation

**Looking for:** Learning, innovative, creative, training, knowledge, learnt
Example:

‘And they just started expanding their own solution based on this success, and were using the principles they learnt in the first one.’

Learning Organisation successful:

‘Developing a commitment to continued innovation, not just implement a system and allow it to stagnate, but continue to develop and build on the system’

‘So, accepting, cooperative, a learning environment, they’re prepared to learn and adopt new things’

In the above statements we can see the employee wants to learn and also that the organisation facilitated and delivered this in the successful examples.

Learning Organisation least successful:

‘The culture was one of lack of flexibility; really it was a lack of flexibility.’

‘The ones that fail have a lack of flexibility; they’re not willing to adjust their practice to a package.’

Contrary to the successful examples the least successful examples identify the reluctance to learn and develop new approaches to practices. Organisational Cultures that tend to have the characteristics of a LO seem to be more successful in the uses of their Enterprise Systems since it fosters an environment of change acceptance and the flexibility to exploit the new opportunities that an ES affords. In summary the figure below visualises the findings:

![Figure 6-12. Learning Organisation role in the OC-ESS relationship](image)

The categories continued to be discovered as the data analysis continued. The next top level category that was identified was the ‘Organisational Structure’ (OS) theme.
Organisational Structure is the formal framework by which job tasks are divided, grouped and coordinated (Mintzberg, 1979). A number of statements were made in relation to the various organisational forms having an influence on the degree of ESS experienced by a particular organisation. Whether the organisation has a flatter organic structure or is more vertically hierarchically oriented seems to have a bearing on some of the components of ESS. Whilst the nature of an organisation's structure is a different aspect of an organisation's makeup to its culture, research has suggested that OS and OC are linked in a number of ways.

**Label:** Organisational Structure

**Looking for:** Structure, organisation, types of structure

**Example:**

‘A purely flat organisational structure, nobody had to go seeking levels of approval for anything and I think that’s a big differentiator.’

The following are examples of the successful and least successful statements in regard to Organisational Structure.

**Organisational Structure successful:**

‘I guess it’s a purely flat organisational structure, nobody had to go seeking levels of approval for anything and I think that’s a big differentiator’

**Organisational Structure least successful:**

‘Misunderstanding behaviours, misunderstanding the impact of the structure and so on. So this was an organisation that was a financial organisation, **structured in silos**. Each of the business units was essentially a little business under its own right, it had own IT group and so on and some of that was historical, as acquisitions had occurred, and some of it was, um, designed in saying well, we’ll structure like this and we’ll have this decentralised structure and it will allow us to be flexible and innovative, and of course, it’s not usually the way it works.’

The comments indicated by some interviewees suggest that those with a flatter structure are more nimble in their decision making, i.e., fewer layers to reach the decision maker. Matrix organisations are examples of flatter, organic, project oriented organisations that are used to handling project, working to methodologies and coping with regular change. Many of the successful ES examples are cited as organisations that have the characteristics of organic structures i.e. are used to managing projects, are innovative
and fluid. Organisations that are flexible, adaptable and innovative may be more rapidly able to exploit the ES and may therefore experience greater success with the ES.

The connection to the OC-ESS relationship occurs because literature suggests that Organisational Structure is in part a function of and influenced by Organisational Culture, i.e., the ‘preferred’ way of working is reflected in the ‘preferred’ structure. Organisational Culture may therefore be moderating ESS via the Organisational Structure.

Figure 6-13. Organisational structure characteristics influencing OC-ESS

This is an area that will require further research but at this point is another intriguing dimension to the OC-ESS relationship.

The data showed another category of description at the highest level based on gender and its role within the OC-ESS relationship.

**OC Manifestation: National Culture/Gender (Masculinity & Feminity)**

Research conducted by Hofstede (1980) indicated that cultural dimensions exist around the notions of masculinity and feminity. Hofstede argues that the duality of the sexes is fundamental to all societies and that ‘the predominant socialisation pattern is for men to be more assertive and for women to be more nurturing. In organisations, there is a relationship between the perceived goals of the organisation and the career possibilities for men and women’.
Hofstede bases much of his research on the work of Chetwynd, who is quoted as ‘the sex role system is at the core of our cultural norms’ (Chetwynd & Hartnett, 1978:3). Hofstede also subscribes to a widely held belief in anthropology and psychology fields that there is a pattern of male assertiveness and female nurturance which tends to male dominance in many areas of politics, economy and religion.

A factor score of 40 countries was used as the basis of the Masculinity Index (MAS). The MAS measures the extent to which respondents tend to endorse goals usually more popular amongst men (high MAS score) or amongst women (low MAS score). Typical characteristics of low and high MAS societies are shown in the table below.

<table>
<thead>
<tr>
<th>Table 6-10. MAS characteristics (Hofstede, 1990)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries with a low score (feminine) in the study were Sweden (5), Norway (8) and the Netherlands (14); countries with high MAS score (masculine) were Japan (95), Austria (79) and Venezuela (73). Australia is a high MAS score country.</td>
</tr>
<tr>
<td>A number of interviewees identified that in some Organisational Cultures there was an element of differences in ES success along the male/female cultural dimensions. The findings provide further support for that male and female characteristics can be less or more dominant in certain organisations and therefore influential in the OC-ESS relationship (Hofstede, 1990). In particular,</td>
</tr>
</tbody>
</table>

**Masculinity/feminity successful example:**

‘That’s the other thing, which was observable, maybe because there is a lot of female branch managers out there, that we certainly found the women branch managers were really gung ho.’

‘We just give them indications, things to think about, but men want solutions.’

**Masculinity/feminity least successful example:**

‘I think it’s sort of, part of the culture because a lot of X Bank was mainly female and X Water for example, you can imagine the guys that work out in the field...’
doing maintenance and sewerage and stuff, there’s no females at all, and it’s a particular type of male, and I really think that’s, even such a simple thing as gender, it’s really important to consider.’

There is evidence to suggest that the feminine dimension of ‘nurturing’ may be more supportive of the ES, fostering its use and diffusion throughout the organisation.

OC Manifestation: Sub-Cultures present within the Dominant OC

Literature indicated that sub-cultures within a dominant overarching culture type are common occurrences in larger organisations (Goffee & Jones, 1998; Wilkins & Ouchi, 1983). Many of the statements made by interviewees confirm the presence of sub-cultures with the dominant. The sub-cultures may exist in separate Business Units, within the one entity, separate geographic locations or even entire separate companies/divisions in large multi-national conglomerates. The existence of sub-cultures in itself does not appear to be an automatic precursor for failure or a problematic ES. Rather it appears that it is the manner in which these sub-cultures interact that is important in the OC-ESS relationship. However, there were far more negative comments regarding the presence of strongly disparate sub-cultures within an organisation, than there were positive experiences.

Label: Sub-cultures present within the dominant

Definition: A sub-culture is a set of people with distinct sets of behaviour and beliefs that differentiate them from a larger culture of which they are a part.

Looking for: Groups, clusters, they do things this way,

Example:

‘Export sales are viewed by those within the group as a part from the group with their own rules.’
Within the data there were numerous statements with regard to the negative impact that sub-cultures had on the relationship. Some of these examples are presented below.

**Sub-Cultures least successful example:**

‘In a similar way to ABC Export, **engineering were involved more with petroleum exploration and generating income and were largely, non-conformists who did not want to follow the standard process.**’

‘like the firm I worked on, I was like in the sales so we had the more savvy people, that is the part which was run very badly was the maintenance.’

‘Always, and it’s more than that, within very large organisations some of those groups will actually be in conflict.’

‘That’s exactly the feeling when I talk to them, resistance to more rule and structure; it is probably the formalisation of the structure, which they rebel against.’

The statements suggested that in certain situations the sub-cultures may be actively resisting the ES, for example,

‘**Engineering were involved more with petroleum exploration and generating income and were largely, non-conformists who did not want to follow the standard process**’

Or they may for whatever reasons be following their own agenda, for example,

‘**We had the technology group saying, we don’t like it, this is a Microsoft system and we’re a J2EE shop, so what we’re going to do is, we’re going to build a front end, a J2EE front end on it, and everyone was out of control and nobody with the big picture.**’

There may also be power struggles at play between the cultural groups, where each group is motivated by their own requirements foremost.

‘**I mean I think that’s about human nature, effectively it’s about power and how do you get there. And some people are motivated that way and not always taking the best interests of everyone around them at heart.**’
In summary, we can conclude with some observations that sub-culture may be influencing the OC-ESS relationship via:

**Groups in conflict:** Some sub-cultures may actually be in conflict or competing with each other. The groups are more concerned with self-interest, self-promotion and protectionism than with the greater organisational success.

**Self interest and power issues:** Some sub-cultures resist the ES due to perceptions of relinquishing power or redistributing power to other ‘competing’ sub-cultures.

**Lack of perceived benefit:** A number of sub-cultures within the dominant were reported as resisting the ES because of inadequacies with the functionality of the ES. The ES did not ‘do’ what the group wanted and the group was failing to see the value in the ES.

Figure 6-14. Sub-culture presence in the OC-ESS relationship
6.4. Qualitative Selective Coding

The third pass through the transcripts involved selective coding. The cultural manifestations and components that had been previously identified were then coded against the OCAI. The purpose of the selective coding was to explore the OC-ESS relationship directly through the OCAI constructs and sub-constructs lens. Analysing the themes against the OCAI constructs allowed the mapping of the themes directly into the OCAI. By mapping the themes into the OCAI a direct exploration of the OCAI sub-constructs, cultural types and ESS dynamics could be made. Statements at the lowest level in the hierarchy (i.e. the S/LS level within an OC manifestation) were analysed to see if the statement concerned an OCAI construct directly.

The table below summarises the number of utterances made that were clearly discussing one of the OCAI constructs, ranked by number of passages.

<table>
<thead>
<tr>
<th>Successful ES</th>
<th>Least Successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rank</td>
<td>OCAI Construct</td>
</tr>
<tr>
<td>1</td>
<td>OCAI C (DO)</td>
</tr>
<tr>
<td>2</td>
<td>OCAI A (CI)</td>
</tr>
<tr>
<td>3</td>
<td>OCAI A (F)</td>
</tr>
<tr>
<td>4</td>
<td>OCAI A (I)</td>
</tr>
<tr>
<td>5</td>
<td>OCAI H (COOR)</td>
</tr>
<tr>
<td>6</td>
<td>OCAI C (T)</td>
</tr>
<tr>
<td>7</td>
<td>OCAI H (CON)</td>
</tr>
<tr>
<td>8</td>
<td>OCAI C (IR)</td>
</tr>
<tr>
<td>9</td>
<td>OCAI H (A)</td>
</tr>
<tr>
<td>10</td>
<td>OCAI M (CO)</td>
</tr>
<tr>
<td>11</td>
<td>OCAI M (CS)</td>
</tr>
<tr>
<td>12</td>
<td>OCAI M (E)</td>
</tr>
</tbody>
</table>

Table 6-12. OCAI constructs by passage

The frequency counts alone indicate the importance of the clan culture type in the successful ES, and specifically the influence of the DO sub-construct (Development of Others - Helping individuals improve their performance, expand their competencies and obtain personal development opportunities) to the OC-ESS relationship in successful ES.

In the least successful ES the passage counts indicate the large number of utterances that relate to the Hierarchy COOR (Coordination - Fostering coordination within the organisation as well as with external units and managers and sharing information across boundaries) and Hierarchy CON (Control - Ensuring that procedures, measurements and monitoring systems are in place to keep processes and performance under control)
as being particularly influential (negatively so) in the OC-ESS relationship in the least successful ES. These two OCAI constructs alone accounted for 52% of the total passage count.

The next section reviews the major OCAI categories identified.

**Successful ES OCAI Clan Sub-Construct DO (Development of Others):**

Many of the consultants indicated that the way in which management encouraged, promoted or failed to support employees in regard to the ES was particularly critical. These statements, in a cultural context, suggest that the DO sub-construct has a strong influence on the OC-ESS relationship.

The Clan DO sub-construct represents the largest OCAI category for successful ES by passage count; some of the statements are shown below:

**Clan DO ES successful:**

‘They’ve upgraded a couple of times and they’ve really understood that they needed to change their business processes and to train, train, train their people and to raise the skill sets, to where they could.’

‘I think we focus a lot on enabling the people so they can actually know how to use it and be comfortable sort of, pressing the right buttons and stuff like that, and less on if they really want it.’

‘But I think in some way individualising the approach so, individuals feel that they actually are enabled to, and it’s good too because we need people to prepare for themselves.’

**Clan DO ES least successful:**

‘asked the senior supervisors why don’t your staff know what happens in the whole process. The response is “Oh, I only teach them what they’re capable”.’

‘and there wasn’t any stroking going on and they probably needed some stroking to get them over the line, but they were being told, this is what you will do’

The figure overleaf visualises the findings from the Clan DO coding.
Successful ES OCAI Adhocracy Sub-Constructs CI (Continuous Improvement), F (Future), I (Innovation):

Whilst the Clan DO was the largest individual OCAI sub-construct by passage count, the 2nd, 3rd and 4th ranked constructs were the three sub-constructs found in the adhocracy culture type, i.e., CI (fostering an orientation toward continuous improvement, flexibility and productive change among individuals in their work life), F (communicating a clear vision of the future and facilitating its accomplishment) and I (encouraging individuals to innovate, expand alternativeness, become more creative and facilitate new idea generation).

The adhocracy sub-constructs accounted for nearly 50% alone of all the passages identified in the selective coding phase (77 passages from a total of 159). Some of the statements made include:

**OCAI adhocracy CI, F, I ES successful:**

- **CI** ‘So, accepting, cooperative, a learning environment, they’re prepared to learn and adopt new things’

- **CI** ‘The understanding what it can do for you. Understanding the journey and the hard work ahead to make it work successfully’

- **I** ‘So people willing to try, not sort of, necessarily, afraid of failing. Again it depends on the culture of the organisation you know, if there’s a no fail, punishment culture, then obviously you don’t get it. So that’s what I think, so that’s, you know, in the perfect world, that’s something done, not move away from, so a failure isn’t you know, is okay. It’s there to learn, yeah’
OCAI adhocracy CI, F, I ES least successful:

CI ‘If your organisation doesn’t accept that, if I’ve got an inflexible organisation, big or small then it’s not going to work. Because they are not going to use it the way it should be used and they are going to be fighting it all the time.’

CI I ‘Almost to a person, people are going into it thinking, well we’ll just tweak this and pull that and make it do it the way we’ve always done it.’

The figure below summarises the findings from the adhocracy constructs on the relationship.

---

Least Successful ES OCAI Hierarchy Sub-Constructs COOR (Coordination), CON (Control):

The analysis of the least successful ES transcripts revealed the prevalence of statements, that when selectively encoded against the OCAI, clustered around the hierarchy sub-constructs COOR (fostering coordination within the organisation as well as with external units and managers and sharing information across boundaries) and CON (ensuring that procedures, measurements and monitoring systems are in place to keep processes and performance under control). These OCAI constructs seem particularly important in the OC-ESS relationship in the least successful examples. The consultants revealed that a lack of sharing information across boundaries, a lack of control of policy and procedures or a severe degree of over control could stifle the success of the ES. Organisational Cultures that allowed sharing of information and offered a degree of
control and direction experienced greater levels of ESS. Least successful ES were influenced greatly by information sharing and control issues.

**OCAI hierarchy COOR & CON ES least successful:**

**CON** ‘The governance in the organisation wasn’t very strong.’

**CON** ‘So you know, how do you make them use something. You know they might get into a fight literally, and you know say, stuff it I’m not doing it. And the boss would have to say well, stuff it, you are going to do it.’

**COOR** ‘I mean I think that’s about human nature, effectively its about power and how do you get there. And some people are motivated that way and not always taking the best interests of everyone around them at heart.’

**COOR** ‘So they had to see across their team, if you like, and they were not used to that and I guess were quite siloed thinkers and, that was hard to break through.’

The figure below summarise the influences of OCAI H CON and COOR identified in the data.

*Figure 6-17. OCAI hierarchy control and coordination influence*
6.5. Quantitative Results: OCAI Radar Plots

Each interviewee was asked to complete two OCAI surveys at the conclusion of the interview; one for the successful ES example and one for the least successful ES example discussed in the interview. A total of 17 interviews were conducted therefore a theoretical 34 OCAI’s (17 Successful OCAI and 17 least successful OCAI’s) were to be collected. However, in total 12 interviewees returned fully completed surveys yielding 24 OCAI’s (12 successful OCAI and 12 least successful OCAI). The actual overall scores are shown in the table below, together with the radar plot for the ‘All Consultant’ categories is shown below.

<table>
<thead>
<tr>
<th>OCAI Culture Type</th>
<th>Successful</th>
<th>Least Successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan</td>
<td>32</td>
<td>22</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td>Market</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>30</td>
<td>39</td>
</tr>
</tbody>
</table>

*Table 6-13. OCAI scores all consultants mean*

*Figure 6-18. OCAI radar plot all consultants*
The OCAI instrument identifies that all organisations have attributes of the four types but that organisations have varying mixes of the four types. Some organisations tend towards a hierarchy whilst others tend to have more of the characteristics of a market culture. The most successful ES organisations have a clear tendency towards the clan typology with a mean score of 32, the next is ‘Hierarchy’, ‘Adhocracy’ and finally ‘Market’.

### Clan Culture
The clan culture is typified by ‘a friendly place to work where people share a lot of themselves. It is like an extended family. Leaders are thought of as mentors, even as parent figures. The organisation is held together by loyalty and tradition. Commitment is high. The organisation emphasises the long term benefit of individual development with high cohesion and morale being important. Success is defined in terms of internal climate and concern for people. The organisation places a premium on team work, participation and consensus’ (Cameron & Quinn, 1999).

The data therefore suggests a hypothesis for testing:

**H1:** Those organisations that have a strong Clan culture element will experience the greatest levels of ES success

### Market Culture
The culture type that is least prevalent in successful ES (18) and has the second highest score in least successful ES (23) is the market culture. The market culture is typified by ‘a results oriented workplace. Leaders are hard driving producers and competitors. They are tough and demanding. The glue that holds the organisation together is an emphasis on winning. The long-term concern is on competitive actions and achieving stretch goals and targets. Success is defined in terms of market share and penetration. Outpacing the competition and market leadership are important’ (Cameron & Quinn, 1999).

Since market cultures appear to be associated with least success a second hypothesis emerges for testing:

**H2:** Those organisations that are strongly Market culture oriented will experience the lowest levels of ES success
Hierarchical Culture

Hierarchical cultures appear to have the potential to be very successful – ranked as the 2nd highest dimension in successful ES (30) or very least successful (39). Hierarchy culture components were seen as being the least successful by a clear margin – nearly double the score of the next culture type. There is an interesting paradox here. Some organisations that are strongly hierarchical have the potential for ES Success whilst other organisations that are highly hierarchical experience low levels of ES Success. Hierarchy cultures therefore have the potential to be highly successful and yet also highly unsuccessful.

H3: Hierarchy cultures are associated with the least successful ES organisations

H4: Dimensions of the hierarchy culture are important in successful ES organisations

Adhocracy Culture

When one considers the adhocracy culture type there are some interesting results. The adhocracy culture type has a moderate score for successful ES (20, rank third for mean consultant scores) and the lowest score in least successful ES (16).

The adhocracy dimension is seen as being only weakly prevalent in the successful ES. Yet these results are very curious. When we revisit the literature, the theory tells us that Learning Organisations (Senge, 2004) - organisations that are very flexible, creative and innovative - are the organisational types that modern organisations should aspire to become. Research indicates that these contemporary organisations are agile, lean and adaptable, poised to exploit new opportunities, aggressively entering new markets and able to change rapidly to meet the challenges of the market. They are perceived to be the ‘new’ successful organisational types.

The adhocracy sub-constructs (CI – Continuous Improvement, F – Future Orientation, I – Innovation), are these exact qualities that we would expect to find in very successful ES. But curiously we do not find evidence of this in the OCAI plots from the consultants, the adhocracy culture type and its sub-constructs are not seen as being the most important in successful ES organisations. There are a number of possible explanations for this:

Adhocracy cultures are simply not that common. Whilst the literature may be correct and organisations that display these qualities are indeed successful, they may simply not be
that common – the consultants do not experience working with these organisations very frequently simply because they are rare.

The adhocracy culture is difficult to see. It may be the case that the dimensions of CI, F and I are not very visible within organisations. The consultants do not immediately experience these elements because the adhocracy.

The adhocracy culture is dominated by other more tangible cultures. Another possible explanation is that the adhocracy is more of a subtle culture and is dominated by other culture types, e.g. the hierarchy – which is very visible through its reliance on policies, procedures and administration, whereas the adhocracy culture is overridden by the hierarchy culture, even though dimensions of the adhocracy are actually present within the organisational.

Looking at the consultant sub-categories provides further views through the data enabling deeper data analysis.

**Sub-Category: Implementation Consultants OCAI Plots**

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>Market</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>39</td>
<td>47</td>
</tr>
</tbody>
</table>

*Table 6-14 IC OCAI scores*

The OCAI radar plot is shown overleaf.
The IC consultants view hierarchy (47) culture types as the most dominant culture type in the least successful examples. In their experiences of numerous implementations the hierarchy culture is most strongly associated with the least successful ES. Yet at the same time the hierarchy culture (39), in this group of consultants, can also be associated with the most successful ES examples.

**Sub-Category: Change Consultants OCAI Plots**

Internal change consultants have OCAI plots that are the clearest in terms of the differences between successful and least successful culture profiles. The successful examples indicated a very clear alignment to dimensions of the clan culture (40), whilst the least successful examples were strongly hierarchical (38) and market culture (30) oriented.

<table>
<thead>
<tr>
<th>Category</th>
<th>S</th>
<th>LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan</td>
<td>40</td>
<td>16</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td>Market</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>21</td>
<td>38</td>
</tr>
</tbody>
</table>

**Table 6-15. Change Consultants OCAI score**
Sub-Category: Vendor Consultants OCAI Plots

The vendor consultants confirmed the results of the IC and VC consultant categories; Hierarchy was evident as the dominant culture in the least successful examples whilst dimensions of clan and hierarchy were dominant in the most successful examples.

<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan</td>
<td>31</td>
<td>22</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>18</td>
<td>21</td>
</tr>
<tr>
<td>Market</td>
<td>19</td>
<td>24</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>

Table 6-16. Vendor Consultants OCAI scores
Summary: OCAI Consultants Plots

The OCAI results from the consultants present some very interesting findings. Firstly, that the hierarchy is consistently associated with the least successful ES examples across all the consultant categories. Regardless of consultant type, organisational setting or organisational type, the hierarchy is most closely associated with the least successful ES.

Secondly, the Organisational Culture type most dominant in the most successful ES is the clan culture. The clan culture is clearly shown as being the dominant culture type in the most successful ES organisations.

Thirdly, the market culture is the second most dominant culture type in the least successful ES.

Fourthly, and paradoxically, the hierarchy culture is also strongly represented in the successful ES organisations. Hierarchy culture characteristics closely follow behind clan cultures, being the second most in those organisations that experience successful ES. There are two possible explanations as to why the hierarchy is seen as dominant in the least successful but at the same time important in successful ES organisations.

The hierarchy culture is comprised of three sub-constructs (‘Coordination’, ‘Control’ and ‘Acculturation’). Not all the dimensions are responsible for equal influence in the OC-ESS. Certain of these constructs may be more important and influential in the successful and least successful ES than the others.
The clan and hierarchy cultures are strongly represented in the successful ES examples since it may be that the combination of these two culture types together fosters a positive environment for the ES.

In summary, the culture types were ranked as shown in the table below:

<table>
<thead>
<tr>
<th>Culture Hierarchy</th>
<th>Successful ES Culture Types</th>
<th>Least Successful ES Culture Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Most Dominant</td>
<td>Clan</td>
<td>Hierarchy</td>
</tr>
<tr>
<td>2nd Most Dominant</td>
<td>Clan &amp; Hierarchy</td>
<td>Market</td>
</tr>
<tr>
<td>3rd Most Dominant</td>
<td>Hierarchy</td>
<td></td>
</tr>
</tbody>
</table>

*Table 6-17. Table of the culture types ranking*
6.6. Combining the Consultant OCAI and Consultant Qualitative Results

The OCAI radar plots indicate that the most successful ES are located within organisations that are dominated by dimensions of the clan culture. The least successful ES are located within organisations that are dominated by dimensions of the hierarchy culture. The quantitative findings from the consultant study are supported by the qualitative data from the consultant interviews. The pattern coding identified a number of manifestations that were in support of the OCAI results. The individual triangulated points of support are shown in the table below.

<table>
<thead>
<tr>
<th>Aspect of the OC-ESS relationship</th>
<th>Quantitative Finding</th>
<th>Qualitative Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Successful ES example</td>
<td>Clan most dominant culture type in successful ES</td>
</tr>
<tr>
<td>Comment</td>
<td></td>
<td>Both the qualitative and the quantitative data from the consultant’s study indicated that the clan and in particular the clan DO sub-construct are strongly evident in those organisations that were most successful. The two independent sets of results indicate the important influence of the clan in successful ES.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspect of the OC-ESS relationship</th>
<th>Quantitative Finding</th>
<th>Qualitative Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Least successful ES example</td>
<td>Hierarchy most dominant culture type in least successful ES</td>
</tr>
<tr>
<td>Comment</td>
<td></td>
<td>The hierarchy culture appears to be negatively associated with ES Success. The qualitative data indicates that the two constructs associated with the lack of success in these hierarchies is caused by: A lack of information sharing across boundaries (COOR) and a lack/or too extreme control (CON) in these culture types</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspect of the OC-ESS relationship</th>
<th>Quantitative Finding</th>
<th>Qualitative Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Least Successful ES example</td>
<td>Market culture orientation very dominant in the last successful ES examples</td>
</tr>
<tr>
<td>Comment</td>
<td></td>
<td>Market cultures from the quantitative data are associated with least successful ES examples. No consultants indicated that any of the dimensions of the market culture were associated with successful ES. The components of the market culture do not appear to assist in the success of the ES.</td>
</tr>
</tbody>
</table>

Table 6-18. Combined OCAI and Consultant findings
The analysis of the consultant data took a great deal of time, however, by studying the OC-ESS relationship via both quantitative and qualitative techniques, even though it was time consuming, rich and comprehensive observations of the research object were made. The wide variety of individual findings discussed in this chapter is evidence of the breadth and depth of results obtained by the multi-method approach. The next section summarises the major findings of the consultant’s study.
6.7. Summary of Results

The Consultant study presented a number of interesting findings.

The major discoveries are summarised below.

**A.** The actual consultant categories seemed less important than first envisaged. There was much repetition of manifestations in the interviews regardless of consultant category. The repetition of manifestations started early in the data gathering exercise, the same manifestations being expressed by interviewees as early as interview three, and by the close of interview six, over half of the final manifestations had been identified. The fact that interviewees were repeating and confirming manifestations early in the process indicated two important elements:

The interview questions and interview structure were working well. The repetition in the latter interviews of manifestations already discovered in earlier interviews indicated a strong design that was indeed exploring the OC-ESS relationship. The reliability of the data collected was very strong.

The same manifestations were being experienced regardless of individual consultant or individual organisational setting. The experiences and manifestations of the relationship between Organisational Culture and ES Success appear to be similar regardless of the actual ES Innovation, organisational setting or consultant type. These findings are discussed in greater detail in chapter 7. The next section presents the findings and results from the consultant’s study.

**B.** The findings in the qualitative data were supported by the findings in the quantitative data. For example from the OCAI survey the clan culture was most dominant in successful ES and the qualitative data confirmed the strong presence of clan culture dimension DO in the successful ES examples.

**C.** The hierarchy and market culture types may be most dominant in least successful ES organisations. Again, both the quantitative and qualitative data support this finding.

The figure overleaf visualises the influences.
The next chapter considers the case study component of the PhD.

**Figure 6-22. Summary of Consultant findings**
Chapter 7

Revelatory Case Study
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Table 7-9. Operations BU all results
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Table 7-12. Sales & Marketing Unit all results
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Table 7-16. Location ranked by overall ESS score
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7.1. Revelatory Case Study

This chapter describes the revelatory case study that commenced upon completion of the consultant’s study. The purpose of the case study was to further explore the OC-ESS relationship in a revelatory environment to provide further data regarding experiences of the OC-ESS relationship.

In order to satisfy the study design requirements for the study, the revelatory case study needed to be undertaken in an organisation that met the needs of the overarching research design, in order to capture experiences of the OC-ESS across the broadest possible range from experienced consultants.

Organisational Setting

The organisation involved in the case study was a large Australian dairy cooperative, called Oz Dairy. The organisation was founded in 1950 and has subsequently grown to become one of the largest processors of milk in Australia. The company has eight plants and processes 35% of the nation’s milk supply into quality products which are sold on both domestic and export markets. The organisation employs some 2,200 people and exports its products, which include Butter, Cheese, Milk Powders and UHT products, to over 100 countries.

A summary of financial results is shown below:

<table>
<thead>
<tr>
<th>AUS (Millions)</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Sales Revenues</td>
<td>1420</td>
<td>1613</td>
<td>2012</td>
<td>1663</td>
<td>1613</td>
</tr>
<tr>
<td>Exporting Sales Revenue</td>
<td>863</td>
<td>1103</td>
<td>1312</td>
<td>1003</td>
<td>1013</td>
</tr>
<tr>
<td>Operating Profit (pre tax)</td>
<td>30</td>
<td>50</td>
<td>63</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Total Shareholders Equity</td>
<td>345</td>
<td>404</td>
<td>500</td>
<td>527</td>
<td>544</td>
</tr>
<tr>
<td>Issued Ordinary Capital</td>
<td>66</td>
<td>84</td>
<td>105</td>
<td>123</td>
<td>130</td>
</tr>
<tr>
<td>Reserves And Retained Profits</td>
<td>206</td>
<td>238</td>
<td>298</td>
<td>295</td>
<td>302</td>
</tr>
<tr>
<td>Total Assets</td>
<td>887</td>
<td>1065</td>
<td>1302</td>
<td>1212</td>
<td>1319</td>
</tr>
<tr>
<td>Milk Intake (million litres)</td>
<td>3134</td>
<td>3393</td>
<td>4130</td>
<td>3635</td>
<td>3506</td>
</tr>
</tbody>
</table>

Table 7-1. Oz Dairy financial results
The organisation is a substantial entity and offered an opportunity to investigate the research object in a significant enterprise.

### 7.2. Suitability of the Organisation for Inclusion in the Study

The organisation fulfilled a number of key criteria that allowed its inclusion into the study. The key criteria were:

1. 2 years post ‘go live’
2. deployment of multiple modules
3. use of the system across the Business Units
4. geographically diverse
5. Australian-based
6. to be able to both qualitatively and quantitatively explore the relationship of culture to perceptions of ESS.

**Size**

Oz Dairy is a large organisation with a turnover of AU$1.4 billion and employing over 2,000 staff. It had organisational units dispersed geographically including city and country elements. It had a typical organisational structure functionally derived with different business units for sales and marketing, production and finance. Such an organisation has been shown to have the potential for sub-cultures. Thus, Oz Dairy provided an opportunity to investigate the existence of a relationship between micro culture type and the perceptions of Enterprise Systems Success.

**Enterprise System SAP R/3**

The organisation has an integrated ES, having implemented SAP R/3 in a two phase roll out. Phase I commenced in 2001 and Phase II was completed in 2002. This represented a sufficient amount of time from ‘go live’ to data collection (July 2005) to meet our criteria for interviews (2-4 years post implementation).

SAP R/3 has been implemented across a range of Business Units and functions and enabled investigation into the OC-ESS relationship within a private sector organisation.

The organisation currently has in operation Financial Accounting and Control (FI-CO), Materials Management (MM), Sales & Distribution (SD), Production Planning
for Process Industries (PP-PI) and Plant Maintenance (PM) modules. An overview of the current SAP R/3 functionality and integration into the various functions is shown in the diagram below:

![Diagram of Information System portfolio Oz Dairy](image-url)

**Figure 7-1. Information System portfolio Oz Dairy**

Thus, OZ Dairy met all the criteria for deployment and use of an Enterprise System:

1. 2 years post ‘go live’
2. deployment of multiple modules
3. use of the system across the Business Units
4. geographically diverse
5. Australian-based

**Location & Accessibility**

The organisation kindly agreed to allow full access to its various Business Units within both its Head Office and branch network. Located in Australia, the organisation afforded convenient access to the researcher and presented a viable opportunity to collect the data.
Diversity

The organisation is both geographically diverse, having several regional sites in addition to the Head Office (where over 400 staff are located). It also has many Business Units that offer a degree of segregation and functional departmentalism. These two factors alone offered an opportunity to study cultural and ESS variances across geographic boundaries and also organisational structure entities. The case study sought to capture and explore these aspects.

Users

Within the organisation, some of the employees are based in farming, dairy production/collection and operational aspects of the business, and these employees have minimal exposure to and use of SAP R/3. However, in the various plants and Head Office, approximately 200 employees actively use the ES. Users from this group of 200 were actively targeted for inclusion in the study, provided that they met the strict study criteria which are discussed below. In total 40 from this cohort were identified that met the criteria for participation in the study.
7.3. Data Collection

Data collected was both qualitative (interviews) and quantitative (paper-based survey). The same qualitative interview protocols from the consultant study were followed in order to ensure comparability and consistency of the results. The interviews obtained met the original protocol requirements.

Internal Consultants drawn from the following organisational settings:

- internal consultants employed within client organisation
- hold middle to senior management position
- experienced at least two innovations
- employed in medium to large business
- have experienced innovations across at least two Business Units
- are in a position to comment on how successful/unsuccesful that IT innovation is 2-4 years out from ‘go live’

Internal consultants that met the above criteria were included in the study and invited to participate. The pre-interview instruments, interview questions and OCAI/ESS data collection process were the same as those used in the pilot and main consultant interviews. The actual survey document is shown in its entirety in Appendix 4.6.

Demographics were also collected whilst maintaining the respondent’s anonymity as per the ethical requirements. Again the survey participants were selected based on the following criteria:

- have a minimum 4 years experience with the organisation
- are in a position to comment on how successful/unsuccesful that IT innovation is 2-4 years out from ‘go live’

The surveys were sent to respondents, coupled with a blank return envelope for return within seven days.

Much effort and thought went into designing and identifying the demographics that would best allow full exploration of the relationship.

The following table shows the demographic item and the rationale for collection.
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

<table>
<thead>
<tr>
<th>Demographic Item</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Unit</td>
<td>Since Organisational Culture is a group phenomenon, the smallest organisational structure unit that could be identified in the organisation was the Business Unit. The data could therefore be analysed against Business Units within the organisation.</td>
</tr>
<tr>
<td>Geographic Location</td>
<td>Captured in order to complete the cultural map of the organisation and enabling branch/head office variations to be explored</td>
</tr>
<tr>
<td>Current Role</td>
<td>The type of role that the respondent fulfilled within Oz Dairy. 1. Strategic/Senior Manager; 2. Middle Manager; 3. Operational Staff; 4. Other These employment types were the same as used in the original ESS study and followed the categorisation developed by Anthony (1965). The work of Anthony (1965) has been utilised in many studies, and particular studies in the IS field have adopted these or variants of these criteria for survey respondents. The original employment categories described by Anthony were 1. Strategic; 2. Management; 3. End User, and 4. Technical staff.</td>
</tr>
<tr>
<td>Length of Service</td>
<td>To enable variances in experience and culture and ESS based on how long the employee had been with the organisation to be investigated, in addition confirming that the participant met the minimum four years experience criteria</td>
</tr>
<tr>
<td>IT Innovation</td>
<td>Data was collected to identify the exact IT innovation that the respondent was reporting upon, i.e., all SAP R/3 modules or just a selection of the various modules (All, MM, SD, PP-PI, PM, FI-CO) in their day to day role</td>
</tr>
<tr>
<td>Use Type</td>
<td>In addition to which modules were used, data was also collected as to how the IT innovation was being used.</td>
</tr>
<tr>
<td>Use Frequency</td>
<td>How often the IT Innovation was being used</td>
</tr>
</tbody>
</table>

Table 7-2. Case study demographics collected

Both qualitative and quantitative data were collected from Oz Dairy. The qualitative data came from interviews with four internal consultants (drawn from senior managers and project managers). The qualitative data has been reported in the previous chapter. The quantitative data came from 40 responses to the survey. This represented 80% from those meeting the criteria for survey participation. The researcher spent two working weeks full-time at the organisation. This included:

- notes and observations taken during the time in the organisation
- exposure to company documentation
- observation of groups working together
- informal discussions with the staff
- present in meetings and discussions

Chapter 7: Revelatory Case Study  7-9
The major quantitative effort of the PhD study revolved around the case study organisation. The unit of analysis in this phase of the study was the IT innovation being investigated; this could represent the entire ES or one of the extensions to the ES, for example the CRM module. Data was collected from a variety of business units throughout the organisation that have experienced the innovation.

The surveys themselves were mailed to the participants in a double blind envelope, i.e., a return envelope was provided for the survey to be returned within the research package. The return envelope address contained no identifiers that could lead to identification of the respondent. As an additional safeguard for anonymity the surveys were to be returned to a central administration point for collection before they were collected by the researcher. In this way there were no identification keys that could suggest to the researcher the identity of the survey respondent. Thus the survey results were totally anonymous.

The next sections describe the results of the data analysis.
7.4. Quantitative Data: ESS + OCAI Analysis and Interpretation

The quantitative data was subjected to a variety of statistical analysis techniques in an effort to explore the relationship and the manner in which the various sub-constructs were interacting with each other.

7.4.1 Descriptive Statistics

This section discusses the descriptive statistics for the case study. The survey instruments collected data that included ES use, respondent role, Business Unit and Geographic Unit, in addition to the OCAI cultural typology data and ES Success data. The purpose for collecting the additional data per respondent was to allow a fuller understanding of specific aspects of the OC-ESS relationship. The histogram below summarises the ES Success results, showing overall frequencies:
The results indicate that all the survey respondents were neutral or agree that the ES was successful. Overall, the mean score for ESS across all respondents showed that 64% rated the ES as being either a 5 or 6 (agree) that the ES was successful. The mean showed a large cohort as neutral. The bars in the histogram above report the actual number (frequency) of the respondents that scored the ES a particular score. The bell curve shows the bias to an interpretation of success. The peak in the curve is the mode score.

The next elements to be discussed are the demographic profiles of the respondents, including ES Success measures and the OCAI plots for the categories of Business Unit, Geographic Unit and Employment Cohort.

### 7.4.2 ESS Business Unit Results

The five Business Units which participated in the study were ‘Operations’, ‘Shipping’, ‘Finance’, ‘Sales & Marketing’ and ‘IT’. A brief description of each follows.

**Operations:** This unit is responsible for overseeing much of the day to day operational activities of the organisation – plant maintenance, administration, production and production planning.

**Shipping:** This is responsible for exports and export documentation, customs and freight delivery.

**Finance:** This is responsible for Accounts Payable, Accounts Receivable, Invoicing and Payroll.

**Sales & Marketing:** This is responsible for new business generation, branding, advertising and PR.

**IT:** This is responsible for IT support, infrastructure services, network maintenance and data integrity.

The table overleaf summarises the responses and the ESS scores.
The greatest number of responses (49%) was obtained from the Operations Business Unit. ‘Finance’ contributed the next highest number of respondents at 22%, ‘Shipping’ and ‘Sales & Marketing’ Units both equally contributed 11% and ‘IT’ the smallest contribution at 7%.

The Business Units are ranked by overall ESS score in the table below:

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>% of Total Responses</th>
<th>Overall Score</th>
<th>Individual ESS Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>49</td>
<td>5.43</td>
<td>4.83, 5.77, 5.46, 5.65</td>
</tr>
<tr>
<td>Finance</td>
<td>22</td>
<td>5.52</td>
<td>5.28, 6.18, 5.02, 5.58</td>
</tr>
<tr>
<td>Shipping</td>
<td>11</td>
<td>4.77</td>
<td>4.92, 5.58, 4.37, 5.22</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>11</td>
<td>3.62</td>
<td>4.50, 4.75, 3.56, 1.67</td>
</tr>
<tr>
<td>IT</td>
<td>7</td>
<td>5.66</td>
<td>5.13, 5.50, 6.0, 6.0</td>
</tr>
</tbody>
</table>

**Table 7-3. Summary of BU ranked by % responses and ESS scores**

The Business Unit that was most satisfied and reported the highest level of ESS was the IT Business Unit with a score of 5.66. This was followed by ‘Finance’ at 5.52, ‘Operations’ at 5.43, ‘Shipping’ at 4.77 and the lowest ESS score was reported by ‘Sales & Marketing’ at 3.62.

There is clearly a wide variance in the level of success reported by the different Business Units within the organisation.

Each Business Unit also reported significant variations in ES Success across the individual ESS sub-constructs.
The following tables show the findings per individual item scores.

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>Individual ESS Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>5.28</td>
</tr>
<tr>
<td>IT</td>
<td>5.13</td>
</tr>
<tr>
<td>Shipping</td>
<td>4.92</td>
</tr>
<tr>
<td>Operations</td>
<td>4.83</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>4.50</td>
</tr>
</tbody>
</table>

**Table 7-5. Business Units ranked by OI scores**

Finance BU reported the greatest satisfaction with the OI item of the ESS measure, with a score of 5.28. Next was ‘IT’ with 5.13, ‘Shipping’ 4.92, ‘Operations’ at 4.83 and finally ‘Sales & Marketing’ reported the lowest with 4.50.

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>Individual ESS Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>6.18</td>
</tr>
<tr>
<td>Operations</td>
<td>5.77</td>
</tr>
<tr>
<td>Shipping</td>
<td>5.58</td>
</tr>
<tr>
<td>IT</td>
<td>5.50</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>4.75</td>
</tr>
</tbody>
</table>

**Table 7-6. Business Units ranked by II scores**

‘Finance’ also reported the highest score for Individual Impact (II) with 6.18. ‘Operations’ followed second with 5.77, ‘Shipping’ 5.58, ‘IT’ 5.50 and again Sales & Marketing Business Unit with a score of 4.75 ranked lastly.

The table below shows the Business Units ranked by System Quality (SQ) results:

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>Individual ESS Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT</td>
<td>6.0</td>
</tr>
<tr>
<td>Operations</td>
<td>5.46</td>
</tr>
<tr>
<td>Finance</td>
<td>5.02</td>
</tr>
<tr>
<td>Shipping</td>
<td>4.37</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>3.56</td>
</tr>
</tbody>
</table>

**Table 7-7. Business Units ranked by SQ scores**
‘IT’ reported the highest satisfaction levels with an SQ score of 6.0, ‘Operations’ was ranked second with 5.46, ‘Finance’ third with a score of 5.02, ‘Shipping’ 4.37 and lastly ‘Sales & Marketing’ with a score of 3.56.

The final ES individual item to be reported is Information Quality (IQ), and the table below reports on the IQ scores by Business Unit:

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT</td>
<td>6.0</td>
</tr>
<tr>
<td>Finance</td>
<td>5.58</td>
</tr>
<tr>
<td>Operations</td>
<td>5.65</td>
</tr>
<tr>
<td>Shipping</td>
<td>5.22</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>1.67</td>
</tr>
</tbody>
</table>

Table 7-8. Business Unit ranked by IQ scores

‘IT’ reported the highest levels of ESS for the IQ item with a score of 6.0. The next highest was ‘Finance’ with 5.58, third was ‘Operations’ with 5.65. ‘Shipping’ ranked fourth with 5.22 and by far the lowest score was ‘Sales & Marketing’ with 1.67.

The individual results for each of the Business Units are now discussed in detail.

Operations Business Unit Results (49% of total responses)

The Operations BU reported a relatively high level of ES success overall with a score of 5.43. Employees here indicated that they were mostly satisfied with the ES. The table below shows all the scores for the Operations BU.
When the individual item scores are reviewed for the Operations BU we see that all the results are relatively high. The highest single score was 5.77 for 'Individual Impact' whilst the lowest score, 4.83 for OI, is still above neutral for level of ES Success reported. When the results are viewed in comparison to the other business units we also see that except for OI, this Business Unit was ranked either first or second for the all individual items.

The next Business Unit to be examined is the Shipping BU.

**Shipping Business Unit Results (11% of total responses)**

The Shipping Business Unit reported the second lowest ES overall success score of all Business Units. Employees in this BU are most satisfied with ‘Information Quality’ (5.22) and least satisfied with ‘System Quality’ (4.37). However, all the scores, when compared against the other Business Units, were either second or third lowest. Indeed, the only item that users in this BU ranked above neutral was IQ.

<table>
<thead>
<tr>
<th>ES Success by Business Unit</th>
<th>ESS</th>
<th>Individual Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Unit</td>
<td>Overall Score</td>
<td>OI</td>
</tr>
<tr>
<td>Shipping &amp; Export</td>
<td>4.77</td>
<td>4.92</td>
</tr>
<tr>
<td>Ranking</td>
<td>4th</td>
<td>3rd</td>
</tr>
</tbody>
</table>

Table 7-10. Shipping Unit results

**Finance Business Unit Results (22% of total responses)**

After ‘IT’, ‘Finance’ reported the second highest score for overall ES Success and the highest positive score for ‘Individual Impact’. Employees in this Business Unit indicated very high levels of satisfaction with the ES, and, in particular, thought the individual impact of the ES had been very positive. ‘Finance’ also reported the highest ‘Information Quality’ score for all the BU’s. ‘Finance' thought the impact of the ES upon themselves personally was very positively high, and in particular they were highly satisfied with the 'Information Quality'.
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

### Sales & Marketing Business Unit Results (11% of the total responses)

The Sales & Marketing Business Unit reported the lowest overall level of ES success for all the Business Units.

In particular the ‘Information Quality’ (IQ) and ‘System Quality’ (SQ) constructs were very low and the lowest scores for all the Business Units. Overall the ES Success level was low and highly negative.

**Table 7-12. Sales & Marketing Unit all results**

### IT Business Unit Results (7% of total responses)

Perhaps also not surprisingly, ‘IT’ reported the highest overall ES Success score for all the Business Units and was very satisfied across all four of the Individual items. In particular, IT rated the System Quality (6.0) and Information Quality (6.0) constructs the highest for all Business Units.

**Table 7-13. IT Unit all results**
There were some clear trends emerging in the data when viewed through Business Unit. ‘Operations’ was highest in IQ, ‘Sales & Marketing’ was the lowest in all items whilst ‘Finance’ was highest in OI and II.

The next section discusses the ESS results across the Geographic Units of the organisation.

### 7.4.3 ESS Geographic Unit Results

The figure below shows response rates for the survey by Geographic Unit. The organisation operates from several plants (K1, M1, R1, L1 and C1) in addition to a central Head Office (H1).

The majority of the survey responses were taken from Head Office (40%), with the next largest cohort coming from the C1 plant (26%).

All Geographic Units indicated a positive ES Success experience with small variance across each unit from the mean. The summary results for the ESS data is shown in the table below:

<table>
<thead>
<tr>
<th>Geographic Unit</th>
<th>Overall</th>
<th>OI</th>
<th>II</th>
<th>SQ</th>
<th>IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>5.48</td>
<td>5.63</td>
<td>6.00</td>
<td>4.78</td>
<td>5.50</td>
</tr>
<tr>
<td>R1</td>
<td>5.47</td>
<td>5.06</td>
<td>5.75</td>
<td>5.38</td>
<td>5.66</td>
</tr>
<tr>
<td>L1</td>
<td>5.54</td>
<td>5.38</td>
<td>5.81</td>
<td>5.19</td>
<td>5.80</td>
</tr>
<tr>
<td>C1</td>
<td>4.94</td>
<td>4.81</td>
<td>5.25</td>
<td>4.80</td>
<td>4.88</td>
</tr>
<tr>
<td>H1</td>
<td>4.94</td>
<td>4.66</td>
<td>5.40</td>
<td>4.94</td>
<td>4.63</td>
</tr>
</tbody>
</table>

*Figure 7-14. ES Success by Geographic Unit*
Across the various locations there is little variation, the sample variance is just .09 and the SD is .31 indicating a very narrow range of values. The data indicates that the various Plant and Head Office locations view the ES success at similar levels. The lowest overall ES Success score was 4.94 (H1) and the highest 5.54 (L1).

The mean score overall was 5.27 for overall ES Success, with the highest individual item mean being 5.64 for ‘Individual Impact’ (II). The lowest reported individual item mean score was SQ at 5.29.

M1 reported the second highest overall ESS score at 5.48; M1 also reported the highest OI and II score at 5.63 and 6.00 respectively. The highest SQ score was reported by R1 at 5.38 and the highest IQ score at 5.80. C1 consistently ranked lowest or 4th lowest ESS for all scores, it ranked 5th for Overall ESS at 4.94, 4th OI (4.81), lowest II (5.25) of all, and 4th for SQ and IQ. The individual item scores are:
L1 scored ES the highest, whilst H1 reported the lowest levels of satisfaction with the ES. All the Geographic Units reported success significantly above neutral. There was however wider variance across the Geographic Units for the individual item scores.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Geographic Unit</th>
<th>OI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M1</td>
<td>5.63</td>
</tr>
<tr>
<td>2</td>
<td>L1</td>
<td>5.38</td>
</tr>
<tr>
<td>3</td>
<td>R1</td>
<td>5.06</td>
</tr>
<tr>
<td>4</td>
<td>C1</td>
<td>4.81</td>
</tr>
<tr>
<td>5</td>
<td>H1</td>
<td>4.66</td>
</tr>
</tbody>
</table>

Table 7-17. Location ranked by OI score

The table above shows the ‘Organisational Impact’ score, M1 reported the highest score while H1 reported the lowest at 4.66.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Geographic Unit</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M1</td>
<td>6.00</td>
</tr>
<tr>
<td>2</td>
<td>L1</td>
<td>5.81</td>
</tr>
<tr>
<td>3</td>
<td>R1</td>
<td>5.75</td>
</tr>
<tr>
<td>4</td>
<td>H1</td>
<td>5.40</td>
</tr>
<tr>
<td>5</td>
<td>C1</td>
<td>5.25</td>
</tr>
</tbody>
</table>

Table 7-18. Location ranked by II score

The highest individual item reported was ‘Individual Impact’ at 6.00 for M1. This was the joint highest for any item and represents significant satisfaction with this element of the system. ‘System Quality’ was the lowest reported individual item when ranked by Geographic Unit with a mean SQ for all Geographic Units of 5.02. The table below shows the various locations ranked by SQ:

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Geographic Unit</th>
<th>SQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R1</td>
<td>5.38</td>
</tr>
<tr>
<td>2</td>
<td>L1</td>
<td>5.19</td>
</tr>
<tr>
<td>3</td>
<td>H1</td>
<td>4.94</td>
</tr>
<tr>
<td>4</td>
<td>C1</td>
<td>4.80</td>
</tr>
<tr>
<td>5</td>
<td>M1</td>
<td>4.78</td>
</tr>
</tbody>
</table>

Table 7-19. Location ranked by SQ
The final individual item score was ‘Information Quality’ (IQ). The scores are shown below:

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Geographic Unit</th>
<th>IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L1</td>
<td>5.80</td>
</tr>
<tr>
<td>2</td>
<td>R1</td>
<td>5.66</td>
</tr>
<tr>
<td>3</td>
<td>M1</td>
<td>5.50</td>
</tr>
<tr>
<td>4</td>
<td>C1</td>
<td>4.88</td>
</tr>
<tr>
<td>5</td>
<td>H1</td>
<td>4.63</td>
</tr>
</tbody>
</table>

Table 7-20. Location ranked by IQ

The reported range for IQ was large at 5.80 (maximum) and 4.63 (minimum).

There were some clear trends emerging in the data when viewed through Geographic Unit. The locations that consistently ranked lowest across the overall score and the individual item scores were H1 (Head Office) and plant C1. In all but one category (SQ) either one of these locations reported the lowest score. Whilst L1 consistently reported the highest score or second highest score across all the items. The next section looks at the ESS scores by employment cohort.

7.4.4 ESS by Employment Cohort

The demographic data also identified the role and employment cohort (Anthony, 1965) that the respondent undertook within their BU. The majority of the respondents were categorised as middle managers (45%), the second most prevalent category was operational staff (44%), with the fewest number of respondents taken from the senior management category. The ratios are a reflection of the typical pyramid hierarchy present in most organisations. Even though the respondents were invited to the study based on selection criteria, i.e., not randomly selected and not based on managerial level. Due to the normal hierarchy structure there were fewer senior managers than operational staff who fitted the selection criteria.
The following figure illustrates the cohort ratios:

![Survey Response by Role](image)

**Figure 7-4 Survey response by employment cohort**

The employment cohort does appear to have some influence on the degree of perceived ES Success. The table below shows the ES Success scores by employment cohort:

<table>
<thead>
<tr>
<th>Role</th>
<th>ESS Overall Score</th>
<th>Individual Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OI</td>
<td>II</td>
</tr>
<tr>
<td>Strategic/Senior Manager</td>
<td>5.80</td>
<td>5.44</td>
</tr>
<tr>
<td>Middle Manager</td>
<td>5.20</td>
<td>4.98</td>
</tr>
<tr>
<td>Operational Staff</td>
<td>4.93</td>
<td>4.76</td>
</tr>
</tbody>
</table>

**Table 7-21. ESS results by employment cohort**

The highest score for overall ES Success score was given by the senior manager cohort. Indeed the overall ES Success score of 5.80 was the highest score by all categories and for all respondents. Looking at the individual item scores the highest score was again given by this employment cohort at 6.38 for ‘Individual Impact’ (II). This score of 6.38 was the highest reported score from the whole of the survey data.

The senior manager group view the ES as being particularly successful. Operational staff however gave the lowest overall score of 4.93.

The results do indicate that different employment cohorts have different views as to the success of the ES which suggests that they may use the ES for different activities. Prior research has suggested that one should always be mindful as to whose perspective the success is being measured (Shang & Seddon, 2002). This is borne out by the results of this study; the senior managers rate the ES very highly.
on ‘Information Quality’, possibly due to the need for MIS, Decision Support Systems (DSS) and Executive Information Systems (EIS). The SAPR/3 product contains numerous tools by which senior management can produce high level reporting and information summaries of the underlying data architecture.

7.4.5 ESS by Usage

Data was also gathered about the individual modules used. The ES Success by individual modules used is shown in the table below:

<table>
<thead>
<tr>
<th>SAP R/3 Module(s)</th>
<th>ESS</th>
<th>Individual Item Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Score</td>
<td>OI</td>
<td>II</td>
</tr>
<tr>
<td>All</td>
<td>5.66</td>
<td>4.25</td>
</tr>
<tr>
<td>PM</td>
<td>5.60</td>
<td>5.25</td>
</tr>
<tr>
<td>FI-CO</td>
<td>5.38</td>
<td>5.19</td>
</tr>
<tr>
<td>MM</td>
<td>5.10</td>
<td>5.01</td>
</tr>
<tr>
<td>PP-PI</td>
<td>5.22</td>
<td>5.23</td>
</tr>
<tr>
<td>SD</td>
<td>4.82</td>
<td>5.12</td>
</tr>
</tbody>
</table>

Table 7-22. ESS Scores by module ranked by overall ESS score

The overall ESS scores show that those that use all the modules reported the highest levels of success for the ES at 5.66, whilst those that used SD predominantly had the lowest overall score at 4.82.

Whilst the highest individual item score reported was for ‘Individual Impact’ (II) at 6.25 for the actual ES elements the highest reported score was ‘Information Quality’ (IQ) at 6.08. The lowest scores were reported for OI (4.25) by those that use all modules and IQ 4.24 for those that use predominantly SD.
7.4.6 OCAI Business Unit Results

The survey data collected from the participants also included the OCAI survey instrument. This section presents the OCAI results firstly by Business Unit and then by Geographic Unit.

**Operations Business Unit OCAI Results**

The culture of the Operations BU, as reported via the OCAI, is shown in the plot below. The BU has strong elements of clan and hierarchy culture types. Employees in this BU are internally focused, valuing high levels of structure, policy and procedure and control. They are concerned with team work and value strong leaders.

![OCAI Operations Business Unit](image)

**Figure 7-5. OCAI Operations Business Unit**

**Shipping Business Unit OCAI Results**

The culture profile for the BU indicates that similar to the Operations BU, employees are strongly oriented towards dimensions of ‘Hierarchy and Clan’, yet the strength of these dimensions is much higher and more extreme than the Operations BU. Employees in this BU value very highly control, policies, procedures and team work.

The OCAI radar plot for the Business Unit is shown overleaf.
Finance Business Unit OCAI Results

The OCAI plot for finance is shown below:

The BU again shows a hierarchy and clan orientation but to a lesser extent than both Operations and Shipping. Again employees are more internally focussed, valuing control, policies and procedures above all else.
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

Sales & Marketing Business Unit OCAI Results
Perhaps not surprisingly the OCAI profile for this Business Unit indicates a very strong external focus orientation, with the BU displaying the typically sales oriented culture profile. Employees are competitive, customer centric and highly goal oriented. They value results and winning above all else. The Sales & Marketing BU in addition to reporting the highest Market score also reported the lowest clan and hierarchy scores of all the BU’s.

IT Business Unit OCAI Results
Interestingly ‘IT’, the BU which reported the highest ES Success score, had a directly opposite culture profile to the Sales & Marketing BU, i.e., the BU that reported the lowest ES success score. The OCAI plot for IT BU shows a very strongly clan oriented culture, that is internally focussed, values team work and the development of others.
In summary the results of the OCAI data by Business Unit show that the most hierarchy oriented type is the Shipping Business Unit, followed by Finance Business Unit. The most Clan oriented Business Unit is the IT department, the most Market oriented unit is the Sales and Marketing Business Unit. In terms of the least oriented the lowest Market score is for the Shipping Business Unit, the lowest Clan is for the Sales and Marketing Business Unit and the lowest Hierarchy is for the IT Business Unit.

### 7.4.7 OCAI Geographic Unit Results

The OCAI radar plots for the Geographic Units (GU’s) present a similar picture as the ES Success scores, i.e., little variances across the individual GU’s, the individual plots per location are shown in Appendix 7.2. However, the mean HO plot is shown below:
The culture profile for the GU's confirms the findings of the culture plots across the BU's, i.e., the culture is predominantly a clan and hierarchy profile. The GU's themselves value team work, are internally focussed and are reliant upon policy, procedures and administration control frameworks. The culture profile across the organisation throughout the state is uniform geographically, but as previously shown, has significant variance based on the Business Unit and functional department that employees are assigned to.

7.4.8 Interpretive Statistics

The sample size was relatively small at N=27. However, there are statistical methods that may be used to explore the OC-ESS relationship with this sample size. Whilst not wishing to draw categorical conclusions based purely on the statistical results the analysis can be used, in conjunction with the qualitative data to help describe the relationship further. However, even with the limitations of small sample size the results do indicate certain trends, offer intriguing insights and do suggest directions for further research.

An initial correlation analysis was used to examine the relationship between ES Success (overall and individual item level) and the OCAI types (C, A, M, H). A Pearson product moment correlation coefficient is used to describe the relationship between two variables (Coakes, 2005). This technique was used to test the strength and direction of the correlation between the culture types in the OCAI. The table overleaf shows the results of the analysis, those cells highlighted in yellow indicate that the results were statistically significant.
Table 7-23. Correlation/linear regressions of the OCAI culture types

<table>
<thead>
<tr>
<th></th>
<th>ESS</th>
<th>Clan</th>
<th>Adhocracy</th>
<th>Market</th>
<th>Hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS overall</td>
<td>Pearson Correlation</td>
<td>1</td>
<td>.385</td>
<td>.208</td>
<td>-.493(*)</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.104</td>
<td>.393</td>
<td>.032</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Clan</td>
<td>Pearson Correlation</td>
<td>.385</td>
<td>1</td>
<td>-.059</td>
<td>-7.67(**)</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.104</td>
<td>.783</td>
<td>.000</td>
<td>.142</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>19</td>
<td>24</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>Pearson Correlation</td>
<td>.208</td>
<td>-.059</td>
<td>1</td>
<td>.024</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.393</td>
<td>.783</td>
<td>.910</td>
<td>.010</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>19</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Market</td>
<td>Pearson Correlation</td>
<td>-.493(*)</td>
<td>-7.67(**)</td>
<td>.024</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.032</td>
<td>.000</td>
<td>.910</td>
<td>.232</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>19</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Hierarchy</td>
<td>Pearson Correlation</td>
<td>.061</td>
<td>-.309</td>
<td>-.515(**)</td>
<td>-.253</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.804</td>
<td>.142</td>
<td>.010</td>
<td>.232</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>19</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

The results show that at $p < .05$ ‘Market’ is negatively correlated (-.493) to overall ES Success, i.e., the market cultures experienced the lowest levels of ES Success. In addition, ‘Clan’ is very strongly negatively correlated to ‘Market’. This suggests that in this organisation ‘Clan’ is unlikely to occur in conjunction with the market culture.

The clan culture is also strongly positively correlated (.385) to ES Success.

‘Adhocracy’ is also negatively correlated to ‘Hierarchy’ suggesting that these two culture types are unlikely to occur together.

At the individual item level the results provide further insights into the relationship. The tables overleaf show the individual ESS items correlated against the OCAI culture types.
### Table 7-24. OCAI types by ESS item

The strongest correlation is shown between ‘Information Quality’ and ‘Market’ (-.619). The negative correlation suggests that within the market culture type the item that is most influencing ES Success is the Information Quality construct.
7.5. Case Study Review & Summary

In summary, the case study formed an important part of the study because OZ Dairy, a live organisation, met the key criteria of

1. 2 years post ‘go live’
2. deployment of multiple modules
3. use of the system across the business units
4. geographically diverse
5. Australian-based
6. being able to both qualitatively and quantitatively explore the relationship of culture to perceptions of ESS

Summary of the Main Findings

The summary findings from the revelatory case study were as follows:

1. Different Business Units could clearly be seen to be reporting differing levels of success for the ES. IT Business Unit experienced highest level of success, whilst ‘Sales & Marketing’ reported the lowest overall score. We could therefore see large variations in the range of success reported.

2. The individual item scores of OL, II, SQ, IQ also reported different scores for each Business Unit. The largest single variance was between ‘IT’ and ‘Sales & Marketing’ on the IQ construct. ‘IT’ reported 6.0 whilst ‘Sales & Marketing’ 1.67. There was therefore large variation reported in the organisation across individual item scores.

3. There was also wide variance in the degree of ES Success when viewed by Geographic Unit. Significantly, ‘Head Office’ reported lowest or second lowest level of success across all ESS item scores.

4. When the organisation was viewed through employment cohort, the role that reported the greatest degree of success for the ES was strategic/senior managers whilst operational staff reported the lowest. Ironically, the operational cohort formed the largest proportion of users.
5. The OCAI results show that the different Business Units reported different culture types. This confirms the literature findings that organisations have sub-cultures present within the one entity.

6. The Sales & Marketing BU which reported the lowest ESS score was strongly market oriented in its culture profile. The IT BU, which had the highest ESS score, was very strongly clan culture oriented. Combining the ESS and OCAI results indicates that we do see evidence of different culture types experiencing differing levels of success with the one organisation.

7. The statistical analysis of the data indicated that market culture type is negatively correlated to overall ES Success. In addition, market culture type (the culture of the lowest ranking Business Unit by ES Success) was also negatively correlated to clan type (the culture of the highest ranking Business Unit). This indicates that ‘Market’ is unlikely to experience high levels of ES Success whilst ‘Clan’ is likely to be associated with high levels of ES Success, and also that the two types, ‘Market’ and ‘Clan’, are unlikely to occur together in this organisation.

8. ‘Market’ was also negatively correlated to the Information Quality (IQ) individual item score. This suggests that IQ in market types is the individual item that is most responsible for the low level of ESS reported.

9. ‘Hierarchy’ was negatively correlated to ‘Adhocracy’, meaning that ‘Hierarchy’ is unlikely to occur with ‘Adhocracy’.

The results from the revelatory case study were very enlightening on the OC-ESS relationship; clear patterns could be seen to be emerging and the nature of the relationship was beginning to be discerned.

The next chapter, the Cross-Case Analysis, combines the results from the pilot, main consultant study and the revelatory case study.
Chapter 8

Cross-Case Analysis
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8. Cross-Case Analysis

The previous chapters have reported on the findings from the three main phases of the research. In particular, chapter 5 discussed the findings of the pilot study. Chapter 6 reported the consultants’ experiences of the OC-ESS relationship and found that the same manifestations were being reported by consultants across a range of organisational settings. Chapter 7 reported on the results from the revelatory case study and found that different culture types were experiencing differing levels of Enterprise System Success.

The purpose of this chapter is to bring the three sets of data together in order to distil the core workings of the OC-ESS relationship, thus forming a cross-case analysis.

The results from the previous phases have indicated that the nature of the OC-ESS relationship is complex but we do see patterns emerging. Whilst each of the phases has identified unique elements they have also simultaneously confirmed many of each others findings, albeit by different methods.

The multi method approach has proven robust in its design and provided different views of the OC-ESS relationship. This has been a key strength of the study. This chapter seeks to triangulate the results and show the evidence for the combined conclusions.

Each of the major findings shall now be taken in turn. This will be presented by examining the culture type associated with successful use of the Enterprise System; this is the clan culture.

8.1. The Relationship of the Clan Culture to Successful ES

Each of the studies showed that the clan culture was associated with reporting most success with Enterprise Systems.

The ‘Clan Culture’ is typified by:

‘a friendly place to work where people share a lot of themselves. It is like an extended family. Leaders are thought of as mentors, even as parent figures. The organisation is held together by loyalty and tradition. Commitment is high. The organisation emphasises the long term benefit of individual
development with high cohesion and morale being important. Success is defined in terms of internal climate and concern for people. The organisation places a premium on teamwork, participation and consensus' (Cameron & Quinn, 1999).

Evidence for clan being associated with ESS comes from the consultants' view quantitative data and the revelatory case study. The results from each are discussed in order.

Consultants' view found that 'Clan' is most associated with success. The consultant OCAI's suggest that the clan culture is associated with the most successful ES innovations. The OCAI radar plot below indicates the overall successful and least successful results as reported by the consultants. The most successful reports of ESS is shown in blue and the least successful is shown in red.

Figure 8-1. Mean OCAI all consultant categories showing clan most successful

The mean consultant OCAI results support ‘Clan’ as being strongly associated with the most successful ES. In the individual consultant categories both the vendor and internal consultants rated their most successful ES examples as being dominated by the clan culture type.

The case study view was formed through analysis of the case study OCAI's in the Business Unit patterns and through examination of correlation values. All the Business Units that reported ES Success positively were either ‘strongly clan’ or ‘extremely clan’. The following radar plots of the business units reporting the most

---

2 ‘Strongly clan’ is defined by clan being 1st or 2nd most dominant typology in their profiles.

3 ‘Extremely Clan’ is defined by clan being most dominating over all others combined.
success with the Enterprise Systems shows the dominance of clan cultural practices.

Figure 8-2. Most successful BU from the revelatory case study – ‘extremely clan’

Figure 8-3. Internal change consultants report the most successful BU as ‘strongly clan’
Figure 8-4. Vendor consultants report the most successful BU as ‘strongly clan’

The Pearson correlation value of 0.385 for ‘Clan’ on ESS is almost significant at p <.05, which suggests a positive correlation between ‘Clan’ and ES Success.

The qualitative view was formed through content analysis of the interview data with consultants and axial coding using the culture constructs. Within the ‘Clan’ there are three sub-constructs: Development of Others (DO), Interpersonal Relationships, Team Work. The qualitative data indicates that the DO sub-construct is the most influential of these in the OC-ESS relationship. This study analysed the attributes of a culture related most to successful Enterprise Systems. ‘Development of Others’ was a specific element associated with successful use of Enterprise Systems. This is not surprising as the sub-construct DO is described as ‘helping individuals improve their performance, expand their competencies and obtain personal development opportunities’.

These behaviours, when linked to supportive training and management, led to greater competencies with the system and thus higher levels of success.

However, in addition to encouraging users to learn, the culture also needs to allow the user to learn by supporting them, with managers being seen as very visible ambassadors stressing the importance of self-development.

The table overleaf summarises the data that leads to the finding that clan culture type is most strongly associated with successful Enterprise System:
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

<table>
<thead>
<tr>
<th>OCAI Consultant study Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan most dominant</td>
</tr>
<tr>
<td>OCAI Consultant study radar plots which show that the clan culture type is most dominant with strongest support from internal and vendor consultants</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Qualitative Data – Selective Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan most dominant</td>
</tr>
<tr>
<td>The clan culture type - Development of others – is consistently reported as key characteristic of the most successful Enterprise Systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Revelatory Case Study Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan most dominant</td>
</tr>
<tr>
<td>Clan most dominant in most Successful BU</td>
</tr>
<tr>
<td>Clan on ESS Pearson Correlation .385 strongly positively correlated with the ESS constructs. Being significantly correlated at the 0.05 level</td>
</tr>
</tbody>
</table>

Table 8-1. Evidence summary for clan as most successful culture type

In addition to this support from the consultant study, the revelatory case study also supports the clan culture as being most associated with successful Enterprise Systems. The IT Business Unit, the individual business that reported the greatest level of ES Success, was extremely oriented towards the clan culture. Whilst it is perhaps not surprising that the IT Business Unit thought the ES was highly successful, it does provide further support for their being a relationship between high ES Success levels and a clan culture types.

We therefore see that there is strong support for the clan and its association with the most successful ES examples from the OCAI data.

The ESS data from the Oz Dairy case study supports the OCAI findings, suggesting a positive relationship between the clan and ES Success. The table below shows the ES Success score and the correlation to the various culture types. ‘Clan’ has the strongest positive correlation.

<table>
<thead>
<tr>
<th>ESS overall</th>
<th>ESS</th>
<th>Clan</th>
<th>Adhocracy</th>
<th>Market</th>
<th>Hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS overall</td>
<td>Pearson Correlation</td>
<td>1</td>
<td>.385</td>
<td>.208</td>
<td>-.493(*)</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td></td>
<td>.104</td>
<td>.393</td>
<td>.032</td>
</tr>
</tbody>
</table>

Table 8-2. Clan significantly correlated to ES Success

The qualitative data indicated that the clan sub-construct ‘Development of Others’ (DO), defined as ‘helping individuals improve their performance, expand their competencies and obtain personal development opportunities’, was particularly important in the successful examples. Many of the consultants in the interviews discussed the importance of a culture that actively encouraged users to learn.
However, in addition to encouraging users to learn, the culture also needed to allow the user to learn by supporting them, with managers being seen as very visible ambassadors stressing the importance of self development.

The qualitative data therefore supported the quantitative findings that the clan was important in the most successful ES but also that in particular it was the DO sub-construct that was interacting strongly with ES Success.

In summary, the clan culture has been indicated to be the most dominant culture type in the most successful ES innovations:

- Consultant qualitative and quantitative data support this finding
- Revelatory case study quantitative also supports this finding

The range of evidence for the clan culture being most associated with the most successful ES is therefore strong. The fact that the data from all the various sources supports this finding, adds strength to the results.

The next section discusses the culture most associated with the least successful ES.
8.2. Market Culture Very Strong in Least Successful ES

The OCAI culture that is most commonly associated with the least successful ES innovations is the ‘Market’.

The market culture is typified by:

‘a results-oriented workplace. Leaders are hard driving producers and competitors. They are tough and demanding. The glue that holds the organisation together is an emphasis on winning. The long-term concern is on competitive actions and achieving stretch goals and targets. Success is defined in terms of market share and penetration. Outpacing the competition and market leadership are important’ (Cameron & Quinn, 1999).

Evidence for the market culture type being associated with least successful ES comes from the consultants’ view, the case study view and the qualitative study view. The results from each are discussed in order.

The consultants’ view as reported in the OCAI shows that the dimensions of the market were reported as the second most common culture type for least successful Enterprise Systems.

The case study view also indicated that market was strong in the least successful ES.
The business unit that reported the lowest levels of ES Success was the Sales & Marketing BU, which was very strongly oriented to the market culture as shown in the OCAI plot below:

Figure 8-6. OCAI plot for the BU that reported the lowest scores for ES Success

The case study survey data also supports these OCAI findings. The survey indicated that there was a very strong negative correlation between ES Success and ‘Market’. When linear regression was undertaken on the overall mean ESS score and the market culture type, a strong negative correlation was discovered. The table below highlights the findings:

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Clan</th>
<th>Adhocracy</th>
<th>Market</th>
<th>Hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>.385</td>
<td>.208</td>
<td>-.493(*)</td>
<td>.061</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.104</td>
<td>.393</td>
<td>.032</td>
<td>.804</td>
</tr>
<tr>
<td>N</td>
<td>21</td>
<td>19</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 8-3. Market culture negatively correlated

* Correlation is significant at the 0.05 level (2-tailed).

The results show that at market culture type is strongly negatively correlated (-.493 p <.05) to overall ES Success. Thus, high levels of market culture are associated with low levels ESS.

Reviewing the results in the table below, it can be seen that the overall score at 3.62 is below neutral and into dissatisfied with the ES.
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

<table>
<thead>
<tr>
<th>Business Unit</th>
<th>Overall Score</th>
<th>OI</th>
<th>II</th>
<th>SQ</th>
<th>IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales &amp; Marketing</td>
<td>3.62</td>
<td>4.50</td>
<td>4.75</td>
<td>3.56</td>
<td>1.67</td>
</tr>
</tbody>
</table>

Table 8-4. Overall ESS score and IQ scores the lowest

In addition to a low overall ESS score, the Information Quality factor was the lowest individual item score given by all respondents at 1.67. When linear regression was undertaken at the individual item level for the ESS instrument the results indicated that there was a very strong negative correlation between ‘Market Culture’ and ‘Information Quality’ (IQ variable in the table).

<table>
<thead>
<tr>
<th>Information Quality</th>
<th>BIQ</th>
<th>Clan</th>
<th>Adhocracy</th>
<th>Market</th>
<th>Hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ</td>
<td>1</td>
<td>.328</td>
<td>.035</td>
<td>-.619(**)</td>
<td>.304</td>
</tr>
<tr>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>26</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 8-5. Market negatively correlated to IQ

** Correlation is significant at the 0.01 level (2-tailed).

The qualitative data from the consultant interviews suggest some possible causes for the quantitative findings. A number of the consultants had highlighted that in many of the least successful ES examples there were sub-cultures operating with the one overarching dominant culture type. Many organisations have sub-cultures present within themselves and this has been well documented in the literature (Beyer & Cameron, 1997; Cameron & Quinn, 1999; Wilkins & Ouchi, 1983; Goffee & Jones, 1996). The presence of sub-cultures by itself does not automatically mean that an ES will be failing; sub-cultures can be either a positive or negative influence on the organisation.

However, what does appear to be occurring, at least in the context of ES innovations in the least successful examples, is that some of sub-cultures may actually be in conflict or competing with each other. The individual groups with a market culture are generally more concerned with self-interest, self-promotion and protectionism than with the greater organisational success. Whilst many organisations experience difficulties with controlling individual power groups and the sometimes competing interests of individual stake holder groups, the competitive...
nature of the market culture may be exaggerating this effect. If some of the sub-cultures are market oriented, then these marketing cultures may be resisting the ES due to issues of conformity, perceptions of the ES as an ‘admin’ system and as resisting ‘another Head Office’ directive.

The findings from the consultant interviews suggest that the market culture views the ES as another controlling administration tool that prevents them from carrying out what they perceive to be the more important task of capturing more business. Marketing cultures view administration, compliance with policies and procedures as onerous chores and if the perception of the ES is one that it is predominately an admin tool then the reaction to it will be adverse.

A number of consultants reported that an Organisational Culture of change acceptance was critical to the success of the ES innovation. A culture of change acceptance assists the diffusion process (Rogers, 1995), allowing the innovation to quickly and easily become embedded in the organisation. Numerous statements were made to this effect by all consultant categories, e.g.:

‘Culturally I think clearly, the branches that were successful were the ones who just adopted the change, understood it and knew what value it was going to do and felt comfortable.’

‘The culture would be one that accepted ICT innovations and understood the importance of change management to system acceptance and success.’

Yet, marketing cultures have a tendency to be naturally competitive, rule breaking and fostering the ‘us and them’ mentality, if this attitude is allowed to be applied to the ES then success may be adversely impacted.

In summary, the market culture type has been indicated to often be associated with the least successful ES.

The range of evidence in support of market culture and least successful association is summarised in the table overleaf.
<table>
<thead>
<tr>
<th>Evidence from OCAI</th>
<th>OCAI All Consultant radar plots Least Successful</th>
<th>Change Consultant OCAI radar plots most dominant type</th>
<th>Market most dominant in most Least Successful BU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market very strong</td>
<td>☑</td>
<td>☑</td>
<td>☑</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Qualitative Data – Selective Coding Least Successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market ‘competitiveness’ perceived negatively</td>
</tr>
<tr>
<td>Market very strong</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market most dominant in most Least Successful BU</td>
</tr>
<tr>
<td>Market very strong</td>
</tr>
</tbody>
</table>

Table 9-6. Summary of the range of evidence supporting the market as least successful ES culture

8.3. OCAI Clan and OCAI Market Negatively Correlated

An interesting result was found in regards to the way in which the clan and market culture types interacted with each other. The quantitative data from the revelatory case study indicated a strong negative correlation between the clan and market culture types.

The data from the OCAI survey in the case study indicated that these were negatively correlated to each other, where we can see a very strong negative correlation between the market and clan culture types (-.767 significant at the p<0.01 level).

The correlation analysis is shown in the table overleaf:
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

Chapter 8: Cross-Case Analysis

<table>
<thead>
<tr>
<th></th>
<th>ESS</th>
<th>Clan</th>
<th>Adhocracy</th>
<th>Market</th>
<th>Hierarchy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ESS overall</strong></td>
<td>Pearson</td>
<td>1</td>
<td>.385</td>
<td>.208</td>
<td>-.493(*)</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>1.04</td>
<td>.393</td>
<td>.032</td>
<td>.804</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>21</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td><strong>Clan</strong></td>
<td>Pearson</td>
<td>.385</td>
<td>1</td>
<td>-.059</td>
<td>-.767(**)</td>
</tr>
<tr>
<td></td>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.104</td>
<td>.783</td>
<td>.000</td>
<td>.142</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>19</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

**Table 8-7. Clan and market negatively correlated**

** Correlation is significant at the 0.01 level (2-tailed).

This study has shown ‘Clan’ to be the culture type that is most dominant in the most successful ES. Dimensions of the clan culture seem to be important and dominant in the most successful ES. The market culture type however has been consistently found to be strong in the least successful ES. Business Units that were very market oriented were associated with the least successful ES.

When we look at the characteristics of the clan and market types, the literature indicates that the two culture types are very different in nature, i.e., ‘Clan’ – internal focus, high stability and high control; ‘Market’ - external focus, low levels of control and stability, highly competitive. The Pearson correlation from the data also supports the strong differences between the two types, ‘Clan’ is strongly associated with successful ES and ‘Market’ with least successful ES and they are unlikely to occur together. The figure overleaf visualises the findings.

In addition to the ‘Clan’ and ‘Market’ being negatively correlated, the ‘Adhocracy’ and ‘Hierarchy’ also were negatively correlated.

The next findings that we examine revolve around the hierarchy culture type.
8.4. Hierarchy Strong in Both Successful & Least Successful ES

The hierarchy culture type is defined as:

‘The organisation is characterised by a formal and structured place to work. Procedures govern what people do. Effective leaders are good coordinators and organisers. Maintaining a smooth running organisation is important. The long-term concerns of the organisation are stability, predictability and efficiency. Formal rules and policies hold the organisation together’ (Cameron & Quinn, 1999).

The findings from the various phases of the study indicate strong support for the hierarchy having high levels of influence in both the successful and least successful ES examples. Initially this appears paradoxical; how can one culture type be dominant or very strong in both successful and least successful ES? A closer examination of the data provides some understanding of this paradoxical state, through examining the hierarchical culture components most strongly associated with either outcome.

This analysis will be undertaken through examining the OCAI data in the consultant’s study and the case study, both of which show the presence of the hierarchy in both successful and least successful ES.

The mean OCAI for all consultants shows ‘Hierarchy’ as being strong in both successful (ranked 2nd after ‘Clan’) and least successful ES (the strongest culture in the least successful).

Figure 8-8. Hierarchy strong in both successful and least successful ES
Implementation consultants in particular ranked ‘Hierarchy’ the strongest culture type in the least and also most successful ES examples.

The OCAI radar plots show the influence that the hierarchy culture type is having on the least successful ES examples. In all these plots the ‘Hierarchy’ is the dominant in the least successful ES. Yet, the ‘Hierarchy’ also appears to be strong in the successful ES examples. Scores for ‘Hierarchy’ are shown in tables below, these are the rankings for the mean ‘All Consultants’ category.

<table>
<thead>
<tr>
<th></th>
<th>Successful</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clan</td>
<td>32</td>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Hierarchy</strong></td>
<td>30</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
</tr>
<tr>
<td>Adhocracy</td>
<td>20</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
</tr>
<tr>
<td>Market</td>
<td>18</td>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Table 8-8. Hierarchy score in successful ES

Overall, in reviewing the actual values, for example ‘All Consultants’, the ‘Hierarchy’ was 2<sup>nd</sup> most dominant (30) in the successful and the most dominant in the least successful (39). The next table shows the results for ‘Hierarchy’ and least successful.
The least successful score is significant since it is nearly double that of the next closest score ‘Market’ (23). This pattern of most dominant in the least successful and 2nd most dominant in the successful was repeated throughout many of the OCAI categories.

The qualitative data reveals a deeper meaning to these contradictory states for the hierarchy culture: most successful and least successful. The hierarchy culture type is comprised of three sub-constructs

- Acculturation (A): Helping individuals become clear about what is expected of them, what the culture and standards of the organisation are and how they can best fit into the work setting
- Control (CON): Ensuring that procedures, measurements and monitoring systems are in place to keep processes and performance under control
- Coordination (COOR): Fostering coordination within the organisation as well as with external units and managers and sharing information across boundaries

The next table overleaf highlights these hierarchy sub-constructs, ranked by passage count when the interviews were selectively coded against the OCAI constructs.
In the least successful ES examples, many of the consultants made clear statements in regard to a lack of communication, coordination and sharing across BU and functional boundaries negatively impacting upon the ES. Indeed these two OCAI sub-constructs accounted for over half of all the OCAI passages. Coordination (COOR) comments were very evident in the selectively coded passages. Least success ES examples were consistently reported to have been problematic due to issues of poor levels of information sharing, lack of communication of important messages across the organisation and protectionism of information between BU’s.

A number of issues relating to control (CON) were also raised. A lack of adequate control, policies and procedures, inherent in the organisation could indicate a culture that was used to low levels of control. This would adversely affect the success of the ES because users were now being asked to work in a very structured and controlled manner – something to which they were not used, therefore resistance levels were high. The users resisted the ES because they perceived it as being too controlling. Conversely, statements were made indicating that over control and too much control, in an organisation that was too bureaucratic, too administration focussed and too procedures oriented could also be stifling to the ES Success. Both a lack of control and too much control could negatively affect the ES.
Conversely, the organisations that have the balance right in terms of COOR and CON issues appear in the most successful ES. The level of communication, i.e. COOR, present within the organisation seems to directly influence the success of the ES. In those organisations that were seen to have successful ES, managers communicated vision, communicated across boundaries and shared information. Successful achievement of these activities appears to heavily influence the success of the ES.

In summary, the interaction of the hierarchy and its sub-constructs in the OC-ESS relationship is complex. On the one hand, the hierarchy culture type is seen the least successful culture for achieving ESS when poor communication and control occurs. On the other hand, hierarchy is strongly evident in the successful ES organisations, where coordination and control function well. The data does suggest that it is the levels and types of COOR and CON activities that appear to be very influential in the OC-ESS relationship. Open information sharing, open cross functional communication and compliance with clearly defined policies and procedures are influential in the OC-ESS relationship.

This chapter has triangulated data to derive a model of the interaction of culture in organisations with the most success in Enterprise Systems and the interaction of culture types to organisations with the least success in Enterprise Systems.

In order to further articulate this relationship, analysis of the question 'Describe the perfect supportive Organisational Culture for achieving success with ICT innovations' leads to a model of the ideal culture for Enterprise Systems Success, which is discussed in the next section.
8.5. The Ideal Culture

The question ‘Describe the perfect supportive Organisational Culture for achieving success with ICT innovations’ was added to the interview question as a summary type question in order to capture the interviewees overall cultural experiences taken from across all the implementations that they had been involved in.

The attributes of ideal culture are shown in the following table:

<table>
<thead>
<tr>
<th>Ideal Culture Item</th>
<th>Defined as</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visionary</td>
<td>Clear goals for the projects, ES, organisation, a clear direction for the organisation</td>
</tr>
<tr>
<td>Accepting of the Innovation</td>
<td>How well the users accepted the innovation</td>
</tr>
<tr>
<td>Business Users Involved</td>
<td>The degree to which the users were involved in the diffusion process</td>
</tr>
<tr>
<td>Continuous Improvement</td>
<td>Fostering a culture of change, change review and adaptation</td>
</tr>
<tr>
<td>Cooperation</td>
<td>Users supporting each other and the manner in which managers supported other BU managers</td>
</tr>
<tr>
<td>Effective Leadership</td>
<td>Strong, clear, direct and respected leaders</td>
</tr>
<tr>
<td>Feedback Allowed</td>
<td>The degree to which management encouraged, allowed, supported feedback from users</td>
</tr>
<tr>
<td>Implementation Partner Valued</td>
<td>The closeness of the IC relationship</td>
</tr>
<tr>
<td>Innovative</td>
<td>Flexible and willing to take risks</td>
</tr>
<tr>
<td>Learning Organisation</td>
<td>Knowledge and information, shared, retained and reused across the organisation</td>
</tr>
<tr>
<td>Open Communication</td>
<td>Vertically and horizontally throughout the organisation</td>
</tr>
</tbody>
</table>

Table 8-11. Components of the ideal culture as reported by the consultants

The final selective coding of the interviews carried out during the analysis of the interview transcripts selectively coded the ideal culture elements against the OCAI constructs. The results were interesting in the support that they gave to the findings from the OCAI survey data itself. The full coding and results for the qualitative data is shown in Chapter 5, however the table overleaf summarises the ideal culture items, and the OCAI sub-constructs that were identified when the transcripts were selectively coded.
## Table 8-12. Summary of ideal culture items when selectively coded against the OCAI sub-constructs

The table above indicates the ideal vulture manifestations can be mapped into the OCAI constructs. It can be seen that many of the manifestations of the ideal OC cluster around the ‘Clan’ and ‘Adhocracy’ constructs, in particular the ‘Development of Others’ (DO), ‘Continuous Improvement’ (CI), ‘Interpersonal Relationships’ (IR) and ‘Innovative’ (I) constructs.

These findings again support the key role of the clan typology in successful ES with an emphasis on the DO sub-construct that were suggested by the OCAI radar plots and coding of the interviewee responses from the previous questions in the interview.
The coding of the ‘ideal culture question’ also showed strong support for the influence of the hierarchy sub-construct ‘Coordination’ (COOR - Fostering coordination within the organisation as well as with external units and managers and sharing information across boundaries). Again the selective coding of the ‘ideal culture’ question shows further support for the findings from the previous interview questions and the OCAI and ESS survey data.

In summary, the ‘ideal culture’ question shows support for the findings from the other data sources, namely:

- the clan culture factor Development of Others (DO) is strongly influential in the successful ES examples and the ideal OC
- the clan culture factor Interpersonal Relationships (IR) is strongly influential in the successful ES and the ideal OC
- the hierarchy culture factor Coordination (COOR) sub-construct influential in the relationship and the ideal OC.
8.6. Cross-Case Analysis Summary Findings

This chapter has sought to bring the findings from the consultant study and case study together in order to identify associations between the findings from the various data sources.

The purpose of a multi-method approach being adopted by the study was to enable full exploration of the OC-ESS relationship. The various data sets did raise different dimensions of the relationship but at the same time confirmed each other in some of the key dimensions of the relationship. These data sets included interviews, surveys of experience and in-situ survey reports.

Several key findings have emerged from the data, namely:

1. the clan culture was very dominant in successful Enterprise Systems
2. market culture was very strong in least successful Enterprise Systems
3. hierarchy culture was strong in both successful and least successful Enterprise Systems
4. characteristics of the ideal culture were found
5. OCAI clan and OCAI market cultures are negatively correlated
6. OCAI adhocracy and hierarchy cultures are negatively correlated.

The next chapter concludes the thesis with an integration of these findings with the literature, which leads to the presentation of a model of the relationship of Organisational Culture to Enterprise Systems Success. Limitations of the study are also discussed, along with proposed future work.
Chapter 9

Conclusions, Contributions and Future Research
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9.1. Summary of Overall Research

The research results indicate that there is a relationship between Organizational Culture and the perceptions of Enterprise Systems Success. In particular, those cultures which foster a culture of change, support for innovation and the development of others, when coupled with strong leadership and effective project management, are more likely to report success than failure.

The literature review identified that there was a gap in research on the relationship between Organizational Culture and Innovation Success. This gap was the stimulus for this doctoral research project titled ‘An Exploration of the Relationship between Organizational Culture and IT Innovations in the context of Enterprise Systems’. The research project was funded by the Australian Research Council in conjunction with SAP AG, SAP USA and SAP ANZ through the ARC Linkage Grant program.

The research project adopted a multi-method research design, grounded in practice, in order to surface any reported relationship between Enterprise Systems Success and Organizational Culture. A critical part of the study was to identify who could report on this relationship. Much care and time were developed in creating a research design that was robust, rigorous and strong, whilst still remaining achievable within the confines of a PhD study. It was identified that key partners in implementation include internal change managers, internal consultants, vendor consultants and implementation partner consultants would be best placed to inform on the relationship. Representatives from each of these constituents were interviewed, covering a range of industry sectors and Enterprise Systems vendor organisations.

The first phase of the research was to qualitatively assess the perception of these participants on the role of culture to Enterprise Systems Success. This phase used semi-structured interviews and applied open, axial and selective coding of the responses.

The second phase of the research was to gather quantitative measures of Organizational Culture and Enterprise Systems Success as reported by the consultants. The Organizational Culture Assessment Inventory (OCAI) of Cameron and Quinn (1999) was selected to gather quantitative data on Organisational
Culture (OC). This instrument was selected because it has been shown to be robust, reliable and well validated across a range of organisational settings, industry sectors and national cultures. The Enterprise Systems Success (ESS) instrument of Gable, Sedera and Chan (2004) was selected to measure the perception of ESS again because of its proven reliability and validity. This data was gathered from the participating consultants post-interview, as to not polarise their statements on the relationship between culture and Enterprise Systems Success.

Each of these data sets were then analysed to determine if a pattern existed between the cultures of organisations that achieved most success with the Enterprise System as opposed to the culture types reported of organisations that achieved the least success with the Enterprise System.

Finally, in the third phase of the research project, the relationship of OC to ESS was explored in a rich case study of one large firm, to determine if the consultant’s reported relationships could be identified in the micro-cultures of the organisation.
9.2. The Research Aims Achieved

The aims and objectives of the research project were:

**Aim:** To explore the relationship between Organisational Culture and ES Success.

**Objective:** The objective of this research was to model the relationship between Organisational Culture and ES Success.

The objective was achieved through the following methods:

1. A multi-method study of a representative sample of 20 stakeholders taken across public and private industry, drawn from vendor, client and implementation partner organisational settings using both qualitative and quantitative techniques, based on established instruments for measuring culture and Enterprise Systems Success.

2. A revelatory case study in an organisation applying quantitative and qualitative methods.

3. A cross-case analysis comparing and contrasting the findings from the consultants, the organisational study and the literature.

The key outcome was an operant model of the Organisational Culture – Enterprise System Success relationship and the relationship explored.

The aims and objectives of the study were therefore achieved. The primary aim of the research was achieved and the research objective achieved, with a proposed model of the relationship.

A summary of the findings is presented in the following section.
9.3. Summary of Findings

The key findings of this study were:

1. that there was a relationship reported between Organisational Culture type and success types (most and least) in that:
   a. clan cultures which emphasised the behaviours of development of others were strongly related to reports of Enterprise Systems Success
   b. hierarchical cultures which emphasised the behaviours of control and coordination were related to reports of Enterprise Systems Success
   c. hierarchical cultures which were poor in the execution of control and coordination were related to reports of the least success with ES
   d. market cultures which emphasised (internal) competitiveness were strongly related to reports of least success with ES
   e. that literature attributes of ‘Continuous Improvement’ (CI), ‘Flexibility’ (F) and ‘Innovation’ (I), which are often described as antecedents to innovation success and are found in the culture type of adhocracy, were reported as strongly related to success of Enterprise Systems; but the culture type of adhocracy was not reported as being present in the quantitative data describing consultant experiences with enterprises which had implemented Enterprise Systems

2. that the literature identified theoretical reasons for such relationships

3. that these patterns of relationships were found in the case study.

The PhD research supports the proposition that there is a relationship between Organisational Culture type and Enterprise Systems Success. Certain culture types practice behaviours that correspond to reported necessary behaviours for innovation success and Enterprise Systems Success, whilst other culture types practice behaviours that correspond to behaviours for failure of innovation and of Enterprise Systems failure. The key behaviours of success were found to be the development of others, effective control and effective coordination. The key behavioural barriers to success were found to be ineffective control, ineffective
coordination and strong internal competitiveness. The literature emphasises the need for continuous improvement, flexibility, and innovation, but this culture type of adhocracy was not reported as found in either the successful or least successful organisations in their perception of Enterprise Systems Success.

9.4. Model Output

A model of and explanation for this relationship was proposed as a result of the findings. The model is shown below:

![Figure 9-1. OC-ESS model](image)

The model shows that there are reported antecedent behaviours such as top management support, leadership and user empowerment. These behaviours are fostered or attenuated through the Organisational Culture of the enterprise. For those cultures which emphasise the clan behaviour of development of others, then the probability of Enterprise System Success is higher than those enterprises in which development of others is not a key value. Similarly, for those organisations which practice effective control and coordination, then the probability of Enterprise Systems success is higher than that of organisations in which there is ineffective control or ineffective coordination. Finally, those organisations which emphasise internal competitiveness as found in market cultures, will have a lower probability of
success than those organisations in which internal competitiveness for resources are reduced.

9.5. Future Work

The major area for further investigation that is now required is to empirically test the model.

The model should be tested across:

- a range of national culture settings
- a range of industry settings
- a range of organisational sizes
- public and private sector settings

Propositions surfaced by the research are:

P1: Organisations with effective control behaviours report higher perceptions of Enterprise System Success than those organisations with ineffective control behaviours.

P2: Organisations with effective coordination behaviours report higher perceptions of Enterprise System Success than those organisations with ineffective coordination behaviours.

P3: Organisations with effective development of others behaviours report higher perceptions of Enterprise Systems success than those organisations with ineffective development of others behaviours.

P4: There is no difference in the reports of Enterprise System Success in organisations that emphasise organisational flexibility as compared with organisations that do not emphasise organisational flexibility.

P5: There is no difference in the reports of Enterprise System Success in organisations that emphasise innovation as compared with organisations that do not emphasise innovation.
P6: There is no difference in the reports of Enterprise System Success in organisations that emphasise continuous improvement as compared with organisations that do not emphasise continuous improvement.

Further studies are required on the existence and industry sector distribution for organisations reporting predominantly adhocracy characteristics. It may be that such organisations prosper in the small enterprise segment and are not present in the large enterprise segment which can afford to invest in Enterprise Systems.

This study should be repeated in other innovation settings. However, a key criterion to include is that the innovation needs to impact on the wider organisation, than just one component. It is only when the innovation spans the organisation that the elements of Organisational Culture are invoked. Such innovations include business process change, the adoption of tele-working, and radical restructurings to become more agile. Technology innovations that may be useful to examine include RFID in logistics and transportation, network centric warfare or network enabled operations through the deployment of mobile and interconnected battle space management systems, or the wide spread adoption of pervasive computing in a business or social setting.

Other cultural instruments should be used in similar studies to detect further interactions. In addition, the role of national culture to innovation success should be investigated and the relationship between Organisational Culture and national culture explored.

The ES itself may actually change the OC past go live
Some researchers have suggested that the Enterprise System itself may actually bring cultural change to an organisation. If changes to culture can be tracked over time it would be of value to investigate the changes to the OC-ESS relationship over a period of time. A longitudinal study could shed new light on the relationship before, during and post implementation to see the effects of the ES itself upon the OC-ESS relationship.

Micro cultures present within the organisation
Sub cultures (micro cultures) are those cultures present within an organisation, and have been identified as existing in a number of other studies. The PhD study supports the proposition for the presence of sub cultures with an organisation via
the case study. The case study showed that within the one organisation there were different OCAI profiles across the different business units. An area for future study is to investigate the OC-ESS relationship across other large organisations to further explore the sub culture influence on the relationship.

**National Cultures**

One clear area for future work is to investigate the relationship across National cultures, Hofstede in his work clearly identified and quantified national culture and found six overarching dimensions. Further research to be undertaken will examine the OC-ESS relationship not just across other national cultures but also against the dimensions that Hofstede proposed. The nature of the relationship (OC-ESS) will be examined within the context of these dimensions.
9.6. Implications for Practice

There are a number of practical implications arising from this research these are:

1. to benchmark Organisational Culture prior to systems selection in order to determine barriers and enablers to such innovation success.
   This can be undertaken through the application of the OCAI throughout the organisation, ensuring adequate sample size for each business unit or sub-culture identified.

2. to commence change management practices early which are designed to improve organisational behaviours known to be associated with innovation success and to ameliorate those organisational behaviours known to be associated with innovation failure.
   Organisations can commence these practices prior to large system changes or in seeking improvements to the success of the ES to be experienced.

3. to monitor change management programs for changes in Organisational Culture.
   Organisational Culture has been shown to change, albeit slowly, over time. Large, long-term change management programs will need to monitor cultures for signs of change.

4. to re-position the implementation processes, with full knowledge of organisational friction arising from cultural issues.
   Organisations and vendors will be able to reposition their implementation methodologies accordingly to accommodate the findings from the study.
9.7. Research Limitations

As with any research project, decisions had to be made that led to compromises being made or paths not being chosen for further investigation. Within the PhD there are clearly bounds of time, resource and topic and this study is no different to any other PhD in this regards. The identified limitations are as follows:

**Organisational Culture not National Culture**

The study investigated the relationship of Organisational Culture and not National Culture to Enterprise System Success. Due to size and scope a decision was made to focus the study upon Organisational Culture.

**Australian Study**

The findings from the study we recognise are based on Australian business experiences. It may be that there are different results in other national settings.

**Industry Sector**

The findings from the study we recognise are based on Australian business experiences in specific industry sectors. Not all industry sectors were examined. It may be that there are different results in other industry sector settings.

**OC and ES Success Instrument Choice**

Clearly a decision had to be made as to which instruments to use. Within both fields there were many instruments available that could have been chosen. All instruments have their detractors and their supporters, some might agreed with our instrument choice whilst others will disagree. However, instruments were selected against our criteria of grounded in theoretical rigor, validity, reliability and a significant number of prior studies, and the OCAI and ESS impacts instruments met these criteria and were selected for use.

The use of particular instruments however could lead to criticism of the results based on the instruments chosen. However, we feel that by using instruments that were very well tested, validated and supported in the literature only strengthens the research results.
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

**Bias**
The potential for bias exists in all research projects and the researcher needs to be aware of the potential for bias and employ strategies to ensure bias does not occur. In the study a number of strategies were utilised, and care taken, in particular via the study design to guard against bias.

In regards to the selection of Consultants, all consultants that participated in the research were experienced senior consultants that had significant experience gained over several years across a range of industries. The maturity and seniority of the consultants meant that they had a full range of experiences to report on. The Consultants were invited from various categories in line with the requirement to capture a broadest range of experiences as possible. Since the goal was to select the consultants from the broadest range as possible, with the greatest range of experiences the issue of bias will therefore not arise.

Consultant names, Consultant firms and Client firms were not reported in the research. The Consultants knew this from the documentation given prior to participation in the research and the statements made by the interviewer in the interviews. The consultants were encouraged to speak with truthfulness and candor and this was clearly articulated at the start of each interview by the interviewer.

**Consultant Choice**
Except for the internal change consultants the majority of the consultants were external to the organisations to which they reported upon. Questions could be asked as to whether these were able to comment on an organisation’s culture when they were external to this organisation.

We would argue that research has suggested that these are the best positioned stakeholders to comment on the organisation’s culture (Schein, 1997).

**Survey Numbers**
From the case study we had 27 responses completed, and from the 17 consultant interviews we received 30 responses. The numbers are low from a statistical perspective, but the study was exploratory. The next task is now to gather further data to fully test the initial model and findings. As further data is gathered and analysed more fully supported conclusions can be drawn.
Case Study Results
The results from the case study are of course from but one organisation, the findings on their own are clearly weak if we try to generalise from them. However, support for the case study comes from the pilot and main consultant studies; because independently these findings also supported the findings from the case study. So finding the same results from the different data sets and via different research methods suggests there is some consistency in the results.

Enterprise Systems
The research was focussed in the domain of ES and their extensions. So questions may be asked as regards the applicability of the study in the wider context of IT innovations. The research has sought to demonstrate that ES are examples of IT innovations – unique yes, but nevertheless one type of innovation. We now need to test the model fully across other IT innovation settings to fully test this assertion.

Some researchers have suggested that ES benefits perception may change over time
Research from a variety of studies has indicated that Enterprise System benefits perceptions may change over time within an organisation which may well be the case. However, the PhD study was not a longitudinal study, rather the OC-ESS was investigated and explored at a very specific point in time i.e. 2 years past Go Live. By sampling always at this point in the ES lifecycle the effects of potential changes, if any, in the OC-ESS relationship during the normal hectic implementation, would be minimalised. Future research will be to study the OC-ESS relationship over a period of time and at different points in an implementation. The purpose of the PhD study however was not to investigate the OC-ESS relationship over time.
9.8. Conclusions and Research Contributions

The research project has been an exploratory journey that sought to investigate a complex research object. However, even though the study was exploratory in nature, tried and tested, rigorous research approaches were adopted and followed in order to pursue a strong and robust program of study.

The research was a multi-method study, purposefully selected to be multi-method, in order to capture and explore as many of the dimensions of the relationship as possible. Identified, established and validated instruments were adopted where appropriate and established qualitative methods undertaken to ensure that the study was strong in design and approach.

The research has made a significant contribution to the body of knowledge in that it is the first to explore the Organisational Culture – Enterprise System Success relationship. This study has shown that such a relationship exists and has identified key elements of that relationship. The key behaviours of success were found to be the ‘Development of Others’, effective control and effective coordination. The key behavioural barriers to success were found to be ineffective control, ineffective coordination and strong internal competitiveness. The literature emphasises the need for continuous improvement, flexibility, and innovation, but this culture type, Adhocracy in the OCAI was not reported as found in either the successful or least successful organisations in their perception of Enterprise Systems Success. This latter observation should stimulate further studies in determining the frequency of occurrence of this culture type in those organisations which use Enterprise Systems.

The research outputs will have implications for both practice and research and point the way for future work to be undertaken.

I have personally gained skills in designing research, conducting case study research, undertaking qualitative research and application of quantitative methods. The PhD journey has been challenging but enormously rewarding and I have very much enjoyed the experience of becoming a researcher. I look forward to continuing the work that the PhD study has begun and the moving on the next phase of the research.
The work will now continue to build testable hypothesis and to further develop and test the model that has been developed.
Reference List


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Davey, K., & Symon, G. (2001). Recent Approaches to the Qualitative Analysis of Organizational Culture. In C. Cooper, S. Cartwright & P. C. Earley (Eds.), The International Handbook of Organizational Culture & Climate. London: Wiley & Sons Ltd.


References:


Kaplan, B. (c2006). Combining qualitative and quantitative methods in IS in healthcare revisited. In T. Spil & R. Schuring (Eds.), E-health systems diffusion and use: the innovation, the user and the Use IT model (pp. xvi, 342 p.:). Hershey :: Idea Group,.


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### Appendix 3.0 Authors & Ideologies

A summary of some of the prominent authors and the dominant ideologies is shown below:

<table>
<thead>
<tr>
<th>Types of Organisational Cultures</th>
<th>Dominant Ideologies</th>
<th>Authors</th>
</tr>
</thead>
</table>
| 9 Point Instrument to measure 'climate' | Structure (rules and regulations vs informality)  
Responsibility (the feeling of being your own boss; not having to double check all your decisions)  
Rewards (positive rewards vs punishment; perceived fairness of pay and promotion)  
Risk (calculated risk vs playing it safe)  
Warmth (a feeling of good fellowship and helpfulness)  
Support (mutual support from above and below)  
Standards (emphasis of management on high standards of excellence)  
Conflict (management is not afraid of different opinions; emphasis placed on settling differences here and now)  
Identity (feelings of involvement in and belonging to an organisation) | Litwin & Stringer, 1968 |
<p>| Type A                           | Hierarchical control, high specialization, short term employment, individual responsibility | Ouchi and Jaeger, 1978 |
| Type J                           | Clan Control, low specialization, life time employment, collective responsibility, collective decision making | Ouchi 1981 |
| Type Z                           | Clan Control, moderate specialization, long term employment, individual responsibility, consensual decision making | Ouchi 1981 |
| Process                         | Low risk, tight hierarchy, ‘cover your ass’ mentality                                 | Deal &amp; Kennedy, 1982 |
| Tough-guy-Macho                 | High Risk, quick feedback, fluctuating structure.                                    |                                            |
| Work hard-Play hard             | Moderately low risk, race to the quick, flexible structure                            |                                            |
| Bet your company                | Very high risk, slow feedback, clear cut hierarchy                                    |                                            |
| Sensation-thinking              | Impersonal, abstract, certainty, specificity, authoritarian                            | Mitroff &amp; Kilmann, 1975                   |
| Intuition-thinking              | Flexible, adaptive, global notions, goal driven                                       |                                            |
| Intuition-feeling               | Caring, decentralised, flexible, no explicit rules or regulations                     |                                            |
| Sensation-feeling               | Personal, homelike, relationship driven, non bureaucratic                             |                                            |
| Apathetic                       | Demoralizing and cynical orientation                                                  | Sethia &amp; Von Gilnow, 1985                 |
| Caring                          | High concern for employees, no high performance expectations                           |                                            |
| Exacting                        | Performance and success really count                                                  |                                            |
| Integrative                     | High concern for employees with high concern for performance                           |                                            |</p>
<table>
<thead>
<tr>
<th>Types of Organisational Cultures</th>
<th>Dominant Ideologies</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paranoid</td>
<td>Fear, distrust, suspicion</td>
<td>Kets de Vries &amp; Miller, 1984</td>
</tr>
<tr>
<td>Avoidant</td>
<td>Lack of self confidence, powerlessness, inaction</td>
<td></td>
</tr>
<tr>
<td>Charismatic</td>
<td>Drama, power, success, abject followership</td>
<td></td>
</tr>
<tr>
<td>Bureaucratic</td>
<td>Compulsive, detailed, depersonalised, rigid</td>
<td></td>
</tr>
<tr>
<td>Schizoid</td>
<td>Politicised, social isolation</td>
<td></td>
</tr>
<tr>
<td>The Family</td>
<td>A highly personal but hierarchical and power oriented culture. It displays a highly paternalistic attitude towards its employees and their welfare and gives a low priority to efficiency but a high priority to effectiveness</td>
<td>Trompenaars, 1993</td>
</tr>
<tr>
<td>The Eiffel Tower culture</td>
<td>A highly structured culture with a bureaucratic division of labour and roles. The logic of subordination is clearly rational and coordinative and is manifested in rules.</td>
<td></td>
</tr>
<tr>
<td>The Guided Missile culture</td>
<td>This culture differs from the previous two in that it is egalitarian. It is also impersonal and highly task oriented. Its members tend to be intrinsically motivated by their enthusiasm for the task.</td>
<td></td>
</tr>
<tr>
<td>The Incubator culture</td>
<td>The basis of this culture is its minimal structure. Its belief being that, if organisations are to be tolerated at all, they should exist as incubators for self expression and self fulfillment.</td>
<td></td>
</tr>
<tr>
<td>Artefacts &amp; Symbols</td>
<td>The visible products of a culture</td>
<td>Schein, 1985</td>
</tr>
<tr>
<td>Patterns of Behaviour</td>
<td>The socially shared rules and norms/concrete actions</td>
<td></td>
</tr>
<tr>
<td>Values &amp; Beliefs</td>
<td>Which underlie these actions</td>
<td>Denison, 1990</td>
</tr>
<tr>
<td>Basic Assumptions</td>
<td>About the world and how it is, which unconsciously underpin the other three levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cultural artefacts include:-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical setting and layout</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product and company literature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Press Releases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Company slogans and rituals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>In House journals and manuals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The presence/absence of organisational charts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stories, myths and other critical incidents which have become part of organisational folklore</td>
<td></td>
</tr>
</tbody>
</table>
### Types of Organisational Cultures

<table>
<thead>
<tr>
<th>Practices</th>
<th>Dominant Ideologies</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Words, gestures, pictures and objects that carry a particular meaning</td>
<td>persons (real or imaginary) who possess characteristics highly prized in the culture</td>
<td>Hofstede, 1990</td>
</tr>
<tr>
<td></td>
<td>collective activities that are technically superfluous but are socially essential Core of Culture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>broad, non specific feelings of good and evil, normal and abnormal, rational &amp; irrational.</td>
<td></td>
</tr>
<tr>
<td>Within Practices Hofstede found 6 independent dimensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P1 = Process Orientated vs Results Orientated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2 = Employee Orientated vs Job Orientated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P3 = Parochial vs Professional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P4 = Open System vs Close System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P5 = Loose Control vs Tight Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P6 = Normative vs Pragmatic (Customer Orientation)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Hierarchy Culture

- Formalised and structured place to work. Control fosters efficiency, timeliness and smooth functioning.
- Organisation functions as a market itself, Competition fosters productivity, market share, goal achievement, external focus.
- Family type organisation, participation fosters commitment, cohesion, Parent/Mentor leader type.

### Market Culture

- Temporary specialised, dynamic, innovativeness fosters new resources, cutting edge output, visionary, entrepreneurial leader type.

### Clan Culture

- Utilizing the Organisational Culture Assessment instrument, six key dimensions of culture are identified. These six dimensions are
  - Dominant characteristics
  - Organisational leadership
  - Management of employees
  - Organisation glue
  - Strategic emphases
  - Criteria of success

### Adhocracy Culture

- (Quinn & Rohrbaugh, 1983)
- (Cameron & Quinn, 1999)
Appendix 3.1 Components and Instruments of Culture
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

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Appendix 3.4 Hofstede’s Dimensions

Many studies into Culture, in particular National Culture, have utilised either wholly or in part research conducted by Hofstede. It is therefore worth taking a closer look at the dimensions of culture that Hofstede discovered since they had a profound impact on the culture studies that followed.

1. Power Distance

In the 1980 study Hofstede analysed the data collected from the questionnaires and measured the levels of Power Distance as derived from three specific questions in the questionnaire. This gives a Power Distance Index score for a particular country. The PDI calculation uses mean percent values for the three questions, using mean scores on a five point scale (1= very frequently, 5= seldom). The actual calculation gives the country index a value range between zero (small Power distance) and 100 (large Power Distance). Hofstede argues that the PDI is a measure of values found in an organisation or its subsidiaries and some of the scenarios for PDI differences are shown below:-

<table>
<thead>
<tr>
<th>Low PDI Countries</th>
<th>High PDI Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Managers seen as making decisions after consulting with subordinates</td>
<td>A. Managers seen as making decisions autocratically and paternalistically</td>
</tr>
<tr>
<td>B. Employees less afraid of disagreeing with their boss</td>
<td>B. Employees fear to disagree with their boss</td>
</tr>
<tr>
<td>C. Employees show more cooperativeness</td>
<td>C. Employees reluctant to trust each other</td>
</tr>
<tr>
<td>D. Close supervision negatively evaluated by subordinates</td>
<td>D. Close supervision positively evaluated by subordinates</td>
</tr>
</tbody>
</table>

In conclusion, Hofstede’s study showed that power distance between B and S is to a considerable extent determined by their national culture.

2. Uncertainty Avoidance

The second dimension of culture that Hofstede found in the data was Uncertainty Avoidance. Uncertainty about the future is a basic fact of human life, which society tries to cope with and future proof against by having such things as laws, religion and technology. Organisations, Hofstede argues, also try to cope with uncertainty, but via technology, rules and rituals. Data from the study showed that the tolerance for uncertainty varies considerably amongst subsidiaries in different countries. Similar to the PDI, three indicators in the questionnaire were used to create an
index, this time to produce an Uncertainty Avoidance Index. The three questions related to rule orientation, employment stability and stress.

Humans live with uncertainty, but perhaps more importantly are conscious of it, extreme uncertainty creates anxiety and society has developed mechanisms to cope with this inherent uncertainty. Different societies however, have adapted to uncertainty in differing ways, transferred and reinforced through family, school and state. Organisations reduce internal uncertainty by the setting rules, rituals and regulations. Uncertainty avoiding rituals in an organisation do not make the future more predictable rather they relieve some of the stress of the uncertainty by giving members a sense of security.

Hofstede defines the main underlying dimension as ‘the tolerance for uncertainty (ambiguity) which can be found in individuals and which leads some individuals in the same situation to perceive a greater need for action for overcoming the uncertainty than others’.

Analysis from the three questions in the questionnaire that relate to rule orientation, employment stability and stress, gives a theoretical UAI value of between -150 (lowest uncertainty avoidance i.e. all think that rules can be broken, no one wants to stay and no one ever feels nervous) to 230 (highest uncertainty avoidance i.e. all think that rules should not be broken, everyone wants to stay more than five years and everyone always feels nervous). Some of the connotations of UAI differences in the study are shown below:-

<table>
<thead>
<tr>
<th>Low UAI Countries</th>
<th>High UAI Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Greater readiness to live by the day</td>
<td>A. More worry about the job</td>
</tr>
<tr>
<td>B. Preference for smaller organisations as employers</td>
<td>B. Preference for larger organisations as employers</td>
</tr>
<tr>
<td>C. Hierarchical structures of organisations can be</td>
<td>C. Hierarchical structures of organisations should</td>
</tr>
<tr>
<td>by-passed for pragmatic reasons</td>
<td>be clear and respected</td>
</tr>
<tr>
<td>D. Conflict in organisations is natural</td>
<td>D. Conflict in organisations is undesirable</td>
</tr>
</tbody>
</table>

In consequence for cultures, a greater need for uncertainty avoidance should lead to greater formalization, specialization and standardization, in lower UAI countries managers will be less inclined to want to view the fine detail, wishing instead to engage in more strategic activities.

3. Individualism v's Collectivism

The third dimension of culture is Individualism; this dimension describes the relationship between the individual and the collectivity and is reflected in the way
that people live together in societies. High IDV countries place importance on time for personal life whilst low IDV countries place importance on being trained by the company, Hofstede also found that the Individualism Index is negatively correlated to the Power Distance Index.

Whilst it is generally accepted that humans are social animals, the data suggested that different societies show differing degrees of gregariousness. The relationship between the individual and the collectivity in human society is linked to societal norms and affects the structure and functioning of many organisations and institutions in the society. Throughout much of this analysis there is a perception that Western societies are generally more individualistic than many Eastern cultures. Hofstede considers that the norm prevalent in a society regarding the degree of individualism/collectivism will strongly affect the relationship between a person and the organisation to which they belong. The level of individualism/collectivism will influence a member’s reason for complying with the organisational requirements.

The IDV values have a theoretical minimum of zero (high collectivism) and a max value of 100 (high individualism). The highest IDV values were found in the USA, Australia and UK whilst the lowest scores were found in Venezuela, Columbia and Pakistan, mid range were Germany, Austria and Spain. IDV manifests itself in various way, for example:-

<table>
<thead>
<tr>
<th>Low IDV Countries</th>
<th>High IDV Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Emotional dependence on the company</td>
<td>A. Emotional independence from the company</td>
</tr>
<tr>
<td>B. Moral involvement with the company</td>
<td>B. Calculative involvement with the company</td>
</tr>
<tr>
<td>C. Group decisions are considered better than individual decisions</td>
<td>C. Individual decisions are considered better than group decisions</td>
</tr>
<tr>
<td>D. More importance attached to training and use of skills in jobs</td>
<td>D. More importance attached to freedom and challenge in jobs</td>
</tr>
</tbody>
</table>

With regard to organisations, there are therefore consequences to having different IDV levels. In low IDV societies members will consider the organisation as being part of an extended family or clan to which they belong. In high IDV societies members will expect to remain emotional independent from the organisation.

4. Masculinity vs Femininity

The fourth dimension that Hofstede identified is that of Masculinity and its opposing value, Femininity. Hofstede argues that the duality of the sexes is fundamental to all societies. Hofstede states that, ‘the predominant socialization pattern is for men to
be more assertive and for women to be more nurturing. In organisations, there is a relationship between the perceived goals of the organisation and the career possibilities for men and women'. Hofstede bases much of his argument for this dimension on the work of Chetwynd, who is quoted as, 'the sex role system is at the core of our cultural norms,' (Chetwynd & Hartnett, 1978:3). Hofstede also subscribes to a widely held belief in anthropology and psychology fields that there is a pattern of male assertiveness and female nurturance which tends to male dominance in many areas of politics, economy and religion.

A factor score on the 40 countries in the study, that considers masculine or feminine goals, was used as the basis of the Masculinity Index (MAS). The MAS measures the extent to which respondents tend to endorse goals usually more popular amongst men (high MAS score) or amongst women (low MAS score). Countries with a low score (feminine) in the study were Sweden 5, Norway 8 and the Netherlands 14 and countries with high MAS score (masculine) were Japan 95, Austria 79 and Venezuela 73.

<table>
<thead>
<tr>
<th>Low MAS Countries</th>
<th>High MAS Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Belief in group decisions</td>
<td>A. Belief in the independent decision maker</td>
</tr>
<tr>
<td>B. Managers relatively less interested in leadership, independence and self realization</td>
<td>B. Managers have leadership, independence and self realization ideal</td>
</tr>
<tr>
<td>C. Lower job stress</td>
<td>C. Higher job stress</td>
</tr>
<tr>
<td>D. Managers have a more service ideal</td>
<td>D. Managers relatively less attracted by service role</td>
</tr>
</tbody>
</table>

The study confirmed that the impact of the differences in masculinity/femininity in societies can be very large and pervade all aspects of a society’s makeup.

5. Long v’s Short term orientation

The fifth dimension Hofstede found in a study among students in 23 countries around the world, using a questionnaire designed by Chinese scholars it deals with Virtue regardless of Truth. Values associated with Long Term Orientation are thrift and perseverance; values associated with Short Term Orientation are respect for tradition, fulfilling social obligations, and protecting one's 'face'. Both the positively and the negatively rated values of this dimension are found in the teachings of Confucius, the most influential Chinese philosopher who lived around 500 B.C.; however, the dimension Hofstede also applies to countries without a Confucian heritage (Hofstede, 1991).
## Appendix 3.5. Instruments Measuring Organisational Culture

The following table is a summary of some of the instruments that have been identified in the academic literature as purporting to measure dimensions of national and/or Organisational Culture.

<table>
<thead>
<tr>
<th>Research Approach</th>
<th>Date of</th>
<th>Author</th>
<th>Instrument Tools</th>
<th>Instrument</th>
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<tbody>
<tr>
<td>Qualitative</td>
<td>1982</td>
<td>Deal &amp; Kennedy</td>
<td>Co Literature</td>
<td>Organisational History</td>
</tr>
<tr>
<td></td>
<td>1985</td>
<td>Schein</td>
<td>Interviews</td>
<td>Qualitative Methods</td>
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<td></td>
<td>1993</td>
<td>Hansen &amp; Kahnweiler</td>
<td>Interviews &amp; Documentation</td>
<td>Story Analysis</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>Silvester</td>
<td>Interviews</td>
<td>Attribution Analysis</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>Rowlinson &amp; Hassard</td>
<td>Interviews</td>
<td>Organisational History</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>Gamble &amp; Gibson</td>
<td>Interviews</td>
<td>Discourse Analysis</td>
</tr>
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<td></td>
<td>2000</td>
<td>Johnson</td>
<td>Focus Groups</td>
<td>Focus Groups</td>
</tr>
<tr>
<td>Quantitative</td>
<td>1968</td>
<td>Litwin &amp; Stringer</td>
<td>Questionnaire</td>
<td>9 Point Instrument to</td>
</tr>
<tr>
<td></td>
<td>1980</td>
<td>Hofstede</td>
<td>Questionnaire</td>
<td>Values Survey Module</td>
</tr>
<tr>
<td></td>
<td>1983</td>
<td>Quinn and Rohrbaugh</td>
<td>Questionnaire</td>
<td>OCAI</td>
</tr>
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<td></td>
<td>1983</td>
<td>Cooke &amp; Lafferty</td>
<td>Questionnaire</td>
<td>OCI</td>
</tr>
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<td></td>
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<td>Reynolds</td>
<td>Questionnaire</td>
<td>Four Part Questionnaire</td>
</tr>
<tr>
<td></td>
<td>1990</td>
<td>O’Reilly, Chatman &amp;</td>
<td>Questionnaire</td>
<td>OCP - Organisational Culture Survey</td>
</tr>
<tr>
<td></td>
<td>1990</td>
<td>Denison</td>
<td>Questionnaire</td>
<td>Organisational Culture Survey</td>
</tr>
<tr>
<td></td>
<td>1990</td>
<td>Caldwell &amp; Chapman</td>
<td>Questionnaire</td>
<td>16 item Questionnaire</td>
</tr>
<tr>
<td></td>
<td>1993</td>
<td>Trompenaars</td>
<td>Questionnaire</td>
<td>16 Item Instrument</td>
</tr>
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<td></td>
<td>1995</td>
<td>House et al</td>
<td>Questionnaires</td>
<td>GLOBE</td>
</tr>
<tr>
<td></td>
<td>1996</td>
<td>Goffee &amp; Jones</td>
<td>Questionnaire</td>
<td>questionnaire</td>
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<td>1999</td>
<td>Carroll &amp; Harrison</td>
<td>Simulation</td>
<td>Model</td>
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<td>1990</td>
<td>Hofstede</td>
<td>Interviews</td>
<td>Values Survey Module</td>
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<tr>
<td></td>
<td>1994</td>
<td>Gundry &amp; Rousseau</td>
<td>Critical Incidents interviews</td>
<td>Critical Incidents</td>
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<td></td>
<td>1995</td>
<td>Denison</td>
<td>Questionnaire</td>
<td>Case Study &amp; Survey</td>
</tr>
<tr>
<td></td>
<td>1997</td>
<td>Langan-Fox &amp; Tan</td>
<td>Interviews</td>
<td>Repertory Grid</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>Homburg &amp; Pfleffer</td>
<td>Questionnaire</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3.6 Studies into Culture and Information Systems Research

A few researchers over the last decade have attempted to understand the role that culture plays in the use of IS within organisations. The vast majority of these studies have relied solely upon Hofstede’s national culture dimensions and have paid little heed to other models and views of culture other than those of Hofstede. (Myers & Tan, 2002) presented a summary of IS research that has been published over the last decade or so involving the study of culture and IS. As already discussed, Hofstede’s dimensions, whilst still valid and helpful in studying the culture phenomenon, do have weaknesses. Yet researchers have still attempted to rely upon these dimensions in their research, coupled with our thoughts on the limitations of the Hofstede model, it brings into question the validity of research based upon a total reliance on Hofstede’s dimensions of culture in IS research. A summary table of research into IS is shown below:-

<table>
<thead>
<tr>
<th>Authors</th>
<th>Cultural Dimensions Explored</th>
<th>Topics Studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burn, Saxena, Ma, &amp; Cheung</td>
<td>Individualism, Uncertainty Avoidance, Power Distance &amp; Masculinity</td>
<td>IS and Culture – top management issues in HK</td>
</tr>
<tr>
<td>(1993)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumming &amp; Guynes (1994)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance &amp; Masculinity</td>
<td>HQ versus subsidiaries</td>
</tr>
<tr>
<td>Ein-Dor, Segev &amp;Orgad (1993)</td>
<td>Economic, Demographic &amp; Socio-psychological</td>
<td>Effect of National Culture on IS</td>
</tr>
<tr>
<td>Garfield &amp; Watson (1998)</td>
<td>Uncertainty Avoidance, Power Distance</td>
<td>Impact of national culture on national information infrastructure</td>
</tr>
<tr>
<td>Harvey (1997)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance &amp; Masculinity,</td>
<td>Comparing GIS designs and implementation between USA &amp; Germany</td>
</tr>
<tr>
<td></td>
<td>Ethnographic approach</td>
<td></td>
</tr>
<tr>
<td>Hasan &amp; Ditsa (1999)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity,</td>
<td>National culture and the adoption of IT</td>
</tr>
<tr>
<td></td>
<td>Time Orientation, Context, Mono/Polymorphic, Mono/Polychrony</td>
<td></td>
</tr>
<tr>
<td>Hill, Loch, Straub &amp; El-Sheshai</td>
<td>Critical approach – no predefined cultural dimensions tested</td>
<td>IT transfer in Arab culture</td>
</tr>
<tr>
<td>Hofstede (2000)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity</td>
<td>Effects of differences in national culture within MNC’s</td>
</tr>
<tr>
<td>Hunter &amp; Beck (2000)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity</td>
<td>Cultural differences in the perception of the qualities of excellent systems analysts</td>
</tr>
<tr>
<td>Keil, Mixon, Saarinem &amp; Tuunainen (1995)</td>
<td>Uncertainty Avoidance</td>
<td>Effect of national culture on escalating commitment to IT</td>
</tr>
</tbody>
</table>
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

<table>
<thead>
<tr>
<th>Authors</th>
<th>Cultural Dimensions Explored</th>
<th>Topics Studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lally (1994)</td>
<td>Individualism</td>
<td>Emerging technologies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Authors</th>
<th>Cultural Dimensions Explored</th>
<th>Topics Studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mcleod et al (1997)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance</td>
<td>Views of CIO roles and IRM process</td>
</tr>
<tr>
<td>Mejias, Shepherd, Vogel &amp; Lazaneo (1997)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity</td>
<td>Perceived satisfaction and consensus levels in GSS/non GSS</td>
</tr>
<tr>
<td>Menou (1983)</td>
<td>Objective/Subjective</td>
<td>Impact of culture on information generation, presentation and use</td>
</tr>
<tr>
<td>Milberg, Burke, Smith &amp; Kallman (1995)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance</td>
<td>Information privacy and culture</td>
</tr>
<tr>
<td>Niederman (1997)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance</td>
<td>Comparing US and Mexican GSS facilitators views</td>
</tr>
<tr>
<td>Palvia &amp; Hunter (1996)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity</td>
<td>IS Development methods</td>
</tr>
<tr>
<td>Png, Tan &amp; Wee (Forthcoming)</td>
<td>Uncertainty Avoidance, Power Distance</td>
<td>Culture and corporate adoption of IT infrastructure</td>
</tr>
<tr>
<td>Robey &amp; Rodriguez-Dias (1989)</td>
<td>Culture in general</td>
<td>MNC implementation in Latin America</td>
</tr>
<tr>
<td>Shore &amp; Venkatachalam (1994)</td>
<td>Power distance &amp; Uncertainty Avoidance</td>
<td>Cross culture transfer of IS applications</td>
</tr>
<tr>
<td>Straub (1994)</td>
<td>Uncertainty Avoidance &amp; Language style</td>
<td>Diffusion of IT across cultures</td>
</tr>
<tr>
<td>Tan et al (1995)</td>
<td>Power Distance</td>
<td>GSS to dampen power distance effects</td>
</tr>
<tr>
<td>Tan, Wei, Watson, Clapper &amp; McLean (1998)</td>
<td>Individualism</td>
<td>National culture, majority influence and computer mediated communication</td>
</tr>
<tr>
<td>Trauth (2001)</td>
<td>Ethnographic Approach</td>
<td>Influences and impacts of Cultural, economic and political factors in the Republic of Ireland</td>
</tr>
<tr>
<td>Trauth &amp; Thomas (1993)</td>
<td>Bottom Up/top down</td>
<td>Global EDI</td>
</tr>
</tbody>
</table>

Appendices: A-13
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

<table>
<thead>
<tr>
<th>Authors</th>
<th>Cultural Dimensions Explored</th>
<th>Topics Studied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tricker (1988)</td>
<td>Family Orientation</td>
<td>Cross Cultural information resource management</td>
</tr>
<tr>
<td>Walczuch, Singh &amp; Palmer (1995)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity</td>
<td>Cultural motivations for trans border data flow legislation</td>
</tr>
<tr>
<td>Watson &amp; Bracheau (1991)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity</td>
<td>Key issues in IS management</td>
</tr>
<tr>
<td>Watson et al (1994)</td>
<td>Individualism &amp; Power Distance</td>
<td>Culture as a 4th dimension of GSS</td>
</tr>
<tr>
<td>Watson, Kelly, Galliers &amp; Bracheau (1997)</td>
<td>Individualism, Uncertainty Avoidance, Power Distance, Masculinity</td>
<td>Concerns of IS executives across nations</td>
</tr>
</tbody>
</table>

IS research on national cultures (adapted from Myers & Tan (2002))
Appendix 4.1 Interview Protocols for Participants

Demographic Data Collected

<table>
<thead>
<tr>
<th>Contact Type:</th>
<th>Consulting Firm:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit:</td>
<td>Site:</td>
</tr>
<tr>
<td></td>
<td>(place)</td>
</tr>
<tr>
<td></td>
<td>Today’s Date:</td>
</tr>
<tr>
<td>Phone:</td>
<td>Written by:</td>
</tr>
<tr>
<td></td>
<td>(with whom)</td>
</tr>
</tbody>
</table>

Demographics

IC’s Name: __________________________

Position Title: __________________________

No. of Years experience as an IC/CC/VC (yrs)

Due to ethical requirements – all data was subsequently de-identified post interview to maintain participant and organizational anonymity.
Appendix 4.2 Pre Interview Instruments

ES use proceeds along various stages and can be categorised along the phases such as those shown below.

<table>
<thead>
<tr>
<th>Beginning</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Final Desired End State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Adopt</td>
<td>Implement</td>
<td>Embed</td>
<td>Exploit</td>
</tr>
<tr>
<td>Choice of IT Innovation made</td>
<td>Rolling out the technical solution</td>
<td>Using the intended functionality as planned, achieving goals articulated in the business case. Adaptation of the innovation by adapting the- IS to the Business needs</td>
<td>Extending the functionality in innovative ways achieving strategic value</td>
<td></td>
</tr>
<tr>
<td>or Business needs to the IS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Thinking about the above phases, consider four (4) examples of extended ES implementations or use that you have been involved with.

These four examples should represent what you consider to be the two (2) most successful examples of an IT innovation and the two (2) least successful examples of the use of an IT Innovation. The example organizations should be at least two years out from implementation and you must have been actively involved with the organization since that time.

Summary of Criteria Selection

The innovation that you consider for your example should meet following criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have been in regular contact</td>
<td>☐</td>
</tr>
<tr>
<td>Go Live more than 2 years ago</td>
<td>☐</td>
</tr>
<tr>
<td>Context of extended ES</td>
<td>☐</td>
</tr>
</tbody>
</table>
The next section contains reflective questions for you to use in considering each case. Please complete these forms and give the completed forms to the researcher during the interview. Please do not name the organisations on which you are reflecting.

Please add additional comments if you like and attach to the data collection form.
Example One: Successful ES IT Innovation

<table>
<thead>
<tr>
<th>Stage of Success Reached</th>
<th>Adopt</th>
<th>Implement</th>
<th>Embed</th>
<th>Exploit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe the innovation that you consider successful:</td>
<td>Adapt IS to business</td>
<td>Business to IS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have been in regular contact</td>
</tr>
<tr>
<td>Go Live more than 2 years ago</td>
</tr>
<tr>
<td>Context of extended ES</td>
</tr>
</tbody>
</table>

What are the characteristics of this organization’s success with this innovation?

What elements of organizational culture have contributed to this success?

What other factors have influenced the success of the innovation?
Informed Consent Form (To be completed by each participant in the study)

Organizational Culture and ES Success
IT Professional Services
Faculty of IT, QUT
Level 5, 126 Margaret St
Brisbane, 4000
AUSTRALIA

Ph: +61 7 3864 9477
Fax: +61 7 3864 9390
Email: p.birbeck@qut.edu.au

Glenn Stewart
Associate Professor
Peter Birbeck
Researcher

Statement of Consent

By signing below, you are indicating that you:

• have read and understood the information sheet about this project;
• have had any questions answered to your satisfaction;
• understand that if you have any additional questions you can contact the research team;
• understand that you are free to withdraw at any time, without comment or penalty;
• understand that you can contact the research team if you have any questions about the project, or the Research Ethics Officer on 3864 2340 if you have concerns about the ethical conduct of the project; and
• Agree to participate in the project.

Name

________________________________________

Signature

________________________________________

Date

______ / ______ / ______
Appendix 4.3 Interview Questions and Script

The interview will be between 45 mins to 60 mins duration and seeks to gain answers to the following questions:-

How do you recognise a successful IT Innovation?

Topic: View of Success

Describe an ES innovation that worked well

Describe the organization that has incorporated this innovation

What was their principle measurement of the success of the system?

With this organization in mind, describe its culture

Describe the relationship between organizational culture and the innovation you have given.

How has Organizational Culture influenced the success of the ES innovation

Topic: View of Least successful

Describe an ES innovation that did not work well

Describe the organization that has incorporated this innovation

What was their principle measurement of the success of the system?

With this organization in mind, describe its culture

Describe the relationship between organizational culture and the innovation you have given.

Topic: Heterogeneous Example

Many organizations typically have culturally diverse groups. Within the organizations you have dealt with can you describe such culturally diverse groups? Have you noticed any of these groups within these organisations using the Innovation successfully whilst other groups of the organization are using the Innovation unsuccessfully? Please describe a specific incident that demonstrates any variation.

Topic: Concluding

What factors do you think might have led have led to differences in successful utilisation of the target innovation?
What role do you think organizational cultural differences play in successful use of an ICT innovation?

Which other organizational factors do you think have influenced the successful/unsuccessful adoption of these IT innovations?

Describe the perfect supportive organizational culture for achieving success with ICT innovations.
Appendix 4.4 Field Protocols

Field Procedures

1.1. Initial Scheduling of Field Visits
The pilot field study took place during September/October 2004. The remaining fourteen interviews were completed during 2005.

1.2. Determination of Organizations to Participate in the Study
The study was exploratory in nature. In order to capture as many of the experiences of the OC-ESS relationship as possible, it was identified that the Consultant groups should be drawn from as wide a base of experience as possible. Interviewing experienced consultants with very broad industry experience, across a range of ES innovations with differing degrees of ES success provided the greatest breadth of opportunity to explore the OC-ESS relationship.

Approaches were therefore made to larger consulting firms, client organizations and vendor firms, practising in cross industry environments. Large international consulting firms have wide experiences of successful/less successful ES in a range of industries; large client organizations have experience of ES operating across different business units.

1.3. Approaches to Target Organizations
Letters of introduction were sent out to the selected consulting firms during August 2004, with a view to making telephone contact leading to face to face interviews.

1.4. Number of Consultants to be interviewed
Min 15; Max 20
Initial pilot of six interviews, after which the protocol was revised and small changes made prior to the second full round of interviews in 2005.

1.5. Length of interview time required with Consultants
Up to 60mins
Appendix 4.5 Confidentiality and Ethical Clearance

Statement given to research participants

Confidentiality
Only the research team will have access to the information that you provide. The interview tapes will be transcribed and any identifiers to yourself, your firm and the example organizations that we discuss in the interview will be removed. Once the interview tapes have been transcribed, the tapes themselves will be destroyed.

Your anonymity and confidentiality will be further safeguarded in any publication of the results of this research, through the use of pseudonyms and aliases. The survey instruments do not collect any personally identifiable information.

Personal Information
Storage - In light of the above, no personal information will be stored after the study has been completed. During the study information will be stored in a secure location at QUT’s Centre for Information Technology Innovation.

Publication & Reporting of Results - Participants will not be identifiable in any publication of results, or the reporting of results to a third party.

Information Category - De-identified (not re-identifiable, anonymous) - The research results, and in particular the interview transcripts, will be subject to a process of de-identification in order to protect your identity, your firm for which you work and the examples that are discussed during the interview.

Voluntary participation
Your participation in the project is totally voluntary and any subsequent decision to withdraw from the project will involve no penalty or loss of benefits to which you would otherwise be entitled. You may discontinue participation at any time without comment or penalty.

Inducements
In order to express our thanks for participating in this research we will provide to each consultant 6 mixed wines as a gift for completing the interviews, surveys and instruments.

Questions/Further information
If you have any question, queries or require further information regarding any aspect of the research please contact the researchers on:

<table>
<thead>
<tr>
<th>Dr Glenn Stewart</th>
<th>Peter Birbeck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate Professor</td>
<td>Researcher</td>
</tr>
<tr>
<td>QUT</td>
<td>QUT</td>
</tr>
<tr>
<td>Centre for Information Technology Innovation</td>
<td>Centre for Information Technology Innovation</td>
</tr>
<tr>
<td>Faculty of Information Technology</td>
<td>Faculty of Information Technology</td>
</tr>
<tr>
<td>Phone: 07 3864 9480</td>
<td>Phone: 07 3864 9477</td>
</tr>
<tr>
<td>Mobile 0417 761 501</td>
<td>Mobile 0412 513 261</td>
</tr>
<tr>
<td>Email: <a href="mailto:g.stewart@qut.edu.au">g.stewart@qut.edu.au</a></td>
<td>Email: <a href="mailto:p.birbeck@qut.edu.au">p.birbeck@qut.edu.au</a></td>
</tr>
</tbody>
</table>

Concerns/Complaints
This research protocol has been approved by the QUT University Research Ethics Committee. Any concerns regarding this study can be directed to the University Research Ethics Officer, Wendy Heffernan at (07) 3864 2340, w.heffernan@qut.edu.au.
Appendix 4.6 Survey Questionnaire
Appendix 7.2 OCAI Plots per Location for Case Study
Appendix 7.3 Histograms of Survey Responses by ES Success Item

II across All Responses

Mean = 5.42
Std. Dev. = 0.886
N = 25

OI across All Responses

Mean = 4.9076
Std. Dev. =
N = 23
Exploring the Relationship of Organisational Culture to Enterprise Systems Success

IQ Across All Respondents

- Frequency distribution
- Mean: 4.9679
- Standard Deviation: 1.42441
- N: 26

SQ Across All Responses

- Frequency distribution
- Mean: 4.9324
- Standard Deviation: 1.01213
- N: 23
Appendix 7.4 Response Rate by BU & GU

The overall response rates by Business Unit and by Geographic Unit are shown in the tables below.

<table>
<thead>
<tr>
<th>By Business Unit</th>
<th>Frequency (f)</th>
<th>By Geographic Unit</th>
<th>Frequency (f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT</td>
<td>2</td>
<td>Koroit</td>
<td>1</td>
</tr>
<tr>
<td>Operations</td>
<td>13</td>
<td>Maffra</td>
<td>1</td>
</tr>
<tr>
<td>Shipping</td>
<td>3</td>
<td>Rochester</td>
<td>2</td>
</tr>
<tr>
<td>Finance</td>
<td>6</td>
<td>Leongatha</td>
<td>5</td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
<td>3</td>
<td>Cobram</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Head Office</td>
<td>11</td>
</tr>
<tr>
<td>Sum (Σ)</td>
<td>27</td>
<td>Sum (Σ)</td>
<td>27</td>
</tr>
</tbody>
</table>
Appendix 7.5 ES Success Categories

The mean ESS score for all respondents was 5.12. However when the individual cohort categories are analysed the results show differing levels of ES success across the various Business Units, Roles and Geographic Units.

The overall ESS score varies as do the individual item scores across the Units.

### ES Success by Geographic Unit

<table>
<thead>
<tr>
<th>Geographic Unit</th>
<th>Overall Score</th>
<th>OI</th>
<th>II</th>
<th>SQ</th>
<th>IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maffra</td>
<td>5.48</td>
<td>5.63</td>
<td>6.00</td>
<td>4.78</td>
<td>5.50</td>
</tr>
<tr>
<td>Rochester</td>
<td>5.47</td>
<td>5.06</td>
<td>5.75</td>
<td>5.38</td>
<td>5.66</td>
</tr>
<tr>
<td>Leongatha</td>
<td>5.54</td>
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### ES Success by Business Unit

<table>
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<th>Business Unit</th>
<th>Overall Score</th>
<th>OI</th>
<th>II</th>
<th>SQ</th>
<th>IQ</th>
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<tbody>
<tr>
<td>Operations</td>
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<td>6.18</td>
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<tr>
<td>Sales &amp; Marketing</td>
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## ES Success by Role

<table>
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<tr>
<th>Role</th>
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<th>Individual Item Score</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>OI</td>
<td>II</td>
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<td>Strategic/Senior Manager</td>
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<td>5.44</td>
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<tr>
<td>Middle Manager</td>
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## ES Success by SAP/R3 Modules Used

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<th>Individual Item Score</th>
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<td></td>
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<td>FI-CO</td>
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<td>5.95</td>
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Appendix 7.6 ANOVA Results

**ANOVA Clan on ESS overall**

<table>
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<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
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<td>1.703</td>
<td>2.951</td>
<td>.104(a)</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
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<td>.577</td>
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<td></td>
</tr>
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<td></td>
<td>Total</td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>

a  Predictors: (Constant), ACweight  
b  Dependent Variable: BAllmean

**ANOVA Adhocracy on ESS overall**

<table>
<thead>
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<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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a  Predictors: (Constant), AAweight  
b  Dependent Variable: BAllmean

**ANOVA Market on ESS overall**

<table>
<thead>
<tr>
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<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
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<td>5.460</td>
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<td>Total</td>
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<td></td>
</tr>
</tbody>
</table>

a  Predictors: (Constant), AMweight  
b  Dependent Variable: BAllmean
### ANOVA Hierarchy on ESS overall

**ANOVA(b)**

<table>
<thead>
<tr>
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<th>Sum of Squares</th>
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<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
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</table>

a Predictors: (Constant), AHweight  
b Dependent Variable: BAllmean