Strategies for managing contingent knowledge workers in New Zealand

Adam Donson
Southern Cross University
Strategies for Managing Contingent Knowledge Workers in New Zealand

By

Adam Donson

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Southern Cross University Business School
Attestation of Authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Adam Donson

March 2019
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Abstract

Using the Social Exchange Theory (SET) as a theoretical framework, the present research aims to examine how the appointment of contingent workers affects an organisation's ability to effectively manage knowledge in New Zealand. Another objective is to explore how New Zealand organisations are managing knowledge and knowledge workers. The number of contingent knowledge workers is increasing, but organisations have been slow to adapt their cultures, structures or procedures to maximise the opportunity these workers represent. The relationship between the organisation and contingent knowledge workers is characterised primarily by economic compensation, which does not emphasise trust and commitment, the prerequisites for collaborative knowledge management behaviours.

This is a qualitative study based on data collected through semi-structured interviews with senior and middle managers, human resource management practitioners, and permanent and contract employees located in six case organisations. A total of forty-eight employees were interviewed for this study over a period of three years.

The findings suggest that trust in the organisation has a significant influence on an organisation’s ability to manage knowledge. Trust moderates employee commitment and represents the basis for organisational culture, and as shown by the findings it is cultural elements that support the knowledge creation processes within the SECI model. The findings showed that information and communication technologies (ICTs) not only support Combination, but play an increasing role in Socialisation, Externalisation and Internalisation.

In conclusion, the existence of trust encourages social exchange between individuals and facilitates the sharing and transfer of knowledge. Extending trust towards contingent workers influences their commitment and ensures their inclusion in the knowledge creation process.

This study adds to the knowledge management body of knowledge by considering a distinct, yet increasingly important, segment of the workforce. Existing research focuses on generic knowledge management implementation, but does not consider how this affects different types of worker, such as contingent knowledge workers. There is a need to adapt human resource management practice in relation to the management of contingent workers, so that organisations provide rewards which promote professional commitment. This research also confirms the need to further develop dynamic capabilities for managing knowledge management, and proposes that this responsibility is delegated to those in middle and project management positions. The use of the SECI model (Takeuchi & Nonaka, 2004) to examine
knowledge management practice is shown to be effective, and provides those charged with developing this competence with the means of identifying elements that require attention.

**Keywords:** Commitment, Contingent worker, Knowledge Management, SECI, Social Exchange Theory, Trust
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1 Introduction

According to the Organisation for Economic Co-operation and Development - OECD (2011), the economies in many countries are increasingly dependent on knowledge and information, now recognised as significant contributors to enhanced productivity and economic development. A knowledge-based economy is also dependent on highly skilled workers to support the business and public sectors (Organisation for Economic Co-operation and Development - OECD, 2005). It is proposed that knowledge is now the most important form of capital, supplanting financial and physical assets to represent the most influential element of organisational value (O'Donnell et al., 2001). In a knowledge-based economy, an organisation’s internal capabilities are contingent on knowledge-based assets, individuals in possession of the requisite knowledge. As a consequence, organisational performance and success is dependent on how well these knowledge-based assets are managed (Hamzah & Ismail, 2008).

According to Prusak (2001), organisations have developed knowledge management capability in response to globalisation, accessibility of information and communications technology, and the conceptualisation of the knowledge-centric view of the firm. This changing environment has made it more difficult for organisations to derive competitive advantage from traditional physical and financial assets, therefore knowledge has emerged as an alternative basis for creating and sustaining competitive advantage (Andreu, Baiget & Canals, 2008). The knowledge economy is also characterised by rapid technological and scientific development, and rapid obsolescence (Powell & Snellman, 2004).

Knowledge management studies propose two classes of knowledge, explicit knowledge consisting of facts, rules and instructions in documentary form (electronic and paper), and tacit knowledge that is possessed by individuals and supports their skills and abilities. Explicit knowledge can be shared without need for dialogue, but the transfer of tacit knowledge is dependent on face-to-face contact (Wyatt, 2001). It is suggested that much of the knowledge possessed by organisations only provides the basis for transient competitive advantage, because it can be copied and reproduced in other establishments. However, the development of a knowledge management capability which leverages tacit knowledge can be a source of inimitable competitive advantage (Lubit, 2001). Simply processing knowledge does not ensure strategic advantage, and to achieve competitive advantage knowledge must be managed. According to Massa and Testa (2009, p. 129), the “knowledge that firms acquire
is a dynamic resource that needs to be nourished and managed carefully.” The creation of competitive advantages is dependent on an institution’s ability to create and apply new knowledge effectively and efficiently Zack (1999a). The significance of tacit knowledge and its location within the minds of individuals necessitates examination of how organisations manage their human resources.

A significant proportion of large companies based in the United States, and many in Europe, have implemented some form of knowledge management (Davenport & Völpel, 2001), but Storey and Barnett (2000) suggest that many knowledge management deployments have been unsuccessful, with recorded failure rates exceeding eighty percent. Reasons for these failures were overemphasis on information technology or ill-conceived knowledge management strategies. Ramirez and Nembhard (2004) highlight the lack of universally accepted methods to measure knowledge worker productivity. Matson and Prusak (2006) also suggest that executives have a limited understanding of what is required to support knowledge worker productivity, because the tasks undertaken by these employees are more disparate and unstructured than those carried out by production or clerical staff.

The increasing relevance of knowledge-based assets coincides with structural changes affecting the composition of the workforce and blurring of boundaries separating organisations from one other (Marchington et al., 2005). The shift to more temporary forms of employment represents a significant development, because the number of contingent workers is increasing three to four times faster than traditional workforces. As a result of this trend, the number of contingent workers will increase to 25 percent of the global workforce (Erickson, 2012). This shift is changing the occupational landscape and means employees remain with organisations for shorter periods of time, and in the case of contingent knowledge workers, their commitment to a specific employer may have decreased. This represents a challenge for knowledge management because knowledge sharing behaviour is heavily dependent on affective employee commitment, therefore a reduction in an organisation’s ability to influence affective commitment necessitates alternative approaches for managing contingent knowledge workers. The principal focus of this study is to identify ways in which New Zealand organisations might manage these seemingly incompatible positions.

A recent report analysing global human capital trends emphasised the need to integrate and leverage the part-time and contingent workforce, with a significant number of executives and
human resource leaders (71 %) ranking the trend as important or very important. The study also confirmed that many companies are struggling with the challenge, with only 19 per cent of executives believing their companies understand the employment laws governing contingent workers, and only 11 per cent having complete management processes for the contingent part of their workforce (Deloitte, 2016). Initial enquiry and the researcher’s experience as a contingent worker suggest that organisations need to take a more planned approach to the management of contingent workers.

In the past, contingent work has been associated with unskilled work, providing workers with limited job security, inferior pay and minimal benefits (Kalleberg, Reskin & Hudson, 2000). As a consequence, there is an abundance of literature concerned with lesser-skilled temporary workers, but material relating to more skilled, contingent knowledge workers is less prevalent (Redpath, Hurst & Devine, 2008). However, twenty years ago, Slaughter and Ang (1996) suggested that independent contractors were being increasingly used for complex and technical tasks. Lepak and Snell (1999) also noted that independent contractors are being used to perform tasks that were previously undertaken by permanent members of staff. This trend has continued and accelerated since that time.

1.1 The View from New Zealand

A survey of New Zealand public and private sector organisations suggests the existence of a knowledge management culture, but also concludes that knowledge management practice is immature (McCullough et al., 2004). A lack of resources was identified as a significant barrier to the implementation of knowledge management within these organisations. Although the surveyed organisations acknowledged that knowledge management is a business-focused approach, there was found to be a bias towards the use of information technology for managing knowledge (McCullough et al., 2004). The results of this research are dated, but provide a useful indication of how New Zealand organisations perceive knowledge management, and expose areas to be considered as part of this research.

Employment in knowledge-intensive sectors is growing faster than in the rest of the New Zealand economy, increasing by 28 percent between 2000 and 2008 (from 459,000 to 587,000), compared with 23 per cent employment growth across the rest of the economy over the same period (Department of Labour - DoL, 2009). Further growth in New Zealand’s knowledge economy was recorded between 2008 and 2010, with an additional 137,000
workers joining the sector (Infometrics, 2012). Despite this development, there has been limited research into the composition of the workforce within these industries.

The growth in New Zealand’s knowledge economy has not resulted in any substantial increase in the number of temporary workers. Approximately one in ten workers is employed on a temporary basis, which is below the numbers employed in the United States, Europe and the wider Asia Pacific region. The ten per cent of workforce employed on a non-permanent basis includes different categories of temporary worker, a large proportion of whom are not employed in the knowledge economy, such as casual and seasonal workers. As a contingent knowledge worker, the researcher has been recruited to perform a variety of roles in a number of New Zealand organisations, and has been both a creator and a consumer of knowledge during these periods of employment. There is an expectation that contingent knowledge workers quickly integrate into an organisation and acquire the knowledge they need to complete their work, but in many cases locating this knowledge presents a significant challenge.

1.2 Significance of the Research

Knowledge management has and continues to receive a good deal of attention from academics and professionals, and this has led to the creation of numerous models. A number of these models reflect the multi-disciplinary nature of knowledge management (Kakabadse, Kakabadse & Kouzmin, 2003), which was considered an important attribute when selecting models to investigate knowledge management practice in New Zealand organisations. The creation and sharing of knowledge are fundamental concepts within knowledge management, and the SECI (Socialisation, Externalisation, Combination, Internalisation) model proposed by Takeuchi and Nonaka (2004) provides a means of examining these practices. In addition, the model also considers the role of individuals and groups and the significance of the environment in the creation of knowledge. The SECI model emphasises the need to combine different classes of knowledge (explicit and tacit), and underlines the need for face-to-face interaction in relation to creating and sharing tacit knowledge during the socialisation, externalisation and internalisation stages of the knowledge creation process. However, Takeuchi and Nonaka (2004) acknowledge the utility derived from information technology during combination of types of knowledge, which involves the organisation of explicit knowledge.
Information technologies specifically used to manage an organisation’s knowledge are classed as knowledge management systems. These systems are continuing to evolve, and include data warehouses, databases, decision support programmes, document repositories, groupware, intranets, and text and data mining. More specifically, document repositories support knowledge gathering, data warehouses and databases provide the ability to store knowledge, communication and collaboration technologies support knowledge synthesis, e-mail and message broadcast software support knowledge dissemination and usage, and communication and collaboration technologies enable knowledge synthesis. Information technology is therefore considered essential for carrying out an organisation’s knowledge management (Chuang, Liao & Lin, 2013).

For this study, the need for individuals to share their knowledge guided the selection of SET as the most appropriate theoretical foundation. SET proposes that interactions between individuals are governed by self-interest, whereby the costs and benefits of each exchange are examined so that benefits are maximised and costs are minimised (Molm, 2001). SET posits that people anticipating positive returns are more inclined to share their knowledge, than people who perceive the activity as involving a disproportionate cost. The rule of reciprocity is a prominent concept within SET, because it embodies the expectation that individuals (and organisations) respond favourably to one another by returning benefits for benefits (Okyere-Kwakye & Nor, 2011). In an economic exchange involving an organisation and an employee, money is exchanged for a person’s services, but a social exchange also involves the exchange of more particularistic resources including trust and commitment (Foa & Foa, 1980). It has been suggested that affective commitment is a critical ingredient for knowledge sharing (Jayasingam & Yong, 2013), and that trust between an employee and an organisation has a strong influence on commitment (Dirks & Ferrin, 2002).

This study argues that organisations are not building trusting relationships with their contingent staff (Svensson, 2011), and as a consequence, these employees are not committed to the organisations employing them and are apathetic about engaging in organisational citizenship behaviour (OCB) including knowledge sharing. It is suggested that the exchange of trust for affective commitment affects all classes of employee (permanent and temporary). However, the impermanence of contingent employment contracts and their dependence on precise conditions and explicit financial terms present a barrier to the establishment of trust in and commitment to an organisation. The absence of trust and commitment deters contingent workers from participating in social exchanges, resulting in their performing only the
activities necessary for successful economic exchanges. Economic exchanges do not invoke 
OCBs, so the inability to engage contingent knowledge workers in social exchange 
relationships could discourage these employees from sharing their knowledge.

1.3 Research Questions and Methodology

The considerable body of knowledge management literature integrates different disciplinary 
perspectives including information technology and human resource management. The 
literature makes extensive reference to knowledge creation (Nonaka, 1994), sharing and 
transfer (Davenport & Prusak, 1998), and a significant portion of the study is devoted to 
identifying the mechanisms which induce employees to participate in knowledge 
management activities (Hislop, 2003). These studies place considerable emphasis on 
knowledge creation through the conversion of tacit knowledge into explicit knowledge, but 
they do not differentiate between the categories of employee involved in the sharing and 
transfer of knowledge. As previously suggested, alternative employment arrangements are 
becoming more prevalent, and the context in which knowledge management practices are 
applied is changing. The purpose of this study is to describe how contingent workers 
contribute to knowledge management practice, and distinguish the cultural elements that 
encourage their commitment to and participation in these activities. In realising these 
objectives this thesis describes how New Zealand organisations are currently managing 
knowledge and contingent knowledge workers, and critically evaluate the effectiveness of 
these strategies. The researcher’s experience as a contingent knowledge worker employed by 
New Zealand organisations, and the review of knowledge management literature and related 
research from the human resource management and information technology disciplines, 
prompted five research questions, which are:

**RQ1:** How conscious are those employed in the different case organisations of 
knowledge management theory?

**RQ2:** What are the organisational contexts in which knowledge management practice 
is applied?

**RQ3:** What are the reasons for employing contingent knowledge workers within 
different institutions?

**RQ4:** How are contingent knowledge workers treated by the organisations employing 
them in terms of knowledge sharing and access to organisational resources?
RQ5: Which case organisations recognise contingent knowledge workers as a valued source of know-how?

This research extends existent knowledge management literature by identifying the factors that induce contingent knowledge workers to participate in organisational knowledge management activities. A specific focus is determining the contribution of contingent workers to knowledge management in public and private New Zealand organisations, and how human resource practices relating to rewards and benefits, as well as the application of information and communication technologies, can be configured to assist the knowledge management process.

1.3.1 Methodology

The management of knowledge and contingent knowledge workers in New Zealand organisations represents a complex phenomenon, so the selection of an appropriate research method was a critical decision. Appraisal of possible ontological and epistemological positions and research methodologies resulted in the adoption of a qualitative case study methodology (Merriam, 1998). The need to provide individuals with an opportunity to describe complex situations and expose the meanings people attribute to different social settings was a primary consideration for this choice. Data for this study was collected through document analysis and semi-structured interviews, with interviewees selected using purposive sampling. The unit of analysis for these case studies was “organisation”, and the six case organisations included in this study were selected on the basis that they each possessed unique characteristics in terms of their ownership, maturity, size and structure (Neuman, 2011). Forty-eight individuals were interviewed for this research of which twenty-five were permanent members of staff and twenty-three were contingent workers. The employees interviewed performed a mixture of roles included senior management, middle management and operational staff. The roles of interviewees in the sample selected for this study are summarised in Table 1.1.

1.4 Potential Contributions to Theory and Practice

The principal aim of this research was to determine whether New Zealand organisations are constructing environments which enable the creation and sharing of knowledge, and distinguish the organisational characteristics that have the greatest influence on the development of this space. The identification of the most significant components was
intended to provide New Zealand organisations with material they could use to implement new or improve existing knowledge management practices, and distinguish the areas that require the most attention.

### Table 1.1: Summary of Sample Information

<table>
<thead>
<tr>
<th>Case organisation</th>
<th>Position</th>
<th>Interviewees</th>
<th>Employment status</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Permanent</td>
</tr>
<tr>
<td>CO1</td>
<td>Senior managers</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Middle managers</td>
<td>3</td>
<td>2</td>
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<td></td>
<td>Operational staff</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>CO2</td>
<td>Senior managers</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Middle managers</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Operational staff</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>CO3</td>
<td>Senior managers</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Middle managers</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Operational staff</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>Senior managers</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Middle managers</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Operational staff</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>CO5</td>
<td>Senior managers</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Middle managers</td>
<td>2</td>
<td>2</td>
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<td></td>
<td>Operational staff</td>
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<td>1</td>
</tr>
<tr>
<td>CO6</td>
<td>Senior managers</td>
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<tr>
<td></td>
<td>Middle managers</td>
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<td>1</td>
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<td></td>
<td>Operational staff</td>
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<td>TOTAL</td>
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<td>48</td>
<td>25</td>
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</tbody>
</table>

Source: Compiled for this research

A secondary objective was to ascertain the relevance of knowledge management models developed by scholars in Asian countries, to organisations based in New Zealand. The model of knowledge creation (SECI) developed by Takeuchi and Nonaka (2004) describes explicit and tacit knowledge, and the intent of this research was to determine if these constructs are recognised and managed by New Zealand institutions. This research sought to associate the stages of knowledge creation defined by Takeuchi and Nonaka (2004) to the knowledge management practices deployed in selected case organisations, to ascertain if equal attention is given to each phase and identify variations attributable to diverse institutional characteristics.
A significant proportion of the literature reviewed for this thesis emphasises the role of individuals, and the need for human interaction in the creation of knowledge. Consequently, this study sought to identify the means by which organisations encourage employees to participate in these activities. A specific aim of this research was an evaluation of the rewards and benefits afforded to employees and how these support the development of social exchange relationships and promote knowledge sharing behaviours. Identifying the rewards and benefits provided to contingent knowledge workers, and determining their effectiveness in relation to inducing participation in knowledge management activities were major considerations. The investigation included an evaluation of each case organisation’s ability to engender trust amongst contingent employees, because of the role trust plays in stimulating affective commitment and enabling knowledge sharing. A final aim of this research was to reveal how contingent knowledge workers are perceived by New Zealand organisations and to confirm whether these employees are recognised as a potential source of knowledge and competitive advantage.

1.5 Outline of the Thesis

This thesis comprises of seven chapters, outlined as follows: Chapter 1 (Introduction) provides the context for the research. It highlights the changing employment and organisational landscapes with the emergence of knowledge workers, growth in knowledge intensive industries and increasing numbers of contingent workers in New Zealand. The chapter includes a discussion of the justification for introducing knowledge management practices within organisations. Finally, this introductory chapter considers the implementation of knowledge management and the knowledge creation process, and identifies SET as a possible basis for integrating contingent knowledge workers into institutional knowledge management practice. The role of benefits and rewards in the creation of trust, and how trust is exchanged for affective commitment is acknowledged. The association between affective commitment and knowledge sharing is also recognised. A brief description of the theoretical approach and methodology for the study is also offered.

Chapter 2 (Literature Review) contains a review of literature relating to knowledge management and the two parent disciplines of human resource management and information technology. The chapter commences by defining knowledge management and the knowledge creation process and then considers how these theoretical components are interpreted and applied in commercial and non-commercial environments. Consideration was given to how
these practices are evolving and their adoption within the New Zealand environment. The literature review also identifies organisational design elements including leadership, structure and culture, and considers how these influence the human and technological components that support knowledge management practice. Finally, the literature review examines research relating to the rewards and benefits afforded to knowledge workers and considers their effectiveness at inducing participation in knowledge management activities.

Chapter 3 (Theoretical Framework) reviews the theoretical tenets and applications of SET. The chapter begins by considering the origins of SET and then reviews the assumptions, rules and resources of exchange. The analysis considers the relationship between SET and knowledge management, and establishes associations between trust, commitment, culture, OCB and knowledge sharing. Finally, the examination of SET enabled the development of the theoretical model used to interpret the findings from this research.

Chapter 4 (Methodology) identifies the researcher’s ontological position as relativist, and the epistemological position adopted for this research as being subjectivist. The methodology chapter describes the use of inductive reasoning to develop general conclusions, and the employment of a multiple-case study design to provide a basis for understanding the similarities and differences within and between cases. The qualitative method of interviewing was used to develop an understanding of the activities undertaken by organisations to manage knowledge and coordinate contingent knowledge workers. Document analysis was employed to verify findings and corroborate evidence from the semi-structured interviews. The case organisations selected to participate in this research represented deliberate choices to include private and public sector organisations, operating in different sectors and possessing unique characteristics in terms of their size and maturity. Interviewees were selected using purposive sampling. The sample for this research sought to include individuals responsible for planning the work of knowledge workers, managing knowledge workers and performing knowledge work. In total the sample consisted of forty-eight participants, of which twenty-five were permanent employees and twenty-three contingent knowledge workers.

Chapter 5 (Findings) considers this study’s potential contribution to theory and practice by contemplating how trust and commitment contribute to the establishment of cultures, which facilitate the creation of new organisational knowledge. A link between these concepts was established during the literature review, and the findings from this research provide support for these earlier studies. The results also showed that trust and organisational culture
influence contingent workers knowledge sharing intent, and they also show that affective commitment has relevance for these employees. A significant contribution is the demonstration of interconnectedness between elements identified in the conceptual model, which confirms the need to consider multiple factors when designing and implementing knowledge management practices. A further contribution attributable to this study is that it uses a cross-disciplinary approach to investigate knowledge management and the management of contingent workers. Major topics include trust and organisational culture, models of knowledge creation and knowledge management, and knowledge management systems.

Chapter 6 (Discussion and Conclusions) considers the findings from each of the case organisations and draws cross-case conclusions about knowledge management practice and the organisational contexts in which knowledge creation takes place. The concepts described in the conceptual model, including trust and commitment, culture, knowledge management systems and processes representing stages within the knowledge creation processes, were used to formulate responses to each of the research questions. A significant consideration was the applicability of these concepts to contingent knowledge workers, and the ability of New Zealand organisations to recognise and influence these elements for the purpose of enhancing institutional knowledge creation capabilities.

Chapter 7 (Recommendations) is organised into two sections, the first focussing on the development of knowledge management practice within New Zealand organisations and the second considers organisational changes needed to support the implementation of knowledge management. The recommendations relating to knowledge management emphasise the need to establish and agree a common understanding in relation to the discipline’s objectives within organisations, and to the identification of the resources needed to build the requisite capability. Proposals concerning modifications to the organisational environment are focussed on the role of managers, Enterprise Project Management Offices (EPMOs), the development of competences for combining organisational resources and approaches for engendering trust and creating cultures that are conducive to the management of knowledge. The recommendations also include proposals for increasing the contribution of contingent workers to organisational knowledge creation.
2 Literature Review

The following review of literature considers the dominant theoretical frameworks used by researchers to conceptualise knowledge management, including interpretations of what the practice involves, how it should be implemented, and the potential benefits. A range of theoretical approaches to and portrayals of knowledge management to construct images of the field and reflect on inter-disciplinary nature of the subject are examined. The major themes considered within the literature review are: definitions of knowledge management, the knowledge management process, knowledge management practice in New Zealand, the role of information technology for managing knowledge, and the influence of human resource practices such as rewards and benefits on knowledge management.

2.1 Knowledge Management Definition and Development

There exist many definitions of knowledge management, and the nature of such definitions is dependent on the context referenced and the perspective of specific authors (Dalkir & Liebowitz, 2011). Sample definitions belonging to each category are specified in Table 2.1.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Source</th>
<th>Category</th>
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<tbody>
<tr>
<td>“Knowledge Management is the management of activities and processes for leveraging knowledge to enhance competitiveness through better use and creation of individual and collective knowledge resources.”</td>
<td>Allan et al. (2004, p. 11)</td>
<td>Business</td>
</tr>
<tr>
<td>“Leveraging intellectual assets to enhance organizational performance.”</td>
<td>Stankosky (2008, pp. 9-10)</td>
<td>Knowledge Asset</td>
</tr>
<tr>
<td>“Knowledge management (KM) is a business process that formalizes the management and use of an enterprise’s intellectual assets. KM promotes a collaborative and integrative approach to the creation, capture, organization, access and use of information assets, including the tacit, uncaptured knowledge of people.”</td>
<td>Gartner (2017, para 1)</td>
<td>Process-Technology, Knowledge Asset</td>
</tr>
<tr>
<td>“Knowledge Management draws from existing resources that your organization may already have in place—good information systems management, organizational change management, and human resources management practices.”</td>
<td>Davenport and Prusak (1998, p. 163)</td>
<td>Knowledge Science</td>
</tr>
<tr>
<td>“Maximize the enterprise’s knowledge-related effectiveness and returns from its knowledge assets and to renew them”</td>
<td>Wiig (1997, p. 8)</td>
<td>Knowledge Science</td>
</tr>
</tbody>
</table>
These definitions of knowledge management are all relevant to this study; however, the definition that is regarded as most appropriate is that devised by Standards Australia, which makes specific reference to the people, process and technology elements of knowledge management and the complexity and difficulty involved in combining these separate elements. The document in which this definition is found relates directly to knowledge management implementation in Australian based organisations, and is written from a business perspective. The definition states:

A transdisciplinary approach to improving organisational outcomes and learning through maximising the use of knowledge. It involves the design, implementation and review of social and technological activities and processes to improve the creating, sharing and applying or using of knowledge. Knowledge management is concerned with innovation and sharing behaviours, managing complexity and ambiguity through knowledge networks and connections, exploring smart processes and deploying people-centric technologies. (Standards Australia, 2005, p. 2)

Knowledge management is an emerging discipline which can trace its origins to a number of other fields. According to Fahey and Prusak (1998), it is imperative that managers formulate an appropriate definition of knowledge, because it influences and informs their actions in relation to knowledge management practice. These authors suggest that a failure to develop an accurate definition of knowledge leads to mistaken beliefs and incorrect actions in relation to knowledge management practice. There is a suggestion that knowledge cannot be managed and that the term knowledge management is itself inappropriate (Wilson, 2002). Wilson (2002, p. 144) suggests that knowledge management is an “umbrella term” comprising organisational activities for managing work practices, with the intention of enabling information sharing. This conclusion was derived from consideration of diverse definitions of knowledge management provided by commercial firms (business consultancies) and academic institutions (business schools), and identification of information management and management of working practices being identified as substitutes practices. Wilson also dismisses the idea that the idea of organisational culture where knowledge sharing benefits all employees, and identifies specific instances where institutions dismissed large numbers of people although they are supposedly “their most important resource” (Wilson, 2002, p. 144).
**Forms of knowledge**

Explicit knowledge is knowledge that is tangible, and typically exists in the form of books, documents, audio and video recordings, manuals, and computer files and systems. The physical nature of explicit knowledge allows it to be formally and systematically transferred from one person to another. In contrast, tacit knowledge lacks physical form and is derived from an individual’s experience, ideals, values and emotions. The intangible character of tacit knowledge introduces complexity in relation to how it is communicated and shared with other people (Takeuchi & Nonaka, 2004). However, organisations that overlook tacit knowledge are restricting their ability to innovate and maintain their competitive position (Gamble & Blackwell, 2001).

The term tacit knowledge was introduced by Michael Polanyi in relation to human knowing in his work *Personal Knowledge* (1958), and later suggested that “all knowledge is either tacit or rooted in tacit knowledge” (Polanyi & Grene, 1969, p. 144). The features emphasised in definitions of tacit knowledge suggest that it:

- is not or cannot be codified (Howells, 1996);
- is gained in an informal learning and experience (Chugh, 2015); and
- is personal in nature and resides in people’s minds (Chugh, 2015; Coghlan & Brydon-Miller, 2014).

Explicit knowledge is sometimes referred to as ‘know-what’, and may be shared by multiple persons simultaneously (Brown & Duguid, 1998). Brown and Duguid (1998) propose that core competency originates from know-how (tacit knowledge) and also provides the basis for utilising know-what (explicit knowledge), whilst acknowledging that there is a need for these elements to work together. According to Polanyi (1958, p. 144), “while tacit knowledge can be possessed by itself, explicit knowledge must rely on being tacitly understood and applied”, and as a consequence understanding explicit knowledge can be more difficult (Addis, 2016).

The management of tacit knowledge presents a significant challenge in the business world (Leonard & Sensiper, 1998), because the boundaries erected within organisations through the division of labour and the division of knowledge (Brown & Duguid, 1998) make it difficult to organise. In addition tacit knowledge is hard to transfer because “strategic resources can only be exchanged under conditions of acquaintance and mutual trust” (Bouty, 2000, p. 50). The
ability of organisations to utilise tacit knowledge is constrained because it is difficult to articulate and is resistant to codification (Baumard, 1999).

It follows that the competitiveness and efficiency of organisations are negatively impacted by high employee turnover through the loss of tacit knowledge (Droege & Hoobler, 2003). However, persuading employees to convey different forms of knowledge (explicit and tacit) requires different kinds of rewards. It is proposed that hard (organisational) rewards positively influence a person’s explicit knowledge sharing intentions, but have a negative impact on their inclination to share tacit knowledge. Incentives for persuading employees to share tacit knowledge includes reciprocity, enjoyment, and social capital. Social capital is defined by Adler and Kwon (2002, p. 23) as “the goodwill available to individuals or groups”, which is derived from a person’s social relations. Creating social capital necessitates stability and continuity in social relations (Nahapiet & Ghoshal, 1998), and the building of trust is dependent on familiarity and duration of social interactions (Bigley & Pearce, 1998). These findings have implications for both research questions because they influence organisational design and the development of rewards systems which accommodate these different needs (Hau et al., 2013).

Contingent knowledge worker contribution

It is suggested that contingent workers are a source of tacit knowledge because they bring with them their knowledge gained through education, training and experience (Vaiman, 2010). Vaiman further suggests that the majority of organisations do not know what kinds of specific knowledge their contingent workers possess. However, Vaiman confirms that contingent workers take their newly acquired knowledge and experience with them when they leave an organisation, and suggests that the creation of organisational knowledge is contingent on an organisation’s ability to transform the additional knowledge to which they had access.

Organisations based in the United States (US) engage temporary staff for strategic purposes, the most common being cost cutting, increased flexibility, avoidance of restrictions and consequences imposed by hiring permanent employees, and as a means for circumventing budgeting constraints (Von Hippel et al., 1997). Although these findings are dated, they remain relevant and are reflected in more recent studies. Vidal and Tigges (2009) provide evidence that many US manufacturing companies utilise contingent workers to realise systematic numerical flexibility, rather than deal with unexpected problems in a reactive
manner. These findings suggest that US-based organisations do not regard temporary workers as a valued source of knowledge, but as a way of meeting short-term operational needs.

In an effort to reduce costs and maximise resource utilisation, television production companies in the United Kingdom increased their use of out-sourced resources (Tempest, 2009). Greater use of flexible occupational labour markets provides these organisations with increased access to alternative ideas and concepts. Organisations employing a large proportion of temporary workers are able to learn from those who have experienced other environments, the benefit being a dramatic expansion of an incumbent firm’s knowledge boundaries (Tempest, 2009).

Resource-based view (RBV) of the firm
The resource-based view of the firm examines internal characteristics of organisations and how these contribute to performance, and is based on the assumption that competitive advantage is derived from the heterogeneity and immobility of a firm’s resources (Barney, 1991). Firm resources are the basis for implementing strategies that enhance its efficiency and effectiveness, and comprise assets, capabilities, organisational characteristics, information and knowledge. Barney proposes three types of firm resources: physical capital resources, human capital resources, and organisational resources. For an organisation to achieve sustained competitive advantage firm resources must possess specific attributes, which are value, rarity, imperfect imitability and non-substitutability.

Barney suggests that culture and social relationships may contribute to imperfect imitability, but he proposes that information technology (computers) is imitable on the basis that they can be purchased across markets. However, the combining of information systems with an organisation’s decision-making process has the potential to establish sustained competitive advantage, because it creates a complex social system which is imperfectly imitable (Rasmussen, 1986). A study of internal electronic information (IEI) usage in German automotive suppliers undertaken by Bakos et al. (2016) confirms knowledge/analytics to be a source of sustainable competitive advantage. The study also suggested information processing to be a source of competitive advantage, but the low cost associated with imitating this firm resource provides only temporary competitive advantage. The Value, Rarity, Imitability and Organization (VRIO) framework adopted by Bakos et al. (2016) in this study provides managers with a means of identifying firm resources with the requisite characteristics for achieving competitive advantage. However, the realisation of this potential
is dependent on organisations being sufficiently organised to exploit their resources and capabilities (Barney, 1995).

According to Cardeal and Antonio (2012), the existing RBV does not sufficiently describe how organisations transform resources into competitive advantage, a view supported by Lin and Tsai (2016). In order to address this gap, research assessing competitive advantage has focussed on dynamic capabilities. Dynamic capability refers to the combining of organisational resources with knowledge to create competitive advantage, placing greater emphasis on how resources are used instead of characteristics such as value, rarity and inimitably. Organisations can possess resources that are not valuable, rare or inimitable, but are able to create sustained competitive advantage by the way they combine these resources (Cardeal & Antonio, 2012). Knowledge management plays an important role in the development of such dynamic capabilities because it provides insight into how resources can be managed in order to create new asset combinations and realise sustained competitive advantage (Krzakiewicz, 2013). According to Özbağ (2013), capability is the foundation for developing core competency, which are defined as “a skill or capability of a firm rather than the mere ownership of a resource.” (Mooney, 2007, p. 111). Core competencies represent the activities a firm does best, and comprise unique knowledge that enables problem definition and problem solving, forming the basis for competitive advantage (Srivastava, 2005).

The competitive environment in which firms operate has changed dramatically in the last twenty years and established sources for competitive advantage have been supplanted (Kirsimarja & Aino, 2015). Knowledge-based industries are playing an increasing role in the OECD economies, and knowledge is considered a key driver of productivity and growth (Organisation for Economic Co-operation and Development - OECD, 1996). The transition to more knowledge-based economies and recognition of the role knowledge plays in formulating competitive strategies occasioned the development of the knowledge-based view (KBV) of the firm. The KBV is considered an extension of the RBV, but regards knowledge as the most critical strategic resource. The KBV suggests that organisations exist to create, transfer and transform knowledge for the purpose of creating sustainable competitive advantage (Curado, 2006). The principal role of organisations is to assimilate specialist knowledge into goods and services, using managers to organise and coordinate the individuals employed by the institution (Grant, 1996). The arrival and widespread deployment of information technologies has also contributed to a knowledge-based view,
because it is considered a means of enabling knowledge management within and across organisation boundaries (Alavi & Leidner, 2001).

**Sectorial differences**

Application of the RBV is not restricted to organisations operating in competitive environments (private sector), and is regarded as a useful approach for explaining value creation in the public sector (Pablo et al., 2007). According to Llewellyn and Tappin (2003), public sector managers are expected to employ managerial strategies to enhance organisational performance, and the inside-out perspective afforded by the RBV provides a basis for informing strategy development within public sector institutions (Pablo et al., 2007).

Analysis of an organisation’s heterogeneous resources for the purpose of identifying those which create value and efficiency is a legitimate application of the RBV, but the model’s focus on preserving these resources for the organisation itself is incompatible with the principles of many public sector institutions. The creation of value in this context may conflict with organisational objectives in relation to other ‘legitimate’ stakeholders (Rosenberg Hansen & Ferlie, 2016). Public sector organisations are devoted to fulfilling the needs of specific client groups as opposed to realising profits, and the adoption of strategic approaches within this sector are typically focused on maximising operational performance (Collins & Collins, 2006).

A goal for many public sector organisations is comparative advantage as opposed to competitive advantage, and the RBV can provide strategies which can help achieve this aim. The RBV provides insights that are relevant to both private and public sector institutions, but because organisations in the public sector are not focussed on establishing sustainable competitive advantage some RBV concepts do not make sense. According to Eisenhardt and Martin (2000), the dynamic capabilities framework is especially relevant to strategy in the public sector because it provides organisations with processes for adapting to constant change. This assessment is supported by Teece, Pisano and Shuen (1997, p. 516), who describe dynamic capabilities as “the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.” A similar link between dynamic capabilities and rapid and unpredictable change is recognised by Rosenberg Hansen and Ferlie (2016).

When considering knowledge management, it is necessary to acknowledge the differences between organisations, particularly the sector in which they operate (public or private).
Within public sector organisations knowledge management practice is at an embryonic stage, but governments have recognised its importance and have started to implement procedures for managing knowledge (Cong & Pandya, 2003). Cong and Pandya (2003) suggest that private sector organisations have needed to develop competitive advantage to survive in an environment characterised by discontinuous change, and as a consequence they have rapidly adopted knowledge management practices. Acceptance of these practices in the private sector leads to their adoption in other sectors.

Creating and sustaining competitive advantage is identified as a principal motivation for developing knowledge management practice, but according to Cong and Pandya (2003) other benefits enhance an institution’s performance by improving efficiency, productivity, quality and innovation. They propose knowledge management to have equal importance for public and private sector organisations, because both face increased competition at national and international level in relation to service delivery, and the imminent retirement of a large section of the workforce.

Effective management of an institution’s knowledge-based assets can provide a basis for creating a sustainable competitive advantage (Appleyard, 1996), and according to Teece (1998) superior profits can be derived from intangible assets, such as brands, customer relationships, know-how and superior business processes. Sustainable competitive advantage is dependent on the effectiveness of decisions and an institution’s capacity to use knowledge in advance of competitors, reducing its value for these rival entities (Malhotra, 2003). As a consequence, organisational knowledge has to be continuously maintained, and used to inform and revise strategy and processes (Hamid, 2008; Weber, 2007). Organisations are more likely to develop competitive advantage when they utilise their intangible resources to uniquely configure their tangible resources (Spender, 1996). This view is supported by Ling (2013), who found positive relationships between a firm’s intangible assets and organisational performance. Ling suggests organisational performance to be a product of institutions combining an appropriate knowledge management strategy with the right type of intellectual capital, but warns of adopting approaches that are either technology-centred or people-centred.

It is proposed that knowledge is an organic resource which is not consumed in the same way as other resources. The creation and application of knowledge represents ecology as opposed to economy (Nonaka & Konno, 1998). This valuable resource is combined with the cognitive
capabilities of selected people (Davenport & Prusak, 1998; Van Beveren, 2002; Yahya & Goh, 2002), primarily referred to as knowledge workers. Knowledge workers think, they use their judgement, they utilise their experience, they make decisions about what to do and how to do it, and they innovate. They contribute their knowledge to the work of the overall organisation.

The use of computers in the workplace has turned almost every worker into a knowledge worker (Adams & Oleksak, 2010). Jashapara (2011, p. 9) defines knowledge workers as “professionals or managers with graduate level skills in critical thinking, communications and technology.” Bogdanowicz and Bailey (2002, p. 126) suggest that knowledge workers

… bring to an organisation their prior education, experience, knowledge and skills, and as they interact within the organisation they draw on this experience to develop their skills and knowledge further, thus adding to their human capital value and to the value of the organisation.

It has been proposed that everyone is a knowledge worker to a certain extent, on the basis that they require information and skills to perform their work. Knowledge workers have always existed, but societal changes (industrialisation) have led to an increase in the variety and number of knowledge workers (Cortada, 2009). A knowledge worker is “a person who works in a professional or managerial capacity and whose tasks involve creating, processing and interpreting information” (Pass et al., 2006, para 11). This definition provides an indication about the work undertaken by knowledge workers, but does not describe the characteristics which make a person a knowledge worker. According to Davenport (2005, p. 10), “knowledge workers have high degrees of expertise, education, or experience, and the primary purpose of their jobs involves the creation, distribution, or application of knowledge.” Davenport proposes that these workers have the ability to solve problems, fulfil customer requirements, and collaborate and communicate with others. Contingent knowledge workers share the same traits as their permanent counterparts, but are employed by organisations to undertake specific projects for a period of time specified by a contract (Desouza & Awazu, 2006).

Knowledge workers are highly sought after by firms, because these employees can contribute toward the renewal of valuable knowledge (Drucker, 1998; Thompson & Heron, 2005). All types of employment combine physical and mental work, but knowledge work is dominated by the need to think (Reinhardt et al., 2011). There exist multiple definitions of knowledge
work, but a clear and concise description of the term is lacking (Pyöriä, 2005). Withey (2003) suggested the use of ‘high’, ‘moderate’ and ‘low’ knowledge work to describe the knowledge component in various jobs. Those performing high-level knowledge work constantly search for and assimilate existing knowledge, in order to create new knowledge. These individuals present knowledge in a form that is easily understood by others and are capable of developing creative solutions to institutional problems. In contrast, the tasks associated with moderate- and low-level knowledge work comprise reduced depth and intensity.

Knowledge work is the term used to describe the activities and tasks undertaken by employees designated as knowledge workers (El-Farr, 2009). A simple description of knowledge work is “the work of those who think for a living…the practice of making knowledge explicit” (Megill, 2012, pp. 71-72), but this is regarded as being too narrow for the purpose of this study which considers knowledge work to be non-routine and involves more than creating explicit knowledge. A more complete definition of knowledge work is offered by Ware and Grantham (2007, p. 3), who suggest that it is “any activity that requires specialised skill or knowledge or creates new knowledge.” Although this definition covers a wide variety of activities it excludes problem solving, which is a key role performed by knowledge workers. An alternative definition put forward by North and Gueldenberg (2011, p. 25) includes specific reference to problem-solving and states that: “The challenge of productive knowledge work lies in the continuous search for best practices or next practices, systematic problem-solving, and tailoring these routine knowledge processes to the changing requirements around us.” Although these definitions are useful a more complete description is provided by Davenport, Jarvenpaa and Beers (1996, p. 54), who suggest “knowledge works primary activity is the acquisition, creation, packaging, or application of knowledge. Characterised by variety and exception rather than routine, it is performed by professional or technical workers with a high level of skill and expertise.” This definition makes specific reference to the creation and application of knowledge, the non-routine nature of knowledge work and the high skill levels of those performing the work.

There is considerable demand for knowledge workers in New Zealand and a recent report highlighted a shortage of appropriately skilled, experienced and qualified candidates. New Zealand organisations require knowledge workers with the ability to perform non-routine tasks and who possess a high-level of technical ability (Hays, 2016). However, the demand and shortage for talented workers is not confined to New Zealand based organisations and remains a challenge for institutions in other countries (Sung, 2003). An unnamed US business
leader refers to the shortage as the ‘smart gap’, which represents a shortage of individuals who are able to think. A 2013 study involving a small New Zealand-based manufacturing organisation identified the recruitment of ‘innovative minds’ as a major challenge (Kohli, 2013). According to Arthur (2001), it is necessary to transcend conventional approaches to employee recruitment and develop new methods for engaging people who are innovative.

The current demand for workers with a tertiary education (knowledge workers) in advanced economies is set to continue, and it is predicted that an additional 16 million to 18 million will be required by 2020 (Dobbs et al., 2012). Although this study associated tertiary education with high-skill, there is acknowledgement that not all those with academic qualifications will be able to fulfil the requirements of high-skill jobs. Based on the patterns in enrolment and completion, the skill gaps may be larger in some countries and in some fields. An increasing demand for high-skill jobs is forecast for the 27 European Union countries (plus Norway and Switzerland), and it is projected that people employed in high-qualification jobs will increase from 29 to 35 per cent between 2010 and 2020 (International Labour Office, 2010).

In 2010, New Zealand's knowledge intensive industries employed 724,144 workers, which accounts for 33.2 per cent of the workforce. This reflected an increase of 0.9 per cent on the previous year (Infometrics, 2012). This change is driven by climate change, demographic trends, globalisation, technological development and resource pressures (Department of Labour - DoL, 2008). The speed of technology change and the availability of key skills were shown to be of particular concern to New Zealand Chief Executives in the Annual Global CEO Survey (Paredes, 2015).

Karoly and Panis (2004) suggest that information technology is driving significant change to occupational structure, and demand for professionals has increased in a synchronised way with technological developments. In New Zealand these occupational shifts have developed a more highly-skilled workforce. A survey undertaken by Statistics New Zealand in 2012 indicated that 37% of the working population are employed in roles that are designated as highly skilled (level 1), with a further 24% occupying positions requiring level 2 (11%) and level 3 (13%) skills. The proportion of people employed in highly-skilled occupations increased from 34 per cent in 2009, and the proportion of those employed lower-skilled positions has decreased. Occupations are classified according to the Australian and New Zealand Standard Classification of Occupations (ANZSCO), which measures skill levels.
based on the range and complexity of the tasks being performed, educational requirements and previous experience. The survey results are shown in Figure 2.1.
In 2006, the population of New Zealand was approximately 4.2 million, which at the time was comparable with the population of Singapore (4.5m). Horwitz et al. (2006) observed that Singapore faced challenges in developing requisite numbers of knowledge workers. Organisations belonging to diverse sectors such as science and technology, life sciences research and development, venture capital, consulting and financial services, information technology, government, electronics, semi-conductors fabrication, and telecommunications and communications were affected by the scarcity of knowledge workers. As a consequence and similarly to New Zealand, Singapore is dependent on overseas workers to meet demand for specific skills and knowledge.

This section describes characteristics associated with the knowledge management discipline, recognising the difference between types of knowledge and the implications this has for organisations. Specific reference is made to the Resource Based View (RBV) and Knowledge Based View (KBV) as these theories provide a useful context for considering the origins of knowledge management, and assist in defining the boundaries of the discipline and framing this research. The purpose of knowledge management and the role of knowledge workers was also examined, to identify major themes for investigation. The review of literature relating to knowledge workers identified different classes of knowledge work and confirmed that global demand for knowledge workers is increasing. This demand for knowledge workers is reflected in the New Zealand employment market as an increasing number of workers are now employed in knowledge intensive industry sectors.
2.2 Knowledge Creation Process

The examination of knowledge management definitions and development carried out in §2.1 distinguished two categories of knowledge (explicit and tacit), which are considered to be opposites (Nonaka & Takeuchi, 1995). The authors also proposed a knowledge creation process (the SECI model), which distinguishes four approaches for converting these different types of knowledge. The modes of knowledge conversion are socialisation involving individual to individual interaction, externalisation where individuals interact with a group, combination connecting groups to an organisation, and internalisation relating to interaction between the organisation and the individual. Nonaka and Takeuchi’s model of knowledge creation is shown in Figure 2.2Error! Reference source not found.
Figure 2.2: The SECI Model of Knowledge Creation

Source: Takeuchi and Nonaka (2004, p. 98)

For the purpose of this thesis knowledge sharing is considered to be a process, which consists of two sub-processes: externalisation and internalisation. Externalisation involves a knowledge owner transmitting their knowledge to another person, and internalisation is the absorption of this knowledge by the receiver (knowledge reconstructor) (Chugh, 2016). The act of externalising knowledge can assume multiple forms and includes codifying, showing, describing, and in the same way internalisation can be achieved through learning by doing, reading and interpreting (Hendriks, 1999). A study undertaken by Van Den Hooff and De Ridder (2004) equates socialisation and internalisation with ‘knowledge donating’ and ‘knowledge collecting’, which they describe as an active process where individuals actively impart what they know, or actively confer with others to learn what they know. Van den Hooff and de Ridder also propose that new knowledge is created when individuals engage in mutual exchanges of implicit and explicit knowledge, and that this is the basis for transforming individual knowledge into organisational knowledge. The role of ‘knowledge sources’ and ‘knowledge receivers’ is also acknowledged by Weggeman (2000), and Oldenkamp (2001) discusses the role of ‘knowledge carriers’ and ‘knowledge requestors’ in knowledge sharing.
In contrast to knowledge sharing, which is regarded as a people-to-people process (Ryu, Ho & Han, 2003), knowledge transfer concerns the conveyance of knowledge between departments, divisions, functions and groups (Argote & Ingram, 2000). According to Liyanage, Elhag, Ballal and Li (2009), knowledge transfer involves an act of translation, which requires the person transmitting knowledge to provide context that allows the receiver to determine how that knowledge can be utilised. Knowledge transfer is held to be more than transmitting what is known because it requires the source to communicate what the knowledge in question means to the receiver (Seaton, 2002). Successful knowledge transfer within and between organisations is in part dependent on transparency, characterised by an institution’s openness to communication, and learning capacity, represents an entity’s ability to absorb and apply new knowledge (Cranefield & Yoong, 2005). Liyanage et al. (2009) suggest that the utilisation and application of knowledge is the most important stage in the transfer of knowledge, because it is in this phase that value is created or performance enhanced.

Wickramasinghe (2007) propose a “loose” side and a “tight” side to knowledge management. The tight side refers to the information processing aspects of knowledge management which enables efficiencies of scale and scope, while the loose side provides agility and flexibility. This concept is presented in the Yin-Yang model of knowledge management (see Figure 2.3), which is constructed around the concept of duality and the need for dualities to truly understand the essence of the whole. The model shows that the efficiency and effectiveness of an organisation are dependent on knowledge, and that the creation of new knowledge and maintenance of existing knowledge are equally necessary. In addition the model shows that it is necessary for organisations to incorporate both explicit and tacit knowledge.
According to Takeuchi and Nonaka (2004), knowledge creation starts with the socialisation process, which entails individuals sharing their experiences and the tacit knowledge that has accumulated as a result of these experiences. Tacit knowledge is acquired through observation, simulation and practice, so verbalisation is unnecessary. Tacit knowledge is a product of an individual’s intellectual activity and includes a person’s skills, capabilities and expertise, and combines a human being’s attitudes, cultural beliefs, mental models and values (Botha, 2008).

The externalisation process involves the conversion of tacit knowledge into explicit concepts. These concepts take the form of analogies, hypotheses, metaphors and models, which are articulated by writing and encoding tacit knowledge. Once tacit knowledge has been converted into explicit knowledge, it can be shared with other people and becomes the foundation for creating new knowledge within an organisation (Takeuchi & Nonaka, 2004).

Combination involves collecting explicit knowledge from inside and outside the organisation and merging, editing and processing it to compile a composite set of explicit knowledge. Once assembled, this new explicit knowledge can be distributed throughout an organisation, possibly using information technology. As the label suggests, combination involves merging...
and amalgamating discrete explicit knowledge sources. The media used to combine this explicit knowledge includes computerised communication networks, documents, meetings and telephone conversations (Takeuchi & Nonaka, 2004).

During internalisation, an individual uses existing explicit knowledge in the performance of their work, and as a consequence this knowledge becomes the basis for new working practices. Internalisation is comparable with “learning by doing”, and results in individuals revising their mental models, and the tacit knowledge created through this process is considered a valuable asset (Nonaka & Takeuchi, 1995).

Knowledge creation and redundancy
The management of knowledge creating companies requires the establishment of “redundancy.” Redundancy relates to the “conscious overlapping of company information, business activities, and managerial responsibilities” (Takeuchi & Nonaka, 2004, p. 40). According to Takeuchi and Nonaka (2004), redundancy can be built using strategic (job) rotation, where staff members from different areas and functions have the opportunity to experience, learn and perform alternative roles. It is suggested that “rotation helps employees understand the business from a multiplicity of perspectives. [Making] organisational knowledge more fluid and easier to put into practice” (Takeuchi & Nonaka, 2004, p. 41).

Effective internalisation of knowledge is supported by job rotation (Glisby & Holden, 2003). Providing all employees with free access to all organisational information (excluding personal data) also assists with the creation of redundancy.

The four processes included within the SECI model consider how knowledge is created, but it is also necessary to contemplate the environment in which such knowledge is created. Takeuchi and Nonaka (2004) propose that knowledge requires a physical setting to enable its creation, referred to as “Ba.” Ba is described as:

A shared context in motion, in which knowledge is shared, created and utilised … ba should be understood as interactions that occur at a specific time and space … Ba is an existential place where participants share their contexts and create new meanings through interactions. (Takeuchi & Nonaka, 2004, p. 101)

Considering organisations as organic configurations of “ba” instead of an organisational structure, provides an alternate view of the type of knowledge that can be created, the kind of interactions required, and the people with the appropriate knowledge (“right people”)
(Takeuchi & Nonaka, 2004). When separated from “ba” knowledge turns into information, which is tangible and can be communicated. However, knowledge embedded in “ba” and formed through complex social interaction is intangible and is likely to meet the conditions of inimitability identified by Dierickx and Cool (1989). A relationship between “ba” and organisational culture is proposed by Auernhammer and Hall (2014). They also propose the knowledge creation process to be an organisational capability that transforms knowledge through social interactions, and could when combined with other firm resources be a source of sustained competitive advantage Du Plessis (2007).

Contingent workers providing new knowledge and supporting innovation
Contingent workers provide organisations with the ability to accumulate knowledge and create competitive advantage. Such competitive advantage is not only derived from reducing costs and increasing flexibility, but also from providing organisations with access to new knowledge and best practices, which augment the knowledge creation process (Matusik & Hill, 1998). It is recognised that the engagement and effective management of contingent workers can support innovation within organisations. Many contingent knowledge workers are experienced professionals who provide subject matter expertise in specific fields, and provide hiring organisations with technical assistance on innovation projects (Fournier, 2016). The growth in non-standard employment has led to the formation of work groups comprising standard and non-standard workers (Akron et al., 2016). Their research found that diversity caused by different work arrangements is a source of enhanced performance. Work groups comprising standard and non-standard workers are regarded as an abundant source of knowledge and experience, which supports decision making and problem solving. Nesheim (2003) found that the use of external personnel in core positions created ideas and aided innovation.

Contextual considerations and criticisms relating to the SECI model
As a means of illustrating the conversion of knowledge through socialisation, externalisation, combination and internalisation, Takeuchi and Nonaka (2004) describe the Matsushita Electric Company’s efforts to develop an automated bread-making machine, and explains how a master bread maker’s tacit knowledge is transferred to a software developer, who converts it into explicit knowledge and shares it with a project development team which utilises it to develop the finished product. However, a review of the bread-making machine example suggests that there is no conversion of tacit to explicit knowledge, and machine
usage is dependent on an operator’s tacit knowledge (Ribeiro & Collins, 2007). They claim the bread-making machine to be a ‘social prosthesis’, which Collins (2016, p. 33) describes as “something that fills the place of a missing part in a social setting…but does not have to be identical to the original part.” Their assertion is that the bread-making machine substitutes some polymorphic actions and mimics other mimeomorphic actions, and that other actors such as the machine’s users apply their own tacit knowledge substituting that of the master bread maker. The performance of polymorphic actions is dependent on the tacit knowledge required to negotiate living within society, and because machines do not presently have an understanding of society they cannot currently perform polymorphic actions. In contrast mimeomorphic actions can be reproduced by observing and replicating behaviours linked to an action, and unlike polymorphic actions it is not necessary to understand the culture environment in which the action is performed.

The classification of actions into polymorphic and mimeomorphic activities supports the argument that bread making using the automated machine is not representative of knowledge conversion. The suggestion that tacit knowledge may be transformed into explicit knowledge, as proposed by the SECI model is refuted by Tsoukas (2011), on the basis that tacit knowledge is incapable of being expressed or described in words. The assumption underlying the SECI model is that tacit knowledge is “knowledge-on-its-way-to symbolic representation: a set of rules, as yet unformulated, that symbolically represent the activity an actor is involved in” (Tsoukas, 2011, p. 466). Tsoukas also proposes that even the most explicit knowledge is associated with a tacit component, and rejects the notion that explicit and tacit knowledge are located at extreme ends of a continuum. According to Tsoukas, the development of the bread-making machine provides an example of “practical knowledge”, which “can neither be taught nor learned, but only imparted and acquired” Oakeshott (1991, p. 11). The suggestion that practical knowledge can be precisely defined and codified diminishes the stature of practical knowledge, because it reduces “what is known to what is representable” (Tsoukas, 2011, p. 467). Instead, the articulation of tacit knowledge and the creation of new knowledge necessitates new forms of discourse, which Tsoukas (2011, p. 472) labels “dialogical interactions.”

There are numerous definitions of tacit knowledge, but the concept requires further elaboration in the context of knowledge creation. It is proposed that tacit knowledge consists of distinct components, which are relational tacit knowledge (RTK), somatic tacit knowledge
(STK) and collective tacit knowledge (CTK) (Collins, 2010). Each of these components is considered in Table 2.2.

**Table 2.2: Forms of tacit knowledge**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relational tacit knowledge (RTK)</td>
<td>Knowledge that could be made explicit but is not. It is associated with the way in which people relate to one another.</td>
<td>Transferred through “close contact with the owner of the knowledge” (Collins, 2010, p. 92).</td>
</tr>
<tr>
<td>Somatic tacit knowledge (STK)</td>
<td>Knowledge which becomes embedded within human physiology which cannot be described.</td>
<td>Learning to ride a bicycle through “demonstration, guided instruction and personal contact with others who can ride” (Collins, 2010, p. 100). Cannot be realised by being told how to do it.</td>
</tr>
<tr>
<td>Collective tacit knowledge (CTK)</td>
<td>Knowledge which is held collectively and socially.</td>
<td>Riding a bicycle through busy city streets with pedestrians and motorised traffic.</td>
</tr>
</tbody>
</table>

Source: Collins (2010)

Collins acknowledges that using the bread-making machine approximates human bread-making and combines RTK, STK and CTK, but emphasises that the CTK elements are only achieved by substituting some polymorphic actions with mimeomorphic actions. The principal criticisms directed at the SECI model are therefore an underestimation of the complexity associated with tacit knowledge, and misconceptions about the relationship between tacit and explicit knowledge (Collins, 2010; Tsoukas, 2011). Although these findings cast doubt on the SECI model’s paradigmatic status (Gourlay, 2006), the processes identified by Takeuchi and Nonaka (2004) provide an appropriate basis for analysing and categorising the data collected for this study. The need to further investigate the process of organisational knowledge creation was acknowledged by Nonaka et al. (1994), on the basis that initial testing was mainly focussed on the content of organisational knowledge creation.

The model was developed in Japan, where long-term employment (even life-time employment) is more widespread than in other countries (Ono, 2010). Long-term employment is indicative of affective commitment, which Jayasingam and Yong (2013) suggest is a critical ingredient for knowledge sharing. Takeuchi and Nonaka (2004) suggest that Japanese and Western companies espouse two opposing approaches to organisational knowledge creation. The principal form of knowledge in Western based organisations is explicit, the attraction being that this can be rapidly transmitted between individuals in a
formal and systematic manner. However, the Japanese see explicit knowledge as a small proportion of their overall knowledge, and consider knowledge as being primarily tacit. The differing emphasis changes the emphasis on how learning is achieved, with the West utilising “systems thinking” and the Japanese emphasising the need to learn through direct experience, and by experimentation. Takeuchi and Nonaka (2004) argue for synthesis of East and West, because an over-reliance on tacit knowledge can lead to “group think”, and focusing solely on explicit knowledge can frustrate innovation because of the need to put together diverse pieces of data.

Glisby and Holden (2003) propose that the four modes of the SECI model are acutely Japanese, and as such the SECI model should be treated as a culturally biased metaphor that cannot be applied outside of the Japanese reality. However, Andreeva and Ikhilchik (2011) propose that SECI is applicable to Western settings because of the cultural universality of cognitive processes, but they suggest the set of tools managers need to implement has to differ from those that Nonaka and Takeuchi advise. The present research considers the relevance of Takeuchi and Nonaka’s research in a New Zealand context and determine whether contingent workers can contribute to the knowledge creation process.

To summarise, the literature reviewed in this section proposes the existence of explicit and tacit knowledge. Explicit knowledge is tangible and can be articulated, codified, accessed and verbalised. In contrast, tacit knowledge is difficult to transfer from one person to another through writing or verbalisation. This view of tacit knowledge is consistent with a phrase devised by Polanyi (1967, p. 4), who stated: “we can know more than we can tell.” The SECI model of knowledge creation, which considers the interplay between explicit and tacit knowledge was described to provide a contextual basis for analysing knowledge management practice in New Zealand organisations. Specific emphasis is placed on the four stages of knowledge creation, and the concept of the knowledge creating place “ba”. The Eastern origin of the SECI model and its applicability in a Western context (New Zealand) was also considered.

### 2.3 Knowledge Management Implementation

This section expands on the theoretical basis of the SECI model, and contemplates how organisations implement knowledge management processes and practices. According to Lin (2011), implementing knowledge management demands the systematic integration of people,
processes and technology, so that operationally relevant knowledge and expertise can be exchanged.

The environment in which organisations operate demands constant innovation, service excellence and increasing appetite for bespoke and localised services, so knowledge management has become increasingly critical for organisations (Sirkin, Hemerling & Bhattacharya, 2008). Kogut and Zander (1992) propose knowledge to be the foremost strategic resource. According to McGurk and Baron (2012), having the capability to rapidly assimilate knowledge, utilise it to modify process, and increase the speed of delivery is a major influence on performance. They recommend that managers develop an understanding of knowledge flows into and out of their organisations, to create value from knowledge management initiatives.

The manner in which knowledge flows into, across and out of an institution has a major effect on organisational learning and protection of organisational value. There is a need for organisations to continuously refresh their knowledge, which necessitates the development of knowledge networks (network capital) so that staff members can share their knowledge with other employees (McGurk & Baron, 2012). However, they propose this to be the “Achilles’ heel” of knowledge management, because it requires persuading staff members to share their knowledge and use it in the best interest of an organisation. McGurk and Baron believe the reasons why knowledge management has not been fully embedded into practice are:

1. The objectives associated with the initiative are either too vague or too complex and over-structured.
2. There is an overemphasis on tracking and capturing knowledge, instead of learning and sharing knowledge.

Ambrosio (2000) identifies common mistakes made by organisations attempting to implement knowledge management. She believes the most common error to be failure to coordinate the actions of human resources and information technology, manifested by organisations framing knowledge management as either a people issue or a technology issue. She believes organisations need input from human resources and information technology to succeed. Ambrosio also suggests that organisations focus too intensely on information technology, developing large databases to house all a company’s knowledge, instead of concentrating on knowledge management practices and communities of practice. A
community of practice is a group of people “who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Wenger, 2011, p. 1).

Communities of practice are a means to augment participant capabilities, and develop and share knowledge, and are formed to quickly solve problems, transfer best practices, develop professional skills and recruit and retain talent (Wenger & Snyder, 2000). The reward systems in most companies are configured to recognise individual accomplishments, including historical information hoarding behaviours. Ambrosio (2000) suggests that organisations implementing knowledge management change their compensation schemes to reward team work and other actions which lead to knowledge sharing.

The critical challenges faced by organisations implementing knowledge management include a human resource element, a social element and a strategic element. The human resource component refers to the need to understand employee motivation for contributing to a knowledge management initiative, and how this influences the character of knowledge management implementation. The social component relates to the construction of social networks or informal community networks, such as communities of practice and communities of interest for sharing knowledge. The strategic challenge involves combining technology and human-centric strategies in order to enable knowledge transfer within the organisation (McDermott, 1999; Widén-Wulff & Ginman, 2004). The technology components provide the basis for managing explicit knowledge, and the human-oriented elements provide a basis for managing tacit knowledge (Nonaka & Takeuchi, 1995).

**Rationale for implementing knowledge management**

The management of knowledge within organisations can be problematic because of ‘conceptual confusion’, which can result in conflicts between business units or functions. As a result knowledge management initiatives can end in failure because they are disconnected from strategic objectives, impeded by political struggles and failure to meet organisational needs. The cause of such conceptual confusion is the multi-dimensional nature of knowledge management and the diverse perspectives through which the discipline is viewed (De Long & Seemann, 2000). The first element contributing to conceptual confusion is the complexity of the subject in terms of different levels of analysis, conflicting objectives and varying levels of experience. The multifaceted nature of the knowledge management process also contributes to this complexity. A second source of conceptual confusion is an individual’s role within an organisation. The four perspectives identified by De Long and Seemann are strategy/leadership, knowledge content/practice, technology and change management/reengineering.
Senior executives view knowledge management as a means of supporting strategic business objectives, but line managers are more concerned with the mechanics of managing knowledge and how this is applied in practice. The technology perspective is focussed on the utilisation of information and communication technologies to manage knowledge, and change management/reengineering perspectives consider the changes required to organisational structure and culture to exploit knowledge. The objectives associated with knowledge management are influenced by the conceptual confusion relating to the discipline and, as a consequence, the field has an array of stated aims. The most commonly stated knowledge management objectives are the creation of competitive advantage (Joshi, Farooquie & Chawla, 2016), stimulation of innovation (Du Plessis, 2007), support for new product development (Pitt & MacVaugh, 2008), establishing a basis for decision-making (Quast, 2012; Rus, Lindvall & Sinha, 2002) and realisation of organisational efficiencies (Rasula, Vuksic & Stemberger, 2012).

Knowledge management as a social activity
A number of authors consider the implementation of knowledge management to be a social activity, and as a consequence, the extent of social interaction determines whether a knowledge management initiative succeeds or fails (Brachos et al., 2007; Thomas, Kellogg & Erickson, 2001). In addition, an effective knowledge management strategy necessitates balance between technology and human approaches (Albino, Garavelli & Gorgoglione, 2004; Argote et al., 2000). For knowledge management implementations to succeed, organisations need to possess an appropriate organisational culture, the requisite technical capabilities and employees with the motivation to acquire, utilise and share knowledge (Moffett, McAdam & Parkinson, 2003). According to De Long and Fahey (2000), appropriate organisational cultures possess characteristics that support the creation, sharing and utilisation of critical knowledge. Senior management support is considered a key enabler for implementing knowledge management (Yeh, Lai & Ho, 2006).

The successful introduction of knowledge management practices and the promotion of knowledge sharing behaviour is also dependent on organisational commitment (Jashapara, 2011). Commitment is considered an attitudinal consequence of the psychological contract, which is based on the perceptions individuals and organisations bring to the employment relationship. Such commitment is derived from the core elements of psychological contracts, which are fairness, trust, fulfilment of obligations, and realisation of expectations. These
components are influenced by culture and climate, expectations and human resource practices as shown in Figure 2.4.
It has been suggested that traditional psychological contracts are being replaced by transactional psychological contracts in some industries (Inkson, Heising & Rousseau, 2001), which may have an effect on organisational commitment and therefore knowledge management. Frost, Osterloh and Weibel (2010) propose that these transactional contracts are not able to sufficiently motivate workers to generate and share knowledge, and propose transformational solutions to foster knowledge worker’s intrinsic motivation to collaborate voluntarily.

Contingent employment relationships
It is suggested that contingent employment relationships comprise both transactional and relational elements, which increases their complexity (Arthur & Rousseau, 1996; Beard & Edwards, 1995). However, contingent workers are more likely than permanent staff to recognise that their psychological contracts are more transactional than relational (Millward & Hopkins, 1998). The transactional nature of temporary employment implies that contingent workers may be insufficiently motivated to generate and share knowledge (Frost, Osterloh & Weibel, 2010). However, a contingent worker’s psychological contract becomes more relational over time, even though the relationship is affected by contract infringement and the level of support afforded by an organisational (Lee & Faller, 2005). In contrast with permanent employees, contingent workers perceive their relationship with an employer to be narrower in relation to terms and incentives, which results in lower commitment to an organisation and a disinclination to engage in OCBs such as knowledge sharing. In summary, contingent workers hold less positive attitudes than their permanent counterparts, but by provisioning appropriate rewards organisations are able to induce organisationally supportive behaviours (Coyle-Shapiro & Kessler, 2002).
The role of culture, trust and knowledge assets

The relationship between organisational culture and trust is confirmed by Genetzky-Haugen (2010), who found that organisational culture is a predictor of trust. Organisational cultures that engender trust encourage interaction between employees and focus on constructive norms including achievement, self-actualising, humanistic-encouraging, and affiliative behaviours. An achievement culture expects members to set themselves challenging yet achievable goals, and the need for supervision, rules and procedures is limited because people are highly motivated. Organisations with self-actualising cultures revere creativity and quality. Members are encouraged to take responsibility for their own development and undertake unfamiliar and interesting tasks. Organisations with humanistic-encouraging cultures employ participative and person-centred strategies, and there is an expectation that members help each other to grow and develop. Affiliative cultures place particular emphasis on constructive personal relationships. Organisations with affiliative cultures expect employees to be friendly and attentive to the needs of their work groups (Cooke & Lafferty, 1995).

The modern business can be understood as a factory (knowledge factory), a place where knowledge raw materials get put to work (Adams & Oleksak, 2010), with value created by combining diverse classes of knowledge asset. The knowledge assets identified by Adams and Oleksak are human capital, relationship capital and structural capital. Anklam (2007, p. 119) describes human capital as “the knowledge, skills, experience and problem-solving capabilities of the individuals who work in and for the organisation.” She describes relationship capital as “the value of an organisation’s relationships and reputation with customers, suppliers, employees, partners, the cities and countries in which it does business” (Anklam, 2007, p. 119). Partnerships are divided into those that create value for an organisation which include traditional suppliers in a manufacturer’s supply chain and contractors employed by service companies as a substitute for their own human capital on specific projects, and others supplying support services such as payroll, IT and administrative services. However, it is suggested that all partners are “an integral part of a business’s value creation factory” (Anklam, 2007, p. 26) because the failure of partners to fulfil their obligations represents a significant risk to an organisation. Structural capital includes internal procedures, organisational structures and processes that have developed over time, which allow an organisation to operate as it does (Adams & Oleksak, 2010). Adams and Oleksak (2010) also identify four forms of structural capital: culture, organisational knowledge,
intellectual property (IP), and processes. Culture is the least tangible of the structural assets and Adams and Oleksak (2010) suggest that it can be a productive or destructive force within an organisation, and is difficult to change.

2.3.1 Evolution of Organisational Knowledge Management Practices

It has been proposed that knowledge management is evolutionary, and that the ultimate aim of knowledge management programmes is the transition to a learning organisation. Previous research indicates a close relationship between knowledge management and the concept of the learning organisation. Knowledge management can be regarded as a sub-system of the learning organisation with changes in knowledge management resulting in changes in the organisation and vice versa (Aggestam, 2006). Loermans (2002) further believes that knowledge management and learning organisations cannot exist without each other. He proposes that organisations wanting to transform themselves into learning organisations must attend to both in parallel. Dust, Dehaghi and Demneh (2014) also found knowledge management to be necessary for establishing a learning organisation.

According to Garvin (1993, p. 80), a learning organisation is “An organisation skilled at creating, acquiring and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights.” According to Tait and Blinco (2014), learning organisations share the following characteristics:

- They include staff at all levels in learning;
- They listen to and value individuals at all levels;
- They understand the nature of learning needs and make it part of organisational culture;
- They employ leaders who provide a shared purpose and clear direction in relation to professional development.

Organisation learning is the processes and procedures undertaken in an institution, as opposed to a learning organisation which is deemed an end state. A learning organisation accentuates the structural characteristics that allow organisations to learn (Dust, Dehaghi & Demneh, 2014). The adoption of learning organisation practices is associated with superior financial performance (Ellinger et al., 2002). According to Mishra and Uday Bhaskar (2011), the creation, sharing, retention and enhancement of knowledge is central to the learning
organisation, and an organisation’s ability to perform these functions differentiates developed (high) and less developed (low) learning organisations. The characteristics associated with these knowledge management attributes are shown in Table 2.3.

**Table 2.3: Comparison of HLO and LLO Knowledge Management Attributes**

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Characteristics</th>
<th>High learning organisation</th>
<th>Low learning organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge creation</td>
<td>Self-learning</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Both informal and formal mode of learning</td>
<td>✓</td>
<td>✓ x</td>
</tr>
<tr>
<td></td>
<td>Rewards for idea generation</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>Decentralised and multi-channel interaction</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Top-driven</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td>Knowledge up-</td>
<td>Training programs (external and internal)</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>gradation</td>
<td>Benchmarking of best practices</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Job rotation</td>
<td>x</td>
<td>✓</td>
</tr>
<tr>
<td>Knowledge retention</td>
<td>Structured knowledge retention process</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Detailed exit interview</td>
<td>✓</td>
<td>x</td>
</tr>
</tbody>
</table>

Notes: ✓ = Exists, x = Does not exist, ✓ x = Partially exists

Source: Mishra and Uday Bhaskar (2011, p. 355)

**Knowledge management and collaboration**

The shift from a production-based economy to a knowledge-based economy necessitates the replacement of organisational hierarchy with workplace collaboration (Evans, 2012). According to Marshall (1995, p. 4), collaboration is “a principle-based process or working together that produces trust, integrity and breakthrough results by building true consensus, ownership and alignment in all aspects of the organization.” Organisations adopting collaborative work practices experience increased productivity, and an augmented capacity for creativity and innovation, which results from improved knowledge sharing (Evans, 2012). Knowledge management facilitates collaboration and the sharing of tacit knowledge (Du Plessis, 2007), which is critical to an organisation’s ability to innovate (Tamer Cavusgil, Calantone & Zhao, 2003). Collaboration between cross-functional teams is regarded as critical in situations where tacit knowledge is used for innovation (Cardinal, Alessandri & Turner, 2001). Du Plessis (2007, p. 24) defines collaboration as “the ability of customers, suppliers and employees to form knowledge sharing communities within and across organizational boundaries, that can work together to achieve a shared business objective, resulting in benefits to all community members.” This definition acknowledges the need to
collaborate with parties internal and external to the organisation, and the mutual benefits that can be derived from the relationship. Collaboration through informal networks is a means to access tacit knowledge quickly and efficiently (Pyka, 2002), but technological platforms and tools also enable knowledge sharing within and across different groups (Du Plessis, 2007). An informal network or organisation is defined by Simon (2013, p. 198) as “interpersonal relations in the organization that affect decisions within it but either are omitted from the formal scheme or are not consistent with that scheme…no formal organisation would operate effectively without an accompanying informal organisation.” Informal networks develop for various conscious and unconscious reasons (Waldstrøm, 2001), and these include:

- fulfilment of affiliation needs;
- supporting the creation of an identity and improving self-esteem;
- affording a structure to support a shared social reality;
- offering a defence mechanism to respond to threats (perceived or actual);
- providing a mechanism to reduce risk (strength in numbers);
- facilitating communications and offering a means of bypassing formal channels;
- extending a mechanism for exchanging favours; and
- influencing colleagues and superiors.

To summarise, this section reflects on the implementation of knowledge management within organisations, with specific emphasis on how theory has informed practice. Rapid and significant change occurring in the wider economic environment was identified as a stimulus for institutions to develop their knowledge management capability.

The literature suggests that knowledge flows within and across organisational boundaries, and that this is achieved with networks and the combining together of different types of capital. It was proposed that the sharing of knowledge is a key condition of knowledge management and one that is not performed well in many organisations because it has not been embedded in practice. It was maintained that knowledge management necessitates collaboration across an entire institution and that this is not the predominant standard within many institutions, because information technology dominates other areas.

The implementation of knowledge management is dependent on multiple elements, but leadership support, organisational culture and unambiguous business strategies were emphasised as being of greater significance. The critical role of individuals in the deployment
of knowledge management initiatives was also acknowledged, with trust and commitment being identified as major considerations when introducing practices for managing knowledge. It was reasoned that inducing these sentiments presents a challenge for organisations because psychological contracts between organisations and employees have become more transactional, which has implications for managing contingent knowledge workers in relation to knowledge management.

2.3.2 International knowledge management studies

The literature pertaining to the Knowledge Management discipline is substantial, and as a consequence much of this material was developed in diverse localities and environments. The theoretical basis for this research is wide-ranging, but a number of studies contemplating knowledge sharing and temporary employment used SET as a means of examining individual behaviours. In particular, a study undertaken in Taiwanese IT companies by Tsai and Cheng (2012) suggests that knowledge sharing is influenced by the relationship between individuals and organisations. They recognise that staff members continuously evaluate the costs and benefits associated with relationships, and that employees will leave relationships where costs exceed benefits. The costs associated with knowledge exchange are reduced by commitment based on trust, which serves to increase overall knowledge exchange, therefore Tsai and Cheng propose that an objective of managers is the creation of environments which support social exchanges.

Research undertaken by José Chambel and Sobral (2011) found that SET is an appropriate framework for examining the effects of training provided to temporary workers within Portuguese organisations. The study suggests that temporary workers respond to training by developing affective commitment towards a client organisation due to reciprocity. SET is also used by Bartol et al. (2009) to examine knowledge sharing amongst knowledge workers in China. The study shows that reciprocity is dependent on “a history of open-ended exchanges” (Bartol et al., 2009, p. 223), and that reduced job tenure may inhibit the reciprocity. SET is also used by Bock and Kim (2002) to examine the influence of rewards on the knowledge sharing intentions of workers employed by South Korean public sector organisations. The study suggests that extrinsic motivators are an ineffective means of promoting knowledge sharing, and that positive attitudes towards knowledge sharing develop through reciprocation. The use of SET for examining knowledge sharing intentions in diverse contexts provides support for its application to New Zealand based organisations. The
following section considers knowledge management practice in New Zealand, with SET examined further in §3.1.

2.3.3 Knowledge Management Practice in New Zealand

The preceding section examined the factors that organisations should consider when implementing knowledge management, and how the discipline has evolved to form a part of a wider body of knowledge relating to learning organisations. The focus is now turned to current knowledge management practice in New Zealand.

A survey carried out by McCullough et al. (2004) found that knowledge management practices in New Zealand are nascent and still maturing. In addition, Patterson (2001) suggests that the capability of firms and the micro-economic structure of the economy are not conducive to fostering national innovation. It is also claimed that New Zealand companies are not fully exploiting the intellectual capital and organisational knowledge at their disposal (Ingham, 2001). The formation of the Ministry for Business, Innovation and Employment (MBIE) in 2012, by merging the Ministries of Economic Development, Science and Innovation and the Departments of Building and Housing and Labour, was completed as a means of partially addressing these failings (State Services Commission, 2014).

In 2004, McCullough et al. conducted a survey of New Zealand public and private sector institutions, with the aim of determining the knowledge management capability of these institutions. They found that only a small number of New Zealand organisations had established positions at executive level with responsibility for managing knowledge. In the private sector, small groups of managers lead knowledge management and in central government a single director or senior manager is assigned the responsibility. The New Zealand organisations surveyed support the view that knowledge management is a business centric activity, but emphasised the role of information and communication technologies in the processes governing the creation, distribution and utilisation of knowledge (McCullough et al., 2004).

According to Hutchison and Boxall (2014), New Zealand organisations are facing a war on talent caused by emigration and retirement of older workers, many of whom possess important knowledge. Staff retention is therefore considered an important part of managing people and internal resources. In this context Boxall, Macky and Rasmussen (2003) proposed individual development of employees to be more important than remuneration.
In summary, it is suggested that the New Zealand employment market will in future be characterised by a shortage of knowledge talent, thus supporting the view that knowledge management and the management of knowledge workers (including contingent knowledge workers) will assume greater importance for New Zealand organisations. It is acknowledged that knowledge management practice in New Zealand is immature (Lin, 2013).

2.3.4 Considering the role of data, information and knowledge

ICT provides the platform for creating, sharing, and exploring knowledge artefacts, and mitigates the challenge of sharing information and knowledge between geographically dispersed individuals and teams. Digitalisation of knowledge also enables more efficient and effective use of resources, and provides a basis for improved decision-making and problem solving ability (McLean, 2005). Bigliardi, Dormio and Galati (2010) supports the view that ICT assists the transfer of knowledge across time and space, but also recognises the increased speed of these interactions. It is also suggested that information technology support contributes to ‘knowledge-based dynamic capability’ and ultimately firm performance. Information technology provides a means of contextualising and creating information, and suggest the highest level of information to be ‘Analytics.’ Analytics is described as “explicit, critically analysed information” (Bakos et al., 2016, p. 63), and a superior analytics capability supports the establishment of competitive advantage. The creation of knowledge or analytics requires information to be organised, and ICT and information management (IM) are essential for systemising information. This section suggests a dependence between knowledge management and ICT, so the connection between these fields is further investigated in §2.4.

2.4 How Information Technology Influences Knowledge Management

Organisations need some level of technical capability to succeed, but an over emphasis on information technologies is considered detrimental when implementing knowledge management. This section considers the role of information and communication technologies in managing organisational knowledge.

Computers and computer technology are widely used in New Zealand organisations, with 97 per cent using computers, 96 per cent utilising the Internet, 69 per cent possessing a website and 94 per cent having broadband connections. Corporate entities are deriving benefits by digitising their processes and information technology is transforming working practices.
Manual processes, such as bank telling, that previously required the participation of multiple employees can now be performed by a smaller number of people and appropriate computer technology. Technological advances have provided organisations with the ability to store, retrieve, transmit and receive, and manipulate data economically. As a consequence it is easier for organisations to acquire, store and disseminate knowledge, but information technology is not considered by some researchers to be a prerequisite for successful knowledge management implementation, with the suggestion that information technology should only be adopted when necessary (Hibbard & Carrillo, 1998; McDermott & O’Dell, 2001).

Information technology can accelerate knowledge-sharing capabilities, but it can be difficult to incorporate human behaviour aspects into technology. Simply deploying information and communication technologies will not ensure the success of knowledge management initiatives, their introduction “has to be part of a balanced and integrated set of components” (Mohamed, Stankosky & Murray, 2006, p. 105). The adaptability afforded by information and communication technologies provide a basis for managing different knowledge types (explicit and tacit), but this diversity necessitates the adoption of tailored approaches to knowledge management (Alavi & Leidner, 2001). It is proposed that information technology within organisations serves a dual role. The first is the automation of organisational tasks, and the second is the provision of information needed to facilitate organisational decision making and the interchange of thoughts, ideas and concepts (Sanders, 2008). For example, the amalgamation of information technology with a people oriented business process allowed Citibank to derive significant time and cost savings, and personalise their service. A redesign of specific information technology systems reduced response times by empowering employees and reducing the time required to transfer information between people and functions (Rucker, 2000).

According to Walsham (2001), computer systems can help organisations to manage knowledge if they support the creation and transfer of human meaning. However, Walsham believes human relationships cannot be reproduced or supplanted by information technology and that knowledge management implementation should commence with human processes and not with computer systems.

The ability of information and communication technologies to contribute to knowledge management necessitates the combining of a “convergent” dimension and a “divergent”
dimension (Van den Brink, 2003). The convergent dimension allows individuals to connect with each other by increasing analysis and dialogue, and enabling virtual networks that are not restricted by temporal or geographic obstacles. The convergent dimension assists in the transfer of tacit knowledge by enhancing coordination and communication between employees. The divergent dimension relates to access and retrieval of explicit knowledge components, and emphasises the need to organise knowledge by classifying content and imposing taxonomies. It is acceptable for organisations to utilise multiple taxonomies, because different groups categorise knowledge according to diverse criteria. However, the need to share knowledge throughout an organisation necessitates standardisation of the terms and structures (McDermott, 1999). For the knowledge contained in an organisation’s information systems (explicit knowledge) to remain relevant, institutions are required to delete obsolete content, archive infrequently used knowledge and restructure and reorganise the remaining documents. Reorganisation of knowledge content involves the elimination of redundancies, combination of orphaned threads and development or redevelopment of knowledge categories (Zack, 1999b).

Information systems used to store and retrieve knowledge, enable collaboration, expose knowledge sources, extract concealed knowledge diverse repositories and acquire and utilise knowledge, are collectively known as knowledge management systems. Many of the technologies that enable the storage, retrieval and communication of knowledge within organisations are already in place. However, because these have been implemented over an extended time period they can be fragmented, which impedes the transfer of knowledge within the institution (Tiwana, 2002). Frequently used knowledge management technologies are shown in Figure 2.5 Error! Reference source not found..
Knowledge management systems are continuing to evolve, and current technologies utilise mobile devices and mobile applications and Web 2.0 and Enterprise 2.0 tools such as blogs and microblogs, wikis, RSS and social networking (Tsui, 2013). Although organisations might adopt these newer technologies a large proportion retain knowledge management systems built using older platforms, which creates a fragmented architectural environment (Tiwana, 2002). New knowledge management tools are being continually developed and these typically include features that support single phases within the knowledge management cycle (Knowledge Generation, Codification, Retrieval, Transfer, Purging). It is rare for knowledge management systems to have the ability to operate across multiple phases (Banerjee, 2005). Banerjee (2005) groups knowledge management tools according to purpose, which are shown in Table 2.4.
Table 2.4: Knowledge management tools and their applications

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Knowledge management tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge generation</td>
<td>• Online Analytical Processing (OLAP);</td>
</tr>
<tr>
<td></td>
<td>• Group Decision Support;</td>
</tr>
<tr>
<td></td>
<td>• Data-mining tools;</td>
</tr>
<tr>
<td></td>
<td>• Meeting support tools.</td>
</tr>
<tr>
<td>Knowledge codification</td>
<td>• Document Management System;</td>
</tr>
<tr>
<td></td>
<td>• Content Management System;</td>
</tr>
<tr>
<td></td>
<td>• Text mining tools;</td>
</tr>
<tr>
<td></td>
<td>• Taxonomy generators;</td>
</tr>
<tr>
<td></td>
<td>• Knowledge repositories.</td>
</tr>
<tr>
<td>Knowledge retrieval</td>
<td>• Retrieval systems;</td>
</tr>
<tr>
<td></td>
<td>• Search engines;</td>
</tr>
<tr>
<td></td>
<td>• Navigators.</td>
</tr>
<tr>
<td>Knowledge transfer</td>
<td>• Online cooperative tools:</td>
</tr>
<tr>
<td></td>
<td>o Videoconferencing;</td>
</tr>
<tr>
<td></td>
<td>o Screen sharing;</td>
</tr>
<tr>
<td></td>
<td>• Work coordination:</td>
</tr>
<tr>
<td></td>
<td>o Workflow management;</td>
</tr>
<tr>
<td></td>
<td>o Electronic white boarding;</td>
</tr>
<tr>
<td></td>
<td>o Knowledge of object sharing.</td>
</tr>
</tbody>
</table>

Source: Banerjee (2005)

Product and process views of knowledge management

Knowledge management practice conforms to either a product or process perspective. The product view of knowledge management endeavours to divorce knowledge from the knower, which supposes that knowledge can be discovered and controlled as a discrete entity. The product view of knowledge management relies on structural capital including information technology. In contrast, the process view regards knowledge management as a social communication activity that is dependent on collaboration and cooperation. The process view is not concerned with capture and distribution of knowledge, and does not hold that knowledge is detachable from the knower (Massingham, 2014a).

Massingham (2014b) refers to the capture of collective wisdom and the facility for accessing it as ‘preservation’, and necessitates the utilisation of toolkit incorporating information technology and systems. Specific elements include:

- select process;
- storage;
- metadata; and
- lessons learned database.
The select process concentrates on identifying the knowledge to preserve, and ensuring that it is captured and maintained. Ongoing selection, accumulation and conservation of knowledge assist in refining organisational memory, and contribute to continuous learning and improvement. The storage process is based on concepts of content management, the main focus being the identification of the most appropriate means of organising knowledge so that it accessible and can be used by different parties. Metadata is ‘data about data’ and this tool provides individuals with the contextual background of the data held in a knowledgebase. Metadata consists of data from a range of sources (metadata repository), and describes how stored knowledge can be accessed. Finally, the lessons learned database consists of information relating to past situations which can be applied to present decisions or activities. The lessons learned process is intended to avert mistakes and prevent duplication through the sharing of experiences.

According to McLean (2005), ICTs provide a basis for more efficient use of resources, enhance an organisation’s ability to make decisions and solve problems, reduce difficulties associated with geographically dispersed workers, augment the capacity of organisations to analyse large volumes of data, and increase organisational capability with respect to knowledge creation, sharing and exploitation. It is proposed that information technology has “a significant positive relationship with knowledge-based dynamic capability, and, in turn…firm performance” (Bigliardi, Dormio & Galati, 2010, p. 19). Such competencies are reliant on ICTs, because they provide the capacity to explore and exploit knowledge effectively and efficiently. Traditionally, ICTs are used to store and retrieve data, but research undertaken by Sian Lee and Kelkar (2013) showed that technology plays a significant role in the maintenance of relationships, sharing of experiences and self-development. Examination of the ICTs used in the creation of knowledge showed the adoption of different mixes of technologies during each stage of the SECI model.

The grand vision of knowledge management

In the nineties, many organisations and theoreticians sought to deliver a grand vision of knowledge management largely through software systems. But Tuzhilin (2011) suggests that the field of knowledge management was not widely adopted and never became a mainstream technology. He also suggests that knowledge management initiatives remained niche projects in a small number of organisations, supported by in-house systems. Tuzhilin believes that a number of knowledge management initiatives launched in the mid-nineties attempted to deliver a ‘grand vision’ of knowledge management, but this was over-ambitious and difficult
to realise by developing specific software systems. The ‘grand vision’ necessitated capturing an organisation’s explicit and tacit knowledge, converting tacit knowledge into explicit knowledge, and structuring and organising it, to make it suitable for automated analysis and processing by knowledge management software. This organised and processed knowledge could be disseminated throughout an organisation and shared with relevant parties (internal and external) to further the goals of that organisation. An inability to deliver the ‘grand vision’ has led to frustration and disillusionment with knowledge management, and triggered the abandonment of knowledge management projects.

A number of information technology advances may provide the basis for bridging these gaps, and Tuzhilin (2011) believes that these can be instrumental in the rebirth of knowledge management. The developments identified by Tuzhilin include the introduction of content management and availability of new technology platforms. Content management provides a formal mechanism for administering digital content, such as audio files, images, multimedia, video and text. Content management systems promote collaboration between those responsible for creating, editing, publishing, administering and consuming digital content, and they enable the application of review standards and version control.

The expansion and development of the internet also provides organisations with opportunities to augment their knowledge management capabilities. According to Tiwana (2002), the internet provides a means of connecting disparate and incompatible knowledge management systems. This integrative capability is derived through the use of hypertext mark-up language (HTML), which is a standardised syntax used to produce web pages and web applications.

Another means of harvesting people’s knowledge is through user-generated content, which takes the form of attaching comments on social media sites, blogging, construction of wikis and tweeting. These activities are widespread in people’s personal lives, but this type of activity is typically discouraged or not actively promoted in organisations. The creation of knowledge sharing and participatory organisational cultures became more attainable due to the consumerisation of information technology (Nusca, 2011). In this way employees practice at work the activities that they perform outside of the organisations as individuals. However, a large amount of user-generated content is amorphous and needs to be converted and organised before it can be utilised (Tuzhilin, 2011).

It has been proposed that the internet and cloud computing provides organisations with the means to combine individual knowledge management systems, affording a solution to the
fragmented knowledge architecture present in many institutions (Tiwana, 2002). However, another challenge facing organisations is the need for employees to have access to knowledge outside formal office environments. The need for a mobile knowledge management (MKM) capability is recognised by Kumar, Dey and Rao (2011), who suggest that existing knowledge management strategies will be strengthened when organisations incorporate mobile solutions. For mobile knowledge management to be successful, organisations are required to provide seamless integration with corporate knowledge management systems for those staff performing tasks in out-of-office locations (Folorunso et al., 2010).

Although the internet and mobile technologies are beneficial to knowledge management practice, they present a challenge for organisations in relation to the protection of intellectual assets. The protection of an organisation’s intellectual capital requires “secure knowledge management”, which according to Bertino et al. (2006, p. 429) comprises “secure strategies, processes and metrics.” Secure knowledge management ensures that authorised individuals are permitted to access and share selected knowledge, it prevents the loss of valuable information (Bertino et al., 2006). Determining an appropriate balance between securing and publishing organisational knowledge has implications for organisations (protection) and those attempting to use the knowledge (accessibility).

An investigation of a New Zealand based small and medium sized enterprise suggests that disparate knowledge management strategies operate within the organisation. Knowledge creation and transfer at an operational level rely on a personalisation strategy, but management teams are disposed towards a codification strategy. The operational (frontline) teams create knowledge in an informal way with a lot of learning attributed to one-on-one training (socialisation). The use of technology for managing tacit knowledge is limited, which is attributed to the organisation’s management not understanding how the frontline create and transfer new knowledge. Managers are the principal users of information technology because it supports the creation of explicit knowledge (codification strategy). Management’s predilection for codification is based on an imperfect understanding of knowledge management and the perceived ease of implementing standardised knowledge management technologies (Shackelford & Sun, 2009).

In summary, this section considered the role of information technology in the management of knowledge. It is suggested that information technology is not crucial to the management of knowledge, but it does enable knowledge sharing. Massingham (2014b) introduces the notion
of a toolkit for preserving wisdom, which includes components for selecting, storing, accessing and sharing knowledge. New developments in technology are creating new opportunities for organisations to improve and expand their knowledge management capabilities.

2.5 Key Themes from the Literature

The key themes discussed in this section are trust, organisational commitment (Jashapara, 2011), organisational culture (Moffett, McAdam & Parkinson, 2003), management support (Yeh, Lai & Ho, 2006) and organisational structure (Adams & Oleksak, 2010). These are discussed below in turn.

2.5.1 Trust and organisational commitment

The literature reviewed for this study proposes trust to be a necessary foundation for knowledge management (Bouty, 2000; Guest & Conway, 1997; Hislop, 2003), although the concept of trust expressed in these studies is expansive. Trust is a complex and multi-faceted concept and there is confusion amongst researchers about the meaning of the term. This is exacerbated by a proliferation of definitions and the many inferences attributed to the word (McKnight & Chervany, 2001). According to Mishra (1996), trust comprises four dimensions, which are:

- Competence – confidence in a person’s abilities;
- Openness – perceptions of openness and honesty in relationships;
- Concern – monitoring of behaviour for potentially unfair advantage and concern for the welfare of others; and
- Reliability – Disparities between what a person says and does (McGregor, 1967).

Based on these dimensions, Mishra (1996, p. 265) defines trust as: “one party's willingness to be vulnerable to another party based on the belief that the latter party is 1) competent, 2) open, 3) concerned, and 4) reliable.” This definition is consistent with the description of interpersonal trust provided by Connell, Ferres and Travaglione (2003, p. 114), which is concerned with “individual or group beliefs concerning other individuals or groups within and across the organisation.” A range of measures are used to evaluate trust in organisations, each focussing on different elements of the trust construct. According to Connell, Ferres and Travaglione (2003), these constructs include:
- Dispositional trust – Personality traits influencing an individual’s trust of other members of an organisation;
- Interpersonal trust – personal or collective perceptions of other individuals or groups within an institution; and
- Situational organisational trust – cultural characteristics and approaches to engendering trust.

Appropriate behaviour within organisations is governed by rules, and it is a shared understanding of these guidelines that provides a basis for trust. Trust in organisations is not supported by “contract [but] by socialisation into the structure of rules” (March & Olsen, 1989, p. 27). Workplace trust is defined as: “having the belief that a person or an employer will be honest and consistently follow through with commitments” (Alston, 2014, p. 1). During interactions, trust between parties intensifies and subsides, but reciprocity in exchanges enhances trust, and a lack of reciprocity is detrimental to trust (Kramer, 1999).

The literature review also established a linkage between trust and organisational commitment (Fard & Karimi, 2015). Organisational commitment is defined by Porter et al. (1974, p. 604) as “an attachment to the organisation, characterised by an intention to remain in it; an identification with the values and goals of the organisation; and a willingness to exert extra effort on its behalf.” Institutions that are proficient at creating and adapting knowledge are characterised by their ability to engender high levels of commitment amongst employees (Alvesson, 2000). Jayasingam and Yong (2013) differentiate between normative, continuance and affective commitment. Normative commitment is illustrated when employees feel obliged to do something, and continuance commitment originates from a workers need for financial sustenance. Affective commitment is displayed when employees choose to perform voluntary acts such as remaining with an organisation and sharing their knowledge. Meyer et al. (2002) propose affective commitment to have a significant influence on job performance and OCB, and it is suggested that affective commitment also has a strong association with favourable organisational outcomes. As a consequence organisations commonly endeavour to promote this form of commitment (Meyer & Allen, 1997).

According to Jayasingam and Yong (2013), knowledge workers possess unique characteristics, so engendering affective commitment amongst this group requires specific attention be paid to elements that interest them. Knowledge workers are motivated by opportunities for personal growth as opposed to monetary rewards (Cook, 1997; Levering &
Moskowitz, 1998), and the use of extrinsic rewards can have a detrimental effect to knowledge worker performance (Markova & Ford, 2011). However, organisations make extensive use of financial rewards to “attract and retain the strongest personnel” (knowledge workers) (Stovel & Bontis, 2002, p. 303), and it is claimed that reward is an effective means of influencing knowledge worker behaviour (Al-Alawi, Al-Marzooqi & Mohammed, 2007; Forstenlechner & Lettice, 2007; Lin & Tseng, 2005). The study carried out by Jayasingam and Yong (2013) is specific to Malaysia, which raises a question about the generalisability of the results relating to financial reward. It is possible this finding represents a cultural viewpoint which cannot be directly applied to other countries and cultures. Organisational reward systems encompassing monetary and non-monetary rewards have the potential to motivate individuals to perform targeted behaviours (Bartol & Srivastava, 2002), but motivating employees to share their knowledge requires rewards that meet each person’s needs and perceptions (Al-Alawi, Al-Marzooqi & Mohammed, 2007). Monetary rewards are an effective means for encouraging knowledge sharing in specific circumstances, but the establishment of trust between an individual and an organisation is critical for the sharing of knowledge during informal interactions (Bartol & Srivastava, 2002).

Human resource policies intended to engender greater commitment amongst one group of workers can negatively impact the commitment of employees belonging to other occupational groups within the same organisation. Satisfaction with benefits is important for routine-task workers, but less significant for knowledge workers (Benson & Brown, 2007). The development of human resource management strategies that recognise the differences amongst occupational groups is necessary to prevent conflict and safeguard knowledge sharing behaviours between different sectors within an institution (Camelo-Ordaz et al., 2011). The application of a common human resource management strategy to all groups within an organisation may be inappropriate, and Horwitz, Heng and Quazi (2003); Kinnear and Sutherland (2000) recommend developing individualised and specialised human resource practices for different classes of worker. Similarly, Lepak and Snell (1999); Kang, Morris and Snell (2007) advocate adapting and configuring human resource practices, employment modes and employment relationships, to recognise the value and uniqueness of different employees. According to Zapata-Cantú, Ramírez and Pineda (2012), human resource management makes a strategic contribution when delivering knowledge management initiatives. They suggest existing human resource management policies, practices and compensation systems do not support knowledge management initiatives. They propose the
incentives and rewards currently offered to employees are incapable of motivating individuals to create and share their knowledge.

The literature reviewed for this section suggests that the sharing of knowledge within an organisational context is dependent on employee trust and a feeling of affective commitment towards an organisation. As a group knowledge workers respond to different types of reward and not exclusively financial incentives. It is suggested that organisations customise their human resource strategies to meet the needs of different types of employees.

2.5.2 Organisational Culture

References to organisational culture are prevalent in the literature reviewed for this thesis, and it is proposed that an appropriate culture is necessary for the creation, sharing and utilisation of institutional knowledge (De Long & Fahey, 2000). It is suggested that organisations focus on the creation of cultures that develop, reinforce and sustain trust, because trust has a significant influence on business outcomes. Organisations with high-trust cultures need fewer rigid controls, but low-trust cultures are characterised by bureaucratic procedures that reduce an entity’s creative and innovative capability. High-trust cultures encourage the sharing of knowledge and information. Knowledge management is regarded as successful when individuals voluntarily participate in activities for creating and sharing knowledge, and to attain this goal it is necessary for organisations to develop open cultures. Organisations with open cultures exhibit a high-level of trust for their employees, demonstrated through the allocation of responsibility and granting of autonomy (Alston, 2014).

The concept of organisational culture has been the subject of much research but there is a lack of consistency with respect to what the term comprises (Al Saifi, 2015). The difficulty conceptualising the term arises because it encompasses a set of complex, interconnected and ambiguous elements (Cameron & Quinn, 2011). According to Morgan (2006), organisational culture can be defined from an anthropological perspective or from a sociological perspective. The anthropological position emphasises that organisations possess cultures and the sociological view point proposes that organisations are cultures. Schein (2004, p. 12) defines culture as:

“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.”

He proposes that organisational culture is a multi-level construct, comprising three conceptual levels. These levels include artefacts, espoused beliefs and values, and underlying assumptions. Artefacts are visible expressions of culture and include elements such as business practices and processes, organisational structure, form(s) of dress, language and technology. Espoused beliefs and values include an organisation’s strategies, goals and philosophies, and are the basis for observed artefacts (Schein, 2004). According to McDermott and O’Dell (2001), the way in which employees behave and interpret their institutional environment exposes an organisation’s core values. The deepest layer of organisational culture, ‘underlying assumptions’, comprises feelings, perceptions and thoughts. According to Schein (2004), these cultural elements are the most difficult to discern, learn and change. The multi-layered perspective of organisational culture provides a basis to isolate and consider the elements that contribute to organisational performance.

An organisational culture comprises multiple cultural patterns (sub-cultures), and that these cultural patterns encompass elements of four core cultures identified by Schneider (1994), which are collaboration, competence, control and cultivation, as shown in Figure 2.6.

**Figure 2.6: Four Core Organisational Cultures**

<table>
<thead>
<tr>
<th>Actuality</th>
<th>Possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>Personal</td>
</tr>
<tr>
<td>Control</td>
<td>Impersonal</td>
</tr>
<tr>
<td>Cultivation</td>
<td>Competence</td>
</tr>
</tbody>
</table>

Source: Schneider (1994, p. 77)

An organisational culture may be closely aligned with a specific core culture, but can demonstrate characteristics associated with one of the other cultures (Schneider, 1994). The blend of cultures within organisations is extended when organisations establish project teams consisting of different professions (Ajmal & Koskinen, 2008), because these occupations
typically have their own cultures and working methods (Ruuska, 1999). Professional cultures exceed organisational boundaries, and oblige members to think and behave in a way that conforms to conventions and standards defined by a specialist community (Wang, 2001). The existence of professional cultures infers the presence of professional commitment, which encapsulates an individual’s dedication to a selected occupation, and acceptance of the aims and ethics associated with the vocation. Those committed to their professions identify strongly with a specific line of work, and feel a sense of responsibility towards the maintenance of professional standards (Rahman & Hanafiah, 2002). Attempting to unify different professional cultures is not recommended, but harmony can be achieved by synthesising these philosophies through communication and co-operation. This synthesis is represented in Figure 2.7.

**Figure 2.7: Formation of Project Culture**

![Figure 2.7: Formation of Project Culture](image)

Source: Ruuska (1999, p. 12)

Organisational cultures are also influenced by the industry or sector in which it operates. Organisations operating in the same industry share cultural characteristics, but these cultural dimensions diverge across different industries (Chatman & Jehn, 1994). The realisation of a project objectives is dependent on understanding the culture of an organisation and the culture of the professions that contribute to outcome. The establishment of common values and a shared vision is essential for projects because it serves to harness the energy required to create knowledge (Ajmal & Koskinen, 2008).

It is suggested in the literature that leaders shape an organisation’s culture, but a relationship between organisational culture and organisational structure is also proposed. According to Jani ijevi (2013), organisational culture legitimises organisational structure and organisational structure institutionalises organisational culture. He suggests that organisational structure regulates employee behaviour, specifies how tasks are completed, and enforces the mode of interaction between persons and groups. When these elements are compatible with an organisation’s culture, the structure is legitimised. The introduction of
structures which conflict with an organisational culture leads to one of two outcomes: when the culture prevails the divergent organisational structure is dismantled or modified, but if a structure overcomes the culture a process of transformation is initiated.

A human resource strategy greatly contributes to the creation of a knowledge-friendly environment, which consists of appropriate cultural, structural and strategic features (Patil & Kant, 2012). Wangombe et al. (2013) propose that knowledge is a key element of all human resources, and they suggest that this is why some organisations perform better than others. According to Armstrong (2006), human resource management contributes to the creation of a knowledge-friendly environment by:

- promoting the creation of an open culture, which is characterised by trust and commitment;
- working closely with other business functions to devise mechanisms for managing explicit and tacit knowledge;
- identifying options and making recommendations with regards to organisational design;
- promote the dissemination of knowledge through the establishment of formal and informal learning processes;
- development of performance management systems and criteria, that motivate employees to share their knowledge;
- guiding the organisation’s resourcing policies to ensure valuable employees are recruited and retained; and
- encouraging managers to support knowledge management initiatives.

The actions and activities proposed by Armstrong represent a shift from traditional personnel management practices which focuses on administrative tasks, to more strategic human resource management. The ability of strategic human resource management practices to create cultures that enable the transfer of knowledge within an organisation is acknowledged by Soliman and Spooner (2000). The adoption of strategic human resource management practices is considered essential, because it is recognised that these knowledge-based workers are a valuable resource (Teo et al., 2008). It is argued that traditional human resource practice considers contingent workers to be commodities, and that a lack of specific human resource practices for these temporary employees is detrimental (Koene & van Riemsdijk, 2005). An organisation’s differing treatment of contingent workers can obstruct knowledge sharing.
between these employees and permanent members of staff, and it is proposed that human resource structures are the source of these obstructions (Zimmerman, Gavrilova-Aguilar & Cullum, 2013).

Commitment-based human resource practices, which endeavour to create long-term exchange relationships, support the creation of social environments that promote knowledge sharing and knowledge exchange (Collins & Smith, 2006). Such practices are characterised by significant investment in employees, which creates trust, encourages co-operation between knowledge workers, and promotes the development of shared symbols and language. Collins and Smith also established an indirect relationship between commitment-based human resource practices and organisational performance, which they suggest to be mediated by social climate (culture) and knowledge sharing.

The makeup of psychological contracts maintained by knowledge workers is a major determinant of their willingness to share knowledge. Individual psychological contracts shape the motivations that encourage these employees to share their knowledge, so is necessary for managers to develop an understanding of these contracts in order that they may construct customised messages to satisfy each person’s needs. The psychological contracts of knowledge workers change during the different stages of employment, which presents managers with additional complexity in determining appropriate messages (O’Neill & Adya, 2007). Many contingent workers are employed by an agency but perform their work within a client organisation. This confuses the development of psychological contracts and organisational commitment (Lapalme, Simard & Tremblay, 2011; Slattery et al., 2010). Kirkpatrick and Hoque (2006) suggest that some contingent workers (agency workers) feel they do not belong in client organisations, they perceive themselves to be outsiders. However, there is a tendency amongst agency works to relate more to client organisations than to an agency (Slattery et al., 2010). The culture of an organisation is affected by the presence of contingent workers (agency workers) (Ward et al., 2001).

2.5.3 Leading knowledge-based organisations

When describing the challenge of management in the knowledge era, Drucker (2002) used the metaphor of the orchestra, because an orchestra conductor does not know how to play each of the instruments of an orchestra, but the conductor is the leader and manager of the team making up the orchestra. Knowledge is dispersed throughout the network and is not concentrated in the managerial class. The role of a manager has changed from being an
internally focused role that worked within a strict hierarchy to one that focuses on maximising the effectiveness of the entire network of an operation. The task of a manager is to strike a balance between the vertical and the horizontal, and the challenge for managers operating in the knowledge economy is creating conditions and a structure that allows employees to carry out their work. A manager’s job is to provide employees with everything they need to undertake their work, but leave them to determine how this is to be performed.

Effective knowledge management is dependent on leaders having the ability to share knowledge, collaborate and engage with a range of stakeholders. The ability to mitigate any negative effects such as opposition, anxiety, knowledge suppression and potential disinterest is also necessary (McKenzie & Aitken, 2012). Leaders also need to be capable of embracing inconsistencies, which includes acceptance of the ever present and constant tension between knowing and doubting (Nonaka & Takeuchi, 2011; Tushman, Smith & Binns, 2011). This interplay of dualities that has complementary and opposing characteristics embodies the Chinese concept of yin and yang. According to Kaplan and Kaiser (2013, para 4), two dualities confronting all leaders are the need to be forceful combined with the need to be enabling, and the need to have a strategic focus combined with the need to have an operational focus.

The need to develop leaders with the ability to manage these opposing demands, also known as “agile leaders” is acknowledged in contemporary human resource management literature. Rapid technological advances, economic turbulence and changing consumer behaviors require organisations to be adaptable (HRM Asia, 2016; Samdahl, 2010). McKenzie and Aitken (2012) suggest that agile leadership practices could help organisations better utilise their knowledge and increase the pace of organisational learning. Leadership agility requires the ability to make sense of complex situations, assess the balance between the familiar and unfamiliar, and assess the risk of taking action and not taking action. Agile leaders enable knowledge management by always demonstrating aspects of the culture they desire, and ensuring employees are able to locate the knowledge they need to make informed decisions. They also create environments that permit experimentation and failure, and support and promote core knowledge management techniques (McKenzie & Aitken, 2012). An examination of failed knowledge management deployments determined the absence of leadership backing to be a crucial factor (Lakshman, 2007).
Effective leadership in the knowledge age requires a shift from an individual, directing position, to a perspective that recognises organisations as complex systems which support ongoing knowledge creation and capture (Uhl-Bien, Marion & McKelvey, 2007). In order to be successful in a knowledge-intensive environment a leader is required to inspire trust, by establishing credibility through the realisation of results and honouring of commitments. Providing an environment in which talented people can flourish requires the establishment of a positive culture, which is created and continually reinforced by a leader’s words and actions (Lawrence, 2013).

The linkage between organisational culture and leadership was recognised by Schein (2004), who related the construct to organisational lifecycle. He proposes that cultural characteristics within a newly formed organisation reflect the values and beliefs of the founder, because this person creates and shapes the culture. However, as an organisation evolves a leader’s actions and style are influenced by the constructed culture. It is also suggested that specific leadership styles affect organisational culture in different ways, with transactional leaders working within the boundaries and constraints of a prevailing culture and transformational leaders continually attempting to change an organisational culture to bring it into line with their vision (Bass, 1985). Effective leaders have the ability to change elements of an organisation’s culture to enhance performance (Brown, 1992).

According to Adams and Oleksak (2010), the role of the manager needs to change to encourage knowledge to flow from the bottom to the top of the organisation, and also from the outside in. They declare leadership to be less about giving commands, but more about facilitating the work of a broad network of employees, partners, and stakeholders. The network referred to by Adams and Oleksak is an abstraction of the organisation chart, wider at the bottom where there are more people working in units or on projects, with a management level connecting the worker to the corporate or executive level. Referring to Figure 2.8, Adams and Oleksak suggest that the shift to the knowledge era has necessitated a greater emphasis on the bottom of the triangle, because organisation charts describe hierarchy, but networks describe the horizontal connections in an organisation.
Figure 2.8: Organisational Pyramid

Source: Adams and Oleksak (2010, p. 54)

Takeuchi and Nonaka (2004) also highlight the need to synthesise top-down and bottom up models of management. Independently neither the top-down or bottom-up models are suitable for creating knowledge. The top-down model is suitable for managing explicit knowledge and the bottom-up model is more appropriate for dealing with tacit knowledge. As a way of synthesising these opposites Takeuchi and Nonaka proposed a “middle-up-down” model of management as a better way of controlling the creative chaos within organisations. According to (Huber, 2000), information technology is an important part of an institution’s communications infrastructure, and has increased the amount of communication taking place within organisations (Hiltz, Johnson & Turoff, 1986). A key benefit resulting from information technology is that it enables interaction between employees working within different functions and divisions (Dewett & Jones, 2001). The interrelationship of these elements is shown in Figure 2.9.

The “middle-up-down” managerial style suggests middle managers occupy a key position within the organisation, because they are able to combine strategic and operational information (Nonaka, 1988). Line and project management practices also influence the knowledge and learning environment in teams and projects (McKenzie & Aitken, 2012).
Figure 2.9: Middle-up-down Knowledge Creation Process

Source: Nonaka (1988)

2.5.4 Organisational Structure

Organisation structure is defined as “the sum total of the ways in which it divides its labour into distinct tasks and then achieves coordination among them” (Mintzberg, 1979, p. 2). The suitability of an organisational structure is dependent on different elements, including the type of work being performed, size and the geographic dispersion and the range of businesses (Morgan, 2014). It is claimed that the majority of organisations are configured in the same way as industrial factories, where workers are interchangeable and dispensable, instead of businesses dependent on knowledge workers to create and preserve competitive advantage (Adams & Oleksak, 2010). These views are not specific to a given country or culture. Hierarchical models might be more prevalent in some Asian, African and Middle Eastern countries, and democracy and power sharing are relatively Western concepts, but Western organisations are known to operate in this mode.

Takeuchi and Nonaka (2004) make reference to synthesis of hierarchy/task force. Hierarchy refers to a highly formalised, specialised and centralised organisational structure, and the task force is a highly flexible, adaptive, dynamic, participative, temporary organisational structure. Takeuchi and Nonaka argue hierarchies are efficient structures to acquire, accumulate and exploit new knowledge, but restrict individual creativity because of their tendency for control. Hierarchical organisations impede the acquisition, accumulation and exploitation of tacit knowledge, and Takeuchi and Nonaka propose that the task force (project) represents an effective structure to create new knowledge. However, the
impermanence of task forces make them unsuitable for the continuous exploitation and transfer of knowledge throughout an organisation, and they are not well suited to tap explicit knowledge. It is proposed that knowledge sharing within government agencies is challenging because these organisations are typically hierarchical and bureaucratic, requiring staff to seek approval from multiple parties before performing tasks (Liebowitz & Yan, 2004).

A review of current human resource management literature revealed a significant quantity of material relating to organisational design and the function’s role in reshaping organisation structure. Lawler (2014) suggests that human resources managers spend less than fifteen per cent of their time as strategic business partner, and the most time on the implementation and administration of HR policies and practices. Lawler believes that human resources rarely contribute to the development and execution of business strategies. Organisational design models make explicit the need for human resource management expertise (Corporate Executive Board, 2009), in relation to the creation of organisational structures with appropriate roles, information flows and reporting relationships.

The structure of an organisation influences knowledge management, with knowledge management practice enhanced when an institution is less centralised, more complicated and more integrated (Mahmoudsalehi, Moradkhannejad & Safari, 2012). Centralisation refers to the concentration of decision making authority at the highest levels of an organisation, and complexity is the degree of autonomy provided to different subunits and functions within an organisation. Integration is the extent to which institutional activities can be organised through formal coordination mechanisms (Lee & Grover, 1999).

**Formation of silos**

Traditional organisational structures are vertically arranged (hierarchy) with jobs grouped by function into departments, and the number of management layers dependent on the size of the organisation (Morgan, 2014). Departments and divisions within these traditional organisational structures act as knowledge silos (Sydow, Lindkvist & DeFillippi, 2004). However, Eunson (2007) suggests a silo culture is representative of over-compartmentalised and over-territorial organisations in which sections, departments and divisions stand apart. These environments are characterised by minimal or a complete absence of communication between areas that should be communicating. Silos have negative consequences for knowledge management because they reinforce pre-existing hoarding behaviours and obstruct knowledge sharing (Ministry of Justice, 2013). According to Adams and Oleksak...
(2010), contemporary organisations cannot function if employees are not allowed to step outside a silo or chain of command, because confinement to prescribed channels inhibits communication and reduces agility.

Temporary organisational structures
As a means of bypassing the restrictions created by silos, organisations establish temporary organisations, which are designed with the purpose of creating unique products, services or results. Traditional firms are characterised by work which involves ongoing tasks, permanent assignments and defined roles, but contemporary firms utilise temporary organisations to iteratively solve ‘wicked problems’ through collaborative work practices (Dunne & Martin, 2006). Temporary organisations include projects, programs and special task forces, and are often formed to enable change in firms or other entities (Lundin & Söderholm, 1995). The challenge of managing knowledge in temporary organisations is little researched (Brookes et al., 2006), but their increasing use necessitates their inclusion in this research. Projects are bounded by defined start and end dates, and agreed scope and resources. The Project Management Institute (2016, para 2) propose that “Projects are not a routine operation, but a specific set of operations designed to accomplish a singular goal.” The principal reason organisations undertake projects is to change the status quo, by providing services or products which maximise revenues/minimise costs and/or deliver a positive experience for those involved and/or increase the frequency of transactions (Pennington, 2011).

The management of knowledge in projects and programs presents a greater challenge than knowledge management in permanent organisations, because these entities unlike permanent structures are characterised by instability (Lindner & Wald, 2011). The sources of this instability and its effect on knowledge management is considered in Table 2.5.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Effect</th>
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<tbody>
<tr>
<td>Distinctiveness and impermanent nature of projects.</td>
<td>Obstructs the development of organisational routines and organisational memory, and impedes an organisation’s ability to learn (Bresnen et al., 2003; Fong, 2006).</td>
</tr>
<tr>
<td>Projects involve irregular working arrangements (employment of contingent workers) and team structures.</td>
<td>This results in the fragmentation of individual and organisational knowledge (Kasvi, Vartiainen &amp; Hailikari, 2003).</td>
</tr>
<tr>
<td>Cause</td>
<td>Effect</td>
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</tr>
<tr>
<td>Absence of learning mechanisms within projects.</td>
<td>This negatively impacts the transfer of knowledge to and from the parent organisation, and also adversely affects knowledge transfer between projects. This is particularly problematic for organisations and projects that are geographically dispersed (Boh, 2007; Fong, 2006).</td>
</tr>
<tr>
<td>Projects have a short-term orientation, but knowledge management requires continuing commitment.</td>
<td>Restricted knowledge transfer between projects (DeFillippi &amp; Arthur, 1998; Geoffrey Love &amp; Nohria, 2005).</td>
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According to Lindner and Wald (2011), resolving the problems associated with project knowledge management (PKM) requires:

- The creation of knowledge management processes to convert temporary knowledge into permanent knowledge, with specific focus on the transformation of tacit knowledge into explicit knowledge (Externalisation);
- The establishment of a formalised structure around projects and programmes, with accountability for defining standards and assigning responsibility for PKM activities, provides a stable linkage between the permanent and temporary organisational structures;
- The implementation of information and communication technologies which support communications between people located in the temporary and permanent organisations, and facilitate the storage, maintenance, search and retrieval of knowledge; and
- The creation of a culture which supports informal communication and acceptance of mistakes increases, so that people trust one another and are prepared to share their knowledge. The establishment of a suitable culture is dependent on senior management support, demonstrated by providing the necessary resources and exhibition of appropriate behaviours.

A study of project-based firms undertaken by Prencipe and Tell (2001) suggests that the transfer of knowledge between projects, and to the wider organisation is dependent on an institution’s learning abilities. They maintain that project-based organisations lack the mechanisms found in functionally-based entities where departments act as knowledge silos,
and so knowledge transfer between projects is impeded. The basis for the research undertaken by Prencipe and Tell are the learning processes identified by Zollo and Winter (2002), which are experience accumulation, knowledge articulation and knowledge codification. From these processes Prencipe and Tell developed project-to-project learning mechanisms and used them to analyse a number of case organisations. The analysis identified three distinct learning landscapes, which are: the Explorer (L-shaped landscape), the Navigator (T-shaped landscape) and the Exploiter (Staircase landscape). Organisations embracing an Explorer learning landscape are highly dependent on people-embedded knowledge, with emphasis on experience accumulation processes and the transfer of knowledge through person to person communication. The corporate culture in L-shaped organisations is an enabler of project-to-project learning mechanisms. Entities with T-shaped learning landscapes rely on knowledge articulation processes, with the main focus on implementing project-to-project learning mechanisms at an organisational level. Finally, institutions assuming the Staircase learning landscape place specific emphasis on the development of ICT tools to support project-to-project learning. These tools support knowledge codification processes which allows employees in the wider organisation to exploit project knowledge.

These learning landscapes emphasise different inter-project learning mechanisms, which in turn align with the learning processes proposed by Zollo and Winter (2002). The research undertaken by Prencipe and Tell (2001) indicates that similar firms can have different learning landscapes and that project-based organisations characterised by impermanence do develop routines for managing knowledge. On this basis managers need to carefully select the knowledge management strategies and tools used in project-based organisations, and adapting them to specific organisational contexts.

**Contingent workers**

The increasing use of temporary organisational structures is paralleled with growth in the size of the contingent workforce (Organisation for Economic Co-operation and Development - OECD, 2002), and this section reflects on how this influences organisational knowledge management. The United States (US) and Canada have progressed the furthest in their usage of external talent: 38 percent stating that the workforce in their organisations is at least 50 percent comprised of external talent, with 27 per cent in Europe and 21 percent in Asia Pacific. Different regions prioritise different benefits in relation to temporary employment outcomes. A significant benefit for organisations operating in Europe, the US and Canada is the ability to manage costs associated with personnel, but in Asia Pacific exposure to new
ideas and specialist knowledge, and improved agility are considered more important. Organisations located in Asia Pacific forecast that their use of external talent will increase rapidly in the next five years (Chartered Global Management Accountant - CGMA, 2014). A 2008 study of temporary workers in New Zealand found that the sector represented 9.4 per cent of the total employment market (Dixon, 2009), considerably lower than the 21 per cent recorded for the entire Asia Pacific region in 2014.

The GCMA suggest that the converging forces of globalisation, technological advancement and market flux are creating a need to draw talent from new sources, including people who are external to the organisation. Businesses believe their external workforce will become as critical as their employed staff for resourcing tasks and delivering against key business goals, and organisations are already reliant on external talent (Chartered Global Management Accountant - CGMA, 2014).

There is no overarching definition of contingent, non-standard or temporary employment, and there is significant variation between countries in relation to this workforce category. The types of employees typically grouped within this segment are fixed-term contracts, temporary agency workers, contractors, seasonal workers, on-call workers, daily workers, trainees and persons in job creation schemes workforce (Organisation for Economic Co-operation and Development - OECD, 2002). In New Zealand, a job is regarded as temporary when a worker does not anticipate being employed on a long-term and interminable basis. Temporary employees are engaged for uncertain time periods in order to complete specific projects, temporarily replace other workers or fill seasonal jobs or only when needed by an employer (Dixon, 2009).

These descriptions of temporary workers do not consider the changing role of non-standard employment and the emergence of contingent knowledge workers. A significant number of contingent knowledge workers provide organisations with specialist knowledge and are not substitutable with another person, especially if they have developed their knowledge of an organisation. However, this definition of temporary workers raises significant questions for knowledge management and specifically how organisations can assimilate and exploit contingent worker knowledge, within the constraints of reduced time and influence.

In 2016, there were approximately 2 million employees active within the New Zealand workforce, and 89.3 per cent of these were permanent employees. Temporary employees made up 10.7 percent of the labour force. The temporary worker category included: casual
workers (48.9 per cent), fixed-term workers (26.0 per cent), temporary agency workers (4.6 per cent), seasonal workers (13.0 per cent) and other temporary workers (7.5 per cent). How many of these temporary workers could be classified as knowledge workers is uncertain, but a high proportion of fixed-term employees (51.8 percent) and temporary agency employees staff had bachelor’s degrees. The highest qualification for each employment relationship is shown in Figure 2.10.

**Figure 2.10: Employment relationship by highest qualification (New Zealand)**

[Bar chart showing employment relationship by highest qualification]

Source: Stats NZ (2017)

In the past, the work performed by contingent workers was primarily low-skilled, but the new reality is that this class of worker is now engaged in high-skilled, high-value knowledge work. Contingent workers are replacing managers at senior levels within organisations because they are ‘skilled trouble-shooters’ with the ability to confront specific challenges (Silverstone, Tambe & Cantrell, 2015). Most contingent knowledge workers in New Zealand are employed in mid-level roles (46%), but 26 per cent are working in management. It is proposed that the management of contingent workers in New Zealand has been ineffective. This is because there is an absence of structure for managing these workers and organisations have not managed to fully integrate them into the workplace. It is suggested that contingent workers are treated as commodities in some organisations because they are not managed by a human resource function (Luminary Search New Zealand, 2016). Although contingent workers are typically located on client sites there is no contractual relationship between the parties (Mitlacher, 2005a), but responsibility for establishing and monitoring performance standards for these workers rests with the client organisation.
There is a suggestion that temporary workers have become integral to competitive strategies for increasing profitability and avoiding claims for unfair dismissal by employees who had been made redundant (Burgess & Connell, 2006). Hays, an international recruitment agent, suggest that employers recognise the use of temporary workers, as a long-term human resource strategy and many organisations now view temporary workers as integral to the success of their business. The use of permanent staff (internalisation) and the use of contingent workers (externalisation) serve diverse yet complementary needs. Internalisation increases organisation control and stability, and externalisation augments organisational flexibility. Combining these approaches provides organisations with a mechanism for implementing stable and flexible working arrangements (Davis-Blake & Uzzi, 1993). However, Schrage (2013) proposes that the way employee’s knowledge, skills and expertise are applied to the workplace has changed since the global financial crisis (GFC). The ongoing global restructuring of markets makes temporary employment more attractive for more organisations. There is a perception that the recruitment of permanent staff into positions is an inappropriate strategy which involves greater risk.

The use of contingent workers to create competitive advantage may reduce the willingness of permanent staff to share their knowledge. Connelly et al. (2012) refers to this as ‘knowledge hiding’, which they define as an intentional attempt to withhold knowledge, in response to a request. They suggest employees are more likely to hide their knowledge from co-workers they distrust, which may include contingent employees. If permanent staff are afraid of losing their job to a contingent worker then they are likely to conceal their knowledge. The ability of organisations to derive benefit from temporary workers is dependent on their capacity for strategic planning, and the development of dedicated human resource practices for attracting, retaining and motivating temporary employees. The application of human resource practices used in the management of permanent staff members is considered inappropriate (Von Hippel et al., 1997).

2.5.5 Developing core competences through mentoring

An organisation’s ability to compete in the marketplace is dependent on its knowledge assets or core capabilities. Such capabilities are intangible assets associated with tacit dimensions of knowledge, accumulated over time and embedded in people’s minds and relationships (Swap et al., 2001). Swap et al. (2001) suggest that the transfer of these knowledge assets within and across institutions has had mixed results, because of the unsystematic way in which
knowledge accumulates and the difficulty this presents when attempting codification. The knowledge creation process developed by Takeuchi and Nonaka (2004) and described in §2.2, proposes four stages wherein knowledge is continuously transferred and transformed. The model emphasises the need for individuals to articulate their knowledge, share their experience and expertise, and learn through applying knowledge in different situations. As previously stated, peer mentoring is an accepted means of externalising knowledge (Bryant, 2005), but according to Swap et al. (2001) the mentoring process is also pertinent to socialisation and internalisation. There are many definitions of mentoring and determining the exact meaning of the term is challenging (Clutterbuck, 2014), but a description of mentoring that corresponds with Takeuchi and Nonaka’s ideas of knowledge sharing and knowledge creation is provided by Megginson and Clutterbuck (1995, p. 13), who define it as “offline help by one person to another in making significant transitions in knowledge, work or thinking.” According to Gallupe (2001), mentoring is most appropriate for transferring knowledge about previously solved problems, so that individuals are able to recognise and handle them. However, mentoring relationships are not limited to the transfer of technical information about how to undertake specific parts of a person’s job. Mentors provide mentees with information about an organisation’s political system, and norms of behaviour and organisational values (culture) (Swap et al., 2001).

### 2.6 Gaps in the Literature

The literature review confirmed the existence of a significant quantity of academic material relating to knowledge management, and the associated disciplines of economics, human resource management, information science, information technology, management science and strategy. Nevertheless, a number of gaps in the literature were identified and used to formulate the research questions for this study (see Table 2.6).

<table>
<thead>
<tr>
<th>Gaps in the literature</th>
<th>Research</th>
<th>Research question</th>
<th>Section reference</th>
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</thead>
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<td>Fahey and Prusak</td>
<td>How conscious are those employed in the different case organisations of knowledge management theory?</td>
<td>2.6.1 Understanding knowledge management concepts</td>
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<td>Takeuchi and Nonaka</td>
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<td>Nonaka and Teece</td>
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<td>The role of redundancy in knowledge creation</td>
<td>Nonaka and Takeuchi</td>
<td>What are the organisational contexts in which knowledge</td>
<td>2.6.2 Organisational context</td>
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<td>Knowledge management strategy</td>
<td>Choi and Lee Ling</td>
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### Gaps in the literature

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<thead>
<tr>
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<tr>
<td>Project and task force composition</td>
<td>Nonaka and Takeuchi</td>
<td>management practice is applied?</td>
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<tr>
<td>Influence of organisational, project and professional cultures on trust and commitment</td>
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<td>Bakos et al., Hibbard and Carrillo, McDermott and O’Dell</td>
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<td>Theories of the firm</td>
<td>Sivastava</td>
<td>What are the reasons for employing contingent knowledge workers within different institutions?</td>
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<td>Management of contingent knowledge workers</td>
<td>Silverstone, Tambe and Cantrell, Sullivan, Teo et al.</td>
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<td>Resources of exchange and rewards for contingent knowledge workers</td>
<td>Bartol and Srivastava, Al-Alawi, Al-Marzooqi, and Mohammed, Hau et al., Frauenheim</td>
<td>How are contingent knowledge workers treated by the organisations employing them in terms of knowledge sharing and access to organisational resources?</td>
<td>2.6.4 Treatment of contingent workers</td>
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<td>Contingent knowledge worker commitment</td>
<td>Jayasingam and Yong, Ng and Feldman, Svensson</td>
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<td>Which case organisations recognise contingent knowledge workers as a valued source of know-how?</td>
<td>2.6.5 Contingent workers as a source of knowledge</td>
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</table>

### 2.6.1 Understanding knowledge management concepts

There is no single unifying view of what the knowledge management discipline comprises, which may have a negative consequence for the practices intended to manage knowledge-based assets (Fahey & Prusak, 1998). The effects of this conceptual uncertainty on practice has not been the subject of research, and is considered a significant gap. Takeuchi and Nonaka (2004) propose “middle-up-down” management as a means of controlling the chaos resulting from complexity, on the basis that middle managers are able to combine strategic and operational information. In Japan middle managers are pivotal to continuous innovation but in western organisations their numbers have been reduced and they are sometimes perceived as being backward, unproductive and resistant to change (Nonaka & Teece, 2001).
The capacity of Western-based organisations to implement knowledge management practices has not been evaluated and is considered a gap.

The research question formulated on the basis of this gap is stated as: **RQ1**: How conscious are those employed in the different case organisations of knowledge management theory?

## 2.6.2 Organisational context

*The role of redundancy in knowledge creation*

Knowledge creation within organisations is partially dependent on redundancy, which has been built-in and institutionalised within Japanese organisations (Nonaka & Takeuchi, 1995). The avoidance of redundancy and sharing of redundant information may be detrimental to knowledge creation in western organisations.

*Knowledge management strategy*

The literature reviewed for this thesis suggests that successful knowledge management is dependent on the effective combination of human and technological strategies (Ling, 2013; Nonaka & Takeuchi, 1995). The importance of these elements is conclusive; however, there is an absence of research describing how the balance between these approaches is achieved. A study undertaken by Choi and Lee (2002) indicated the need to adjust the focus between human and system strategy depending on the stages within the knowledge creation process (see Figure 2.2), but the enablers of these strategies is not distinguished. The strategic enablers identified by Choi and Lee include culture, information technology and organisational structure, all of which are topics to be investigated for this research.

*Project and task force composition*

The organisational environment is recognised as being a significant determinant of knowledge management capability, and is the proposed basis for individual knowledge creation and sharing. Takeuchi and Nonaka (2004) propose the concept of a knowledge creating place “ba” which combines multiple organisational design features including cultural and structural characteristics. The authors emphasise the need to combine different organisational configurations including permanent (hierarchies) and non-permanent (task forces) structures, which are common to many New Zealand organisations. The means of synthesising these different constructs is not addressed in the literature reviewed for this thesis, and was judged worthy of further research.
Influence of organisational, project and professional cultures on trust and commitment

The knowledge management literature makes extensive reference to organisations without describing the characteristics which differentiate these institutional environments. Selected research suggests knowledge sharing to be dependent on organisational culture, which is influenced by national (Jelavic & Ogilvie, 2010), project and professional (Ruuska, 1999) and sub-cultures (Schneider, 1994).

Information technology integration

The literature suggests that recent technological developments will benefit knowledge management by facilitating the capture of tacit knowledge (combination), but there is an absence of material describing their deployment and utilisation within New Zealand based organisations. Although it is proposed that information technology is not obligatory for managing knowledge it is considered to be an important element (Hibbard & Carrillo, 1998; McDermott & O’Dell, 2001), and the advent of a new generation of knowledge management systems has the potential to greatly enhance an organisation’s ability to manage knowledge (Bakos et al., 2016). It was intended that this research would determine whether New Zealand organisations are deploying and utilising these new knowledge management systems.

The potential for variation between New Zealand organisations occasions the research question: **RQ2**: What are the organisational contexts in which knowledge management practice is applied?

**2.6.3 The case for hiring contingent workers**

*Theories of the firm*

In theory, the utilisation of contingent knowledge workers represents a socially complex scenario because of the connections between relationship partner organisations, permanent employees, contingent knowledge workers and recruitment agencies, but this topic has not been widely researched and is considered a gap. Combining resources such as permanent and contingent workers can be described as a dynamic capability, and organisations that are better at performing activities associated with these capabilities possess core competences (Srivastava, 2005). The capabilities and core competences relating to the management of relationship partners and combining of different types of human capital resources is absent from the literature reviewed for this study.
Management of contingent knowledge workers

Contingent knowledge workers are not subject to the same management processes as their permanent counterparts because senior executives regard contingent staff as “only temps” (Sullivan, 2015, para 8). Sullivan (2015) suggests that the human resource functions within many organisations are inflexible because they use a contingent labour model developed in the 1960’s, and that a lack of strategic focus on these employees reduces an organisation’s ability to realise their value. Now that contingent workers are performing high-skilled and high-value work (Silverstone, Tambe & Cantrell, 2015), organisations will need to develop a more strategic approach for managing these employees. Strategic human resource management practices are considered a more appropriate means of managing contingent knowledge workers (Teo et al., 2008), but the extent to which this approach has been adopted in New Zealand is unclear from the existing research.

The literature describing the recruitment and management of contingent of workers is emergent, and the gaps identified during the literature review prompted the research question: **RQ3: What are the reasons for employing contingent knowledge workers within different institutions?**

2.6.4 Treatment of contingent workers

Resources of exchange and rewards for contingent knowledge workers

The literature review identified a number of studies examining the means of influencing knowledge sharing behaviours amongst contingent workers (Nesheim & Smith, 2015; Wilkin, de Jong & Rubino, 2018). Encouraging employees to share their knowledge necessitates incentives that meet individual needs (Al-Alawi, Al-Marzooqi & Mohammed, 2007), and organisational reward systems comprising financial and non-financial incentives can provide a mechanism for inducing such behaviours (Bartol & Srivastava, 2002). Important non-monetary incentives include reciprocity, enjoyment, and social capital (Hau et al., 2013) and trust (Bartol & Srivastava, 2002). The importance of non-monetary (particularistic) rewards to contingent knowledge workers is demonstrated by Frauenheim (2012), who found that organisations not providing full information about assignments negatively impacted temporary worker performance. He also suggested that providing contingent workers with coaching increased organisational commitment, and that these workers are seeking recognition of their worth and potential.
Contingent knowledge worker commitment

The knowledge management literature asserts that affective commitment and trust are predictors of knowledge sharing behaviour (Svensson, 2011), and that individual studies focused on the means by which organisations engender these sentiments in their employees. However, the literature does not differentiate between permanent and temporary staff, and it is uncertain whether affective commitment or trust would encourage contingent workers to share their knowledge sharing (Jayasingam & Yong, 2013). Contingent workers typically remain with an employer for shorter periods (Ng & Feldman, 2011), and the ability of organisations to induce affective commitment amongst temporary workers has not been considered in the literature.

The gaps relating to contingent knowledge worker rewards and their trust in an organisation prompts the question: RQ4: How are contingent knowledge workers treated by the organisations employing them in terms of knowledge sharing and access to organisational resources?

2.6.5 Contingent workers as a source of knowledge

Another topic not addressed by the literature is the integration of temporary workers into an organisation’s knowledge management initiatives. Organisations in New Zealand (and globally) are employing greater numbers of temporary workers, and a high proportion of these staff are contingent knowledge workers recruited to work alongside permanent staff and augment the capability of task forces (projects). Strategies for utilising contingent knowledge worker’s ‘know how’ are absent from the literature appraised as part of this study. These shifts have resulted in a new set of issues for employers, and there is a need for organisations to consider how they engage with contingent workers, who possess valuable skills, versatility and flexibility, but who make a virtue out of lack of commitment to a single organisation (Alach & Inkson, 2004). According to Hardy and Walker (2003, p. 151), New Zealand organisations can benefit from the knowledge that temporary workers possess, but their skills are often under-utilised because employers are not providing contingent workers with opportunities to “show their true worth.”

The review of the knowledge management literature and dearth of references relating to contingent workers provided the basis for the question: RQ5: Which case organisations recognise contingent knowledge workers as a valued source of know-how?
2.7 Literature Review Summary

This chapter has considered a range of topics which reflect the multi-disciplinary character of knowledge management. A key point identified in this literature review is that there are multiple definitions of knowledge management, but no overarching, all-encompassing view. However, the potential for deriving competitive advantage from knowledge, and the specification of tacit and explicit knowledge, are widely acknowledged in knowledge management literature. People engaged in knowledge work, which involves “non-routine” problem solving are referred to as knowledge workers, and are increasingly in demand by developed economies.

The literature review identified the SECI model, a prominent model describing the knowledge creation process, which originated in Asia and encompasses characteristics associated with Chinese philosophy, such as Yin and Yang. The SECI model recognises the significance of tacit knowledge and the environment in which knowledge is created, although explicit knowledge is recognised as the principal class of knowledge utilised in the West.

Knowledge management practice in New Zealand is immature and relationships with other disciplines are underdeveloped. The ability to deliver successful organisational knowledge management is dependent on the contribution of an institution’s staff, so effective management of an organisation’s human resources is essential. The literature suggests persuading people to share knowledge is a challenge for organisations and there is evidence that governance, organisational structure and cultural characteristics affect a person’s willingness to contribute. Temporary structures (projects), in which a significant proportion of contingent knowledge workers are employed, are regarded as effective for creating new knowledge but not at exploiting and transferring knowledge. It is suggested that functional organisational structures result in silos, which negatively impact intra-organisation knowledge sharing, but informal networks which develop as a consequence of social interaction can remove or reduce these barriers. Organisational culture is a recurring theme throughout the literature review, and it is proposed that an organisational culture is influenced by its leadership. It is suggested that leaders are cultural ambassadors and that transactional and transformational leadership styles lead to different knowledge outcomes. Organisational cultures which allow experimentation and permit failure are identified as being enablers of successful knowledge management.
The literature suggests that organisations undervalue the knowledge capabilities of temporary workers, and utilise these employees to fulfil short-term operation demands as opposed to assisting with the delivery of strategic outcomes. Different treatment of contingent workers as compared with permanent employees has negative implications for exploitation of contingent worker knowledge, but the strategies for managing these different employee groups need to be balanced to avoid isolating either group. This is increasingly important because of increasing environmental change and volatility, and demand for contingent knowledge workers.

In a similar way to human resource management, information technology supports knowledge management, although it is not considered critical. The literature indicates significant variation in the knowledge management systems used in organisations and new technologies are leading to the introduction of alternative solutions. However, the adoption of social media as a mechanism for sharing and transferring knowledge is not widespread.

The literature review confirmed the influence of trust and affective commitment in relation to knowledge sharing. These themes are prominent elements within SET, which informed the selection of this model as the theoretical basis for this thesis. SET and its application to contingent knowledge workers are considered in Chapter 3.
3 Theoretical Framework

The aim of this research is to determine how New Zealand organisations manage knowledge and knowledge workers, and to ascertain the contribution of contingent knowledge workers to knowledge creation and knowledge sharing within the same organisations. The desired outcome of this research was to identify strategies and approaches to improve the way New Zealand based organisations create, share and utilise their knowledge assets. It has been suggested that all researchers approach their studies from within a particular paradigm (McMurray, 2011), and that paradigms comprise a researcher’s ontological, epistemological, and methodological principles (Denzin & Lincoln, 2011). The choice of paradigm guides the expectations, intent and motivation for an inquiry (Mackenzie & Knipe, 2006). The ontological and epistemological considerations that informed this study are discussed as follows. Methodological choices and research design dependent on these considerations are described and discussed in the next Chapter (Design and Methodology).

3.1 Social Exchange Theory as a Theoretical Framework

Social Exchange Theory was chosen as the theoretical foundation for this study for the following reasons. Firstly, review of the literature revealed that knowledge management is broader than information technology systems. The actions of individuals, leaders within organisations and organisational culture are critical considerations for organisations intending to implement processes and systems for managing knowledge. Recognition that human capital plays a significant role in the management of knowledge, and the requirement for individuals to expose and share their knowledge, informed the choice of theoretical foundation for this thesis. Secondly, adopting SET for this study was consistent with the ontological and epistemological considerations discussed in §4.2.

SET provides a basis for investigating human relationships and social behaviour, and proposes that people in relationships continuously evaluate the risks and rewards associated with an exchange. As emphasised in §2.3.1, a benefit derived by individuals and organisations in receipt of shared knowledge is the ability to learn, but the benefits derived by those sharing their knowledge is less clear. As Fournies (1999) points out, a potential risk for an individual resulting from their sharing of knowledge is loss of status, derived from fear that they may appear ignorant or that their importance within an organisation maybe diminished. SET is well-placed for examining these complex human behaviours and relationships.
SET originated from research within the disciplines of economics, psychology, sociology and anthropology, and is now a commonly used model for explaining human relationships (Varey, 2015). A fundamental principle of SET is that all human behaviour is explained by a succession of exchanges, and that each party to an exchange is striving to maximise the benefits they receive from the transaction by maximising rewards and minimising costs (Kelley & Thibaut, 1978). Parties to an exchange continuously evaluate their interactions with one another to determine whether it is worthwhile continuing with the relationship. SET proposes that interactions between individuals are governed by self-interest, and the costs and benefits of each exchange are examined so that benefits are maximised and costs are minimised (Crossman, 2016; Molm, 2001). Costs comprise of punishments or forfeiture of the rewards that might have resulted from a successful exchange.

**SET and social capital theory**

Coleman (1988) regards social capital as a form of currency, which is accumulated and exchanged by individuals in a reciprocal way. The parties to a relationship assign each other a value based on an assessment of the quality and quantity of their respective social capital. As a consequence, the effort dedicated to maintaining interpersonal relationships is influenced by the value each person places on another’s social capital. It is conceivable that the value placed on the social capital of a person joining an organisation as a new hire (permanent and contingent) would be low, because those people with whom interpersonal relations are established have not had an opportunity to quantify and qualify the substance of an individual’s social capital. However, contingent knowledge workers are typically recruited by organisations to utilise their knowledge to solve specific problems or deliver a specific outcome, so it is possible that their social capital is immediately perceived to be high value within their immediate working group. The need for human interaction and the trust derived from such relations are important elements of social capital, which suggests that until new employees become socialised the true value of their social capital will not have been established by the people with whom they interact. Social capital theory and SET both oblige individuals to reciprocate previous favours. An important difference, according to Coleman, is that social capital theory necessitates the sharing of important information.

### 3.2 Social Exchange Theory Assumptions and Rules

SET encompasses a number of assumptions, which describe the nature of individual behaviour (Chibucos, Leite & Weis, 2005), and the characteristics of relationships between
the parties involved in an exchange (Sabatelli & Shehan, 1993). The first assumption is that parties to a social exchange are rational, and as rational actors they calculate the costs and benefits associated with exchanges.

A second assumption is that individuals who are party to an exchange are seeking to maximise the benefits they derive from the situation, whilst simultaneously attempting to minimise their personal costs (Chibucos, Leite & Weis, 2005). In an organisational environment benefits take the form of job security, opportunity for future beneficial exchanges (reciprocity), prospects for career advancement and status (Davenport & Prusak, 1998).

A third assumption supporting SET is that criteria and standards that individuals use to evaluate benefits and costs could change over a period of time (Sabatelli & Shehan, 1993). It is proposed that actors engaged in a social exchange continually monitor their relationship, with the purpose of comparing the profit being generated with the potential profit from relationships with alternative partners. The comparison level used by the parties to an exchange is derived from memories of past experiences and future expectations (Thibaut & Kelley, 1959).

The relationship between actors involved in a social exchange is also subject to assumptions, the most significant being the interdependence of those participating in the exchange. For social exchanges to succeed each actor must be able to profit from the relationship and therefore both individuals need to be capable of providing the other with appropriate rewards (Emerson, 1981). Disparities in the rewards presented by the actors introduces the dimension of power, because individuals in possession of superior resources have an advantage. Power represents a significant factor in SET (Emerson, 1962).

Another assumption is that trust and commitment develops between the contributors to the exchange, which helps to sustain and stabilise the relationship over a longer period of time. The establishment of commitment and trust towards an exchange partner differentiates social exchanges and economic exchanges, because these socioemotional concepts are absent from purely economic exchange relationships (Emerson, 1981). It is also assumed that relationships are regulated by rules and norms relating to reciprocation, justice and fairness (Sabatelli & Shehan, 1993).
In an institutional setting, power was found to be a determinant of trust, with trust growing as power grows; trust between individuals is possible where there exists moderately unequal power, but trust is harder to achieve where there are greater disparities of power (Öuberg & Svensson, 2010). Farrell (2004) goes a step further and suggests that disparities of power can prevent trust from arising in situations where power asymmetries prevent powerful actors from giving credible commitments to the weaker actors.

For trust and commitment to develop in a relationship between actors involved in a social exchange, each party is required to “abide by certain ‘rules’ of exchange” (Cropanzano & Mitchell, 2005, p. 875). These rules include altruism, competition, group gain, rationality, reciprocity and status consistency (Meeker, 1971). Cropanzano and Mitchell (2005) define these rules of exchange as:

- A person demonstrates altruistic tendencies when they establish a benefit for another individual although the costs of doing so exceed any rewards they may receive;
- Group gain describes the assignment of benefits to a communal repository, from which individuals are able to withdraw what they require regardless of their contribution, and contribute when they are able;
- Competition is the direct opposite of altruism, and describes a propensity to mistreat other people although this can result in harm to the initiator;
- Rationality describes an actors use of logic to determine the expected consequences (ends) and how these can be realised (means);
- Status consistency concerns the distribution of benefits on the basis of a person’s standing within a social group; and
- Reciprocity involves conveying benefits to another individual in exchange for benefits of a comparable value.

According to Adler and Kwon (2002), social exchange involves the exchange of favours, which is a critical component of the Chinese phenomenon known as “guanxi.” Guanxi refers to the building of networks of mutually advantageous associations. The depth and intensity of these connections is greater than those typically found in the west (Goh & Sullivan, 2011).

### 3.3 Social Exchange Theory Resources and Relationships

This section elaborates on the subject of social exchanges, specifically the resources being interchanged between actors. The types and characteristics of resources transferred during
social exchanges are articulated, using resource theory (RT) as an extension of SET. Formulated by Foa and Foa (1974, 1980), RT is included because it acknowledges the status of information as a resource of exchange.

Foa and Foa (1974) identify six categories of resource transferred through social exchanges: goods, services, information, love, money, and status. RT classifies these resources on the basis of particularism and concreteness, and organises them into a two dimensional matrix (see Figure 3.1). Particularism is the value attributed to a resource by the parties to an exchange, and concreteness indicates the physicality of a resource.

Figure 3.1: Structure of Resource Categories

![Figure 3.1: Structure of Resource Categories](image)

Source: Foa and Foa (1980, p. 18)

According to RT, the way resources are exchanged is influenced by the scale of their concreteness or particularism. Resources regarded as more concrete and less particularistic are typically exchanged in a transactional manner, but resources that are categorised as extremely particularistic are exchanged in a more flexible, open-ended fashion. Trust and commitment, previously recognised as being important contributors to the success of knowledge management, are considered particularistic resources, which develop through productive reciprocal exchanges (Foa & Foa, 1980). According to Bishop, Scott and Burroughs (2000) and Eisenberger et al. (2001), employees might exchange commitment for organisational support.
When considering exchanges, it is necessary to distinguish between individuals acting independently and persons affected by their social and organisational context (Kelley & Thibaut, 1978). In an institutional environment, behaviours are influenced by concern about future relationships, balance of power, people’s perceptions, and the impact of actions on other desired outcomes. Where individuals are acting independently, self-interest and reciprocity hypothetically predict behaviour (Constant, Kiesler & Sproull, 1994).

It is proposed that knowledge sharing is dependent on affective commitment (§2.5), which implies that organisations need to act in a manner that demonstrates their support for employees. Employees perceive an organisation’s support when their efforts are well regarded and the institution attends to their welfare (Eisenberger et al., 1986). It is proposed by Cohen (2015, p. 187) that “employees who feel well supported by their organisations tend to engage in more OCB than workers with lower POS levels.” Further, according to Ramasamy and Thamaraiselvan (2011), the relationship between OCBs and knowledge sharing is both significant and positive. OCBs include any activities that maintain the communal environment in which institutional activities are performed (Organ, 1997).

According to Ng and Feldman (2011), organisational tenure moderates the relationship between affective commitment and OCB, with OCB increasing with tenure. In addition, the intensity of the relationship between affective commitment and OCB is greater for individuals with higher emotional intelligence (Carmeli & Nihal Colakoglu, 2005). Temporary workers are less inclined to engage in OCBs (Coyle-Shapiro & Kessler, 2002; Van Dyne & Ang, 1998), but may be persuaded to increase their OCBs when they perceive elevated organisational support or receive additional inducements. In contrast, permanent employees report higher levels of organisational commitment and OCBs, and substantially lower levels of organisational support (Coyle-Shapiro & Kessler, 2002; Van Dyne & Ang, 1998). According to Guest (2004), this illustrates the explicit nature of exchange relationships between contingent workers and organisations.

Perceived organisational support (POS) is identified by Cropanzano and Mitchell (2005) as one of a number of models employed by researchers in relation to SET. The model of POS suggests that an employee who believes an employer to be supportive is likely to return the gesture. A study of temporary workers in Auckland, New Zealand undertaken by Veitch and Cooper-Thomas (2009, p. 2) found “normative and affective commitment were predicted by perceived organizational support (POS)…supporting the idea that these types of commitment are governed by a social exchange relationship.” They suggest that client organisations
employing temporary staff can engender affective commitment by making these workers feel welcome.

It was previously suggested that trust is derived from successful social exchange (Foa & Foa, 1980), and trust is considered an important construct in relation to SET (Dirks & Ferrin, 2002). Trust can be considered a facilitator of social exchange because it reduces anxiety related to the parties taking advantage of one another during the interchange of resources (Tsai & Ghoshal, 1998). Trust in an organisation “enhances individual’s willingness to engage in various forms of spontaneous sociability” (Kramer, 2009, p. 344), including the sharing of knowledge. In their research of interpersonal trust in informal networks Abrams et al. (2003) confirm the concept of trust to be appealing, but acknowledge that it is difficult for managers to influence. However, they identify behaviours and practices that facilitate the development of trust and propose these to be unique for each organisation.

3.3.1 Exchanging Knowledge in an Organisational Context

It has been suggested that parties to a social exchange act rationally, and are unlikely to participate and confer resources unless benefits exceed costs §3.2. In this context, rationality refers to the efforts of individuals to maximise their utility in any given situation (Tan, 2014), utility being a term used in economics to represent the satisfaction derived from a commodity (University of Minnesota, 2011). Economists and sociologists apply Rational Choice Theory (RCT) to model human decision making, which assumes that individuals make choices which align with their personal preferences. According to Green (2002, pp. 4-5), “the choices made by buyers and sellers are the choices that best help them achieve their objectives, given all relevant factors that are beyond their control.” RCT assumes that (1) individuals have selfish preferences, (2) they maximise their own utility, and (3) they act independently based on full information (McGee & Warms, 2013, p. 688). According to Tan (2014), people only act rationally when the conditions of transitivity invariance and continuity are met. Transitivity means that a person’s “weak preferences can cycle only among choices that are indifferent” (Levin & Milgrom, 2004, p. 4). Invariance demands that “the preference order between prospects should not depend on the manner in which they are described” (Kahneman & Tversky, 1984, p. 343), and continuity refers to the existence of a continuous representation (Levin & Milgrom, 2004).

It is argued that human beings do not act rationally (Elster, 2001) and that RCT has serious limitations Tan (2014), which according to Jolls, Sunstein and Thaler (1997) include bounded
rationality, bounded willpower, and bounded self-interest. Bounded rationality refers to the limits of human cognitive abilities and the constraint this places on the processing of large volumes of information. According to Tan (2014), bounded rationality results in sub-optimal decisions or satisficing. Engaging in actions that conflict with a person’s long-term interests illustrates bounded willpower, which can cause significant deviation from RCT. An example of bounded willpower is the decision to smoke tobacco although its damage to human health is well known. Bounded self-interest refers to the fact that human beings care about others, even in market and negotiating environments. Individuals do not solely promote their own interests, but also consider the interests of others.

It follows that employees in possession of specific knowledge will not consider transferring this to others unless the benefits of this action exceed any costs. Knowledge transfer represents a risk for knowledge owners in the form of threats to their positions as professionals and the undermining of their bargaining position with prospective employers (Wang, 2013). Employees that participate in knowledge sharing activities derive tangible reward in the form of access to the knowledge contributed by others (Cohen, 1998). According to Hall (2001), it is necessary for organisations to convince employees that it is worth entering into a social exchange transaction by advancing appropriate resources. This involves creating incentive schemes that appeal to employees (Boisot & Griffiths, 1999).

It has been proposed that financial incentives are more suited to quickly deliver short-term results, which makes them useful for initiating knowledge related projects (Beer & Nohria, 2000), but the development of communities may deliver longer term benefits (Wasko & Faraj, 2000). These studies indicate the need to focus on aspects of organisation design as well as reward systems which offer explicit rewards. According to Bock and Kim (2002), emphasis on incentives is misplaced because extrinsic rewards do not influence a person’s feelings towards knowledge sharing, and they propose paying greater attention to developing a positive atmosphere for social associations to be more appropriate.

3.4 The Conceptual Framework for this Study

The literature review and the preceding examination of SET was undertaken with the aim of identifying topics relevant to the study of knowledge management and contingent workers in New Zealand based organisations. Knowledge management literature is typically grouped under the categories which include information economics, knowledge management process and strategic management (Baskerville & Dulipovici, 2006), and studies associated to each of
these groups were considered during the literature review. The conceptual model shown in Figure 3.2 was developed by combining concepts from these theoretical categories. The major concepts integrated into the conceptual model are trust and commitment, culture, and the processes and technologies that facilitate the creation of knowledge. The relationships and dependencies articulated in this conceptual model represent a unique configuration, which is applicable to diverse organisational environments and contexts. The applicability of these constructs to diverse situations will provide the basis for addressing each of the research questions formulated in sub-section 2.6. Constructs within the conceptual framework have been combined with references to the research questions in order to show how individual elements contribute to fulfilling the purpose of the study, which is to describe how contingent workers contribute to knowledge management practice, and distinguish the cultural elements that encourage their commitment to and participation in these activities. An explanation of the linkages between the constructs in the conceptual model and research questions is shown in

Table 3.1.

**Figure 3.2: Conceptual Model – Influencers and Enablers of Knowledge Creation**

Source: Developed for this research
Table 3.1: Constructs within the conceptual model and related research questions

<table>
<thead>
<tr>
<th>Construct</th>
<th>Associated research question(s)</th>
<th>Annotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust and Culture</td>
<td>RQ2: What are the organisational contexts in which knowledge management practice is applied?</td>
<td>Purpose: Ascertain whether those employed by the case organisations are trusted to perform their duties, and comprehend the organisational cultures affect worker commitment. Scope: Competence, concern, openness and reliability. Organisational culture, project culture and professional culture.</td>
</tr>
<tr>
<td>Knowledge Management Systems</td>
<td>RQ2: What are the organisational contexts in which knowledge management practice is applied?</td>
<td>Purpose: Identify the knowledge management systems in use, and ascertain the effectiveness of these technologies. Scope: Systems categories - Knowledge generation, knowledge codification, knowledge retrieval or knowledge transfer.</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>RQ4: How are contingent knowledge workers treated by the organisations employing them in terms of knowledge sharing and access to organisational resources?</td>
<td>Purpose: Establish whether contingent workers are treated in the same way as permanent staff. Scope: Interpersonal trust and situational organisational trust.</td>
</tr>
<tr>
<td>Knowledge transfer</td>
<td>RQ5: Which case organisations recognise contingent knowledge workers as a valued source of know-how?</td>
<td>Purpose: Determine the extent to which contingent worker know how supports the creation of new knowledge. Discern the mechanisms used by organisations to transfer knowledge between temporary and permanent organisational structures. Scope: Resources of exchange, rewards and commitment. Articulation and translation of tacit knowledge through externalisation.</td>
</tr>
<tr>
<td>Knowledge creation</td>
<td>RQ1: How conscious are those employed in the different case</td>
<td>Purpose: Determine whether organisations comprehend the dynamic nature of knowledge creation, and the need to</td>
</tr>
</tbody>
</table>
organisations of knowledge management theory?combine diverse assets.

Identify the means used to create new knowledge, and whether organisations employ human-centric or technology-centric strategies.

Scope: Dynamic capabilities. Human capital, relationship capital and structural capital.

RQ3: What are the reasons for employing contingent knowledge workers within different institutions?

Purpose: Ascertain whether contingent workers are considered integral to the creation of new knowledge.

Scope: Core competencies, dynamic capabilities and knowledge-based assets.

The conceptual model differs from those developed in previous studies. This is because it overlays processes developed in an eastern cultural context onto organisations operating in a Western setting. Although other studies have assessed the applicability of SECI to alternative cultures (Andreeva & Ikhilchik, 2011; Easa & Fincham, 2012), the enabling role of trust and culture are under-researched. This view is supported by Wensley (2001), who recognises the impact of cultural elements on the generalisability of the SECI model but identified few studies investigating such associations. A study of knowledge sharing in Chinese and Arab cultures conducted by Weir and Hutchings (2005) emphasises the role of trust in knowledge sharing, but they accept that customs in these locales are significantly different to those common to Western societies. Trust and commitment support the Japanese concept of “ba”, which it is proposed is the basis for knowledge sharing amongst individuals and therefore knowledge creation (Nonaka, Toyama & Konno, 2000). In situations characterised by reciprocal, long-term interactions between individuals, the Japanese are more trusting than their Western counterparts (Krockow, Colman & Pulford, 2018). Disparity in the levels of trust between cultures raises a question about the generalisability of the SECI model, so positioning trust at the base of the conceptual model shown in Figure 3.2 represents an alternative perspective.

Prior knowledge management research has examined the role of ICT in knowledge creation, and of these studies a number used the SECI model as a basis (Lopez-Nicolas & Soto-Acosta, 2010; Sian Lee & Kelkar, 2013). It is suggested that Western organisations focus more on explicit knowledge (Takeuchi & Nonaka, 2004) than similar bodies in the East. This
emphasis infers increased use of ICT to create, share, transfer and store explicit knowledge artefacts (Desouza & Evaristo, 2003). The predilection towards explicit knowledge is reflected in the conceptual model with the inclusion of knowledge management systems for systemising and applying explicit knowledge (combination). Knowledge management systems for combining explicit knowledge are most prevalent (Natek & Zwilling, 2016), and it is suggested that these technologies are critical for knowledge creation in New Zealand organisations.

Conceptual linkages

As a starting point, it is proposed in this research that trust has a significant influence on culture, which is the basis for knowledge sharing and knowledge creation. The relationship between trust and culture is the subject of recent research, and a number of studies suggest that organisational trust is critical to the development of a collaborative culture (Barczak, Lassk & Mulki, 2010; Kucharska & Kowalczyk, 2016). According to Saunders et al. (2010), trust provides a basis for overcoming cultural differences and encourages parties to work together and resolve difficulties as they arise. The ability of organisations to respond more rapidly is also enhanced because trust increases openness and promotes the exchange of ideas and information, and as a consequence reduces conflict between partners (Collins, 2013). Trust has a significant influence on organisational commitment, and an escalation in trust causes increases in organisational commitment (Fard & Karimi, 2015). Affective commitment has a strong positive relationship with OCB (Allen, Evans & White, 2011), but the relationship between these elements is moderated by organisational culture (Azizollah, Abolghasem & Amin, 2016). OCB is not included in the conceptual framework shown in Figure 3.2 although research shows there to be a significant relationship with knowledge sharing (Ramasamy & Thamaraiselvan, 2011). The basis for this exclusion is that trust and culture have a greater influence on individual knowledge sharing behaviours. According to Kucharska (2017), trust and culture are strongly correlated and moderate each other, and she suggests that both concepts have a significant influence on tacit knowledge sharing. Trust is developed through reciprocal exchanges (Foa & Foa, 1980), which involve social interaction between parties to an exchange. Organisations possessing cultures characterised by trust are able to continuously create and transfer knowledge (Sankowska, 2013).

The conceptual model shown in Figure 3.2 suggests a relationship between organisational culture and an individual’s willingness to share knowledge. The inclination to share
knowledge is recognised as an OCB, and a strong relationship between organisational culture and OCBs is confirmed by Sarafraz and Kia (2015). OCB has been the subject of research for a number of years and as a consequence there exist many definitions and perspectives on the meaning of the concept. Interest in OCBs derives from a belief that such behaviours can help organisations to achieve performance gains and realise competitive advantage (Robinson, Perryman & Hayday, 2004). OCBs comprise individual behaviours that are discretionary (extra-role) and independent of (in-role) activities, and is defined by Organ (1988, p. 4) as “individual behaviour that is discretionary, not directly or explicitly recognised by the formal reward system, and that in the aggregate promotes the effective running of the organisation.”

The creation of organisational knowledge is defined by Nonaka, Von Krogh and Voelpel (2006, p. 1179) as “the process of making available and amplifying knowledge created by individuals as well as crystallizing and connecting it to an organization's knowledge system.” This definition refers to the knowledge creation process described in §2.2, which describes the interactions between tacit and explicit knowledge through SECI (Takeuchi & Nonaka, 2004). The conceptual model relates knowledge sharing and knowledge transfer with the processes of socialisation and externalisation. Socialisation entails the sharing of tacit knowledge between individuals, which is subsequently converted into explicit knowledge through discussion and contemplation. The resulting “new” knowledge is merged with existing knowledge stored in the organisation’s knowledge management systems (combination), and disbursed throughout the institution. The knowledge stored in an organisation’s knowledge management systems is used as a basis for creating new tacit knowledge (internalisation).

### 3.5 Chapter summary - SET and knowledge creation

The creation of new knowledge is a social process, which is dependent on the willingness of individuals to share what they know with other people within the institution. This implies that economic exchange theory is an unsatisfactory basis for predicting knowledge sharing behaviours, and informed the decision to utilise SET to examine relationships between those employed by New Zealand organisations. According to Emerson (1981), trust represents a critical element for parties to social exchanges because it moderates performance of OCBs, including the willingness to share knowledge. Trust in social exchanges is derived from adherence to specific rules of exchange, and in an organisational setting reciprocity is considered key to the maintenance of trust between parties to an exchange. The benefits
exchanged between parties comprise particularistic and concrete resources, and compliance with the rule of reciprocity is contingent on each party perceiving equivalence in the value of the resources exchanged. Perceived differences breach the rule of reciprocity and potentially compromise trust and performance of OCBs. It is proposed that SET is applicable to permanent and contingent workers, although the composition of resources exchanged between parties may differ.

The willingness to perform OCBs is also dependent on organisational culture, specifically one which supports exchanges between individuals. The conceptual model shown in Figure 3.2 suggests that organisational culture is influenced by trust, but another element affecting culture is the relative power of the parties involved in exchanges. Contingent worker’s power is derived from their knowledge and expertise and the organisations need for it, but significant disparities in power reduce trust and creates cultures that discourage OCB. Cultures characterised by low trust and power disparities diminish affective commitment, and reduces the inclination of workers to perform voluntary acts. Other forms of commitment, which include normative and continuance commitment, are unable to inspire OCBs. However, another rule of exchange is rationality, which implies that parties to exchanges act in a logical way to realise their objectives. Such rationality may overcome the absence of affective commitment and induce employees to perform OCBs.

3.5.1 The conceptual framework and research design

According to Miles, Huberman and Saldana (2014, p. 20), a conceptual framework “explains, either graphically or in narrative form, the main things to be studied, the key factors, concepts, or variables and the presumed relationships among them.” The conceptual framework developed for this research represents a visual representation of the elements that influence knowledge management practice within New Zealand organisations. The model also depicts the assumed inter-relationships between components and the research questions to be addressed by the study.

It is also suggested that the conceptual framework presents a tentative theory of the phenomena being investigated, and a function of this theory is to inform the research design (Maxwell, 2012). This finding is supported by Imenda (2014, pp. 189-190), who suggests that “these theoretical perspectives guide the individual researcher … leading to a better directed review of literature, the selection/identification of appropriate research methods, and the
interpretation of results.” The conceptual model developed for this study represents a significant input into the research design that will be described in Chapter 4.
4 Design and Methodology

This chapter examines the research paradigm, which, according to Kuhn (1996, p. 45), is “the set of common beliefs and agreements shared between scientists about how problems should be understood and addressed.” The research paradigm comprises ontology, epistemology and research methodology, and these elements illustrate how researchers perceive knowledge and their approach to its discovery (Patel, 2015). Each of the components comprising the research paradigm are considered in subsequent sections.

Researcher ontology and epistemology

Ontology relates to a researcher’s perception of reality and how they understand existence, and Neuman (2011) regards it as a continuum, with realist and nominalist positioned at opposite ends. Realists perceive the world to be ‘out there’, and assume that it “exists independently of humans and their interpretations of it” (Neuman, 2011, p. 92). In contrast, nominalists assume that humans experience the world through a “scheme of interpretations and inner subjectivity” (Neuman, 2011, p. 92), so a person’s experiences are organised into categories according to their cultural worldview. Epistemology is a question about what constitutes authentic knowledge and how it can be obtained, and from an epistemological perspective, realists believe that knowledge can be created by cautiously observing reality. Realists gather empirical evidence to verify their ideas about reality, with the aim of distinguishing between truth and myth and producing scientific knowledge. A nominalist believes that the production of social science knowledge is the result of inductive observation, interpretation and reflection on what people say and do in selected social situations, and simultaneously reflect on their own experiences and interpretations. For a researcher to determine his or her epistemological position, Willig (2013, p. 67) suggests that they ask themselves the following questions:

What kind of knowledge do I aim to create?
What are the assumptions that I make about the (material/social/psychological) world(s) which I study?
How do I conceptualize the role of the researcher in the research process? What is the relationship between myself and the knowledge I aim to generate?

A researcher’s responses to these questions help to reveal their epistemological position in relation to their planned research, and this provides a basis for selecting the most appropriate
approach (Willig, 2013). The three main approaches to social scientific enquiry are positivist social science, interpretive social science, and critical social science (Neuman, 2011). Positivism and interpretivism can be placed at the opposite ends of a methodological continuum (Condie, 2012), as shown in Figure 4.1.

Figure 4.1: Methodological continuum

<table>
<thead>
<tr>
<th>Theory-Building</th>
<th>Theory-Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative</td>
<td>Quantitative</td>
</tr>
<tr>
<td>Heavily Interpreting</td>
<td>Heavily Positivist</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>10</th>
<th>25</th>
<th>50</th>
<th>100</th>
<th>250</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Depth Face-to-Face Interviews</td>
<td>500 Closed-Ended Postal Questionnaires</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Response Rate Expected</td>
<td>Low Response Rate Expected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Analytical Work</td>
<td>More Design/Implementation Work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Raddon (2010, p. 9)

Positivist social science is defined by Neuman (2011, p. 95) as “an organised method for combining deductive logic with precise empirical observations of individual behaviour in order to discover and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity.” Neuman (2011, p. 102) defines interpretivist social science as “the systematic analysis of socially meaningful action through the direct detailed observation of people in natural settings in order to arrive at understandings and interpretations of how people create and maintain their social worlds.” Differences between these approaches are highlighted in Table 4.1.

Table 4.1: Contrasting approaches to social science

<table>
<thead>
<tr>
<th>Approach:</th>
<th>Positivist</th>
<th>Interpretivist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose:</td>
<td>Explaining</td>
<td>Understanding</td>
</tr>
<tr>
<td></td>
<td>Predicting</td>
<td>Interpreting</td>
</tr>
<tr>
<td>Origin:</td>
<td>Natural sciences</td>
<td>Social sciences</td>
</tr>
<tr>
<td>Orientation:</td>
<td>Objective</td>
<td>Subjective</td>
</tr>
<tr>
<td>Emphasis:</td>
<td>Value free</td>
<td>Interpretations reference culture and history.</td>
</tr>
<tr>
<td>Outcome:</td>
<td>Universal principles and facts</td>
<td>Identifying and interpreting the meanings, motives and values of social participants.</td>
</tr>
</tbody>
</table>

Source: Raddon (2010)

A researcher’s theoretical perspective informs the choice of research methodology and method. The methodology is concerned with answering the question, “How do you go about finding out?” and includes experimental research, survey research, ethnography, grounded
theory, phenomenological research, heuristic inquiry, action research, discourse analysis and feminist standpoint research. Table 4.2 shows the methodologies and methods associated with the different theoretical perspectives.

**Table 4.2: Theoretical perspectives and related methodologies and methods**

<table>
<thead>
<tr>
<th>Theoretical perspective</th>
<th>Methodology</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positivism</td>
<td>• Experimental research</td>
<td>Typically quantitative, and may include:</td>
</tr>
<tr>
<td></td>
<td>• Survey research</td>
<td>• Sampling;</td>
</tr>
<tr>
<td>Post-positivism</td>
<td></td>
<td>• Measurement and scaling;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Statistical analysis;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Questionnaires;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Focus groups; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Interviews.</td>
</tr>
<tr>
<td>Constructivism /</td>
<td>• Ethnography;</td>
<td>Typically qualitative, and may include:</td>
</tr>
<tr>
<td>Interpretivism</td>
<td>• Grounded theory;</td>
<td>• Qualitative interview;</td>
</tr>
<tr>
<td></td>
<td>• Phenomenological research;</td>
<td>• Observation;</td>
</tr>
<tr>
<td></td>
<td>• Heuristic inquiry;</td>
<td>• Case studies; and</td>
</tr>
<tr>
<td></td>
<td>• Action research;</td>
<td>• Narrative.</td>
</tr>
<tr>
<td></td>
<td>• Discourse Analysis;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Feminist Standpoint research</td>
<td></td>
</tr>
</tbody>
</table>

Source: Patel (2015)

Within academia, there has been extensive debate about the advantages and disadvantages attributed to the qualitative and quantitative paradigms. There are researchers who advocate a purely quantitative approach to research and those taking an opposing position by supporting the exclusive use of qualitative methods (Everest, 2014), and there are also researchers that endorse the use of mixed methods, which combine qualitative and quantitative paradigms (Howe, 1988). It is proposed that alignment with a particular paradigm is dependent on a researcher’s epistemology, which relates to how a human beings study and endeavour to know about phenomena, and ontology, encompassing the interpretation of what constitutes reality and the nature of being (Raddon, 2010). The paradigm discussion is ongoing and it is not the intent of this research to propose the superiority or inferiority of one approach or the other. However, in determining the most appropriate basis for undertaking this research, it
was necessary to consider each of these paradigms. Qualitative research is defined by Yilmaz (2013, p. 312) as:

> an emergent, inductive, interpretive and naturalistic approach to the study of people, cases, phenomena, social situations and processes in their natural settings in order to reveal in descriptive terms the meanings that people attach to their experiences of the world.

In contrast, quantitative research is defined as “the collection of numerical data in order to explain, predict and/or control phenomena of interest” (Gay & Airasian, 2000, p. 627), and Yilmaz (2013) emphasises the measurement of variables for testing theory. The differences between qualitative and quantitative methods are summarised in Table 4.3.

**Table 4.3: Comparison of qualitative and quantitative paradigms**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Quantitative Paradigm</th>
<th>Qualitative Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assumptions:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reality:</td>
<td>Single, quantifiable and separable</td>
<td>Multiple and socially constructed</td>
</tr>
<tr>
<td>Knower and known:</td>
<td>Independent</td>
<td>Inseparable</td>
</tr>
<tr>
<td>Primacy:</td>
<td>Method</td>
<td>Subject matter</td>
</tr>
<tr>
<td>Variables:</td>
<td>Identifiable and measurable</td>
<td>Complex, interconnected and hard to measure</td>
</tr>
<tr>
<td>Inquiry:</td>
<td>Objective</td>
<td>Subjective</td>
</tr>
<tr>
<td><strong>Purposes:</strong></td>
<td>Prediction</td>
<td>Interpretation</td>
</tr>
<tr>
<td></td>
<td>Causal explanations</td>
<td>Comprehending</td>
</tr>
<tr>
<td><strong>Approach:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypotheses:</td>
<td>Start point</td>
<td>End point</td>
</tr>
<tr>
<td>Instruments:</td>
<td>Formal and structured</td>
<td>Researcher as an instrument</td>
</tr>
<tr>
<td>Theory:</td>
<td>Deductive</td>
<td>Inductive</td>
</tr>
<tr>
<td>Values:</td>
<td>Unstated</td>
<td>Articulated</td>
</tr>
<tr>
<td>Interaction:</td>
<td>Experimentation and intervention</td>
<td>Non-intervention</td>
</tr>
<tr>
<td>Numerical indices:</td>
<td>Considerable use</td>
<td>Minor use</td>
</tr>
<tr>
<td>Language:</td>
<td>Abstract</td>
<td>Descriptive</td>
</tr>
<tr>
<td></td>
<td>Impersonal, third-person prose</td>
<td>Textual, graphical or pictorial</td>
</tr>
<tr>
<td>Cases or subjects:</td>
<td>Many</td>
<td>Few</td>
</tr>
<tr>
<td>Data collection:</td>
<td>Questionnaires and surveys</td>
<td>Observation, in-depth interviews, document analysis and focus groups</td>
</tr>
<tr>
<td><strong>Researcher role:</strong></td>
<td>Independent and impartial</td>
<td>Personal involvement</td>
</tr>
<tr>
<td></td>
<td>Unbiased</td>
<td>Acknowledged partiality</td>
</tr>
</tbody>
</table>

Source: Neuman (2011); Yilmaz (2013)
The decision to adopt qualitative or quantitative research methods can be influenced by specific situations or the questions being asked. It is proposed that qualitative studies are better suited to providing detailed and descriptive data relating to specific topic and quantitative investigation provides the ability to conduct broader scale research and summarise major patterns (Yilmaz, 2013).

Deductive versus inductive reasoning

An inductive approach is typically adopted for the study of new phenomena or to re-examine a previously researched phenomena from a diverse standpoint, and deductive approaches are normally used to investigate causality. Inductive approaches are focussed on generating new theory from the data and deductive methods are aimed at testing theory. The decision to use an inductive or deductive approach is dependent on the purpose of the research and the methods best suited to answer the research questions, test a hypothesis or explore an emergent topic or theme within a discipline. Inductive approaches are typically associated with qualitative research and deductive approaches with quantitative research, but this is not directed by any specific rule. A qualitative study can have a deductive orientation and vice versa (Gabriel, 2013).

Research purpose

An important step in the planning of a research project is determining the purpose of the study. Social research fulfils either a descriptive, explanatory or exploratory purpose (Sue & Ritter, 2011), and although a study may have multiple purposes one is typically dominant (Neuman, 2011). The purpose of each research type, associated paradigm and the type of research questions they address is shown in Table 4.4.

Table 4.4: Categories of social research projects

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Exploratory</th>
<th>Descriptive</th>
<th>Explanatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose(s):</td>
<td>Articulate problems; Illuminate basic facts; Clarify concepts; Develop questions for future research; Evaluate feasibility of future research; and Form hypotheses.</td>
<td>Provide a clear depiction of a phenomenon; Document an underlying process; and Describe characteristics of populations.</td>
<td>Explain why phenomena occur (causes and reasons); Predict future occurrences; and Extend and test theories;</td>
</tr>
<tr>
<td>Paradigm:</td>
<td>Typically qualitative</td>
<td>Qualitative or quantitative</td>
<td>Quantitative</td>
</tr>
</tbody>
</table>
The selection of a research design is dependent on the question being asked and present status of theory development. Exploratory research is appropriate where little is known about a phenomenon. Descriptive research is relevant in situations where a phenomenon is satisfactorily defined, but its connection to other phenomena are undetermined. Explanatory research is suited to situations where a phenomenon and its relationships to other phenomena are well known (Fawcett & Downs, 1987).

### 4.1 Methodological approach for this study

After considering the research questions and the desired outcome of this study, it was decided that a qualitative methodology would be employed. The basis for this choice was the need to illuminate the experiences and interpretation of events by actors performing different roles in diverse environments. A qualitative approach affords individuals an opportunity to provide rich descriptions of complex phenomena, and provides a basis examining and interpreting the meaning people or groups of people attribute to their social settings. In addition a qualitative study enables exploration of social exchanges and resource considerations suggested by SET and RT. Qualitative case studies allow researchers to intensively analyse single entities, phenomena or social units. In this way qualitative case studies are focused, descriptive, and experiential, and are reliant on inductive analysis to manage diverse sources of data (Merriam, 1998).

### 4.2 Ontological and Epistemological Considerations

A researcher’s ontology includes the worldviews and beliefs that are utilised in the quest for new knowledge (Schwandt, 2007). The ontological position adopted in this research is subjectivist, which assumes the existence of multiple realities constructed through social interaction and experience. Such realities are the product of human intellect and interaction, and as a consequence these may conflict with one another (Guba & Lincoln, 1994). This is interpreted by Denzin and Lincoln (2011, p. 103) to mean that

… we construct knowledge through our lived experiences and through our interactions with other members of society. As such, as researchers, we must participate in the research process with our subjects to ensure we are producing knowledge that is reflective of their reality.

Creswell (2007) defines epistemology as the relationship between a researcher and the subject(s) of an investigation. The epistemological position adopted for this research
corresponds with a subjectivist epistemology, which regards the “inquirer and inquired” as bonded into a unitary body (Guba, 1990, p. 27). A subjectivist epistemology corresponds with the view that people create their own concept of reality; with meaning being constructed through a person’s interactions with their surroundings (Lincoln & Guba, 1985). A researcher with a subjectivist epistemology acknowledges that their experiences will appear in the knowledge they generate and the data produced by research participants (Denzin & Lincoln, 2011). Flax (1990) suggests a researcher cannot know the real without recognising his/her own role as a knower. As a result, the researcher must acknowledge the importance of reflexivity, and how this impacts on the negotiation of meaning with those participating in the study. In this study, this reflexive practice was extended to include a technology based of computer aided qualitative data analysis (CAQDAS) programme (NVivo™) to interpret the data collected through semi-structured interviews. This study followed an interpretive paradigm, which used naturalistic methods including interviews and analysis of available documents (Angen, 2000).

Based on these epistemological, ontological and methodological choices, the paradigm for this research corresponds with a constructivist/interpretivist approach, the focus being on interpreting social phenomena (Cohen & Manion, 1994), based on the proposition that reality is developed through social interaction (Mertens, 2005). As a qualitative study, this research is dependent on the meaning attributed to the topics being studied by individual participants (Creswell, 2003), and the influence of the researcher’s own experiences and prior history. Consistent with other interpretivist/constructivist studies, this study did not propose a theory, but inductively generated a pattern of meanings through the research process. The advantage derived from adopting a constructivist approach was the opportunity to work closely with participants, which enabled them to describe their experiences through storytelling (Crabtree & Miller, 1999). These narratives provide research participants with an opportunity to describe their interpretations and experiences of reality (Lather, 1992), which facilitates the researcher’s understanding of the participant’s actions.

### 4.3 Qualitative Case Study Research

McMurray (2011, p. 4) defines qualitative research as:

… inquiry that is grounded in the assumption that individuals construct social reality in the form of meanings and interpretations, and that these constructions tend to be transitory and situational. The dominant methodology is to discover these meanings and interpretations by
studying cases intensively in natural settings and by subjecting the resulting data to analytic induction.

This definition refers to the studying of cases (case studies), which is the research method selected for this study. The case study method was selected because it provided the opportunity to intensively investigate a small set of cases, focus on details within the cases (internal features) and the context (environmental perspective). Undertaking case studies also enabled the linking of micro and macro elements from within the organisations being researched. This included the actions of individuals (micro level), and major structural components and processes (macro level) (Vaughan, 1992). Neuman (2011, p. 42) suggests that case studies are capable of providing “evidence that more effectively depicts complex, multiple-factor events/situations and processes that occur over time and space.”

Case studies are used to research a range of topics and are sufficiently flexible that they may be applied to specific events, individuals, institutions, or phenomena (Hancock & Algozzine, 2016). The ability of case studies to target specific subjects makes them appropriate for practical problems (Merriam, 1998), such as improving the ability of New Zealand organisations to manage their knowledge assets. The descriptive element reflects the use of “thick” description to describe the subject of a case study. “Thick” descriptions incorporate detailed depictions of a participant’s experiences, transcending reports of superficial events and exposing the meaning embedded in people’s actions (Holloway & Wheeler, 2010). Thick descriptions allow previously unknown relationships to emerge, enabling reconsideration of the phenomenon being studied (Stake, 1981). Such inductive reasoning involves discrete observations and measurement criteria, the detection of sequences and patterns, the formulation of exploratory hypotheses and the development of general conclusions (Trochim, 2006). It also invites the researcher to consider his impact on the findings as a result of the participants’ perceptions of him, his role, his power and the possible outcomes of the research process in SET and RT terms. Emphasis was placed on describing social phenomena rather than attempting to explain it (Bryman, 2004), by creating a window which allows the researcher to look in and see the culture at work (Creswell, 2007). It provided an opportunity to enter the world of the participants in a relaxed conversational interaction designed to generate a rich dataset of reflections. The research design and research methods mentioned in this section are considered in more detail in §4.4.
4.4 Research Design and Methods

The design for this case study is founded on the principles described by Robert K. Yin in his book *Case Study Research: Design and Methods* (2013), which, on reflection, was a contradictory choice. Within his work, Yin does not explicitly confirm his epistemological position, but Yazan (2015, p. 136) suggests that Yin “demonstrates positivistic leanings in his perspective on case study.” This is in contrast to the epistemological position of the researcher undertaking this study, which is aligned with a constructivist position. However, the case study design is also influenced by Merriam’s *Qualitative Research and Case Study Applications in Education* (1998), and Robert E. Stake's *The Art of Case Study Research* (1995). These researchers are more aligned with the constructivist paradigm adopted for this research. A core philosophical assumption underpinning all forms of qualitative research is that individuals construct reality through interaction with social environments (Merriam, 1998).

According to Yazan (2015, p. 142), Yin advocates the use of “quantitative and qualitative evidentiary sources because he views them equally instrumental”, but this study makes exclusive use of qualitative data, which is consistent with Stake and Merriam’s approaches to case study research. Yin also “presents a detailed and comprehensive approach to the formation of the design” (Yazan, 2015, p. 140), which considers in detail each step of the research process. Although this researcher does not share Yin’s epistemological inclinations, as mentioned, it is his commitment to detail in the design of case study research which most influenced the design of this research.

This research used a multiple-case study design as a platform for discerning the similarities and differences within and between cases. Multiple case studies can be used to forecast analogous results (literal replication) or forecast results which are divergent but for recognised reasons (a theoretical replication). Two or three cases would be literal replications, but four to six cases can accomplish theoretical replication (Yin, 2013). Six cases have been selected for this research on the basis that this is an adequate amount of replications to distinguish differences in the results stemming from the type of organisation (government versus private), size of the organisation (large versus small), age of the organisation (established versus start-up), and organisational structure (hierarchical versus flat).
The unit of analysis for this research is “organisation”, which Neuman (2011) defines as the units, cases, or parts of social life that are under consideration. The cases examined in this research include three public sector and three private sector organisations. A one-phase approach to screening of candidate cases was adopted by querying people who were knowledgeable about each candidate (organisation) and collecting documentation about each candidate. Candidates were selected on the basis that they would provide the most available data sources and might fit with literal and theoretical replication design. The basis for their selection is shown in Table 4.6.

Forty-eight employees from the six case organisations were invited to participate in the study, twenty-five of whom were permanent members of staff and twenty-three contingent workers. Data collection was performed during two separate periods, the first taking place between March 2014 and July 2015, and the second undertaken during a five-month period between September 2017 and January 2018. Each participant attended a one and a half hour semi-structured interview, with a one hour to thirty minute follow-up discussion taking place three weeks after the initial exchange. The sample consisted of ten senior managers, seventeen middle managers and twenty-one operational staff. The majority of the sample were aged between forty-one and fifty years of age, and had been employed by the case organisation for between four and six years. Thirteen business functions were represented in the sample, but the majority of participants were drawn from Human Resource Management (20.84%) and Information Technology (31.25%). Three employees interviewed for this study resigned from their positions after agreeing to participate, but each was included because they afforded a unique perspective in relation to the related case organisation. The composition of the sample is examined in Table 4.5.

Table 4.5: Demographics of Sample Participants

<table>
<thead>
<tr>
<th>Case organisation</th>
<th>Position</th>
<th>Business area</th>
<th>Tenure (Years)</th>
<th>Approximate age</th>
<th>Interviewees</th>
<th>Employment status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Permanent</td>
</tr>
<tr>
<td>CO1</td>
<td>Senior managers</td>
<td>Advisor</td>
<td>1-2</td>
<td>61-70</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Knowledge Management</td>
<td>1-2</td>
<td>41-50</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Human Resource Management</td>
<td>4-5</td>
<td>41-50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Middle managers</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Information Technology</td>
<td>1-2</td>
<td>21-30</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consulting</td>
<td>0-1</td>
<td>21-30</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4-5</td>
<td>41-50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>Middle managers</td>
<td>Marketing</td>
<td>5-6</td>
<td>51-60</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5-6</td>
<td>41-50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role</td>
<td>Department</td>
<td>Count</td>
<td>Age Distribution</td>
<td>Tenure Distribution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>---------------------</td>
<td>-------</td>
<td>------------------</td>
<td>--------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3 Senior</td>
<td>Human Resource</td>
<td>2</td>
<td>21-30 4 8.33%</td>
<td>0-1 1 2.08%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3 Middle</td>
<td>Human Resource</td>
<td>3</td>
<td>31-40 9 18.75%</td>
<td>1-2 12 25.00%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>Knowledge Management</td>
<td>2</td>
<td>41-50 28 58.34%</td>
<td>2-3 9 18.75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>Information Technology</td>
<td>1</td>
<td>51-60 6 12.50%</td>
<td>3-4 6 6.25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>Knowledge Management</td>
<td>1</td>
<td>61-70 1 2.08%</td>
<td>4-5 8 16.67%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>Knowledge Management</td>
<td>1</td>
<td>51-60 6 12.50%</td>
<td>6-7 2 4.17%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>Information Technology</td>
<td>1</td>
<td>41-50 2 8.33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO3</td>
<td>Consulting</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4 Senior</td>
<td>Executive Manager</td>
<td>1</td>
<td>21-30 4 8.33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4 Middle</td>
<td>Human Resource</td>
<td>1</td>
<td>31-40 9 18.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>General Manager</td>
<td>1</td>
<td>41-50 28 58.34%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>Line Manager</td>
<td>1</td>
<td>51-60 6 12.50%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>Marketing</td>
<td>1</td>
<td>61-70 1 2.08%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>Information Technology</td>
<td>2</td>
<td>41-50 2 8.33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO4</td>
<td>Consulting</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5 Senior</td>
<td>Chief Information Officer</td>
<td>2</td>
<td>21-30 4 8.33%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5 Middle</td>
<td>Line Manager</td>
<td>1</td>
<td>31-40 9 18.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>Information Technology</td>
<td>1</td>
<td>41-50 28 58.34%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>Consulting</td>
<td>1</td>
<td>51-60 6 12.50%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO5</td>
<td>Knowledge Management</td>
<td>1</td>
<td>61-70 1 2.08%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO6 Senior</td>
<td>Human Resource</td>
<td>4</td>
<td>31-40 9 18.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO6 Middle</td>
<td>Knowledge Management</td>
<td>2</td>
<td>41-50 28 58.34%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO6</td>
<td>Information Technology</td>
<td>3</td>
<td>31-40 9 18.75%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO6</td>
<td>Consulting</td>
<td>1</td>
<td>41-50 28 58.34%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>48</td>
<td>52% 23 48%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Additional organisations were initially approached and invited to participate in this research, but declined or did not respond. Their exclusion from this research has meant under-representation of different industry sectors, but their absence is unlikely to impact on the findings because similar organisations have agreed to participate. A description of these organisations, and a justification for their planned inclusion is shown in Table 4.6.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Type</th>
<th>Sector</th>
<th>Nº. Employees As at 12th November 2013</th>
<th>Location (City)</th>
<th>Rationale for inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>Public sector</td>
<td>Insurance</td>
<td>Total: 3,200 Permanent: 3,050 (95%) Contingent: 150 (5%)</td>
<td>Wellington</td>
<td>The organisation hires contingent knowledge workers to work on large-scale change projects. The corporation retains contingent knowledge workers for long periods of time, but does not maintain a knowledge management system.</td>
</tr>
<tr>
<td>Organisation</td>
<td>Type</td>
<td>Sector</td>
<td>No. Employees As at 12th November 2013</td>
<td>Location (City)</td>
<td>Rationale for inclusion</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------------------</td>
<td>----------------------------------------</td>
<td>-----------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>CO2</td>
<td>Private sector</td>
<td>Telecommunications</td>
<td>Total: 815 Permanent: 760 (93%) Contingent: 55 (7%)</td>
<td>Wellington / Auckland</td>
<td>Provider of telecommunications infrastructure throughout New Zealand. Spun off from its parent company in 2011, as a condition of winning the majority government contract. Have recently implemented a web-based knowledge/information management system (SharePoint).</td>
</tr>
<tr>
<td>CO3</td>
<td>Public sector</td>
<td>Government</td>
<td>Total: 2,570 Permanent: 2,287 (89%) Contingent: 283 (11%)</td>
<td>Wellington</td>
<td>A government department, which has received considerable negative publicity in recent times because of an unsuccessful attempt to outsource a core system. The department hires contingent knowledge workers, but does not have a knowledge management system.</td>
</tr>
<tr>
<td>CO4</td>
<td>Public sector</td>
<td>Logistics</td>
<td>Total: 5,041 Permanent: 4,774 (95%) Contingent: 267 (5%)</td>
<td>Wellington</td>
<td>An organisation undergoing considerable change because of a changing external environment (increase in electronic data transfer).</td>
</tr>
<tr>
<td>Organisation</td>
<td>Type</td>
<td>Sector</td>
<td>No. Employees As at 12th November 2013</td>
<td>Location (City)</td>
<td>Rationale for inclusion</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------------</td>
<td>---------------------------------------</td>
<td>-----------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>CO5</td>
<td>Private sector</td>
<td>Banking</td>
<td>Total: 5,555  Permanent: 4,836 (87%) Contingent: 719 (13%)</td>
<td>Auckland</td>
<td>Highly profitable Australian bank which uses large numbers of contingent knowledge workers to fulfil short- to medium-term resourcing needs and supplement project teams staffed with permanent employees. Has attempted to implement an organisation-wide knowledge management system with mixed results.</td>
</tr>
<tr>
<td>CO6</td>
<td>Private sector</td>
<td>Software</td>
<td>Total: 741  Permanent: 705 (95%) Contingent: 36 (4.8%)</td>
<td>Wellington</td>
<td>Provider of online software to small and medium sized businesses. Employs knowledge workers and is undergoing rapid expansion, including into international markets.</td>
</tr>
</tbody>
</table>

In 2013, approximately ten per cent of those employed in New Zealand organisations were classified as temporary workers (Ongley et al., 2013), but the proportion of contingent knowledge workers within this grouping could not be determined. The exclusion of casual workers (47.6%) and seasonal workers (13.6%) from the total number of temporary workers suggest contingent knowledge workers represent only a small section of the temporary workers employed by New Zealand organisation. However, the sample described in Table 4.5 includes a large number of contingent knowledge workers (43%) because a major aim of this study is to determine how these employees support organisational knowledge management. Other important characteristics influencing case selection included the propensity of these organisations to employ contingent knowledge workers and also undertake large high profile change projects on a regular basis. Cases were selected on the basis that they might produce contrasting results, anticipated at the beginning of this investigation.
4.5 Data Collection and Analysis

Yin (2013) identifies four principles of data collection, which he believes help to establish the construct validity and reliability of evidence in relation to case study research. These principles are:

(a) Obtaining evidence from multiple sources.
(b) Utilising computer aided qualitative data analysis software (CAQDAS).
(c) Preserving linkages between pieces of evidence.
(d) Conducting careful assessment of data acquired from electronic sources, to counteract any interpretive slant.

Case studies use multiple sources of information and these are considered complementary, because no single source provides a complete advantage. In fact, a robust case study utilises multiple sources of evidence on the basis that findings or conclusions are considered more credible and precise if they are constructed from a combination of information sources (Yin, 2013). The data collected for this study was principally sourced from interviews, with selected documents used to provide contextual information. These documents included annual reports, texts located on organisational intranets and websites, governmental reports and relevant media content. A reflexive journal was maintained during data collection and data analysis, and the contents were used to develop the findings, discussion and conclusions.

Triangulation allows researchers to counter claims that a study’s findings relied too heavily on a single method, single information source, or a single researcher’s preconceptions (Patton, 1990). Denzin (1978) describes triangulation as an amalgamation of practices in the examination of the same subject matter. He identifies four modes of triangulation, which are data triangulation, investigator triangulation, theory triangulation and methodological triangulation. Information for this research was collected from documentation and semi-structured interviews, corresponding with Denzin’s definition of data triangulation.

Yin’s second principle recommends the creation of a case study database, which he suggests increases the reliability of the entire study. Stake (1995); Yin (2013) recognise the importance of effectively organising data, making it available for independent inspection. Rodik and Primorac (2015) suggest the ability to analyse data in a methodical way is increased by using software programmes to arrange, code and manipulate data. Case study databases also enable data sources and associated artefacts to be recorded and organised,
which contributes towards the reliability of a case study. Wickham and Woods (2005) suggest these to be important considerations when constructing a case study database.

The computer aided qualitative data analysis software (CAQDAS) used for this research was NVivo™ for Mac (Version 10.2.0) produced by QSR International. This software provided the ability to structure, explore text, code words or sections of text, search and interrogate the database, write memos, comments and annotations, and generate digital and hard copy reports. All academic journal articles and other documentary materials used in the literature review were integrated into the case study database. In addition the written transcripts from the interviews were also uploaded as were internally and externally sourced documents relating to each case organisation. Codes (nodes) and sub-codes (child-nodes) were created and assigned to the text during the coding stage. Nodes and child-nodes were considered as “containers for ideas”, and their creation involved reading and re-reading of the text for the purpose of classifying and re-classifying information. The first interview transcripts and documents to be coded required the generation of numerous nodes and child-nodes, but as the analysis continued fewer new ideas emerged. On completion of this initial coding the material held in NVivo™ was reviewed, resulting in the amendment of the node tree, identification of major themes and grouping of related concepts.

Initial codes were derived from the literature review and include human resource management, knowledge management, information technology, organisation and external environment, which recognises the multi-disciplinary nature of this study. These high-level codes were used to store the codes resulting from the investigation of the materials collected throughout the research. After the establishment of these codes, each interview transcript was imported into NVivo™ and placed within a directory named after the relevant case organisation. These folders were created within a pre-existing ‘internals’ file, but a similar structure was replicated in the ‘externals’ directory to store other documents relating to the case organisations including annual reports and newspaper articles. Whilst reading and re-reading the materials stored in NVivo™, labels were assigned to words and phrases within the text (in vivo coding). Codes created as part of this process were linked to the initial high-level codes and to each other to form a hierarchy. Examples of this coding hierarchy are shown in Table 4.7.

Table 4.7: Example NVivo™ coding
The coding process facilitated the development of themes which were used as the basis for analytical memos, with the analytical memos forming the basis of the findings in this thesis. Examples showing the linkage between the codes, data and interpretive summary are shown in Table 4.8.

### Table 4.8: Code and theme development

<table>
<thead>
<tr>
<th>Code</th>
<th>Datum supporting the code</th>
<th>Interpretive summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>“I do trust most people. Cos again, they’re all wanting to help.”</td>
<td>ESTABLISHES a connection between trust and reciprocity.</td>
</tr>
<tr>
<td></td>
<td>“I think there’s a certain amount of trust and confidence we need to instil with our people, ensuring that those ideas haven’t been lost.”</td>
<td>ACKNOWLEDGE that knowledge sharing is DEPENDENT on TRUST.</td>
</tr>
<tr>
<td></td>
<td>“So fresh new people had to try and build trust with the CO3 people and then we had to work together.”</td>
<td>CONFIRMATION that trust between individuals is CONSTRUCTED through collaboration and POSITIVE experiences.</td>
</tr>
<tr>
<td>Commitment’</td>
<td>“Even though I'm an outside contractor, when I'm in an organisation, I’m 100% in that organisation.”</td>
<td>CONFIRMATION that contingent workers experience COMMITMENT towards client organisations.</td>
</tr>
<tr>
<td>Code</td>
<td>Datum supporting the code</td>
<td>Interpretive summary</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Culture</td>
<td>“So Mark is definitely at the core and our culture definitely has a Mark flavour about it. It is then also driven by the other senior leaders, because Mark has brought them into the company because they not only could do the job but they reflect and demonstrate/role model, the culture that he is looking for.”</td>
<td>MODELLING of behaviours that reinforce the desired culture, and RECRUITMENT of leaders who possess personality traits and styles of management that support the culture.</td>
</tr>
<tr>
<td>Knowledge sharing</td>
<td>“I’ve even seen it in my own teammates who are permanent staff, just don’t share. They’ll share when they have to, you know.”</td>
<td>RELUCTANCE to share knowledge even within a team environment, and sharing only out of NECESSITY.</td>
</tr>
<tr>
<td>Knowledge transfer</td>
<td>“Part of his role is to upskill the unskilled, so that they understand the medical things.”</td>
<td>The need to individuals to TRANSFER their knowledge to others, so that their work may be performed.</td>
</tr>
<tr>
<td>Socialisation</td>
<td>“It’s all about how you listen to the people, listen to what they’re telling you.”</td>
<td>The transfer of TACIT knowledge through social INTERACTION.</td>
</tr>
<tr>
<td>Externalisation</td>
<td>“The guy with all that knowledge who architected it all, just walks out the door with little or no documentation on it.”</td>
<td>DEPENDENCE on externalisation process as a means of preventing knowledge LOSS.</td>
</tr>
<tr>
<td></td>
<td>“We are all experts in our own right and we know how to fix anything because we know it inside out. But we have never sat down and documented that.”</td>
<td>The existence of an IMBALANCE within the knowledge creation process, an OVERRELIANCE on individual tacit knowledge.</td>
</tr>
<tr>
<td></td>
<td>“The business analysis function collects a lot of information across the organisation, analyses and distils that information into a slightly different format.’</td>
<td>FORMALISATION of the mechanisms for CONVERTING tacit knowledge into explicit knowledge.</td>
</tr>
<tr>
<td>Combination</td>
<td>“When I first started, I tried to document the environment, and a lot of the time I’d just get told, ‘Don’t bother, because it’s all gonna change anyway.”</td>
<td>CONFIRMATION that maintenance of explicit knowledge presents a significant challenge.</td>
</tr>
<tr>
<td></td>
<td>“There are time constraints for new products for example the approach of a new tax year then there are often times when documentation and information management is not maintained to the standard that would be required.”</td>
<td></td>
</tr>
<tr>
<td>Internalisation</td>
<td>“This desk file audience is particularly new employees to be used as an induction tool.’</td>
<td>Knowledge ENCAPSULATED in explicit materials is used as a FOUNDATION for creating new tacit knowledge.</td>
</tr>
<tr>
<td></td>
<td>“I think the problem is that once you document it, people put it under a draw and nothing else happens.”</td>
<td>For explicit knowledge to remain useful and relevant, it needs to be CONTINUOUSLY used and adapted.</td>
</tr>
<tr>
<td>Code</td>
<td>Datum supporting the code</td>
<td>Interpretive summary</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Knowledge management systems</td>
<td>“we have a number of Cloud-based systems, some of which connect to one another, some of which don’t. Some of which connect to the organisational knowledge management framework - some don’t”</td>
<td>PROLIFERATION of knowledge management systems and the FRAGMENTED nature of the physical architecture. Absence of LINKAGES between knowledge repositories.</td>
</tr>
<tr>
<td>Explicit</td>
<td>“a few years ago in trying to ensure that there were desk file for each job that were never there when I started, but they were desk files where everything was process maps which was good.”</td>
<td>Development of DETAILED documentation and INCONSISTENCY across an organisation.</td>
</tr>
<tr>
<td>Tacit</td>
<td>“sometimes there’s those quirky things that people just know, and unless it happens and someone says, “right, you need to document that”, it’s in people’s heads.”</td>
<td>Acknowledgement of the PERSONAL nature and STICKINESS of tacit knowledge. CONVERSION of tacit knowledge into explicit knowledge.</td>
</tr>
</tbody>
</table>

### 4.5.1 Iterative Approach to Coding Raw Data

The means by which data was compared was through coding, which for qualitative studies such as this involved organising raw data into conceptual categories and creating themes and concepts. According to Neuman (2011), qualitative coding is an integral part of data analysis. Miles et al. (1994, p. 56) describe codes as

... tags or labels for assigning units of meaning to the descriptive or inferential information compiled during a study. Codes are usually attached to ‘chunks’ of varying size – words, phrases, sentences or whole paragraphs, connected or unconnected to a specific setting.

Strauss (1987) defines three types of qualitative data coding and suggests reviewing the data on three occasions, using a different coding method each time. These coding methods are open coding, axial coding and selective coding and were used for analysing data for this research. Open coding involved reading field notes, interview transcripts, academic articles and other documents, and identifying critical items, key events, central people or themes. The number of codes was expanded as more topics were identified. Before starting to code the data a list of themes was developed, based on the literature review, but these were supplemented through open coding. Open coding also condensed the large amount of data collected as part of this research into categories. According to Boyatzis (1998), good thematic codes capture the qualitative richness of a phenomenon and can be used as the basis for analysis, interpretation and presentation of research.
The third principle necessitates preserving linkages between pieces of evidence, so that the research audience can link the research questions with the case study conclusions. According to Yin (2013), the chain of evidence is maintained by (1) citing sources used to arrive at specific findings by referring to specific documents and interviews, (2) ensuring the sources, and (3) the data collection followed the procedures stipulated in the methodology.

The amount of data available from electronic sources can, according to Yin, be overwhelming. His fourth principle of data collection suggests placing limits on the time spent using electronic sources, based on priorities for navigating and drilling into various websites, and the centrality of the information to the research. Yin also highlights the need to cross-check sources in order to identify any potential interpretive slant or interpretive bias.

The data used in this study was drawn from a number of primary and secondary sources. The primary data used for this research was exclusively sourced from interviews with people affiliated with the case organisations. Purposive sampling was used to select individual interviewees, the purpose being to gain access to persons involved in implementing and utilising knowledge management processes and practices. Secondary data included material from internal sources (from within the case organisations) and information from external sources such as trade and professional publications, newspaper articles and academic journal articles. Academic journal articles were primarily retrieved from the Southern Cross University, Manukau Institute of Technology and Victoria University (Wellington) libraries.

4.5.2 Interview Construction and Procedures

The persons and roles identified included human resource Managers and Practitioners, Chief Information Officers (CIOs), Knowledge Managers, Contingent Knowledge Workers and Permanent Knowledge Workers. Forty-eight individuals were interviewed for this research of which twenty-five were permanent members of staff and twenty-three contingent workers. This sampling technique is supported by Kvale and Brinkmann (2009), who suggest that it is possible to collect data for qualitative analysis from participants who have been selected at random. The adoption of a non-probability sampling technique implies that a population’s characteristics are chosen based on a researcher’s judgement, and that this selection is made so that data is an adequate basis for meeting the research objectives. This suggests that researchers actively choose appropriate cases to be in their sample whilst actively excluding others (Saunders, 2012).
The interviews were in-depth, informal, non-directive and semi-structured, which McMurray (2011) proposes to be a suitable way to bring up new ideas and allow respondents to communicate narrative using their own language. The interviews conducted as part of this research resembled guided conversations with a consistent line of enquiry, where fluid rather than rigid questions were posed (Rubin & Rubin, 2011). According to (Ortlipp, 2008), the subject of bias in qualitative research has not been fully resolved. She maintains that there is disagreement on the extent and nature of researcher involvement, and the appropriateness of controlling and assessing bias is a contributing factor.

Ortlipp (2008) suggests that bias is particularly pertinent issue in relation to interview-based qualitative research. Scheurich (1997) proposes that the researcher’s ‘baggage’, which includes the researcher’s history, values, and assumptions, is made visible. Prior to an interview each participant was provided with information describing the study and an explanation of the researcher’s role in the study. The written information provided to participants is reproduced in Appendix D. The majority of interviews were conducted face-to-face with individual participants, with a small number conducted using Skype and video conference facilities.

As recommended by Neuman (2011), three types of questions were posed during the interview process. Initially questions requiring descriptive answers were used to learn about the details of the respondents and the setting. The initial questions were followed by structural questions to check understanding of events, situations and conversations, and finally, contrast questions were used to seek out similarities and differences between elements of the research. The interview questions were predominantly open-ended to promote richness of detail and also reveal respondent’s logic, thought process and frames of reference. Posing open-ended questions gave respondents the opportunity to provide detailed answers, and clarify specific statements. Yin (2013) contends that case study interviewers need to operate on two levels at the same time, first to satisfy the needs of the line of enquiry for a single case (level 2 questions), and second to put forth friendly and non-threatening questions to specific interviewees (level 1 questions). In addition, the interview questions also need to cater for the unit of analysis. The interview questions posed during the semi-structured interviews are shown in Appendix B. For this research individual interviews focused on how and why the organisation works, but data relating to personnel policies and organisational outcomes was collected from the organisation in the form of documentation.
4.6 Context of the Sample Organisations

The six organisations included in this study were selected because they are sufficiently different in terms of maturity, ownership (public and private), size, structure and the segment(s) they serve. These differences are examined to determine their influence on each organisation’s attempts to manage knowledge.

4.6.1 CO1 Root and Branch: Changing the Way We Do Things around Here

CO1 is a crown entity established through the enactment of specific legislation, and provides citizens and visitors to New Zealand with insurance for injuries sustained in working and non-working environments. In the event of an injury, CO1 contributes to treatment costs, pays weekly compensation to those who are unable to work and provides funds for modifications to homes and vehicles for those who have been seriously injured. Although the principal beneficiaries of these services are individuals, CO1 also collaborates with health care professionals, and provides advice to businesses and community groups. At the time of the study, CO1 was about to initiate a major transformation programme, which would take approximately three years to complete. The purpose of the transformation programme was to redesign and transform the organisation’s operating model, the intention being to improve delivery of core services and outputs to customers.

The transformation programme was intended to bring about wide-ranging change to CO1, and included redefining the organisation’s vision and values. The redefinition of the organisation’s vision and values was an attempt to change the culture of the organisation to be more customer-focused. CO1 had simultaneously implemented other initiatives to bring about change within the organisation, including modifications to the leadership team and organisational structure. The organisation and the current leadership team were supportive of efforts to manage knowledge and information. It is possible that these efforts and recognition of the importance of knowledge and information management resulted from a number of high-profile privacy breaches, when personal client information had been unintentionally exposed to third parties. CO1's decision to replace its core IT system as part of the transformation supports the view that the organisation is addressing the issues which caused the privacy breaches.

The organisation, at the time of the research study, was described as bureaucratic and siloed, and so another aim of the transformation programme was to remove artificial barriers between different business units, but there was an appreciation that this may take time to
achieve. During previous restructures CO1 had moved from a centralised to a decentralised model, but the planned transformation and restructure would return the organisation to a similar (centralised) structure.

CO1 had previously and was continuing to work with a number of relationship partners, particularly within the information technology domain. Relationship partners provided specialist knowledge and services, including the establishment of advanced analytics and case management capabilities. Additional contingent workers were also recruited to provide extra capacity for business and project teams, and these employees worked closely with permanent staff and other temporary personnel. Contingent staff were located within CO1 offices, from a workforce of 3,200, approximately 200 were contingent workers.

In summary, CO1 is an organisation that was undergoing major changes to its structure, culture, operating model and leadership. Although not directly aimed at facilitating the management of knowledge it was believed that these changes would have a positive influence on knowledge management practices, in particular the removal of silos which were preventing the sharing and transfer of knowledge. Senior management support for knowledge and information management were positively influencing the organisational culture, and encouraging appropriate employee behaviour with regards to knowledge management.

**4.6.2 CO2 There’s a Baby in the House: Creating a New Knowledge Culture**

CO2 is responsible for building and maintaining New Zealand’s fixed telecommunications network, which includes the legacy copper lines and the newer fibre cabling. CO2 is a wholesale business and does not deal directly with home and businesses owners, but works with telecommunications companies, internet service providers (ISP) and network operators. CO2 was founded in 2011 from the structural separation of a business unit from a larger parent organisation.

Since its foundation, the number of people employed by CO2 had increased from 200 staff to approximately 800 core staff at the time of the study, but to deliver its services the organisation had established partnerships with external parties, providing the organisation with access to approximately 2,000 contingent workers. CO2 has a limited information technology capability and consequently employs contingent knowledge workers to perform these duties. These contingent knowledge workers are employed directly, hired through agency organisations or provided through agency agreements with third-party organisations. This growth is attributable to CO2 transitioning from a business unit within a larger business
to an independent organisation. The organisation's enlargement led to disruption of existing networks (formal and informal), and also the creation of barriers (silos) to communication. In addition to elements of culture, CO2 also inherited parts of the parent company's organisational structure, which is also siloed. CO2 was attempting to dismantle these organisational barriers (silos) through the definition of business processes and regrouping work teams to facilitate communication and knowledge sharing.

CO2 is headquartered in Wellington, but the organisation has offices in other major centres (Auckland, Christchurch and Hamilton) as well as eleven satellite offices in other locations. At the time of the study, the growth in CO2's workforce had not led to the introduction of additional hierarchy, so the organisational structure remained flat. CO2 shares characteristics associated with mature organisations, such as an established customer base and a large and experienced workforce. The organisation also possesses qualities shared by newer businesses, including a lack of defined processes (structural capital) and information systems.

The formation of CO2 through divestiture from a larger parent organisation is unique amongst the case organisations, because there are cultural traits belonging to mature businesses as well as characteristics of a start-up business. By their own admission the company is still trying to determine what it does. The culture of the organisation is supportive of efforts to manage knowledge as are the senior leadership team, but there are structural characteristics which obstruct the sharing and transfer of knowledge. CO2 is reliant on a number of relationship partners to deliver its products and services.

4.6.3 CO3 The Sleeping Giant: Recognising the Value of Knowledge

All organisations are dependent on knowledge and information to perform their work, but it is argued that some are more dependent than others. As a government ministry, CO3 does not operate in a competitive environment and does not rely on the application and use of knowledge to derive competitive advantage. CO3 performs a range of functions including advising government, providing information, providing resources, administering regulation and funding, and providing specialist services. CO3 employs approximately 2,600 staff (full-time equivalents), but also makes use of relationship partners to deliver non-core capability. One such area is the provision of a payroll service for public servants employed by the sector for which the organisation is responsible. At the time of this study, the organisation was in the process of replacing one relationship partner (and payroll system) with a new solution provided by a different supplier. The project to replace the CO3 payroll involved contingent
workers affiliated with the incoming and outgoing vendors, and non-affiliated contractors and agency staff. The number of contingent workers varied during the project and unplanned turnover amongst this group of employees was a persistent problem.

The project to deliver the new payroll system failed to accomplish its objectives, the replacement solution was deployed late and was of poor quality. This resulted in negative publicity for CO3 and the new relationship partner. This case study differs from the others because it focuses on the interaction of the CO3, and the relationship partner organisation responsible for delivering the new payroll solution. CO3’s customers include 2,529 educational institutions employing approximately fifty-six thousand members of staff (teachers and ancillary workers). The payroll service is administered by CO3, but the responsibility for maintaining information within the system was delegated to staff within educational establishments, who were provided with insufficient training prior to implementation. This inexperience combined with the poor quality of the payroll system led to inaccurate pay and widespread dissatisfaction with CO3 and the software solution.

CO3 is a large organisation and the transfer and sharing of knowledge across departments and divisions is difficult. In response, CO3 had implemented initiatives in an attempt to change the organisation's culture, which included modifications to the leadership team, organisational structure and communication channels. The existing CO3 culture at the time of study supported the sharing of knowledge and information, but this culture was not compatible with the relationship partner's organisational culture. The incompatibility between organisational cultures created a difficult working relationship, which ultimately failed to deliver the outcome required by CO3 and the eventual termination of the partnership in the midst of this study (October 2014). Similar to the influence of senior management on organisational culture identified in CO2, this was also observed by CO3 staff working with the relationship partner. The CO3 culture was also considered accepting of temporary workers including those belonging to relationship partner organisations. However, contingent knowledge workers whose attitudes and behaviours were not aligned with the CO3 culture risked being rejected, and finding themselves subject to obstructive behaviour by the permanent staff.

There is evidence to suggest that CO3 had an inferior or undeveloped capability in relation to the management of relationship partners. The delivery of the new payroll solution was
dependent on selected CO3 and relationship partner staff working together, but there was a failure to provide sufficient resources to the project.

In summary, CO3 is a large government department that provides a number of services to different stakeholders. The delivery of some services was dependent on partners, and a recent failure to deliver a new system had illustrated an inability to manage relationships with third parties or share and transfer knowledge across organisational boundaries. Human resource management practices were solely focused on permanent employees and fixed-term contractors, with responsibility for other contingent knowledge workers delegated to individual programmes and projects. The organisation had a limited information technology capability of its own, because this service was provided by a relationship partner. The implementation of a knowledge management system encountered a number of problems resulting in a delay to the introduction of the service and limited uptake.

4.6.4 CO4 Desperate to Survive: Trying to Generate New Knowledge
CO4 is a large state-owned enterprise, which operates businesses in two industries, these being mail and logistics, and financial services. The mail and logistics business focuses on the delivery of physical items to addresses located in New Zealand and overseas, and the financial services division provides retail banking products such as current and savings accounts, home loans, insurance and retirement savings. Products are sold over the counter or through digital channels, with the logistics organisation providing transportation of items to individual households, i.e., the general public and an array of businesses from sole traders and large multinationals.

The organisation is described as complex in that it has multiple business units which are at different levels of maturity, and in some cases these business units are in competition with one another. The three main business units which comprise the CO4 group are co-dependent, but operate in silos as independent businesses. This operating model has led to duplication, which CO4 was addressing with the introduction of Centres of Excellence (CoE). Consolidation of functions within core business units was also underway, the intention being to reduce duplication and influence organisational culture. Although this could have enhanced communication across the organisation and between business units in the future, at the time of the study it was creating some difficulties. This complexity was increased by the organisation's need to balance commercial needs with community needs. As a state-owned enterprise operating in a competitive environment, CO4 is bound by legislation to meet
certain requirements, from which competitor organisations are exempt. CO4 also operates a number of overseas operations, which adds further complexity. Each of the businesses that make up CO4 have different cultures and the leadership team was promoting the idea of a business group as opposed to individual business units.

Some cultural variances possibly originate from the diverse business objectives of businesses in the CO4 group. The largest business unit in the mail and logistics sector includes moral obligations towards the wider community, but other businesses operating in the same sector do not have these obligations. The desired outcome from this culture change is for staff in different business units to work more collaboratively and share knowledge and information. The existing CO4 group culture is not supportive of collaboration and knowledge sharing because some business units are competing with each other, and are reluctant to compromise any advantage they may possess. The prevailing culture within CO4 at the time of study was recognised as being a barrier to change and innovation, so the organisation had implemented strategies to influence this. Part of this cultural change would require CO4 to recognise failure, and use it for organisational learning purposes.

Encouraging staff to take more initiative is another CO4 cultural component, which is required to change in order to facilitate the sharing of ideas and knowledge. Such empowerment is considered dependent on creating trust between the staff and the organisation, which was found to be absent. CO4 is a long-established organisation and a high proportion of the workforce (in selected business units) have been employed for an extended period of time. Although these employees can be a valuable source of knowledge, they can prevent or slow change initiatives. CO4’s workforce is distributed across New Zealand and only a small number of employees have access to computers, which adds complexity with regards to the sharing and transfer of knowledge. In 2014, the CO4 group employed approximately 5,000 staff, eighty-seven per cent of whom were permanent employees. The remaining thirteen per cent was comprised of casual employees and people employed on fixed-term contracts. Most contingent staff are recruited to work on information technology and business change initiatives, supplementing or augmenting existing organisational capabilities or capacity.

In summary, the CO4 group comprises a number of businesses, which are at different stages in terms of their maturity, and each one operates in a different industry. The core mail and logistics business was in decline at the time of this research, but the company providing
financial services was experiencing growth. The organisational culture was not conducive to knowledge management, but the senior management team had implemented programmes to change employee behaviours and encourage innovation. There was a belief amongst some staff that the organisation was being constrained by old knowledge and working practices, imposed by long standing employees with many years of experience in the business. Limited employee access to information technology in the core mail and logistics business was impeding efforts to share and transfer knowledge.

4.6.5 CO5 Looking Over our Shoulder: Overseas Ownership

CO5 is a large Australian-owned organisation with headquarters in Auckland. The organisation has another office in Wellington and an extensive branch network throughout New Zealand. The New Zealand subsidiary operates independently of the larger Australian parent. As a consequence, CO5 does not make extensive use of the available knowledge and intellectual capital.

The organisation is described as bureaucratic and consisting of silos, which presents challenges for creating and sharing knowledge for business purposes. In response, the organisation had devised procedures to circumvent normal business practices, which allowed CO5 to leverage available knowledge more rapidly. The organisational culture encourages knowledge sharing, but the mechanisms that facilitated the sharing of knowledge had not been fully developed. But, the willingness to share knowledge is irrelevant if staff do not have the means to do so.

In order to bring about the necessary change and make the organisation more agile, CO5 leadership believed that culture change was necessary. The size and structure of CO5 make the sharing and transfer of knowledge difficult, a situation exacerbated by the organisation’s conservative culture. Although the organisation employs a Chief Information Officer, the role is biased towards technology, so other elements which comprise knowledge management had not been considered or addressed. The business analysis function was used as a means for compiling and distributing explicit knowledge, but this was seen to be restricting the organisation’s ability to capture tacit knowledge, and focused the knowledge on a single group of employees.

In the twelve months before the study, the organisations had formed centres of excellence (CoEs), teams of experts from different parts of the business, for the purpose of performing analysis, modelling and reporting. Three CoEs had been established, which included the
Analytics Centre of Excellence, the Change Centre of Excellence and the Process Centre of Excellence. The objective of the Analytics CoE was to improve the organisation’s decision making capability through providing common data definitions, and a single source of truth. The Change CoE was responsible for managing and embedding change across the institution, which included re-designing and coordinating change communications. The process CoE worked with teams to solve problems and improve processes, and collaborated with managers and team leaders to develop their coaching and mentoring skills.

CO5 was making significant use of information technology to deliver its business strategy, and employed a large number of employees (permanent and temporary) to develop new and existing software applications. Of the 5,500 people employed by CO5, approximately 352 were contingent knowledge workers. A high proportion of these workers were affiliated with relationship partner organisations, with others contracted through employment agencies or directly.

The organisation had recently adopted a new software development methodology (*Agile*) to increase collaboration between teams and engagement with the business. Contingent knowledge workers were employed to augment existing organisational capabilities, and were assigned to one or more projects (temporary organisational structures). Contingent staff, which included agency contractors, independent contractors, temps and third party resources, were engaged by a body known as the Workforce Administration team, not by human resources.

Products/Services: CO5 is one of the four largest banks in New Zealand in terms of assets, income and profitability, and provides a range of retail and business banking services (*NewZealandBanks, 2017*). The retail banking products provided by CO5 include current and savings accounts, mortgages, personal loans, and debit and credit cards, and core business banking facilities include business loans, credit, savings and transactional accounts. CO5’s market share as of 2012 was approximately 19.5% (*The Treasury, 2015*), which equates to about 1.2 million customers. Customers are served through 200 branches and 600 automated teller machines (ATMs).

### 4.6.6 CO6 A World without Boundaries

CO6 is a New Zealand technology company headquartered in Wellington, New Zealand. The organisation provides online accounting software to over one million customers in 180
countries. The product is hosted in the Cloud and delivered through digital channels (Internet) to small and medium sized enterprises, and a network of partner organisations. The organisation was founded in 2006 and has undergone rapid expansion, and has offices in Australia, the United Kingdom and the United States. The growth of the organisation, although desirable, was presenting CO6 with a number of challenges. The first challenge was recruiting sufficient staff with the appropriate knowledge and skills, especially in New Zealand. To meet this increasing demand for knowledge workers, the organisation had adopted inventive recruitment strategies, including recruitment from overseas. Although the organisation had found it difficult to recruit the required workers, contingent staff were only hired to provide short-term cover. The number of contingent workers employed was typically low, but the organisation was making extensive use of relationship partner knowledge for product development and distribution.

A second challenge facing CO6 related to the organisation’s culture, and how elements of this, valued by the organisation and staff members, could be preserved in the face of the expansion. There was concern amongst CO6 employees that the “start-up” culture would be replaced by a “corporate culture”, which it was believed would impose a greater bureaucratic overhead, and impact the organisation’s ability to innovate.

The third challenge confronting CO6 was how it could retain its agility and flexibility as the organisational structure evolved. The organisation employed over one thousand staff in four different countries at the time of writing, which had potential impact on the organisation structure, and introduced unwanted bureaucracy. The organisation was deliberately attempting to retain a flat organisational structure.

The competitive environment in which CO6 was operating influenced the way the organisation was functioning. This was manifested in the reduced timeframes for formulating strategies and making decisions. The organisation’s efforts to retain elements of its culture and flat structure had not been successful, as employees had reported feeling more disconnected. A major requirement for CO6 was ensuring that employees had some access to senior managers. In the past, when the company had been small, employees had had access to the founder and current CEO, but this was no longer possible because of the growth in the organisation’s workforce.

Although it was no longer possible for staff to have regular access to the CEO, the organisation was providing staff with access to other members of the senior management
team, as a means of empowering employees and facilitating communication. Access to senior managers was considered important because it facilitated communication about CO6’s mission and strategy. The organisation’s growth had made communication more difficult, and the business was actively addressing this.

However, putting in place new processes can be met with resistance as it is perceived to be adding to bureaucracy. The concern within CO6 was that the proliferation of bureaucratic processes would restrict the organisation’s ability to move quickly and innovate. The organisational culture at the time supported knowledge management and innovation, because it was based on trust, and was tolerant of failure.

In summary, CO6 had experienced rapid growth, and although this is desirable, the organisation was struggling to retain its original culture and structure. As a new start-up, CO6 had few formal processes, policies and procedures, giving employees autonomy in the way they worked and interacted. Expansion into new markets had necessitated the formalisation of many aspects of the business, which had been resisted by many employees who feared that this would introduce unnecessary bureaucracy. The number of staff employed by the organisation had increased substantially, leading to the recruitment of additional managers and increasing spans of control. In previous years, staff had had direct and unhindered access to the CEO and founder, but the organisation’s expansion had made this is no longer possible. Although the organisation’s growth had necessitated aggressive recruitment, the company retained a preference for permanent staff, only recruiting contingent knowledge workers out of necessity and for short periods of time.

4.6.7 Overview of Case Organisation Characteristics

The case organisations represented distinct categories of New Zealand institutions, in terms of culture, leadership, maturity, ownership, purpose, size and structure, and industry sector in which they operate. Although some case organisations belonged to the same or a similar category, it was the unique combination of these factors that informed and influenced their actions and strategies, including the decision to implement knowledge management practices and/or employ (or not employ) contingent knowledge workers. The contingent knowledge workers employed by the case organisations perform a wide-range of roles, a number of which are specialist and others who are deemed to have a generalist orientation. Examples of specialist functions include health care professionals (CO1), corporate legal representatives (CO2), payroll managers (CO3), head of communications and executive advisors (CO4), fund
managers (CO5) and information security architects (CO6). The organisations in this study typically employ a greater number of generalist contingent workers and the roles performed by these employees include project managers (CO1), environment managers (CO2), data analysts (CO3), software testers and communications analysts (CO4), business analysts (CO5) and software developers (CO6).

A principal difference between the three commercially focused case organisations was their maturity, with CO2 and CO5 in the “mature” lifecycle phase and CO6 being in an early-growth stage. There were also a number of structural differences between these commercial entities. This is because CO2 and CO6 were flat matrix structures and CO5 was a hierarchical bureaucracy. In addition, CO2 and CO6 were both controlled by leaders with strong personalities, which directly influenced the cultures of these organisations. The manner of each organisation’s formation had continued to shape and influence each organisations culture. CO2 was formed through the separation of a business unit from a larger parent organisation, and as a consequence, the company retained elements of the parent organisation’s culture and working practices. CO5 was created when an existing New Zealand institution was acquired by an overseas competitor, and had adopted aspects of the owner’s culture. CO6 was the most recently formed company, started by a small group of entrepreneurs, who leveraged emerging technologies to challenge established players in a niche market sector. Knowledge management in these organisations is ultimately directed towards the creation of value through the development of new and/or existing products, in order to meet customer needs and create competitive advantage.

Similar differences existed among the three government sector organisations. This is because CO1 and CO4 operate as quasi-commercial organisations while the sole purpose of CO3 is to implement government policy. Although these case organisations employ knowledge management practices the basis for this differs. The core business within the CO3 group was in decline, and the organisation had implemented knowledge management practices and knowledge management systems to stimulate innovation for the purpose of creating new business opportunities and revenue streams. In contrast, CO1’s adoption of knowledge management practices was motivated by historical difficulties relating to information and knowledge security, and the requirement to prevent future instances of non-compliance in this area. Knowledge management within CO3 was restricted to the implementation of a document management system, intended to standardise working practices and minimise the loss of knowledge through employee turnover. The government sector case organisations...
were structurally similar, each being hierarchical, bureaucratic and divided along functional lines.

4.7 Analytical Strategies and Techniques

Before selecting an analytic strategy, Yin (2013, p. 135) suggests “playing” with the data for the purpose of finding patterns, insights or concepts that seem promising. Miles et al. (1994) propose placing information into diverse arrays, making matrices of classes and grouping the evidence within such classes and producing data displays as a means to gaining an insight of what needs to be done to analyse the data, and once the researcher has achieved an understanding of the data, analytical strategies and techniques can be applied. Yin identifies four general analytical strategies for analysing case study evidence. These include (1) relying on theoretical propositions, (2) working the data from the “ground up”, (3) developing a case description, and (4) examining plausible rival explanations. These strategies are not mutually exclusive, and a researcher can use any one of them in any combination.

Two analytical strategies were adopted for this research, these being reliance on the theoretical propositions (as outlined in §4.3), and working with the data from the ground up. The original objectives of this case study were based on the aforementioned theoretical propositions, which in turn led to the definition of research questions and informed the literature review. These theoretical propositions also shaped data collection and helped to identify analytical priorities. According to Yin, the second strategy, working the data from the ground up, contrasts directly with the first strategy. However, as a result of the earlier “playing with the data”, patterns emerged and a number of concepts were identified. These insights helped to identify the start of the analytic path, which led further into the data and to the identification of additional relationships.

In addition to the analytical strategies, Yin (2013) proposed five methods for evaluating case study evidence, which include cross-case synthesis, explanation building, logic models, pattern matching and time-series analysis. This study employed two of these analytical techniques, which are explanation building and cross-case synthesis. Explanation building is a cyclical process which can be repeated on multiple occasions, and typically includes the following steps:

- Stating a preliminary statement;
- Contrasting actual case study findings with the preliminary statement;
- Amending the preliminary statement;
- Reassessing the revised preliminary statement against different elements of the case study;
- Evaluating the amended statement against the findings from other case studies; and
- Repeating the previous activities as many times as required.

In a multiple case study such as this, the goal was to develop a universal explanation applicable to each case, although there are variations between the cases. The examination and re-evaluation of case study evidence enabled the revision of the preliminary statement. A final statement emerged rather than being stipulated at the beginning of the study.

As stated in §4, this study employs inductive reasoning as opposed to deductive reasoning. A general inductive approach was adopted for the evaluation of the qualitative data gathered during this study facilitated the condensing of raw textual data (through coding) into a summary format, enabled the establishment of connections between the study’s objectives and the preliminary findings. In this way explicit theories were not imposed on the data for the purpose of testing a specific hypothesis, but instead conceptual categories and descriptive themes were allowed to emerge.

Deductive reasoning, informally referred to as a "top-down" approach, involves a researcher moving from a general standpoint to a more specific position. The process commences with development of a theory relating to a topic of interest, and then the development of hypothesis to be tested. Specific data is used to test the hypothesis, confirming (or not) the original theories. In contrast, inductive reasoning starts with specific observations and develops generalisations and theories. Tentative hypotheses formulated using this “bottom up” approach originate from the detection of patterns and irregularities, which lead to the development of general conclusions and theories (Trochim, 2006).

A second analytic technique used for this study was cross-case synthesis, which treated every case as a separate study and used categorisation and coding to produce aggregated findings across the individual studies. The cases were synthesised using computer aided qualitative data analysis software (CAQDAS) to code and categorise the data relating to each case organisation. Queries developed in the CAQDAS were used to select codes and categories common to each case study, from which sets were developed. These arrays enabled the identification of cases sharing similar profiles and justified whether they could be considered
instances (replications) of a similar class of general case. Profiles that were sufficiently different were considered as contrasting cases. During the design of the study, effort was made to predict similarities and contrasts.

According to Patton (1990), the first decision to be made in analysing data from interviews is whether to begin with case analysis or cross-case analysis. This research employed cross-case analysis, using the constant comparative methodological framework developed by (Glaser & Strauss, 1967). The constant comparative method is synonymous with the grounded theory methodology, which Denzin and Lincoln (2011) describe as a method of social scientific theory construction, but the method is now widely used in other types of qualitative research (Pihama, 2014). The constant comparative method comprises four separate stages (Glaser & Strauss, 1967, p. 105), which are:

1. Comparing instances applicable to each category;
2. Integrating categories and their properties;
3. Delimiting the theory; and
4. Writing the theory.

For this research, the constant comparative method was used as an analytical framework and not to develop theory, an approach which is supported by Fram (2013), who advocates the use of the method outside grounded theory. The constant comparative method allows the researcher to combine classification and coding with appraisal of observed social phenomena. It is proposed that this method enables cross-category comparison and initiates hypothesis generation (relationship discovery), during the analysis of initial observations. The constant comparison of events with previous events leads to the discovery of new topological dimensions and new relations (Goetz & LeCompte, 1981).

During the open coding stage, no attempt was made to establish connections between the themes or to elaborate the concepts that the themes represent. During the second coding stage (axial coding), the focus shifted from the data to the initial coded themes. Although some additional codes and new ideas emerged during this pass, the emphasis was on organising themes and identifying the axis of key concepts. Neuman (2011) advises that axial coding considers causes and consequences, conditions and interactions, strategies and processes, with the aim of forming clusters and interconnecting categories. In the final coding stage, selective coding, the main category was selected and associated with the other categories. During selective coding, the relationships between categories were validated, and
underdeveloped elements were developed and refined. Finally, the categories and their interrelationships identified during open and axial coding were combined, to develop a “storyline” describing what is happening in the phenomenon being examined (Offredy & Vickers, 2010).

4.8 Ensuring the Quality of Research

For the findings of any research to be utilised in practice it is necessary to provide reassurance that the study meets recognised quality standards (Noble & Smith, 2015). Four tests applied to empirical social research to determine its quality are construct validity, external validity, internal validity and reliability. These tests have been summarised by Judd, Smith and Kidder (1991, pp. 28-29, 51) as:

- External validity: the extent to which one can generalize the results of the research of the populations and settings of interest in the hypothesis; and
- Reliability: the extent to which [a measure] is free from random error components.

If a case study researcher does not develop a sufficiently operational set of measures, there is a risk that subjective judgements (ones tending to confirm a researcher’s preconceived notions) will be used to collect the data (Flyvbjerg, 2006; Ruddin, 2006). To increase the construct validity of this research, multiple sources of evidence were used and a chain of evidence established. In developing convergent evidence, data triangulation helps to strengthen the construct validity of the case study, and multiple sources of evidence also provide multiple measures of the same phenomenon. In addition the draft case study report was reviewed by key informants in order to identify inaccuracies introduced through researcher bias. Yin (2013) proposes using the explanation building (analytic technique) as a means for preserving internal validity. During the course of the study, inferences based on interview and documentary evidence were made, but the iterative nature of explanation building and the repeated comparing and revising of theoretical propositions provides greater confidence that such inferences are correct.

According to Yin (2013, p. 40), “a fatal flaw in doing case studies is to consider statistical generalisation to be the way of generalising the findings from a case study.” Statistical generalisation involves a researcher making an inference about a population based on the data gathered from a sample. This is considered inappropriate because “cases are not sampling units, and are too small in number to serve as an adequately sized sample to represent a larger
population” (Yin, 2013, p. 40). As an alternative, he argues in favour of analytical generalisation, which provides an opportunity to generalise findings to the theory or phenomenon being studied and extends applicability beyond the case(s) being studied. Yin (2013, p. 240) describes reliability as “the consistency and repeatability of the research procedures used in a case study.” He suggests making the research steps as operational as possible and development of a case study database to be the key means for establishing a study’s reliability.

Consistent with the ontological position proposed for this study, which regards meanings to be interactively and culturally constructed, the interviews conducted in the study were regarded as a context of interactive meaning-making. Consequently, interpreting the qualitative data collected during the interviews required reflection on the entire research context, including the researcher’s relationship to the respondents, and how the relationship dynamics affected responses to questions. Through reflection, the research process itself became a focus of inquiry, so that preconceptions of both researcher and respondents, and situational dynamics were part of the process of knowledge production.
5 Research Findings

This findings within this chapter are grouped into topic areas, which correspond with major themes distinguished in the conceptual and theoretical frameworks. Major themes considered within this section are trust, commitment and culture within the case organisations, familiarity with the knowledge management discipline, and the capabilities associated with knowledge sharing, transfer and creation. Subsequent sections examine the role of human capital, relationship capital and information and communication technologies in the management of knowledge.

5.1 Trust, Commitment and Culture

Trust and affective commitment are recognised as being necessary for creating the perception of organisational support, which influences OCBs in turn, including an employee’s motivation for sharing knowledge. The development of trust between employees required time to develop and was dependent on the individuals involved, the work being undertaken and the level of expertise. Trust was created when parties to exchanges demonstrated behaviours that were acceptable to one another.

CO2-SPM: *I do trust most people. Cos again, they’re all wanting to help.*

CO6-PD: *You build up a lot of trust in relationships with the teams that you’re working with and it just depends what projects you’re on as to who you need to talk to and where they’re based. And I guess the expertise.*

CO6-KM: *It took me probably a good two years to build up the trust, their trust in me that I wasn’t going to come in and sweep it all away.*

The perception that individuals or groups had behaved in a way that contradicted the established organisational culture resulted in distrust, which led employees to consider their relationship with the organisation. Established employees also distrusted newly recruited staff on the basis that they were unfamiliar with the organisation and its culture.

CO4 NCP: *There is a high level of lack of trust across our group with higher management - we aren’t communicated with, things are being done "not the [CO4] way" and its make a lot of people feel very uneasy and unsettled.*
CO6-SIE: You’ve got the problem of new starters not knowing anything, and you’ve got the problem with people that have been there for a very long time getting really frustrated that there’s so many people coming on, and not knowing enough to be able to be useful and all that. So eventually, that trust gets eroded away.

Contingent workers were distrusted because they were identified as outsiders, but trust was fostered through repeated social interaction over an extended period of time.

CO3-SPM: I went into and did that consultancy work with [CO1], there was a lot of distrust. Because it was your classic, “Oh so they’re gonna come in, write a document that’s going to tell people what we’ve been telling them for years.” So you swan in, you know, you write this paper, you get paid lots of money for doing it.

CO1-TC: I would say there’s a lot of trust. Obviously my boss has built a great rapport with some of the key leads of some of the main teams.

Trust or distrust between members of staff and a contingent worker did not affect their commitment to an organisation. Contingent workers were committed to the satisfactory completion of their work and preserving their reputations, because it was these elements that support their ability to prolong engagements and attain new assignments. The relationship between organisations and contingent workers was transactional, financial rewards paid for delivering contractually specified outcomes, but these workers believed themselves to be a part of the institution and had a high-level of commitment to their work.

CO4-MTAT: I put my heart and soul into this damn project for 14, 16 months you know. Yeah, it’s my personal brand, it’s my commitment. So when I go to an organisation, I’m not a contractor, I’m not an outsider. I give it my all – 100%.

CO4-CM: I want to do a good job, so whatever it is I want to make a difference. I want to hit whatever deliverables I’ve agreed as part of that contract. I consider myself while I’m being paid by any organisation part of that organisation, which I think helps. But I also am motivated. I want to do a good job because actually I’m relying on them for my next piece of work because I need them to say, “Yep, she was great. I’d employ her.”

Trust between those tasked with managing the work and contingent workers was a determinant of a person’s access to future opportunities. Effective performance in previous
roles engendered trust and indicated that the person could meet the requisite standards, reducing the risk of non-performance for recruiting managers. Trust was exchanged for access to future employment opportunities.

CO3-SPM: Programme managers tend to bring in people they’ve worked with before that they know are good… you tend to bring in people that you know you can work with, “I know this person - they’re really good.” I think that’s really how the contractor network kind of works.

5.1.1 Influences on culture and their consequences
The culture within each case organisation is unique, and affected by multiple factors, including the size and development stage of the business, organisational structure, policies and practices, leadership and management style, external environment, employee and management reward structures, working environment and nature of tasks, influence of the founder, industry and sector and attitude of organisation to risk-taking and innovation. Once a culture has been established it exerts a direct influence on organisational operations, including the management of knowledge. In the case organisations, senior managers had a strong influence on organisational culture, the result being the establishment of underlying philosophies and standards which shape employee behaviour.

CO2-ODM: He believes it and the culture’s been created and he naturally enables it. So it’s authentic to him, so that’s why the culture perpetuates.

CO2-PMD: A key role of CEOs, to mirror the culture that he wants and to remove the stuff he doesn’t. Otherwise you just get anarchy really.

Senior management’s influence on culture affects an organisation's ability to implement knowledge management initiatives. It was recognised that in some instances, a change in senior leadership was required to facilitate a change to an organisational culture.

CO5-SBA: It’s a culture change. It definitely is a culture change. Change of leadership. The change has to occur within the leaders themselves, to understand that.

CO3-MCP: A change in senior management saw that that was an area that really needed to be done and really gave it its backing and that when things started to really take off.
The literature reviewed for this thesis supports the notion that an appropriate organisational culture is necessary for knowledge management to succeed (Moffett, McAdam & Parkinson, 2003), and that cultures because they involve complex social relationships may be imperfectly imitable and therefore provide the basis for sustained competitive advantage (Barney, 1991). Subsequent sections consider the cultures within the case organisations from an institutional and an employee perspective.

Culture at CO1
In 2012, CO1 was the subject to media reports describing instances where client information was inadvertently published resulting in privacy breaches (Kitchin, 2012a). This negative publicity and CO1’s status as a crown entity led to intervention by central government and the removal of a senior manager, the board chair and two directors. On his appointment, the new CEO noted that “even senior management worked in a culture of fear…people felt they could not tell others about what had happened” (Kitchin, 2012b, para 6). Staff employed by CO1 recognise the role played by the leadership team as they attempt to change the organisation’s culture, and the culture being promoted by CO1’s management team is embodied by greater openness, collaboration and trust.

CO1-TC: The culture is coming from the leadership at the moment, is about change, it’s about doing things differently...it’s about getting fresh blood in; you know, giving people a little bit of a reset on how they think.

CO1-WTL: CO1 just released some behaviours...which they’re socialising and helping people to understand, which is all part of building that culture.

Culture at CO2
CO2 previously operated as an autonomous business unit within a larger organisation, but, following a demerger, the entity now trades as an independent company. Although CO2 was once part of a larger enterprise, the firm has always had a distinct culture and this has continued to develop since the separation. This development had involved CO2 distancing itself from the parent organisation's brand, and delineating its role as a separate organisation. Elements of the parent company culture persist within CO2, and because these are inconsistent with the new culture, attempts were being made to change these. These inconsistent cultural elements were apparent in the beliefs of staff members, so replacing these with alternative beliefs was seen as the means for bringing about culture change.
CO2-PMD: CO2, before it separated, had quite a strong culture, almost because it was a different brand and so with [Parent organisation] it created its own unique culture almost as an active rejection of the [Parent organisation’s] brand.

CO2 was yet to fully clarify its role and distinct cultures existed, so a dominant culture was yet to establish itself. Nevertheless, the organisation already had a strong identity, which it used to moderate behaviour. This culture was supportive and conducive to the sharing of knowledge, and has resulted in a high level of engagement amongst employees. As recently as June 2015 the organisation won an award for being the best employer for a fourth consecutive year.

Culture at CO3
The failure of CO3 to successfully deliver a new core system (4.6.3) has been attributed to multiple causes, but a ministerial inquiry examining the shortcomings of the initiative noted that “the project culture and the relationship between the CO3 and [relationship partner 1] were not always healthy, and that this affected the effective forward momentum of the project” (New Zealand Government, 2013, p. 5). Major failings were the absence of a shared vision, inadequate leadership, unclear roles and responsibilities, and a lack of trust between CO3 and relationship partner 1. The lack of trust led to a low level of collaboration and a ‘them and us’ division of staff.

CO3-MCP: I think it was is the senior management of, or the culture of [Relationship partner 1] just [did] not have that in their way of working on this particular project.

There was also a lack of trust between CO3 and future users of the payroll system (customer), and the previous supplier of the payroll service. The success of the project required significant organisational change, but the ability to deliver this change was undermined by insufficient resources and ineffective communication.

Culture at CO4
Of the case organisations included in this study, CO4 is the longest established and has undergone many changes to its business, ownership and structure since its inception. These environmental changes have shaped and continue to influence CO4’s culture. The CO4 group comprises distinct business units (4.6.4) each of which has its own culture, and a factor contributing to this divergence is the absence of a unifying vision and strategy. The results of
a 2017 employee engagement survey showed that employees attempting to make change feel persecuted and there is an indication that the organisation has a blame culture.

CO4-TS: There’s actually a blame culture, so people don’t want to be seen to be committing to anything or backing anything, because if they back the wrong horse they feel that they’re going to get a black mark against them.

CO4 NCP: The current company culture severely punishes those who want to implement changes.

CO4-GMDP: The culture’s not particularly helpful in exploring new ideas.

Culture at CO5
CO5 maintains two major offices within New Zealand (Auckland and Wellington), and those workers employed in these centres perform distinct functions and as a consequence possess diverse cultures. The Wellington office supports the organisations ICT infrastructure and the culture is trusting and supportive.

CO5-CM: Great people to work with, always there for help. Very good management, purely supportive and pulsating environment to work and achievements are rewarded on the spot.

However, the Auckland office, which is responsible for core banking and business functions, has a low trust culture characterised by bullying and blame.

CO5-HHR: The organisation has a culture of bullying and blame that is masked by calling it ‘performance management.’

It is suggested that senior managers within CO5 have the greatest influence on the organisation’s culture, causing either positive or negative outcomes for staff.

Culture at CO6
CO6 is the most recently established of the case organisations in this study (2006) and possesses a ‘start-up’ culture, which is agile, informal and innovative.

CO6-HLE: The biggest thing for us is that they want a culture, a start-up culture. They love the start-up culture, because that’s where their story came from. What they love is that kind of, we’re a smart, fast-moving, dynamic, innovative culture. They love that, and I’m sure most people do, because it’s exciting.
However, the organisation continues to experience rapid domestic and international growth and there was the need to introduce more formalised processes in order to ensure greater consistency, but these changes were met with resistance. The changing conditions within CO6 have caused a cultural shift, and eroded trust between staff members.

CO6-HLE: *As soon as it looks like it’s overly complicated, bureaucratic, structured, people will go off that.*

CO6-HLE: *Originally the culture was pretty good, open, welcoming. Within 6 months, management changes organisation changes, tech changes turned a lot of people sour, the environment became toxic and siloed.*

The transformation of the culture within CO6 is attributed to managers and a transfer of power from individuals and teams to more senior staff members. It has been suggested that this shift has resulted in a blame culture.

*Cultural characteristics associated with case organisations*

The review of case organisation cultures revealed the extent to which the concept affects the performance of those working within the enterprises operations. Organisational cultures characterised by trust encourage staff members to communicate and collaborate with one another, but the lack of trust diminishes the inclination of staff to commit themselves to organisational initiatives. Leaders and managers have a significant influence on organisational culture and trust, which contributed to cultural change over time. Compatibility between different sub-cultures is necessary for effective organisational operation, and inter-organisational co-operation is dependent on harmony between institutional cultures.

5.2 Knowledge Management theory and practice

The definitions of knowledge management considered in §2.1 are representative of a range of perspectives including business, knowledge asset, knowledge science and process-technology. These descriptions confirm the diverse meanings associated with the term, and also reveal the elements regarded as significant by each author. In order to establish the meaning attributed to the term by employees of New Zealand organisations, research participants were asked to articulate their understanding of knowledge management. The responses revealed that research participants had a different conceptualisation about
knowledge and knowledge management, and were unclear on what the discipline meant for their organisations.

**CO6-KM:** It boiled down to was they didn’t really know what it [Knowledge Management] was, people had different ideas. I spent the first years actually addressing those and I think we have made some good in roads into broader Knowledge Management, but we’ve got a different idea about what it means now to us. For us, the thing that matters most is being able to find and share our information.

**CO4-HRP:** It probably doesn’t mean much to HR…and probably at [CO4] is something that isn’t well understood either.

The definitions of knowledge management and the components individuals associated with the discipline were influenced by the organisations in which they worked. Organisational maturity and function had a significant influence on the respondent’s perception of knowledge management. Forms of structural capital such as information technology solutions and business processes were identified as being significant components for facilitating the management of knowledge.

**CO1-CM:** Managing organisational information. So that could be processes, it could be system information.

The combining of different forms of capital was not a dominant perspective amongst research participants, and only a single respondent acknowledged the association between human and structural capital. Relationship capital was not recognised as a necessary element for managing knowledge, although all case organisations make use of third party institutions and employ temporary workers.

**CO1-RSM:** People, to me that is knowledge management, but then I know that there is an IT component to it, around really storing information.

CO1 recognised human and technological components of knowledge management, but not the process element that connects them. The basis for CO1’s focus on human and structural capital (processes) was the organisation’s role in ensuring that individuals involved in accidents have access and funding to the appropriate medical care. The decision to award compensation was reliant on robust business processes (structural capital) and qualified people to determine the legitimacy of claims. Knowledge was also used by organisations
operating in non-competitive environments to improve performance and ensure optimum outcomes. Knowledge and the sharing of knowledge was used in one case organisation (CO1) to standardise and ensure consistency across different parts of the business.

CO1-CCA: *Improve the clinical advice so we’re not getting – not losing in reviews and courts.*

CO1-CCA: *Internal stakeholder gets the same advice from every part of the organisation.*

CO2 distinguished the contribution made by its relationship partners in delivering the organisations core business strategy, and individual participants also acknowledged the need for business processes to effectively manage knowledge. Knowledge management within CO2 was directed towards the instruction of relationship partners (relationship capital) and capturing knowledge relating to the organisation’s business processes (structural capital). The emphasis on relationship and structural capital was a response to the organisation’s extensive use of relationship partners and the need to adapt its existing business model to a new product offering and marketing channels.

CO2-GR: *We need to get better at, and we need to get better at in the new world, because [existing product] – they’ve been doing it for 30 or 40 years. [new product] is a different kettle of fish.*

CO3 associates knowledge management with its Human Capital and Structural Capital, in the form of process. Although CO3 used relationship partners to deliver a significant number of services, individuals did not associate these businesses with knowledge management. Some research participants suggested human capital (people) to be the main component of knowledge management.

CO3-BA: *It is about capturing knowledge that an organisation has by way of things that their people know, things that they have developed, things that the organisation has developed but obviously that is done by people.*

The introduction of a new national payroll system occasioned the establishment of a project team consisting of CO3 employees, staff belonging to multiple partner organisations and contingent knowledge workers. CO3 employees were responsible for ensuring compliance with employment legislation (human capital) and educating the users of the new system.
(structural capital). Relationship partners were responsible for delivering the information technology components, and relied on their own knowledge repositories to deliver the payroll system. Although multiple relationship partners were engaged during the project, CO3 lacked the capability to manage knowledge created through these relationships. Those employed as people managers highlighted the need to standardise the work done at an operational level and improve the efficiency of the organisation.

CO3-SME: *How organisations record information and how they disperse information to ensure all their staff are following the same methods of work.*

The descriptions of knowledge management provided by participants from CO4 did not associate the discipline with specific types of capital, although one participant highlighted the link with information technology. The need to create and manage knowledge was not recognised or supported, and consequently, staff employed by CO4 had a limited understanding of knowledge management and could not provide insights into how the discipline contributes to organisational outcomes.

CO4-HRP: *In terms of capturing people’s intellectual property experience, understanding, knowledge of the business and the operation, it probably wouldn’t be a term or an initiative or a framework that [CO4] would have too much experience with.*

Definitions of knowledge management provided by CO4 overlooked Human, Structural and Relationship Capital, a finding which potentially reflects the organisation’s maturity and relative decline.

Participants from CO5 associated knowledge management with human and structural capital (process and technology), but relationship capital was ignored although partners were used to deliver business strategy. Knowledge management within CO5 was directed towards the development of structural capital, specifically business processes and information technology. This emphasis was occasioned by CO5’s status as a commercial entity operating in competitive industry, and the organisation’s knowledge management capability was used as a mechanism for increasing profitability and market share.

CO5-CM: *You always have to break everything into a process flow...And that’s the same whether it’s a strategy piece of work or whether it’s delivering a new logistics system.*
The case organisations operating in a competitive environment used knowledge in a different way to those supplying goods and/or services in a non-competitive sector. They were using knowledge to facilitate the creation of innovative solutions, services and products, the purpose being to establish competitive advantage.

   CO5-CIO: You get this stuff right and actually a lot of the other stuff comes together and it really does give you a competitive advantage.

Participants from CO6 associated knowledge management with multiple elements, but information technology was most frequently associated with the discipline. Knowledge management within CO6 was used predominantly to develop structural capital, specifically technical knowledge relating to the organisation’s products. The role of relationship partners in managing knowledge was also recognised by CO6. The organisation’s expansion into new geographies necessitated continual product development, so new technical knowledge was created to meet the needs of local markets.

   CO6-HRC: Knowledge management is big for us now that we’re operating in four countries, so we’ve been all about how do we transfer that knowledge and ensure that all of the hundreds of people that are joining us now really understand what we’re trying to do, really understand the product.

Emphasis on process capital
The chief use of knowledge in the case organisations was the development of structural capital, and specifically process capital. This included the process of decision making whereby the knowledge created, transferred and shared within case organisations and across organisational boundaries provided a basis for making informed decisions (strategic and operational). The expectation from using knowledge to enhance decision making was improved organisational performance.

   CO2-MSI: The really core part of this of course is that you need to be aggregating knowledge and insight across the business in order to make the strategic decisions.

   CO4-GRS: You need knowledge to make decisions, and the only things we do every day is we make decisions.

Knowledge was widely used as a catalyst for change within case organisations, with a specific focus on problem resolution and improving business processes.
**CO2-ODM:** *It is that you have creative solutions to problems that have stumped you for a while.*

All case organisations (public and private sector), with the exception of CO6, utilised knowledge and knowledge management to standardise business practices and derive operational efficiencies. The commercial organisations CO2, CO5, CO6 (and CO4 which operates in a commercial environment) used knowledge management to develop new product offerings. CO5, which operates in a mature industry characterised by large competitors, was the only organisation with the stated aim of using knowledge management to derive competitive advantage. Knowledge and knowledge management were used by organisations as a basis for strategic and operational decision making, but this was not influenced by the organisation’s purpose or operating environment.

The achievement of these outcomes is reliant on the availability of accurate and relevant knowledge, the provision of which is dependent on multiple factors. Volatility and a high volume of change in the external environment can render knowledge obsolete, leading organisations to make incorrect decisions and sub-optimal performance. Reliance on imprecise knowledge can also result in routine rigidity which prevents case organisations from changing the way they conduct their work, resulting in organisational inertia (Korn, 2016). The need for accurate knowledge combined with change in the external environment necessitates the continual creation of new knowledge.

*Acknowledging different types of knowledge*

Those describing knowledge management also recognised different types of knowledge (explicit and tacit) existing within the case organisations. The difficulty associated with accessing and using tacit knowledge is acknowledged, because such knowledge is held by people who have the capacity to choose to share or refuse to share it.

**CO3-MIA:** *What's in people's heads and their knowledge of processes and policies and thinking within the organisation, and how that is retained and used by the organisation for its achievement of its business objectives.*

**CO6-KM:** *No one person can even tell you what they know…. So for me when I say Knowledge Management, I mean creating the environment where people find it as easy as possible to create, share, use, re-use information to create knowledge and so that is about reducing barriers.*
5.3 Sharing and transferring knowledge within organisations

The case organisations employed different approaches to promote knowledge sharing and facilitate knowledge transfer. Knowledge sharing is portrayed as a people-to-people process (Ryu, Ho & Han, 2003) encompassing the externalisation and internalisation of knowledge (Hendriks, 1999). Knowledge transfer involves conveying knowledge between organisational entities including departments, divisions, functions and groups (Argote & Ingram, 2000). The transfer of knowledge from person to person was dependent on an individual's willingness to share knowledge. Case organisations encouraged knowledge sharing by establishing formal channels and adapting the physical environment.

CO1-CM: We have stand-ups twice a week, so everybody can... That’s the opportunity to be keeping everybody abreast of what’s going on, but everybody is very open to sharing information.

Although organisations were able to influence knowledge sharing behaviour, the decision to share (or not share) was retained by individual employees. Individuals also had the ability to choose what knowledge they shared (or didn't share).

CO2-GR: You don’t need to share everything out at – you need to time what you share out etc. So, in my world, I try to limit what I do, what goes.

In the literature, knowledge sharing is regarded as a key knowledge management concept (Wang & Noe, 2010) and, within the case organisations, there was acceptance that this was an essential mechanism through which employees apply their knowledge and contribute to the institution’s success. Selected case organisations encouraged knowledge sharing through the establishment of communities of practice and communities of interest. The goal of the community of practice was to share information and experiences with a group in order that members had the opportunity to learn from one another. Those affiliated with a community of practice were exposed to other people’s tacit knowledge, which they could use to develop themselves personally and professionally.

CO5-SBA: They have a sector community of practice, so that's all agencies in that sector that meet on a quarterly basis, purely for improving the practice, so sharing the practice.
One method of knowledge sharing was the Community of Interest. A community of interest (CoIN) is defined as “groups of people who share knowledge and experience around a common interest” (Standards Australia, 2005, p. 37).

CO2-GC: That’s sort of done on an interest basis. So you come on board, you go, ‘actually I don’t know as much as I should about I’ll register...’ - and as soon as they’ve got enough people in a particular office they’ll run it.

In addition to communities of practice and communities of interest, the case organisations employed more traditional approaches to the sharing. Principal amongst these were meetings and forums, round-table discussions and panel presentations.

CO2-ODM: We have what’s called the Daily Hum, which we have two stories a day coming through.

CO3-MCP: You have a regular weekly meeting, manager’s meeting or something, you’d find out what everybody else is doing, you’d hear what they’re doing and then you’re going, oh actually, that may have an impact on this, can I just tease that out a little bit.

The sharing and transfer of knowledge is not restricted to methods formally devised by the case organisations. On commencing their employment with an organisation a person forms relationships with other employees and stakeholders, either directly through their work or as a consequence of other formal or informal interactions.

CO4-GM: I found that the easiest way to gain knowledge is to know who to go to, who might be the right person or who might know who the right person is.

In some organisations, it was considered that the boundaries between business functions could lead to the formation of silos, which would act as barriers preventing the sharing and transfer of knowledge between groups and individuals. The case organisations undertook a range of knowledge management activities in the course of their operations, but there was an acknowledgement that these efforts were constrained by the availability of resources, conflicting organisational objectives and a lack of institutional and individual capability.

Some employees were unwilling to share their knowledge because they believed this would undermine their position within the organisation and lead to a reduction in their job security. A lack of trust in the organisation was a barrier to knowledge sharing.
CO4-GRS: *Now it’s kind of like, well hang on, I’m not going to share anything with you because that will undermine my strength...knowledge is power in this organisation, and don’t give it away freely because then someone else might take your job away from you.*

On other occasions, employees were willing to share their knowledge but were unable to do so, because mechanisms and opportunities for knowledge sharing within the case organisation were underdeveloped or absent.

CO3-MCP: *I’ve got the knowledge, I want to give it, but no one’s asked me.*

CO3-MCP: *The team actually started to get very frustrated and very angry and very anti the project team because they were not being approached for that information.*

The case organisations employed formal and informal processes for transferring knowledge, which utilised explicit or tacit knowledge or a combination of these categories. The transfer of knowledge typically involved documentation, but more complex situations necessitated additional explanation and the transfer of tacit knowledge.

CO5-TSA: *They have to provide a service handover document. So the expectation is that service handover document gets handed over to the senior system managers and they review that, to learn and know what they’re getting handed as part of that project.*

CO3-SDM: *They [outgoing vendor] could explain it to us, and even provide us the data maps and everything else. When we handed that over to [new vendor] they had that knowledge.*

CO6’s rapid expansion into new markets necessitated the transfer of knowledge, so the organisation sent staff members from its New Zealand parent to these countries. A consequence of this knowledge transfer was the creation of new knowledge, because returning employees would convey knowledge acquired through working with others based in the overseas branches. The movement of individuals between and within organisations was a catalyst for transferring knowledge. Contingent workers played a significant role in the transfer of knowledge between organisations because of their frequent redeployments.

CO6-HRC: *Every kind of month or two months we would send other people across from New Zealand, from Australia, to the US, to just kind of help – sew the – spread*
the [CO6] vibe. So if you go from Wellington for two months to teach the US team how we do design, and you come back to the design team in New Zealand and you say, ‘oh my god, here are all the ideas the US team had.’

CO5-SBA: The reason that [knowledge] gets filtered around or fertilised around between organisations is contractors going in and saying, “oh well we have to do it just like this.” Or someone moving from one organisation to another and taking that practice across with them.

The work undertaken by staff within the case organisations was sometimes complex, and effective performance was dependent on individuals having sufficient knowledge. A failure to transfer knowledge or an incomplete transfer of knowledge had an adverse effect.

CO6-SIE: Don’t give someone a 10,000 line PowerShell script and expect them to know exactly what this does. I can’t read all that anyway. So they showed me how to add a new site in, but they didn’t say, ‘Don’t run it across everything.’

5.3.1 Encouraging employee participation in knowledge management

The literature reviewed for this study suggests individual knowledge to be a resource, which employees exchange with other parties in return for benefits. Parties to these social exchanges continuously compare the rewards they receive to the costs they incur, and continuation of a relationship is dependent on benefits exceeding costs. In addition, people and organisations are required to match the resources of exchange in terms of their characteristics (concreteness and particularism). The rewards afforded by the case organisations were predominantly financial (more concrete and less particularistic) and included bonuses and shares.

CO6-GPO: We give everybody ownership and everybody gets shares as part of their package, because I want everybody involved in the longer-term gain.

Contingent workers were deliberately excluded from receiving the rewards afforded to permanent employees, because it was considered necessary to differentiate the two forms of employment.

CO6-HRC: If they can see benefits in being a permanent, then you know, there is some incentive for them.

Contingent workers recognised the transactional nature of their relationships with client organisations, and accepted that they were ineligible for the rewards available to permanent
members of staff. This acceptance was borne from the higher pay received by contingent workers, which permanent employees perceived as being advantageous.

CO4-CM: *If you’re a temp or a contractor you don’t expect that. That’s part of what you do. You do it – you have to be self-motivated, I think, to be a contractor.*

Financial rewards were used to encourage individuals to perform ancillary activities, such as working on call during non-business hours and weekends. Contingent worker participation in these activities depended on their valuation of these rewards.

CO6-SIE: *I was only on call for about six hours a day during the week and then all weekend. I didn’t like it, it wasn’t valuable to me – the amount that they paid for call-out was pretty pathetic.*

Although financial compensation represented a significant reward for contingent workers, these employees also valued particularistic resources including opportunities to acquire new knowledge and exchange social capital.

CO1-WTL: *It would be the work, if it’s interesting. If it’s energising and engages me. Then it is, I guess, the ability to take all the knowledge you’ve gained in other organisations and to adapt it for this organisation.*

CO2-HOM: *I don’t get a bonus because I’m on a rate. I don’t get to go to development stuff, like professional development type things. But I’m included in the social stuff.*

However, rewards afforded to employees did not include specific measures relating to the creation and sharing knowledge, and there was some discussion about how this could be incentivised.

CO2-SPM: *I do see performance rewards, but not specifically around knowledge sharing.*

CO4-CSMS: *There was talk about sort of one-off rewards at one stage, and then there was talk again that, you know, being involved in the process was reward enough, to actually have gone through and been recognised as someone who has contributed something that helped shift the business significantly.*

Contingent knowledge workers were continuously appraised, with employers focusing on their ability to apply their knowledge and complete the work to which they were assigned.
Dissatisfaction with a contingent knowledge worker’s performance resulting from the quality or their knowledge or ability to utilise their knowledge occasioned their dismissal.

CO3-SME: *That was one of the reason I fired xxx too, because she was taking way too much of our time, she possibly could have worked out if it was just her and we had had a lot of time to train her, but I didn’t have time to train her.*

CO3-SME: *I was saying ‘you are going into more details than you need to be, you don’t need to look at that, you don’t need to know; just do the bit that I need you to do.’*

5.4 Creating new knowledge

This section considers how knowledge was being managed in the case organisations, and identifies the elements that facilitate the creation, sharing and transfer of knowledge. The knowledge creation process developed by Takeuchi and Nonaka (2004) includes four stages, which are socialisation, externalisation, combination and internalisation. Takeuchi and Nonaka describe the activities undertaken during each stage, and these are used as the basis for analysing knowledge creation within the case organisations. The socialisation process centres on the sharing and creation of tacit knowledge through direct experience and includes the activities walking around inside the company, walking around outside the company, accumulating tacit knowledge and transferring of tacit knowledge. In terms of walking around inside the company, CO3 and CO6 had formalised mechanisms for exposing their staff to diverse sources of tacit knowledge. These were referred to as rotations or secondments.

CO6- GPO: *I’ve got people on secondments for their development to build new skills.*

CO3-SDM: *We had particular people that were pretty much seconded in to the project and worked on it full-time.*

The movement of selected employees through these organisations facilitated the accumulation and transfer of tacit knowledge. Within CO6 there was emphasis on placing less experienced members of staff with those in possession of greater expertise.

CO6- HLE: *It’s about coaching, it’s about talking with experts in the business ... it is about doing stuff, getting involved in projects, experiencing certain things.*
CO6-HRC: Our kind of ethos at [CO6] is that the best training you receive is the on-the-job training sitting next to the guy who’s been doing it for years and knows what to do and how to do it.

CO6-KM: One thing we try and do is have younger staff being mentored by these older, wiser people so that they are growing and learning.

Mentoring involved the grouping of experienced and inexperienced staff, so that the less experienced person was exposed to the experienced staff member's tacit knowledge.

CO2-GR: They have got a - see they’re quite good like that. They’ve actually got him tag-teamed with another chap, who’s been sitting with him for the last two or three years. So literally he’s absorbing everything he’s going through.

Individuals accumulated tacit knowledge through experience, and this was transferred to others through social interaction. After capturing this tacit knowledge through socialisation, individuals translated it in to explicit knowledge (externalisation) so that it could be more easily communicated to other actors.

CO1-WTL: They’ve got that experience through the job. They’ve worked out shortcuts.

CO1-TC: The most useful thing for me was actually sitting alongside the current staff and listening and getting an idea of what they do. I’m interested more in...what could actually make the organisation and the frontline staff be able to do their work better – and then translating it back to our more technical guys, and they do the actual building of the models and things like that.

Within the case organisations there was recognition of tacit knowledge and how this is centred on individuals.

CO5-TCA: Sometimes there’s those quirky things that people just know, and unless it happens and someone says, ‘right, you need to document that’, it’s in people’s heads.

The externalisation process involves the articulation of tacit knowledge through dialogue and reflection, and comprises the activities articulating and translating tacit knowledge (Takeuchi & Nonaka, 2004). CO4 and CO5 had established processes referred to as ‘ideation’, which enabled the expression and coalescing of tacit knowledge through the establishment of semi-
formalised groups. Such groups consisted of stakeholders who in the course of their normal duties would not typically meet at the same time, and the articulation and translation of tacit knowledge occurred simultaneously during the ideation forums.

CO4-CSMS: The ideation phase has been open nearly four weeks. So we’ve been collecting ideas. The next phase will be a funnelling process.

CO5-CIO: We’ve identified a process of – we’re calling it ideation. So we’re creating an environment, and it has a physical manifestation, and it’s called the Service Revolution Cafe, which is picking up all these component parts that if you wanted to find something out.

CO3-SME: They did at least have the people who were good at that stuff and would sit down with you to ask you what you do and then they would draw it and then they would put it into a map and then they would give it back to you and then they would ask you ‘have I got this right, where do we change it’ so that was really good.

The difficulties associated with converting tacit knowledge into explicit knowledge (externalisation) was acknowledged by case organisations. Individuals demonstrated their ability to translate their tacit knowledge into an explicit form, but suggested that a lack of a stimulus meant that this was not undertaken.

CO3-SME: It’s cold and it’s fairly hard to remember ... so it is more useful to show them what you are doing.

CO1-TC: We are all experts in our own right and we know how to fix anything because we know it inside out. But we have never sat down and documented that.

Another barrier preventing the conversion of tacit knowledge into explicit knowledge, was the time required for this transformation to occur.

CO5-TSA: It’s a time factor. You just go, ‘oh yeah, I’ll get to that, I’ll get to that’, and then you’ve, before you know it, something happens and you’re gone, and it’s still in your head.

The value of explicit knowledge is dependent on its quality, accuracy and relevance, and a failure to ensure appropriate standards are met leads to a reduction in its usefulness.
Identification of the intended audience for and users of the explicit knowledge were significant considerations for its producers and contributors.

CO5-SBA: *A lot of the complaints I get from the business or from the operational support people is to do with handover. Yeah, so the knowledge isn’t wrapped up and handed over correctly.*

A number of case organisations had business functions intended to facilitate the conversion of tacit knowledge into explicit knowledge. These business functions employed a number of techniques to compile explicit knowledge, but to achieve this objective there was a need to convert tacit knowledge into explicit knowledge (externalisation).

CO5-SCM: *The business analysis function collects a lot of information across the organisation, analyses and distils that information into a slightly different format. So it takes different parts of the organisation and combines them into an understandable whole.*

The knowledge creation process refers to the systemising and application of explicit knowledge as Combination, which includes the gathering, integrating, transferring, diffusing, and editing explicit knowledge. The case organisations dedicated most resources to the management of explicit knowledge, with specific focus on gathering and integrating these artefacts. The translation of explicit knowledge presented a challenge for CO3 during the payroll replacement project, because the artefacts were developed by a relationship partner and were complex.

CO3-SDM: *A lot of time we actually had to have [the outgoing vendor] to go, okay, you’ve been dealing with this data for so long, what does it actually mean - because it’s not quite making sense in terms of that translation?*

CO5-SCM: *So knowledge is held, stored - point in time - in a document. That document can be stored in a number of places, but we do have the concept of baselined documentation, which is signed off and which is the final version of truth.*

The effective transfer and diffusion of explicit knowledge was dependent on information technology, and with the exception of CO5 the case organisations had invested in specific tools for managing their explicit knowledge.
CO3 Training: *FileNet* is the CO3’s Electronic Document and Records Management System and is a central location for the storage and management of the electronic documents we create and receive.

CO4-CM: Everybody has got either a SharePoint site or some kind of wiki or intranet. I think the issue is they’ve always got so many.

For explicit knowledge to remain accurate the case organisations were required to review and maintain the content. This maintenance was an extension of the “combination” process and presented a challenge for case organisations.

CO3-MCP: If they saw certain documents and saw it was wrong, they weren’t able to - there was no mechanism to be able to change it, and so there’d be a lot of, you know, emails or discussions, heated emails, heated discussions, going backwards and forwards, but there was no mechanism to actually change it.

CO6-SIE: There are often times when documentation and information management is not maintained to the standard that would be required.

The knowledge spiral is concluded when explicit knowledge is used as the basis for creating new tacit knowledge. This stage involves embodying explicit knowledge through reflective action and using simulation and experiments (Takeuchi & Nonaka, 2004). The role of explicit knowledge in the creation of new tacit knowledge was not evident within the case organisations, although CO1 suggested explicit knowledge to be the basis for case manager decisions.

CO1-AR: We have been building better insights from the information we hold. Since June 2014, case managers have been able to use predictive information about claims to help them quickly and more effectively plan and agree realistic actions and outcomes with their clients.

None of the case organisations had formalised mechanisms for conducting simulations and experiments, but CO1 and CO4 both employed processes to create prototype information technology systems. The explicit knowledge used to create such prototypes included business and functional requirements, and the prototypes themselves were the basis for discussions with prospective users. The discussions led to the creation of new tacit knowledge.
CO4-CSMS: We’re working with sort of a working prototype of the process itself. So we’re trying it, we’re gonna see what works. We’ll iterate it for next cycle.

As emphasised in the literature review, knowledge management necessitates the implementation of processes and practices for creating, sharing and transferring knowledge. There was variation in the knowledge management routines used in different case organisations, and these are illustrated in Table 5.1. The examination of each case organisation’s knowledge management processes indicated the existence of similarities and differences between the entities. All case organisations demonstrated a bias towards explicit knowledge (Combination), and dedicated the majority of their knowledge management resources to gathering, integrating, transferring and diffusing these artefacts. There was less emphasis placed on the creation of tacit knowledge and only two case organisations endeavoured to assist employees accumulate and transfer such know how. Explicit knowledge was used as the basis for creating new tacit knowledge (Internalisation), but the evidence for this activity was essentially implied.

Table 5.1: Knowledge Management Processes and Practices

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<th>CO2</th>
<th>CO3</th>
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### Attributes

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Source: Takeuchi and Nonaka (2004, p. 98)

The concept of transforming knowledge from one type to another is not restricted to explicit and tacit knowledge. The case organisations made implicit reference to the knowledge pyramid, which proposes a hierarchical relationship between data, information, knowledge and wisdom. Data was defined as being raw and not having meaning in itself.

**CO2-GR:** My big issue with all that stuff is you’ve got – to me that’s data. It’s not knowledge management; knowledge management is when you put context to it.

Some suggested that data is converted into information when it is organised and presented within a context that gives it meaning and relevance.

**CO1-SIA:** I think knowledge management takes place when people have information and they purpose it into knowledge, so they take something and they use it for something else or they take something and they leverage it and do something with it.

Case organisations possessed abundant data, information and knowledge, but were not using or applying this for the benefit of the business.

**CO2-GR:** So that kind of knowledge or data’s there. I think – it’s trying to give it a context. And that’s what we need to get better at.

### 5.5 The role played by Human and Relationship Capital

As mentioned in §2.2, knowledge creation commences with individuals sharing their knowledge, and tacit knowledge is derived from an individual’s experience, ideals, values.
and emotions (Takeuchi & Nonaka, 2004). The way in which an organisation’s human resources are treated and managed influences the creation, sharing and transfer of knowledge. This section will consider the elements which determine the character of a person’s interaction with an organisation. New knowledge is created when individuals interact with existing knowledge (tacit and explicit), and use their own knowledge and experience to supplement or modify the existing knowledge. Interactions include reading written materials (explicit knowledge) and working with other stakeholders internal and external to an organisation, as indicated by the following comments.

CO5-CIO: We’re coalescing all of this knowledge from the architects, from the application leads, from the business process engineers, from the business demanders of services, from business analysts, from facilitators, bringing them into one place.

CO1-CM: It’s been acquired through working in this particular area, but I don’t think anybody, when this was kicked off, had that information, had that knowledge.

Personal relationships were significant in supporting and enabling knowledge transfer between individuals working in or across organisational boundaries. It was felt that the absence of such relationships prevents or deters individuals from transferring knowledge, and suggests that such relationships cannot be substituted with information technology solutions.

CO6-HRC: I think connections and people and establishing relationships really help transfer knowledge, cos you feel much more comfortable, you know, telling someone everything you know if you’ve met them or seen them, or you’ve got a sense of who they are.

The transfer of knowledge between staff with different experiences (professional and personal) and from diverse backgrounds was considered to be beneficial in the development of CO6’s business.

CO6-HRC: So we’ve now got such an eclectic bunch of people at CO6, from really fresh grads, a lot of Gen-Y - I think our average age is now 35 – through to really seasoned business practitioners who have worked at Google, worked at Air New Zealand, worked at, you know, your big company Microsofts, and big corporates. And so that, from a knowledge transfer perspective within a business, is gold, because you are able to, yeah, just really share and cascade everyone’s different experiences to try and get the best happening.
In addition to knowledge transfer between permanent staff members, case organisations were transferring knowledge to their relationship partners.

**CO3-SDM:** *A lot of that information needed to come across. And then in terms of assisting, I guess, [Relationship partner 1] to make sure that they were set up correctly.*

Relationship partners were required to create explicit knowledge in the form of documentation, which again resembled “combination” because it involved the blending of explicit knowledge from distinct sources. The relationship partner engaged by CO3 was implementing a new payroll system which represented the firm’s explicit knowledge, and the documentation they created for their client was derived from this and other sources. The creation of these artefacts possibly involved the conversion of tacit knowledge, the process that Takeuchi and Nonaka (2004) refer to as “externalisation”, but this could not be determined. A number of case organisations found the explicit knowledge created by relationship partners to be of low quality.

**CO3-MCP:** *[Relationship partner 1] are really quite bad at documenting, which as I said earlier, when one of their contractors would go, there was nothing documented as to how they worked.*

In addition to knowledge transfer between case organisations and relationship partners, knowledge transfer between contingent knowledge workers and permanent staff members also took place. Case organisations gained access to the knowledge accumulated by contingent knowledge workers through their employment with other organisations, and in return permanent staff provided contingent knowledge workers with the knowledge required to perform their roles. The knowledge accumulated by contingent knowledge workers may also have been applicable to future engagements within other organisations.

**CO5-PM:** *I could have an implementation manager and say we’ve done it like this out here and we’ve done it like that and it’s worked really well. And when permanent employees hear that stuff, then it’s like, well why don’t we work on working towards something like that, instead of having this process that we do knows fails.*

Although senior management support for organisational knowledge management is critical, successful implementation also requires support from middle managers and especially people
managers. Without support from more junior managers efforts to implement knowledge management are unlikely to succeed. This was reflected in the following comments.

CO3-BA: The way the desk files were punted up by the manager of the biggest team in that group made them sound like a drag.

CO3-BA: There is a lack of accountability and making sure that people are doing things the way they have all agreed to do things, it is just bad behaviour I think and people get away with it because it’s not managed.

Continuing middle (and senior) management support was required to ensure knowledge management activities were carried out on an ongoing basis.

CO3-MCP: The managers had to work very hard to get the team to use KBase and it probably took about a good nine months before it actually started to be used the way it should be.

5.5.1 Workforce structure and Knowledge Management

The case organisations employed a mixture of permanent and temporary staff. The permanent workforce was augmented with contingent knowledge workers, including people employed by relationship partners and individuals. These contingent knowledge workers worked alongside employees to deliver specific services or outcomes. The case organisations recognised that both permanent and temporary workers are a source of knowledge, and that each category of employee supplied distinct knowledge and skills. Permanent knowledge workers provided structural capital (organisation specific knowledge) while contingent knowledge workers provided organisations with access to more specialist knowledge, which they may require for a shorter period of time.

CO3-HR: One of the first things to do was to settle it down to get more permanent staff on board so that we actually could build up our knowledge and capability of our team.

CO5-SBA: It’s, to a degree, the people that work within the organisation. It’s often people associated with the organisation, so it could be business partners of the organisation.

The case organisations utilised contingent workers with varying levels of expertise, knowledge and skills, but this study focused on those possessing specialised knowledge and
expertise. The competencies provided by these individuals were predominantly technical and included the ability to analyse, develop, implement and test computer software. Other knowledge workers afforded the case organisations specialised business, medical and managerial know-how. These workers were subject matter experts in specific fields and provided organisations with valuable and rare knowledge.

**CO3-MIA:** *They’re brought in because they might have a specialised skill set or knowledge that we don’t have in the CO3.*

**CO1-TC:** *He’s an absolute specialist, yeah, in a very niche area that’s in high demand. They’ve heard about his work and they’re like, ‘Oh we really would love to have that.’*

The high-level of knowledge and expertise provided by contingent workers to the case organisations was regularly applied to specific and difficult to resolve organisational problems, or as a means of delivering major organisational change.

**CO3-SPM:** *I was brought in as an expert in contact centre and service desk implementation.*

**CO4-MTAT:** *I'm hired to solve problems. That’s what I do.*

**CO2-HOM:** *The general manager in charge of it wanted to bring a different take. They already had the technical expertise to do the stuff that they do, because they’ve been doing it for years. But it’s the community aspect that’s different; it’s the brand aspect.*

The need for specialised knowledge was typically short-term and on completion of specific tasks or project contingent workers were dismissed, but some case organisations retained the services of highly-skilled contingent workers to provide specific competencies.

**CO2-DBA:** *a lot of the IT is outsourced. So, all the server infrastructure. CO2 like to just focus on their core business.*

A contingent worker’s ability to apply their knowledge and skills was dependent on specific organisational environments and an individual’s competence and experience. Individuals with knowledge that was valuable, rare, imperfect imitability and non-substitutable were able to
contribute to competitive or comparative advantage, but the realisation of this potential was dependent on other organisational competences.

**CO5-CIO:** I’ve not seen very often an independent contractor come in and change the world, because actually the environment in which they’re operating won’t necessarily take that leap. Unless they’re extraordinary, an evangelist, [they] have some specific skills that no-one else has.

**CO2-HOM:** You can be a strategic influence or driver of change and still be a temporary worker, but you do need quite in-depth business knowledge to do it.

Typically, contingent knowledge workers recruited into case organisations worked closely with permanent staff members. The blending of resources in this way was a means of developing capacity in order to derive results that would not be otherwise possible. The knowledge provided by the majority of contingent knowledge workers was valuable and rare but also substitutable. However, when this knowledge was combined with the knowledge, skills and expertise of other employees (permanent and temporary) dynamic capabilities were established.

**CO3-PROG:** It was trying to blend people who brought experience in, in how to solve a problem, and people who knew how it works in CO3, either because they knew the world out there at schools or they knew the legislation or they had specific knowledge that was essential.

Access to a pool of temporary workers provided organisations with agility in terms of quickly sourcing new capabilities. The time and investment required to develop internal capabilities prevented case organisations from pursuing immediate opportunities.

**CO6-HRC:** Companies are struggling to hire employees in fast-growing fields, especially in the technology industry. If you’re hiring in such an area, you can probably get a consultant more quickly than an employee.

In some instances, it was impractical for a case organisation to recruit a permanent worker because they were uncertain about their future needs, particularly during periods of transition. In this situation the recruitment of contingent knowledge workers provided the case organisations with capabilities required in the short-term, until they were able to more accurately determine the knowledge and capabilities required in the future.
CO4-HRP: *At the moment we tend to have a reliance more on temporary or contract staff because if you are going through a restructure then specifically there will be some form of recruitment freeze in place and to get, not to get around that but to ensure you can keep doing business.*

The speed with which contingent knowledge workers can be recruited and the ability to customise the terms of their employment imparts a degree of expediency, as suggested by the following comment.

CO6- HLE: *We brought an HR contractor in because we just had all these projects backing up, we didn’t have someone to do them, and we probably – they came at us so quickly we weren’t prepared to get a new person on board.*

A significant proportion of the contingent knowledge workers interviewed for this study worked within temporary structures (projects). Explicit knowledge artefacts created during the project were stored in dedicated knowledge repositories, only accessible to those working on the assignment. This approach to explicit knowledge storage created virtual barriers, which prevented the transfer and diffusion of explicit knowledge (combination). Locating knowledge stored within distinct project knowledge repositories required the identification of the individuals who had authored a specific document.

CO4-TS: *It’s fine if you’re on the project, because then we can just go, ‘Oh here’s a bunch of links to our stuff on SharePoint.’ But it’s not wide. Unless you know that that project’s happened …. Unless I know somebody who’s on project A, I can’t find anything out, because it lives over there.*

CO4-TS: *The only way that you could find anything on Google Drive was by finding the person who would own that document originally and getting them to send you a link.*

The temporary character of projects meant that the creators of explicit knowledge artefacts exited the organisation once they had completed the tasks assigned to them. Although the explicit knowledge remained, the tacit knowledge which provided specific context was no longer accessible. The absence of this tacit knowledge inhibited interpretation of the remaining explicit knowledge artefacts.

CO6-SIE: *When you tried digging for some information you may find a config file with this in. I was like, well, what is it and where is it? And what … where the knowledge was,
was embedded within people. He literally was the architect of the whole reporting
platform, and he just .... One day we got an email saying he’s resigned. It was like,
there’s a big knowledge haul gone.

The creation of explicit knowledge artefacts during projects was not always mandated, and
individuals and groups would decide how they approached this activity.

CO1-TC: They have made a conscious effort to maintain visibility across work streams,
because it’s a massive project.

This informal approach to the creation, storage and usage of the explicit knowledge created
during projects was a barrier to organisational learning and caused resignation amongst
contingent workers.

CO4-CM: They don’t write anything down. Or, even if they do, then nobody refers to it
anyway. It just becomes lost in archives. Nobody reads it again. Nobody ever goes back
and says, ‘Do you remember when we did that project and we had some issues with X?
No one ever goes back and reads that.

CO3-PROG: What transpired is we were finding comms from, I don’t know, five, 10
years before which was describing exactly the same situation as [the new payroll
system].

Contingent knowledge workers were regarded as important to the case organisations because
they supported the creation of new knowledge. Contingent knowledge workers possess
diverse knowledge and provide an alternative perspective to that of permanent staff, so by
working collaboratively contingent knowledge workers and permanent staff stimulate change
within the case organisations.

CO4-GM: There has been an injection of knowledge from outside which isn’t
institutional knowledge, but probably more knowledge of a different sort that can
facilitate change and fresh thinking.

Permanent staff ensured the knowledge created through these interactions was relevant to the
work being undertaken by the case organisation. In this capacity permanent staff acted as a
filter to prevent the knowledge being supplied by temporary workers from being incorrectly
applied.
CO5-HHR: The contingent people bring in the new ideas, but we’ve got the permanent people making sure that it’s all kind of locked and loaded and kept on track.

Some organisations seem to get into a cycle of repeating the same mistakes over and over, which would suggest that they are not learning from past mistakes. This failure to learn is indicative of the fact that knowledge about previous failures is not being transferred. It appears that the functional structures of most organisations prevents knowledge from being transferred horizontally, it may go vertically but not really cross-wise. The reduced duration of contingent employment relationships created an impediment to knowledge retention, because the turnover of contingent knowledge workers resulted in knowledge loss.

CO3-SME: I only got those people to a point where their knowledge is quite high and they are moving from project work to BAU work and we are losing them.

CO5-SCM: I know we have been guilty of significant knowledge being built in what are considered temporary workers.

5.5.2 Partner organisations and dynamic capabilities

The case organisations made extensive use of relationship partners to provide services that the organisations did not have the capacity or capability to provide for themselves. As more partnerships were formed between case organisations and relationship partners, the boundaries between the internal and external environment was blurred. The service(s) provided by relationship partners contributed to the goals of the case organisations, and the knowledge applied by the different parties was similarly relevant. Persons employed by relationship partner organisations were considered contingent knowledge workers, because they were not employed directly by the case organisations.

The provision of these services is dependent on those employed by relationship partner organisations having access to case organisation knowledge, having the opportunity to apply their knowledge, and their ability to create new knowledge. The need to disclose knowledge to relationship partners influences how case organisations manage knowledge, which changes knowledge management from an internally focused activity to an activity incorporating internal and external elements. This concern is reflected in the following comment.

CO2-ODM: It’s incredibly blurred because they drive the van with our logo on for one of 8, 9, 10, 20 Retail Service Providers.
In addition to case organisations forming relationships with partner organisations, third parties contracted case organisations to provide services which utilised their knowledge and capabilities.

**CO4-HRP:** *It’s probably our experience and knowledge of how to run an efficient backroom process that’s then on sold to other clients so they don’t have to invest in that kind of service, they outsource that to us.*

This enlarged network can include competitors and customers, which further distorts organisational boundaries, as indicated by the following comment.

**CO4-GRS:** *Our competitors also provide us with a very good business because we’re still the network provider.*

**CO4-GMDP:** *It’s not until you actually start acting it out that it becomes apparent there’s a hole, or we haven’t thought through that at all, or how would that actually work. And so you’re doing that with customers and so it’s a super powerful way of actually working.*

Relationship partner staff were embedded within case organisations, and worked in conjunction with employees (permanent and temporary) to achieve organisational goals.

**CO5-PM:** *They’re based in India, but we’ve got two main support maintenance people on the floor at CO5 in Wellington.*

**CO3-SDM:** *They pulled from the larger <partner organisation> organisation to assist around some of the work. So we always had access to a number of those people.*

Successful partnerships that endured for extended periods of time had become integrated into the structure of the case organisations.

**CO4-GM:** *The communications weren’t just about informing and aligning our own people, but also informing the external audiences as well, who are as much a part of our business and have been for, you know, 200 odd years.*

Relationship partners applied their knowledge and experience to complete the case organisation's work, which provided case organisations with an opportunity to acquire new knowledge.
CO5-TCA: They bring in something else. And although you take on the organisational knowledge of CO5, you’ve always got that, that you deal with things differently, because of the organisation or the contracts that you work with. They give us the opportunity to have a look at how something else is done.

The ability of relationship partners to carry out their work is also dependent on the acquisition of organisation specific knowledge, and failure to attain this knowledge can lead to a breakdown of the relationship with a case organisation. The following comments indicated this concern.

CO3-SME: So from the CO3’s perspective there was an effort made for the institutional knowledge to be carried through. There were flaws in that though. One was that [Relationship partner 1] didn't do that kind of knowledge.

CO3-SDM: the CO3 had taken for granted the amount of knowledge that sat with our vendor. So much so, that when we transferred it to [Relationship partner 1], it was gonna be pretty obvious we were not going to capture it all.

The transfer of knowledge between case organisations and relationship partners is dependent on interactions between staff members from each institution. Difficulties in establishing cohesive relationships between employees will prevent knowledge transfer and put pressure on the relationship between case organisation and relationship partner, exemplified in the comment as follows.

CO3-SME: Those kind of things are frustrating for BAU people who do have the knowledge that other people come in and way up here and go I’m a consultant and I’m going to tell you how to do your job.

The formation of stable relationships between case organisation and relationship partner staff is reliant on their availability, so high turnover may delay or prevent these relationships from forming, as shown in the following comment.

CO3-SME: I explained it to an entirely different group of people who couldn’t find anything that these people had handed on and since then, in the last year I’ve explained it to 2 more lots of people again.

Successful inter-organisational knowledge management is dependent on the parties comprehending one another’s knowledge needs, and the deployment of mechanisms for
sharing and transferring knowledge across organisational boundaries. Having these elements in place allows organisations to combine their knowledge, but their absence prevents the sharing and transfer of knowledge and leads to dissatisfaction. This need was illustrated in the following comments.

CO3-SDM: *We were encouraging them to go out, do focus groups in the beginning, to actually understand the service.*

CO3-MCP: *These were people that knew the system brilliantly, very top, top quality people, but lacking in that New Zealand legislation, HR, payroll, all that kind of stuff.*

Successful application of relationship partner knowledge is beneficial to case organisations because it assists with the meeting of organisational goals, and advantageous to the relationship partners through the continuing business relationship and further development of their capabilities. In successful partnerships case organisations become dependent on the knowledge and capabilities provided by partner organisations, as acknowledged by the following comment.

CO5-CIO: *From an infrastructure services perspective all of our stuff is outsourced to either [Relationship partner 3] or [Relationship partner 4] - you’re pretty naive if you think you know more about what they’re running your trains on than they do.*

Case organisations had underestimated the effort required to manage relationship partners and it is acknowledged that this capability is underdeveloped, so gaining access to and utilising available partner knowledge may not have been achievable.

CO2-GR: *There are all those other suppliers and that - then how do you best utilise all that stuff? And I still don’t think we do that very well, but I don’t think any company really does.*

5.6 Information Technology and Knowledge Management

Investment in information technology was widespread in the case organisations, and the prevalence of systems for storing and organising knowledge suggests a product centric approach to knowledge management (Massingham, 2014a). All organisations included in this study utilised a selection of the technologies, so to determine how these supported knowledge management, the knowledge preservation toolkit elements identified by Massingham (2014b) were used as a means of analysing the findings.
Select process

The case organisations recognised the need to preserve their knowledge, but the processes employed to identify, capture and maintain valuable knowledge are underdeveloped. This was illustrated by participant perceptions of the intranets within their organisations, which they considered to contain irrelevant and poorly maintained knowledge.

CO1-CCA: *We don’t have a process to update ... there’s no automatic process. My mandate is for all the advisers internally to be using the latest and greatest; then I have responsibility for seeing that it is the latest and greatest.*

The selection of valuable knowledge was a challenge because it necessitated involvement of technical experts, who were in some cases external to the organisation. The need for accurate and highly specialised knowledge prompted CO1 to outsource the selection process, so that knowledge which is subject to rapid change can be continuously maintained.

CO1-CCA: *They’re going to need the technical input to make sure that the technical stuff they’re putting in there is correct.*

CO1-CCA: *We have specialist groups outside, like the shoulder group, the group of orthopaedic surgeons, who we meet regularly with and we use that forum as to what’s going on in this space, and they’re all active participants in shoulder surgery.*

In the course of normal operations all case organisations create a significant quantity of knowledge, much of which is stored electronically. The continuous creation of new explicit knowledge necessitated the provisioning of ever more advanced storage mechanisms, not only to deal with the large volume of knowledge but also to provide a means for people to locate and retrieve specific artefacts. Case organisations used shared folders to store explicit knowledge, usually in the form of documentation.

CO4-GM: *We had shared drives but there wasn’t information on the shared drives that I could easily access.*

A number of case organisations had implemented enterprise document management systems, which provided centralised repository and tools for managing explicit knowledge.

CO3-BA: *FileNet is the document management and case management system. FileNet is the application where you save your electronic files. It is automated so you don’t have to do version control; you have metadata to look things up, you know if you were*
using that everyone has got access to the information they should have access to rather than searching in drives.

All case organisations have deployed intranet sites to transfer generic organisational knowledge. These sites were accessible to all employees (temporary and permanent), and were typically used as part of the induction for new staff members. Opinion as to the usefulness of the intranet in case organisations was divided, with some staff believing it to be useful for disseminating knowledge, and others believing it to be ineffective.

CO1-ETS: CO1 has an intranet site called The Source. And that’s actually a really good resource. There’s a lot of organisation information on there.

CO4-GRS: I think because it’s dense, it’s got a lot of information about a lot of things that no one wants to know about.

The availability of alternative repositories made locating the current versions of knowledge artefacts difficult, and makes knowledge inaccessible. The case organisations continue to implement new systems for storing knowledge, the latest approach being content management systems.

CO4-CM: Certainly at [CO4] there’s about three different - four different places you can put things. So there’s a SharePoint; there’s an intranet; everyone’s got their own folders. Everyone uses it slightly differently. Information is there, but then the issue with having so many different sites is you’ve got that whole issue of, well, what’s my latest document?

Metadata

The case organisations generate structural and guide metadata, with structural metadata typically used within information technology groups to describe tables, columns, keys and indexes (data models), and guide metadata was used by business people to assist with the discovery and identification of knowledge. Selected case organisations (CO1 and CO5) had implemented metadata repositories, which they used as the basis for internal and external reporting, business intelligence and data analysis. A common issue amongst staff in the case organisations was locating knowledge, and this was caused by a lack of attention to guide metadata.
CO3-BA: When I joined the [CO3], there was nothing like that, I was shown a drive to work in, two drives to work in, if it was about the project it was shove it in here ... but pretty much that was it. They don’t know where to find it, where to find the latest version.

The distribution of knowledge across multiple systems is a barrier to knowledge accessibility, but developing a single metadata repository is perceived as difficult to achieve. The meta systems currently in place were little understood.

CO4-GM: What doesn’t help is that we have a variety of systems, which many people don’t really understand how to use, including myself. In an ideal world you would have this one source of where all the information is gathered, easily accessible ... but it was just too hard.

It was found that the unplanned approach adopted by information technology in relation to the implementation of knowledge management systems had led to a proliferation of solutions. The majority of these systems were based on digital technology platforms and although they ran in parallel they provided overlapping capabilities.

CO6-SIE: Much of the knowledge that is shared is done so using many tools. One of the problems CO6 has is with the amount of tools used to manage and maintain knowledge .... There is no globally centralised information management point and dependent upon what part of the product or platform you require information depends upon where you need to start looking.

The ability to search (and locate) knowledge was considered the most important capability of a knowledge management system, and the inability to search across knowledge repositories prevented staff from locating and retrieving knowledge.

CO5-CIO: Multiple document storage silos, difficult and slow to find documents.

CO5-SBA: The power of the search engine was more important than anything else.

Metadata is also intended to provide persons using data with context and meaning, which was a challenge for CO2 when providing data to external parties such as the New Zealand government.
CO2-GR: So internally we’re all aligned with what that knowledge and data means. I think [for government], I’d want to peel it back and make sure we’ve got one source of the truth. And just sort of give context to that data, I think a lot of that’s missing ... and that’s what we need to get better at.

Lessons learned database
Lessons learned databases were most commonly used with case organisation information technology groups to manage incidents and problems with specific systems. Selected organisations utilised enterprise-wide databases which could be accessed by multiple parties, but in some cases individuals would maintain their own repositories.

CO5-TSA: Oh there’s hundreds of knowledge bases that the teams use. I have a knowledge base, and that’s where I put it. I maintain it, but anybody can have access to it. Other support people have access to it or can see it.

Similar lessons learned databases were used by business functions within the case organisations, a specific example being the KBase within CO3, which was used to manage and resolve complaints raised by the organisations clients. Challenges encountered during the implementation of the KBase included convincing staff that they should use the database and ensuring the content was of the requisite quality.

CO3-SME: But I don’t know how they got their data and clearly they didn’t have a good way of recording. you know these errors are logged by us, and there’s the defect number and there’s supposed to be all that documentation filed with the defect.

CO3-MCP: The managers had to work very hard to get the team to use KBase and it probably took about a good nine months before it actually started to be used the way it should be.

The lack of a lessons learned database in CO1 led to the organisation providing inconstant advice, which resulted in legal proceedings and negative publicity.

CO1-CCA: The poor and inconsistent advice, and that inconsistency was showing up in court and in review, or on review in court.

During a previous attempt to implement a payroll system, CO3 encountered significant difficulties, because of the complexity of the environment and the requirements to be fulfilled. The organisation was aware that these issues would present a challenge when
attempting to replace their payroll system, but this knowledge was not captured in a lessons learned database and could not be shared amongst the people assigned to the project.

CO3-SPM: *It was easy enough to get payroll knowledge as such, but this is [System X]. You know, this is New Zealand’s most complex payroll. It is unlike any other payroll in New Zealand.*

CO3-PROG: *[System X] wasn't the first time this had happened. This was the second to [System X], because they had put in – I’ve forgotten what the system was called – but the system before [System X] had also had trauma.*

**Summary**

The preservation of knowledge within the case organisations involved a range of tools and technologies. Each technology provides one or more capabilities in relation to selection, storage, metadata and lessons learned, but the coverage provided by these technologies is not evenly distributed across knowledge preservation elements. The distribution of knowledge management technologies across the case organisations is comparable, so the difference in knowledge preservation capabilities was attributable to disparities in organisational processes. The technologies used for preserving knowledge in each of the case organisations is described in Table 5.2.

**Table 5.2: Technologies used to preserve knowledge**

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<tr>
<th>Knowledge Preservation Toolkit</th>
<th>Technologies</th>
<th>Characteristics</th>
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</thead>
<tbody>
<tr>
<td><strong>Select process:</strong></td>
<td>GroupWare</td>
<td>• Used intermittently by selected staff.</td>
</tr>
<tr>
<td></td>
<td>Digital Whiteboards</td>
<td>• Maintained as standalone technology; and</td>
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<tr>
<td></td>
<td></td>
<td>• Not utilised because typically not integrated with other technologies.</td>
</tr>
<tr>
<td><strong>Storage:</strong></td>
<td>File shares</td>
<td>• Unstructured repository; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Contains outdated content.</td>
</tr>
<tr>
<td></td>
<td>Document Management System</td>
<td>• Onerous and impractical;</td>
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<td></td>
<td></td>
<td>• Subject to inadequate training;</td>
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<tr>
<td></td>
<td></td>
<td>• Inadequate search capability; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Maintains historical content/knowledge.</td>
</tr>
<tr>
<td></td>
<td>Intranet</td>
<td>• Extraneous content; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inadequate search capability.</td>
</tr>
<tr>
<td><strong>Metadata:</strong></td>
<td>Business Analytics</td>
<td>• Highly complex structures; and</td>
</tr>
</tbody>
</table>
The technologies used by the case organisations to preserve knowledge is directed towards explicit knowledge in the form of documents and other forms of digital content. The case organisations store a significant amount of content, but participants considered much of this to be irrelevant and valueless. The accumulation of such knowledge is attributable to the immaturity of the selection process. The adoption of technology to preserve knowledge assisted organisational memory because knowledge is retained, and participants recognised this toolkit’s ability to enhance organisational performance. This is consistent with the research of Massingham (2014b), who found the knowledge preservation toolkit to have the greatest potential for enhancing organisational performance although returns can take longer to realise. The case organisations also had technologies to assist knowledge sharing through collaboration (GroupWare), but these elements are more aligned with the knowledge sharing toolkit (Toolkit 1) as defined by Massingham. These technologies are analysed in §2.4.

5.6.1 Decisions about Systems
In the case organisations, information technology was used to affect change but there was concern that this approach led to investment in unsuitable solutions, because it disregarded other areas of the business.

CO1-SIA: *All they could see is the money they spend on IT with no understanding that the purpose of the tools is to serve the needs of the business.*

The case organisations had deployed technology solutions as a means of implementing knowledge management, but a number of these initiatives had been unsuccessful because other components that contributed to successful knowledge management were ignored.

CO3-MIA: *There’s sort of like a conflict between what IT typically want to build, something that costs millions of dollars and they’re so inflexible you can’t do anything with it.*
An alternative approach was to analyse business processes and working practices in order to identify information technology solutions which supported them. In selecting a system for managing knowledge, CO4 observed the work undertaken by employees to determine the functionality required.

**CO4-CSMS:** *Let’s see how our people work and then think about what attributes the tool would need to successfully engage our people.*

It was suggested that the information technology functions in the case organisations did not have sufficient understanding of requirements for knowledge and information management, which led to delays in the introduction of information systems or to the implementation of systems that were not fit for purpose.

**CO3-MIA:** *It has taken us years and years and years and we’re still not there yet of putting in place an electronic documents management system.*

Information technology functions within the case organisations played a significant role in the implementation of knowledge management initiatives, because of the need to provide systems for capturing and sharing explicit knowledge. It was suggested that information technology had too much influence on the outcome of these initiatives and that there was insufficient consultation with other parties. Knowledge management initiatives which required the involvement of information technology, were more likely to succeed if there was collaboration with other interested parties.

**CO1-SIA:** *I just think it would be less wasteful if Information Management had a stronger involvement to say, why we need this.*

Once a knowledge management solution has been deployed there is an ongoing need to maintain and administer it. Maintenance of the solution is the responsibility of the information technology function, but maintenance of the content (knowledge) is a shared responsibility.

The majority of knowledge management systems were deployed to manage explicit knowledge, and a significant challenge for organisations was ensuring that this knowledge remained accurate and relevant. Changes occurring within the organisation and the external environment may have rendered the information obsolete.
CO5-SBA: I think that part of the problem that people have yet to conquer is how to keep the information current.

CO3-SME: I would say the chances of finding a current up to date desk file are fairly remote because for two years no one has had time to put things into deskfiles.

The maintenance of explicit knowledge in CO3 is delegated to individual operational teams and employees responsible for performing the organisation's work. Although this model worked well during periods of stability it failed when the organisation experienced a period of turbulent change.

CO3-SME: Because it was an emergency and because no one cares that your desk file is not up-to-date if someone doesn’t get paid. So a fortnightly processing of pay has for two years taken priority.

Primacy of explicit knowledge
The technology strategies adopted by the case organisations in relation to the management of knowledge were principally focussed on explicit knowledge. The attention directed towards explicit knowledge resulted from an incomplete understanding of knowledge management and of tacit knowledge, which is consistent with the findings from Shackelford and Sun (2009). Documents were used extensively by the case organisations to capture and transfer explicit knowledge, and as a consequence these artefacts were strongly associated with the discipline.

CO6-KM: Documents are still the primary medium in the business world for many types of information the way that we capture and share that with others.

CO2-HOM: I think knowledge management is everything from documentation, of whether it’s processes, policies, information.

Those working in operational capacities recognised the significance of capturing and transferring tacit knowledge. However, it was acknowledged that not all tacit knowledge could be transformed into explicit knowledge because of its complexity.

CO1-TC: I’m interested more in the softer side, so the people, consulting, gathering requirements, what could actually make the organisation and the frontline staff be able to do their work better – and then translating it back to our more technical guys, and they do the actual building of the models and things like that.
It is recognised that the management of tacit knowledge presents organisations with a significant challenge (Leonard & Sensiper, 1998), but the transfer and integration of complex explicit knowledge (combination) involved similar complexity. In the development of the new payroll system CO3 were required to incorporate explicitly stated collective agreements into the new payroll system, but this was demanding because it required a high-level of customisation.

CO3-SPM: *This is New Zealand’s most complex payroll...and the other thing too is because the collectives are incredibly complex; you’ve got a core system that is highly customised.*

There is a perception amongst managers that standardised knowledge management technologies are simple to implement (Shackelford & Sun, 2009), and this position was reflected in the case organisations. Information technology was seen as a means of rapidly resolve problems, but the need to combine this approach with an organisation’s human resources was not widely shared.

CO6-LDS: *In this institution we have a CIO who is much more in the CIO mould of delivering technology solutions to problems that are in his face, and he’s delivering on his brief.*

CO6-KM: *We have to value the people who have that knowledge, we’ve got to bring them on the journey .... The technology is just a tool and actually having to marry the two is the key.*

Permanent and temporary staff employed by CO2 recognised that the creation of new knowledge required the combining of both explicit and tacit knowledge.

CO6-LDS: *Knowledge management for me is stepping beyond the information storage and use dimension into how both individuals and organisations transform their current information into either tacit or explicit knowledge and when they are doing.*

5.6.2 Digital approaches for sharing tacit knowledge

The technologies associated with the knowledge preservation toolkit (§5.6) were deployed to capture and maintain explicit knowledge, but the case organisations utilised alternative tools for creating and sharing tacit knowledge. These technologies supported the socialisation and
externalisation components within the SECI model (Takeuchi & Nonaka, 2004). Technology is not a prerequisite for successful socialisation and under specific circumstances organisations are adept at sharing ideas (Massingham, 2014a), but the case organisation’s adoption of tools for managing tacit knowledge reflects a product centric approach. The knowledge creation toolkit devised by Massingham encompasses the SECI model, and this was used as the basis for analysing how the case organisations use technology to share and transfer knowledge.

The geographical distribution of staff meant physical meetings were impractical, and the siloed nature of some organisations hindered direct communication. These barriers prevented the exchange of ideas between different parties, so the case organisations introduced collaboration software (GroupWare). The use of GroupWare removed the need for physical meetings and facilitated open-ended knowledge exchange.

CO3-HR: *There's Yammer, so people share comments and perspectives on things across the CO3.*

CO5-CIO: *You're seeing it with Yammer and you know, those organisationally internal social – there's lots of knowledge being built up there.*

Yammer and similar GroupWare products enabled tacit knowledge sharing through chatrooms, which were established by persons with a specific interest in a topic. Those with similar interests then joined the session and expressed their thoughts and ideas, and responded to posts made by other contributors. In expressing their thoughts and ideas participants exposed and transferred their tacit knowledge to other contributors (socialisation).

CO4-CSMS: *There are kind of a group of forward thinkers in the business which pop up on some of the forums like Yammer in this innovation platform.*

The preservation of knowledge contained within individual threads constitutes externalisation (the conversion from tacit to explicit knowledge), because selected employees viewed and retrieved the knowledge even though they had not contributed to the thread. The adoption of GroupWare by members of staff was optional and not all employees believed that the technology would be beneficial.
CO1-ETS: *Yammer is being used by our Transformation Programme at the moment, but not overly well, not overly much.*

Other knowledge management systems used in case organisations assisted with the management of tacit knowledge by facilitating communication and collaboration between stakeholders. These solutions included video conference facilities and digital whiteboards and enabled the transfer of knowledge across geographically dispersed organisations.

CO6-HRC: *We’ve just installed, what are they called, Real, LiveWalls, which is in some of our offices – so Denver and Wellington have it, where there’s just a wall, and it’s kind of a camera beaming into the Wellington office, and one beaming into Denver.*

Video conferences allowed for larger assemblies with broader representation from across an organisation, and provided employees with an opportunity to interact socially while discussing job-related issues. The technology facilitated the use of natural language, enabled spontaneous dialogue, and because participants were visible, people could observe social cues. The social interaction between participants during video conferences enabled the transfer and accumulation of tacit knowledge (socialisation), and the articulation and translation of tacit knowledge (externalisation).

The most recently deployed knowledge management systems leveraged cloud computing and internet technologies to facilitate collaboration amongst organisational stakeholders (internal and external). The most commonly deployed solutions were Google Applications and Microsoft's SharePoint.

CO2-PMD: *I very much favour SharePoint, especially in the cloud, because we can actually now get external people involved.*

In 2013, a New Zealand Government Department implemented a shared workspace tool to provide a common, secure platform to support online collaboration between government agencies and their partners. The stated aim of the shared workspace was:

Support interagency collaboration, collaboration with non-government partners enable secure sharing of information achieve better outcomes by allowing specialist groups and networks to share expertise, experience and good practice (DIA, 2016, p. 3).
Two case organisations (CO1 and CO3) were users of a shared workspace, but this was not communicated during stakeholder interviews. An interviewee from CO3 felt the absence of such a solution to be a major shortcoming, although such a solution was being utilised elsewhere in the organisation.

CO3-MIA: *We don’t have a shared workspace, I think the absence of that is completely diabolical.*

### 5.7 Chapter Summary

The conceptual model developed for this research proposes the basis for knowledge management to be trust and the establishment of cultures which engender commitment amongst employees. The development of trust between organisations and employees was dependent on an array of factors, and these were typically associated with social interactions between individuals. The development of trust between employees (permanent and contingent) and an organisation was dependent on the actions and behaviours of individuals. Trust was established through the successful completion of successive social exchanges, commencing when a person is first recruited into an organisation. Both permanent and contingent workers engendered trust by demonstrating their ability to contribute to organisational outcomes. Failure to contribute to organisational outcomes resulted in the withdrawal of trust, and retraction of specific resources of exchange leading to reduced organisational commitment. Although there was a predominant institutional culture the organisations comprised multiple sub-cultures, which originated within functions, individual projects, distinct geographical locations and across professions. Leaders exerted a significant influence on culture within New Zealand organisations.

The case organisations recognised the benefits of contingent workers. Chief amongst these was numerical flexibility and access to a pool of specialised resources, providing specific capabilities for a defined period of time. The type of contingent workers hired by the case organisations was dependent on the work being undertaken, and the capabilities and knowledge required. Relationship partners were engaged to augment specific competence and the success of these relationships was dependent on trust and the compatibility of a client and partner company’s culture. The social interactions between employees of client and partner organisations were informed by the cultures two entities, and disharmony prevented the sharing and transfer of knowledge.
There was limited recognition amongst the case organisations that knowledge creation was a social process, and most organisations associated the knowledge management discipline with technology and business processes (structural capital). Those employed by the case organisations attributed diverse meanings to the terms knowledge and knowledge management, and the terms knowledge and information were used interchangeably. The process for creating knowledge within the case organisations was informal, with practices aligned to socialisation, externalisation, combination and internalisation undertaken intermittently. Most emphasis was placed on gathering and integrating explicit knowledge (combination), and there had been significant investment in technologies for storing, transferring and diffusing explicit knowledge. The codification of knowledge remained the primary focus for case organisations, and the predominant knowledge management systems used were document management systems and knowledge repositories. Such technologies correspond with the product perspective of knowledge management, which regards knowledge as a discoverable and controllable resource.

More recently, case organisations had invested in technologies for articulating and translating tacit knowledge (externalisation), and this investment had occasioned a proliferation of tools and technologies. Knowledge management systems deployed in this capacity included online cooperative tools and work coordination technologies, which promoted dialogue and reflection amongst individuals, and facilitated the individual to group knowledge creating entity. The adoption of these technologies was representative of a shift from a product to a process perspective of knowledge management, because it encouraged social communication activities that are dependent on collaboration and cooperation.

Selected case organisations had functions dedicated to the articulation and transfer of explicit knowledge, and this capability was used to bypass structural barriers. Project teams comprising permanent and contingent staff were established to implement specific changes, and this collaboration occasioned the creation of new knowledge. The utilisation of technology for externalising tacit knowledge reduced or dismantled the boundaries between internal functions or between organisations and their partners. The absence of knowledge selection processes occasioned the accumulation of a significant amount of content, much of which was information as opposed to knowledge.

These findings demonstrated the existence of additional elements, not identified during the development of the conceptual model for this study. These included factors contributing to
trust and the increased use of technology in the creation of new knowledge, specifically the externalisation of tacit knowledge. These elements are shown in the revised conceptual model shown in Figure 5.1 below.
The findings from this study support the proposition that trust, and cultures characterised by trust provide the foundation for OCBs. These constructs are also pertinent to contingent workers, but the results suggest the existence of additional elements that influence the relationship between organisations and these members of staff. The findings also indicated that the role of ICTs in the creation of new knowledge has expanded, and is regularly used to articulate and translate tacit knowledge for the purpose of producing explicit knowledge (externalisation).
6 Discussion and Contributions to Theory and Practice

This chapter reflects on the key findings of this study, viewed through the lens of SET. By inviting employees from New Zealand organisations to respond to questions about their perception and experiences of knowledge management, this study has revealed organisational characteristics, human resource management practice, and information technology components that contribute to, and obstruct, knowledge management practices, particularly with respect to contingent employees.

6.1 Question 1 - How conscious are those employed in the different case organisations of knowledge management theory?

Amongst managers employed in the case organisations, there was a lack of general agreement about what constituted knowledge management and how this could be implemented to the benefit of individuals and organisations. This is consistent with the findings of Fahey and Prusak (1998), who suggest that managers who do not possess a working definition of knowledge are not qualified to implement knowledge management practices, and are inclined to undermine its effectiveness. Managers in the case organisations recognised the benefits that can be generated through knowledge management, and indicated their support for knowledge management initiatives, but programmes to implement knowledge management practices were limited.

Within the case organisations, the expressions data, information and knowledge were used interchangeably, which suggested an incomplete understanding of the knowledge construct (Zins, 2007). The inability to differentiate between these terms implied that the relationship between data, information and knowledge identified by Allan et al. (2004) was not recognised, which affected the development of knowledge management strategies within the case organisations. Disparate knowledge management strategies operated within the case organisations and, as established by Shackelford and Sun (2009), these corresponded with either the codification or personalisation of knowledge. Codification strategies were more widespread as evidenced by the technologies used in the management of explicit knowledge, specifically intranets and document management systems. However, this study indicated increased adoption of personalisation strategies, demonstrated by the increasing utilisation of technologies for transferring, articulating and translating tacit knowledge. These new technologies have enhanced the collaborative capabilities of the case organisation because they traverse internal and external organisational boundaries (Du Plessis, 2007).
The predilection towards codification strategies is, according to Shackelford and Sun (2009), the consequence of an imperfect understanding of knowledge management on the part of managers, and this research provides some support for this finding. Managers within the case organisations had limited comprehension of the knowledge flows within their organisations, the absence of which obstructs performance improvement and value creation (McGurk & Baron, 2012). The analysis undertaken for this research concluded that managers within New Zealand organisations have not associated knowledge management capability with improved organisational performance (Cong & Pandya, 2003), which includes creation of competitive advantage, enhanced decision-making, increased capacity for innovation, better product development and greater efficiency (De Long & Seemann, 2000). The lack of attention to the management of knowledge has reduced each case organisation’s ability to create and maintain knowledge, which has had a detrimental effect on their efficiency and effectiveness (Wickramasinghe, 2007). Although the bias towards explicit forms of knowledge is partially attributable to the limited experience of managers, New Zealand organisations conformed to western philosophies which prioritise codified knowledge (Takeuchi & Nonaka, 2004).

The current approach to knowledge management was consistent with the product view of knowledge management (Massingham, 2014a), which regards knowledge as a discoverable and controllable entity detachable from the knower. Literature reviewed for this study suggests that the purpose of knowledge management initiatives is to transform institutions into learning organisations (Aggestam, 2006). However, this research suggested an absence of understanding in relation to the learning organisation concept, and that the environment within the case organisations corresponded with the description of low learning organisations (Mishra & Uday Bhaskar, 2011).

The justification for implementing knowledge management practices within the case organisations was ambiguous, which indicated the existence of conceptual confusion (De Long & Seemann, 2000). The causes of this confusion were conflicting objectives within and across functions, and discrepancies between the strategies adopted by leaders at different levels within the case organisations. Senior managers employed knowledge management practices as a means of fulfilling strategic objectives including the development of new products, but line and middle managers utilised knowledge management for operational purposes such as informing decision making and improving efficiency.

Although the case organisations recognised the importance of knowledge, it was not regarded as a strategic resource, which is a feature of firms aligned with the knowledge-based view
The strategies adopted by the case organisations were based on combinations of physical capital resources, human capital resources, and organisational resources (Barney, 1991), but there was no acknowledgement that the knowledge component embedded within each organisation’s human capital could be a source of competitive or comparative advantage. In addition, there was a lack of awareness that knowledge could be found in discrete locations or that it could exist in various forms. Such awareness is a characteristic of firms conforming to the knowledge-based view (Kirsimarja & Aino, 2015). Its absence within the case organisations indicated their affiliation with the resource-based view (RBV) (Barney, 1991).

Effective knowledge management is dependent on the creation of appropriate environmental conditions (Kirsimarja & Aino, 2015), but leaders within the case organisations had an imperfect understanding of the characteristics that support such an outcome. The longest established case organisations resembled industrial era hierarchies dominated by strategic control (Adams & Oleksak, 2010), which reduced emphasis on the facilitation of the work undertaken by knowledge workers (Drucker, 2002). In contrast, the newest of the case organisations placed greater emphasis on the horizontal connections between knowledge workers, which formed the basis for a creative, collaborative, and innovative environment (Adams & Oleksak, 2010). The philosophy within this organisation was also more permissive of failure and experimentation (McKenzie & Aitken, 2012). The prevailing attitude towards knowledge management within the case organisations was laissez faire, with most activities undertaken in an informal way. This approach provides support for the findings from Wilson (2002), who proposes knowledge management to be an ‘umbrella term’ encompassing diverse organisational practices, and that it not possible to manage knowledge.

The introduction of knowledge management processes which contribute to competitive or comparative advantage necessitate an understanding of the field advantage (Lubit, 2001). Knowledge management is multi-disciplinary (Kakabadse, Kakabadse & Kouzmin, 2003), so there is a need for managers and leaders to distinguish the elements that might be adapted to facilitate its implementation (McGurk & Baron, 2012). A contribution afforded by this study through this research question represents evidence suggesting that leaders within New Zealand organisations have an inadequate understanding of the knowledge management discipline, the factors influencing it, or the connections between the fields that support the creation of know-how. Although other studies have superimposed the SECI model onto Western-based organisations (Andreeva & Ikhilchik, 2011), the use of this model as a means
of analysing knowledge creation in New Zealand organisations represents a significant theoretical contribution. Unique to this approach was the examination of knowledge management practices in New Zealand organisations using criteria derived from the SECI, which provided a basis for examining the activities undertaken in different institutions and correspondence with the theoretical concepts identified in the model. Utilising the SECI model in this way enabled the identification of disparities between theory and practice, and exposed areas where an understanding of knowledge management was incomplete.

6.2 Question 2 - What are the organisational contexts in which knowledge management practice is applied?

This research revealed variation in the ability of the case organisations to create and manage knowledge, and this was attributed to the way each entity was configured and to a lesser extent to their operational roles. Takeuchi and Nonaka (2004) refer to the environment in which knowledge is created as “ba”, which comprises physical, social and virtual elements. Culture, social capital and organisational structure are considered components of “ba” (Kawamura, 2016), and the influence of managers on these elements directly affects these “collaborative contexts” (Eisenhardt & Santos, 2002, p. 26). This section considers how the elements that comprise “ba” affected the management of knowledge within the case organisations.

Conclusions for organisational structure

With the exception of a single case organisation (CO6), the entities examined for this research had hierarchical structures with multiple management layers (Morgan, 2014). The work within these organisations was assigned to functions or departments, which served as silos (Sydow, Lindkvist & DeFillippi, 2004) and prevented the horizontal movement of knowledge (Adams & Oleksak, 2010). The control exercised within individual departments reduced interaction between members of staff, which inhibited communication, reduced agility, and restricted individual creativity and each organisation’s ability to innovate. These structural barriers inhibited the transfer of tacit knowledge within these organisations (Brown & Duguid, 1998), and reduced their ability to create new knowledge. Actions taken to improve the knowledge creation capability within these organisations typically involved the establishment of projects.

Project teams consisted of staff from distinct organisational functions and selected contingent workers, which facilitated the transfer of tacit knowledge and enabled knowledge creation
(Takeuchi & Nonaka, 2004). However, the processes for converting temporary knowledge into permanent knowledge were underdeveloped (Lindner & Wald, 2011), which resulted in knowledge loss when team members departed or the project was disbanded (Gibbs, 2012; Takeuchi & Nonaka, 2004). In order to prevent the loss of knowledge and formalise structures around projects, selected case organisations established “Enterprise Project Management Offices” (EPMOs) to define and maintain standards, processes and practices (Lindner & Wald, 2011). However, these functions had limited influence on the conversion of temporary knowledge, but project team members typically had access to information and communication technologies, which provided a mechanism for communicating with team members and other people located in the wider organisation. Project team members also used technology to store, search for, and retrieve relevant organisational knowledge. Project environments provided individuals with an opportunity to access benefits created by other team members, even if they had themselves not yet contributed to the benefits repository. Such “group gain” (Cropanzano & Mitchell, 2005, p. 879) was a common feature of projects undertaken by the case organisations, and selected team members demonstrated altruistic behaviours, which typically involved furnishing individuals with specific knowledge relating to the work being undertaken. The rationale for these altruistic acts was unclear, but a possible explanation was anticipation of future social exchanges (reciprocity).

According to Prencipe and Tell (2001), the transfer of knowledge from projects to the wider organisation is dependent on an institution’s learning abilities. They propose the existence of three learning landscapes, and suggest successful knowledge transfer between temporary and permanent organisational structures to be dependent on managers developing an understanding of these landscapes, so that appropriate processes for converting temporary knowledge into permanent knowledge could be developed. Leaders within the case organisations demonstrated a limited appreciation for the learning landscapes within their institutions, and these had developed naturally (Zollo & Winter, 2002). The case organisations represented the three learning landscapes identified by Prencipe and Tell. CO6 possessed an ‘Explorer’ learning landscape which placed significant emphasis on people-embedded knowledge and knowledge transfer through social interaction. In contrast, CO5 employed formalised processes for articulating knowledge, so conformed to the ‘T-shaped’ learning landscape. Processes were performed by a dedicated function (business analysis), which engaged other parties as required. The learning landscape within the remaining case
organisations corresponded with the ‘Staircase’ form, which employed technologies to codify and transfer project knowledge.

The absence of understanding in relation to learning landscapes has resulted in the adoption of restrictive practices for converting temporary knowledge into permanent knowledge. The organisations associated with the ‘Staircase’ learning landscape were over reliant on information technology and overlooked tacit knowledge. In contrast, CO6 was proficient at transferring tacit knowledge but deficient at converting this into explicit knowledge. Finally, CO5 was adept at capturing tacit knowledge and converting this into an explicit form, but had limited ability to communicate this to the wider organisation.

**Conclusions for organisational culture**

A significant influence on the cultures within the case organisations was the national culture of New Zealand, which is predominantly aligned with the Western view (Jelavic & Ogilvie, 2010). Conformity with the Western view was demonstrated by the emphasis placed on explicit knowledge within the more mature case organisations (Takeuchi & Nonaka, 2004). Although there was increased recognition of tacit knowledge, efforts to utilise it were coupled to the implementation of technologies. The transfer of tacit knowledge is dependent on acquaintance and mutual trust (Bouty, 2000), so substituting social interaction with technology-based interactions has had mixed results. Knowledge creation is dependent on collaboration between individuals and groups, and collective cultures such as those found in Japan and China provide support for these social interactions. In contrast, the individualistic culture (Hofstede & Hofstede, 2004) found in New Zealand organisations was not supportive of the social processes that contribute to knowledge creation.

There was considerable cultural variation between the institutions included in this study, which reflected the diversity of the organisations themselves in terms of their environmental circumstances, history, leaders, location, ownership, people, primary function, and size (Mullins, 2004). This research indicated the existence of different levels of culture, and that there was misalignment between artefacts (espoused values) and people’s actual behaviour (values in action) (Hawkins, 1997). It was suggested that the culture in an organisation was a major determinant of trust within an institution (Alston, 2014). With the exception of CO6 the case organisations exhibited low-trust cultures, which were not conducive to knowledge management (De Long & Fahey, 2000). The foundation for these low-trust cultures was the prevalence of bureaucratic procedures within these institutions and discrepancies between the
Espoused cultures and individual behaviours. Efforts to create a culture supporting informal communication and acceptance of mistakes, which increases trust amongst employees, were erratic (Adams & Oleksak, 2010). As a consequence, the norms associated with trusting cultures, which include achievement, self-actualisation, humanistic-encouragement, and affiliation, were not prevalent within the case organisations (Genetzky-Haugen, 2010). The insufficient emphasis on developing a positive atmosphere within the mature case organisations had a detrimental effect on knowledge sharing (Bock & Kim, 2002).

This research also indicated the existence of sub-cultures affiliated with different occupational and professional groups within the case organisations (Ajmal & Koskinen, 2008). The formation of project teams consisting of members with diverse skills occasioned the creation of multiple sub-cultures which have their own cultures and working methods, but the existence of these sub-cultures was not being commonly acknowledged in New Zealand organisations. The synthesis of organisational, project and professional cultures is considered necessary to the success of projects (Ruuska, 1999), but because there was limited cultural awareness amongst the case organisations, this amalgamation was rarely attempted.

Knowledge Management capability

The management of knowledge within the case organisations was compromised by a limited understanding of the knowledge management discipline, and incongruous organisational structures and cultures. The imposition of these constraints occasioned the adoption of a technology led approach to knowledge management, with insufficient attention paid to the people related elements (Walsham, 2001). There was a propensity to favour technologies before addressing other elements that contribute to knowledge management practice (Hibbard & Carrillo, 1998; McDermott & O’Dell, 2001). The lack of balance between these elements has had a negative impact on the case organisation’s ability to manage knowledge (Albino, Garavelli & Gorgoglione, 2004; Argote et al., 2000). The situation was exacerbated because the human resource management functions within the case organisations had a negligible understanding of knowledge management (Zapata-Cantú, Ramírez & Pineda, 2012), which restricted their contribution and their ability to assist with the creation of knowledge friendly environments (Armstrong, 2006). The principal role of human resource functions within the case organisation was the performance of administrative tasks.
Application of technology for the management of knowledge

The technologies used by the case organisations have increased the amount of communication and interaction taking place within the case organisations (Dewett & Jones, 2001; Hiltz, Johnson & Turoff, 1986). However, the case organisations lacked comprehensive information management capabilities, so the data and information used to create knowledge was fragmented and out of date (Bakos et al., 2016), which made knowledge creation difficult. Much of the content stored within case organisation knowledge repositories was considered to be information and not knowledge (Kelley, 2002; Levy & Powell, 2004) on the basis that it consisted of “discrete objective facts about events” (Chaffey & Wood, 2004, p. 17), which were easily transferred and reproduced (Surbhi, 2016).

Knowledge repositories within the case organisations stored a significant quantity of low value information, which was accumulated as a result of ineffectual select processes (Massingham, 2014b). The accumulation of information assets within case organisation repositories impeded the location and retrieval of knowledge, and this was further obstructed by the absence of metadata describing how data could be accessed. Although technologies were widely used to manage knowledge, their principal role was storage, and information processing capabilities required to refine and contribute to the creation of new knowledge were uncommon (Bakos et al., 2016). Analytics capabilities existed within selected case organisations, and were predominantly used to produce technical and performance reports. Lessons learned databases were used by specific business functions, typically information technology groups, but few other instances existed within the case organisations (Massingham, 2014b). The absence of lessons learned databases reduced the ability of the case organisations to avoid mistakes and avoid duplication.

Knowledge creation process

Discrete activities undertaken within the case organisations could be related to the processes included in the SECI model, but awareness of their contribution to the creation of knowledge was absent. This is consistent with the findings of Wilson (2002, p. 1), who suggests that knowledge management represents an “umbrella term” comprising standard organisational activities. The absence of co-ordination between these activities suggested knowledge creation capabilities within the case organisations to be undeveloped (Auernhammer & Hall, 2014). Knowledge management implementations are dependent on middle managers combining strategic and operational information (Nonaka, 1988), but their role within the case organisations was constrained and they were unable to provide this linkage (Nonaka &
Teece, 2001). The movement of information within the case organisations was typically from the top-down, but knowledge and information from operational tiers was not distributed beyond the middle management layer. Redundancy of information is considered an enabler of knowledge creation (Takeuchi & Nonaka, 2004), because it facilitates a shared understanding of a person’s tacit knowledge. A concern of managers within the case organisations was the reduction of inefficient practices, which prevented the cultivation of redundant information.

The principal means of transferring tacit knowledge between individuals (socialisation) within the case organisations was informal, one-to-one mentoring (Moorcroft & Crick, 2014), which was typically undertaken when junior employees joined an organisation or a person transferred from one function to another. Mentoring relationships were initiated in an ad-hoc fashion and without organisational input, so there was variation in the outcomes.

The mechanisms for articulating and translating tacit knowledge (externalisation) were more formalised, and selected case organisations had dedicated functions for converting tacit knowledge into explicit knowledge (Takeuchi & Nonaka, 2004). These functions elicited individual knowledge from subject matter experts and produced explicit knowledge artefacts, which were typically stored within computerised knowledge repositories. Technology was increasingly used to facilitate the externalisation of knowledge but this approach reduced social interaction between individuals and prevented the creation of social capital, which in turn affected the development of trust (Bigley & Pearce, 1998).

Technology was also widely used for storing, transferring and diffusing explicit knowledge (combination), but the competence required to integrate diverse knowledge sources was absent. As a consequence relationships between knowledge artefacts remained unformed, which reduced the case organisations’ capacity for creating new knowledge. The case organisations also had limited capability with respect to improving and refining their knowledge assets (Hamid, 2008; Weber, 2007).

With respect to internalisation, there was an expectation that those employed by the case organisations learn by doing (Hendriks, 1999). Employee learning typically commenced with exploration of explicit knowledge stored within case organisation knowledge repositories, which workers then used in the performance of their duties. Job rotation supported internalisation (Glisby & Holden, 2003) because it required secondees to utilise existing processes and procedures, from which they developed new tacit knowledge.
Knowledge management and the ability to create new knowledge is attendant on components within the organisational environment, which (Takeuchi & Nonaka, 2004) refer to as “ba”. A contribution made by this study is the deconstruction of “ba” into structural and cultural components for the purpose of examining the composition of New Zealand organisations. Through the identification of these foundational constructs, this study was able to propose how these elements would need to be configured to enable effective knowledge management practice. A practical contribution resulting from this research question is evidence that suggests that New Zealand organisations and possibly other Western-based institutions need to place greater emphasis on combining different resource types. It is apparent that New Zealand organisations favour structural and organisational capital, to the detriment of their human capital, so a means to augmenting knowledge management capability is to develop core competences in human resource management.

6.3 Question 3 - What are the reasons for employing contingent knowledge workers within different institutions?

With the exception of CO4, the majority of workers employed by the case organisations were regarded as knowledge workers, because their roles required the use of judgement and experience to make decisions, solve problems and produce innovative designs (Davenport & Prusak, 1998; Van Beveren, 2002; Yahya & Goh, 2002). The use of computer technology has also transformed the activities performed by the case organisations into knowledge work, and those undertaking related tasks into knowledge workers (Adams & Oleksak, 2010). The majority of the knowledge workers employed by the case organisations were permanent staff members, but a proportion were contingent workers recruited through agencies, engaged via relationship partners or hired directly from the market. The preference for permanent staff supports the findings from Davis-Blake and Uzzi (1993), who suggest that these workers provide organisations with greater control and stability. However, Davis-Blake and Uzzi also acknowledge that contingent workers provide institutions with greater flexibility, which was demonstrated by the case organisations.

Most contingent workers recruited by the case organisations provided knowledge and expertise relating to information technologies, which included analysts, developers, project and programme managers, software testers, and technology architects. The activities undertaken by these contingent workers consisted of a mixture of ‘high’, ‘moderate’ and ‘low’ knowledge work (Withey, 2003). But, from a human capital perspective, the knowledge that they provided was not strategically important (Lepak & Snell, 1999). The knowledge
provided by many contingent workers was publicly available and easily sourced from the general labour market, having both low value and low uniqueness. These workers were contracted to an organisation for fixed periods of time and their relationship with the case organisation was transactional, compliance with contract conditions in return for economic compensation. Training was limited to providing information about company policies, systems, and procedures.

The contingent knowledge workers employed by the case organisations were typically hired through recruitment agencies or directly, but the case organisations also engaged contingent workers retained by partner organisations. This human capital was still low value because it was readily sourced from the external market, but the specialist knowledge developed by these businesses, which was available to their employees was unique. These partnerships were dependent on trust, and the absence of trust reduced reciprocity, collaboration and knowledge sharing between staff working for client and partner organisations. Of the case organisations, CO6 was held to be an exception because it made limited use of contingent labour and focussed instead on the development of internal resources. The human capital developed by CO6 was highly valued and highly unique and were vital to the establishment of competitive advantage, so sourcing these firm-specific resources from the market was impractical (Lepak & Snell, 1999).

CO6’s competitive advantage was derived from the organisation’s ability to combine its physical capital resources, human capital resources and organisational resources to create dynamic capabilities (Cardeal & Antonio, 2012). Not all the resources controlled by CO6 were VRIO (Dierickx & Cool, 1989), but the way in which these were combined by the organisations managers enabled the creation of dynamic capabilities. CO6’s core competency were its human resources (Civi, 2000), and the combination of resources which enabled the creation of a culture that was inimitable. Although the other case organisations possessed comparable physical capital resources, human capital resources and organisational resources, they lacked the architectural competence required to develop core competences (Pitt & Clarke, 1999). These organisations were not sufficiently organised to exploit their resources and capabilities (Barney, 1995), and this was demonstrated by their lack of capability with respect to managing contingent knowledge workers (Luminary Search New Zealand, 2016; Silverstone, Tambe & Cantrell, 2015), and practices relating to the management of knowledge (Lin, 2013). The creation of competitive or comparative advantage was a concern for the commercial case organisations, but not for the public sector organisations. However,
these organisations were focussed on maximising their operational performance (Collins & Collins, 2006), which necessitated the development of dynamic capabilities. A failure to develop such dynamic capabilities in the face of a rapidly changing environment has caused a deterioration in the performance of CO4 (Rosenberg Hansen & Ferlie, 2016; Teece, Pisano & Shuen, 1997).

Previous studies suggest that contingent workers were hired to provide numerical flexibility (Vidal & Tigges, 2009), and that the knowledge provided by these employees was low value and readily accessible (Lepak & Snell, 1999). Responses to this research question suggested that the engagement of temporary staff facilitated numerical flexibility, but a more significant contribution to theory is the idea that contingent knowledge workers can be instruments of change. The assignment of contingent knowledge workers to projects, which operate independently from an institution's core functions, provided enhanced opportunities to utilise and combine their know-how. Although the knowledge provided by contingent workers might not be valuable or unique, blending such know-how in these temporary structures created new knowledge, which in turn, facilitated wider organisational change.

6.4 **Question 4 - How are contingent knowledge workers treated by the organisations employing them in terms of knowledge sharing and access to organisational resources?**

Contingent knowledge workers employed by the case organisations received greater financial remuneration than their permanent counterparts, but they were only compensated for the days they worked (Xero, 2014). Permanent employees received paid holidays, sick leave entitlements and access to training and development opportunities (CXC Global, 2015). Employment contracts between contingent workers and case organisations were closely aligned with project objectives, and the resources to be exchanged by each party were explicitly stated. The majority of contingent knowledge workers recruited by the case organisations were assigned to project teams, which were established to deliver agreed outcomes or products within an agreed period of time. In most cases, the management of individual contingent knowledge workers was delegated to project managers working in the same temporary organisational structure, who were themselves contingent knowledge workers.

Project managers were typically responsible for ensuring contingent knowledge workers delivered on their formal commitments, but their proximity within the boundaries of a project
meant they had a significant influence on the psychological contracts of these workers. The Chartered Institute of Personnel and Development - CIPD (2018) suggests that the quality of line management affects people’s experiences in the workplace, and this study demonstrated that project managers had a similar influence on contingent knowledge worker experiences. Most contingent workers hired by the case organisations were party to triangular employment relations (Mitlacher, 2005a), with links to either recruitment agencies or partner organisations. There was limited interaction between contingent workers and the employment agencies to which they were affiliated, but there was more regular contact between contingent knowledge workers and the partner organisations that employed them. As a consequence, the psychological contracts for contingent workers employed by partner organisations were more ambiguous, which increased complexity for client organisations in relation to engendering loyalty and commitment (Mitlacher, 2005a).

It is proposed that psychological contracts fit on a continuum with transactional agreements at one extreme and relational arrangements at the other (Cohen, 2015). This concept was consistent with resource theory (Foа & Foа, 1980), which considers the properties associated with resources transferred through social exchanges in terms of their particularism and concreteness. It was expected that the psychological contracts between contingent knowledge workers and the case organisations would be transactional, but these all encompassed relational elements (Rousseau, 1995), the most influential of which was trust. Trust is regarded as a particularistic resource, which, according to RT, is exchanged in a flexible and open ended way (Foа & Foа, 1980). As previously discussed, organisational culture had a significant influence on the creation of situational trust, but the personality traits of other staff members within the case organisations (dispositional trust) and how these people were perceived by contingent knowledge workers (interpersonal trust) had similar effects (Connell, Ferres & Travaglione, 2003). In the course of their work, contingent workers formed relationships with multiple stakeholders, which provided the basis for establishing dispositional and interpersonal trust. Repeated social interaction led to the development of social capital (Bigley & Pearce, 1998), which supported collaboration between the parties and reciprocal behaviours (Fukuyama, 2000). The development of social capital between contingent workers and those employed by the case organisations was dependent on cultural fit, the absence of which prevented reciprocity (Nahapiet & Ghoshal, 1998). The absence of situational trust was overcome by the existence of interpersonal trust and dispositional trust, but situational trust could not compensate for a lack of interpersonal or dispositional trust.
Employees who do not trust an organisation cannot be committed to it, and employees who do not trust their colleagues do not participate in collaborative activity or enter into reciprocal arrangements with other parties. This conclusion is supported by Bouty (2000), who proposes that the transfer of strategic resources is not possible without mutual trust. Trust is also a determinant of OCB (Dirks & Ferrin, 2002), and a lack of trust reduces the likelihood of employees spontaneously engaging in activities which lie outside their specified contractual obligations such as knowledge sharing. In comparison with their permanent counterparts, contingent knowledge workers received superior financial rewards, but this study indicated that non-financial rewards such as reciprocity, social capital and trust were a fundamental feature of their psychological contracts. However, most case organisations had an incomplete understanding of these needs (Bartol & Srivastava, 2002), and the management of these elements was overlooked (Arthur & Rousseau, 1996; Beard & Edwards, 1995). The lack of consideration for these relational elements indicated an imperfect understanding of social exchanges, and moderated contingent knowledge worker commitment towards these organisations.

Although selected contingent workers were not committed to a specific organisation, nearly all acted rationally and continued their employment (Chibucos, Leite & Weis, 2005). The costs incurred with leaving an organisation, which included a loss of income, the uncertainty associated with finding alternative employment, and reputational harm caused by premature departure from a contract, were exceeded by the principal benefit associated with continued employment, specifically an uninterrupted income stream. The motivation to prolong a period of employment demonstrated continuance commitment (Meyer & Allen, 1991), but this was an inadequate basis for inspiring contingent knowledge workers to perform OCBs. The decision to remain with a specific organisation although outwardly rational could be subject to bounded rationality, because the options and their consequences require a large amount of information processing, which are beyond the cognitive abilities of the individuals concerned. Likewise, it could be easier for these individuals to maintain the status quo and remain in the employ of the organisation even though these conflict with the person’s long-term interests (bounded willpower) (Tan, 2014).

In the course of their duties, contingent knowledge workers utilised and shared their tacit knowledge, but these actions were not attributable to affective commitment towards the organisations that employed them. Contingent workers remained with an organisation for the duration of their contracts, which was on occasion extended, but these employees were not
committed to a single institution (Alach & Inkson, 2004). Affective commitment was an insufficient basis for explaining the role of contingent knowledge workers in knowledge creation (Jayasingam & Yong, 2013). This assessment is supported by Sankowska (2013), who suggested a direct link between trust and knowledge creation, which implied that OCBs including knowledge sharing are not dependent on affective commitment. Permanent staff members demonstrated greater affective commitment than their contingent counterparts (Alvesson, 2000), which explained their inclination to perform OCBs. The OCBs performed by contingent knowledge workers were instead the product of professional commitment (Blatt, 2008), and the willingness to engage in these extra role activities was augmented when the case organisations assigned these workers interesting and challenging tasks. Perceived organisational support amongst contingent workers encouraged these individuals to undertake OCBs (Cohen, 2015), but because the tenure of these workers was comparatively short OCBs were not ensured (Ng & Feldman, 2011). The OCBs demonstrated by contingent workers included organisational compliance, shown through adherence to rules, regulations and procedures, and individual initiative, exhibited through the accomplishment of voluntary acts of creativity and innovation with the intention of improving organisational performance (Podsakoff et al., 2000). The opportunity to employ tacit knowledge and experience was perceived as a benefit by contingent knowledge workers, because it provided opportunities for personal growth (Cook, 1997; Levering & Moskowitz, 1998), which offset the costs associated with being temporary employees such as ineligibility for rewards afforded to permanent employees (Hau et al., 2013).

The majority of contingent workers employed by the case organisations were independent contractors, operating as sole traders or small limited companies. In comparison with the case organisations, contingent knowledge workers have limited power, which influenced the social exchanges between these parties (Emerson, 1962). Contingent knowledge workers were not subject to employment law, so were ineligible for the benefits afforded to permanent employees, such as paid leave and job security. The impermanence of the relationships between contingent knowledge workers and the case organisations also reduced their status and disqualified them from opportunities for career advancement (Davenport & Prusak, 1998).

However, contingent knowledge workers employed by partner organisations had greater power because their rewards were not controlled by the case organisations. The disparity in power was reflected in social interactions between contingent knowledge workers and
permanent members of staff, demonstrated by unwillingness to collaborate and knowledge withholding behaviours. However, contingent knowledge workers were on occasion employed to implement business change affecting permanent employees, so the reluctance of these staff members to engage in social exchanges was partly attributed to their perception that the costs would exceed the benefits (Chibucos, Leite & Weis, 2005).

Power asymmetries were more prevalent in the mature case organisations, and the use (or misuse) of power to influence the work undertaken by contingent workers reduced trust amongst these employees (Farrell, 2004). Managerial practice in the case organisations was reliant on position power, which was used to pressure employees into compliance with organisational demands. This approach reinforced the functional silos within the larger case organisations, impeded the diffusion of knowledge and inadvertently supported knowledge hoarding behaviours (Adams & Oleksak, 2010). The institutional settings in which contingent knowledge workers were employed had a direct influence on their behaviour, actions, and participation in social exchanges (Constant, Kiesler & Sproull, 1994). Concern for future relationships and the effect this had on future job prospects was a significant consideration for contingent workers, because the employment market was small and characterised by a tightknit network of people.

The relationships between contingent workers and the organisations employing them were characterised by the exchange of tangible resources, typically in the form of financial remuneration paid for realisation of activities contributing to the achievement of organisational goals (Beer & Nohria, 2000). Although economic exchanges might suffice in certain situations, they were incompatible with the aims and objectives in knowledge-based organisations. Attainment of institutional goals was reliant on workers utilising and sharing their know-how (Hau et al., 2013). When the range of resources exchanged by the parties was expanded to include more particularistic items, contingent worker psychological contracts evolved from a transactional to relational footing (Frauenheim, 2012). A contribution to practice derived from this research question was the identification of the resources valued by contingent knowledge workers, which provided organisations with a basis for enhancing the capabilities for integrating these employees.
6.5 Question 5 - Which case organisations recognise contingent knowledge workers as a valued source of know-how?

In the organisational environment at the time of study, contingent knowledge workers were not regarded as strategic resources or a source of knowledge, but as a means of enhancing flexibility and short-term skills shortages (Davis-Blake & Uzzi, 1993). However, the case organisations relied on relationship partners to provide services where capabilities were absent or underdeveloped (Adams & Oleksak, 2010). This demonstrated the strategic role of contingent workers within the case organisations, and challenged the idea that these workers were used to augment organisational knowledge for short periods of time. Although contingent workers provided the case organisations with the knowledge and experience they required, selected managers within the case organisations had a negative perception of these employees (Sullivan, 2015). The case organisations treated contingent knowledge workers as commodities (Koene & van Riemsdijk, 2005), who were regarded as interchangeable and dispensable (Adams & Oleksak, 2010). The basis for this position was an incomplete understanding of the capabilities possessed by the contingent workers in their employ (Vaiman, 2010). A factor contributing to this was the assignment of contingent knowledge workers to work that required only sections of their knowledge, although on occasions responsibilities changed and the opportunities to apply alternative knowledge were presented. Likewise, movement between roles within a case organisation also provided the prospect of utilising different knowledge and experiences, but the processes for coordinating and managing contingent knowledge workers was principally focussed on monitoring contract compliance and ensuring this was dealt with in a standardised way (Kang, Morris & Snell, 2007; Lepak & Snell, 1999). As a consequence, contingent worker knowledge and skills were underutilised (Hardy & Walker, 2003).

New Zealand organisations employed fewer contingent workers than institutions based in Europe, the United States and other countries in the Asia Pacific region (Chartered Global Management Accountant - CGMA, 2014). The contingent workers employed by New Zealand organisations performed mid-level or managerial roles (Luminary Search New Zealand, 2016), which demonstrated their status as knowledge workers. Within the case organisations, contingent knowledge workers perform diverse roles, with the majority conforming to the description of high or moderate knowledge work (Withey, 2003). There was an expectation that these workers applied their knowledge to create new knowledge (tacit and explicit) and solve complex organisational problems, with minimal supervision and
management from the client organisation. Contingent knowledge workers were also required to operate in environments characterised by uncertainty, which involved tasks that were ambiguous, unstructured, multi-disciplinary and non-routine. However, the ability of contingent knowledge workers to deliver the desired outcomes was constrained by the case organisation’s inability to integrate these members of staff (Fournier, 2016). In contrast with permanent members of staff, contingent knowledge workers frequently engaged with diverse organisations and applied their knowledge in a variety of situations. There was limited recognition amongst the case organisations that the knowledge and experiences accumulated by the contingent workforce represented an opportunity to augment organisational knowledge (Tempest, 2009). However, the dynamic capabilities required to combine the knowledge from different sources were absent, which impeded the creation of new knowledge and best practices, and inhibited the case organisations’ ability to create comparative or competitive advantage (Matusik & Hill, 1998).

The widespread utilisation of contingent knowledge workers demonstrated that these employees were a valued source of know-how within the case organisations. However, a lack of capability within these institutions prevented the full utilisation of contingent worker knowledge, and inhibited the development of core competencies (Mooney, 2007). The development of dynamic capabilities for integrating contingent worker knowledge was the responsibility of the human resource functions within the case organisations, but their attention was concentrated on the management of permanent employees. As a consequence, contingent workers were being managed in an inconsistent and non-structured way, and interactions were limited to those of a transactional nature, which was preventing the development of a social exchange relationship. The focus on permanent employees resulted from a perception that these workers provided a longer-term perspective on operational effectiveness (de Juana-Espinosa, 2011). As previously discussed, the case organisations, with the exception of CO6, were aligned with the RBV, and their approach to human resource management demonstrated this orientation. Knowledge-based organisations recognise that knowledge is found in many places and exists in numerous forms (Kirsimarja & Aino, 2015), but the principal focus within the case organisations was the management of permanent members of staff and the creation of explicit knowledge. However, the need for the knowledge and expertise supplied by contingent workers was shared by all case organisations although there was variation in the types of contingent labour employed. The mature organisations seeking flexibility made greater use of peripheral contingent workers,
but emerging organisations, such as CO2 and CO6, adopted partnering approaches (Cardon, 2003).

The workforce in New Zealand organisations comprised both permanent and temporary staff, although contingent workers were typically in the minority (Stats NZ, 2017). In comparison with organisations in other developed countries, the ratio of contingent to permanent staff was lower in New Zealand (Chartered Global Management Accountant - CGMA, 2014; Dixon, 2009). The realisation of numerical flexibility was the principal motive for hiring contingent staff (Vidal & Tigges, 2009). However, a significant proportion of these workers had bachelor’s degrees (Stats NZ, 2017), so it is implied that these workers were capable of performing non-routine tasks and problem solving. This suggested an awareness of the knowledge provided by contingent worker, but a contribution resulting from this research question was the suggestion that this know-how was underutilised because organisations had not developed the dynamic capabilities necessary to exploit this expertise. A means of supporting the development of these dynamic capabilities is expanding the role performed by the human resource functions in relation to contingent workers.

6.6 Contributions to Theory and Practice

A significant contribution of this study is the examination of contingent worker contribution to organisational knowledge management. The existing knowledge management literature assumes that workers are permanent employees or makes no reference with regards to their employment status, so including members from this workforce segment in the research represents a notable contribution. The inclination of employees to share their knowledge is associated with affective commitment (Jayasingam & Yong, 2013), but this research confirms professional and continuance commitment to have greater relevance to contingent knowledge workers. This finding has implications for human resource management practice in relation to contingent workers, and supports the need to identify and develop rewards that enhance the performance of these employees (Frauenheim, 2012) to encourage them to share their knowledge (Al-Alawi, Al-Marzooqi & Mohammed, 2007). It has been shown that human resource functions within New Zealand organisations have limited involvement in the management of contingent workers and an imperfect understanding of how to incentivise this type of employee. The need to develop specialised human resource practices for different classes of worker is recognised by Horwitz, Heng and Quazi (2003) and Kinnear and
Sutherland (2000), but organisational resources that support this capability are utilised in a way that excludes or marginalises contingent workers.

This research acknowledges the affiliation of contingent knowledge workers with taskforces and projects, which has implications for the management of these workers. The work undertaken by contingent workers is managed by project managers, and the culture within project teams although influenced by organisational culture develops independently. In these circumstances social exchanges principally take place between project team members, with trust being critical to affective commitment and knowledge sharing. Takeuchi and Nonaka (2004) suggest the establishment of taskforces as a means of bypassing the overhead imposed by hierarchies and enabling knowledge creation, but their ability to deliver these benefits is dependent on the exchange of appropriate resources. As previously declared, contingent knowledge workers are committed to their professions, so the resources most sought by these employees are those that facilitate them in performing the activities associated with their work. Protecting these workers from political manoeuvring and misuse of power are exchanged for professional commitment, which facilitates the transfer and application of knowledge.

In New Zealand organisations, many of the responsibilities associated with human research management functions are shared with or have been delegated to managers, which has reduced the capacity of practitioners to develop strategic human resource practices and influence knowledge management outcomes. The development of capabilities for managing contingent workers therefore necessitates collaboration between human resource practitioners and managers. Such cooperation provides the basis for understanding the components that comprise contingent knowledge worker psychological contracts, and identify the elements which convert these from transactional arrangements to relational agreements. This research concluded that the development of social capital is the principal means of enhancing the psychological contracts between contingent workers and client organisations. This is because it enables the formation of trust and provides a basis for reciprocal exchanges. The findings suggest that New Zealand organisations are aware that social capital is a means of promoting shared goals and a shared culture (Lazarova & Taylor, 2009), but attempts to assist the development of social capital are fragmented. This study highlights the need to organise and accelerate the development of practices that support the creation of social capital, and proposes retraining and reorientation of middle managers within New Zealand organisations as a means of implementing ‘middle-up-down’ management.
The realisation of this change requires middle managers to form closer relationships with all knowledge workers through open communication, which discourages the withholding of information and knowledge. In this respect, it is necessary for middle managers to lead by example and model these behaviours, so that staff have an example to emulate. Current middle management practice is characterised by one-way communication (top-down) and asymmetrical power relationships with operational staff, which constrains the flow of knowledge within an organisation and reduces employee trust. The current focus of middle managers is translating senior management directives into action plans for operational staff, with less emphasis placed on cultural matters and the needs of individual workers. This research confirms the need for organisations to address this imbalance by redefining the role of middle managers, so they are responsible for creating conditions that support knowledge workers. There is a need for middle managers to create and maintain high-trust cultures by demonstrating competence and reliability, being open and honest in their interactions and taking action to prevent unfair advantage. The location of middle managers within organisational hierarchies provides a basis for enhancing communications by assisting the development of informal networks through the establishment of mentoring programmes.

The literature reviewed for this research confirms the existence of a large amount of material pertaining to the knowledge management discipline. This body of knowledge examines a range of theoretical and practical elements from multiple related disciplines, the most prevalent being human resource management and information communication technology. A contribution made by this research is the identification of a gap between knowledge management theory and knowledge management practice in New Zealand-based organisations. The idea that knowledge is the most valuable asset for 21st century institutions (Drucker, 2012) is not reflected in current practice within New Zealand organisations. The divergence between theory and practice is not restricted to specific types of organisation which provides support for the findings from Wilson (2002), which suggests that many activities undertaken in relation to knowledge management are actually routine operational tasks and therefore do not constitute a separate discipline. However, this study proposes that knowledge management is a competence-based practice that is dependent on combining selected human, organisational and physical resources, and that the core concept underpinning the discipline is determining the most appropriate resource configuration. The absence of recognisable knowledge management practice represents an inability to create dynamic capabilities and is not an indication that the concept is unsound.
The use of the SECI model to analyse the activities undertaken by New Zealand organisations confirms a disconnection between knowledge management processes, which is demonstrated by the differing emphasis placed on particular activities. The model also shows how individuals contribute to knowledge creation irrespective of their employment status, and how different classes of worker are utilised within the process. This approach confirms the generalisability of the SECI model, and the conceptualisation of the knowledge creating place “ba” is confirmation that environmental characteristics have a significant influence on an organisation’s ability to manage knowledge.
7 Conclusions, Limitations and Recommendations

7.1 Conclusions

The ability of New Zealand organisations to effectively manage knowledge is compromised by cultural, procedural and structural shortcomings. These drawbacks are more prevalent in large, mature organisations, but the bases for these are also found in more recently established institutions. New Zealand organisations have an incomplete understanding of knowledge management, which has resulted in an uncoordinated approach to the implementation of knowledge management practices. As a consequence, the knowledge management processes distinguished in the SECI model are not synchronised (Takeuchi & Nonaka, 2004), leading to variation in the ability of the organisations to create knowledge. However, the adoption of information technologies for supporting externalisation (transformation of tacit knowledge into explicit knowledge) has increased the knowledge management capability in New Zealand organisations.

Institutions situated in the West are disposed towards the creation and accumulation of explicit knowledge (Takeuchi & Nonaka, 2004), typically stored in physical or digital form. This orientation occasioned significant investment in technology, consistent with the product perspective of knowledge management, and reduced emphasis on the social aspects such as communication, collaboration and cooperation (Massingham, 2014a). Although organisations have become aware of this imbalance, their response has been to invest in knowledge management systems intended to transform tacit knowledge into an explicit form (externalisation), but there has been only limited attention paid to the development of elements relating to human capital.

The sharing of knowledge was dependent on trust, which was conferred by individuals in return for benefits of a similar or greater value (Okyere-Kwakye & Nor, 2011). Exchanges between employees and employers in New Zealand were characterised by the interchange of ‘concrete’ resources, which are more consistent with economic exchanges as opposed to social exchanges (Emerson, 1981). This was more apparent for contingent workers, whose relationship with an organisation were subject to explicit contractual terms, further emphasising the transactional nature of these relationships (Foa & Foa, 1980). Trust is recognised as an enabler of affective commitment (Guest & Conway, 1997; Hislop, 2003), which is associated with knowledge management success and voluntary acts such as knowledge sharing (Jayasingam & Yong, 2013). However, for contingent workers,
professional commitment had a greater influence on the extent of their participation in knowledge management activities, although these behaviours were also moderated by trust. Trust in an organisation also sustains collaborative cultures (Barczak, Lassk & Mulki, 2010; Kucharska & Kowalczyk, 2016), which are a requirement in the establishment of knowledge-friendly environments (Armstrong, 2006).

The contingent knowledge workers hired by New Zealand organisations included a blend of consultants, contractors and individuals from third-party organisations. These temporary staff members were typically assigned to project teams, which were formed to deliver specific outcomes within an agreed period. Contingent workers afforded organisations numerical flexibility. However, the principal reason for recruiting contingent workers was securing access to specific knowledge, expertise and experience (Desouza & Awazu, 2006). However, the ability of organisations to exploit contingent worker knowledge was constrained because human resource practices for managing these employees were undeveloped (Kang, Morris & Snell, 2007; Lepak & Snell, 1999). Organisations treated contingent workers in the same way as their permanent staff, but the rewards and benefits afforded to each group were distinct. The relationship between contingent workers and client organisations encompassed the exchange of tangible resources, but the nature of these interactions changed in line with the duration of the association. Social exchanges replaced the economic exchanges and psychological contracts evolved from transactional to relational (Lee & Faller, 2005). Contingent worker participation in social exchanges augmented organisational knowledge management capability, because the inclination to share knowledge was enhanced because of increased trust and commitment (Inkson, Heising & Rousseau, 2001).

The cultures within New Zealand organisations were typically low-trust, which was detrimental to initiatives intended to implement knowledge management practices, due to insufficient commitment and participation on the part of employees. Such cultural deficiencies were attributable to the way in which employees were managed (Schein, 2004), and specifically an absence of agile leadership (McKenzie & Aitken, 2012). Managers employed by New Zealand organisations were concerned with the direction of subordinates, and not with facilitating the work of knowledge workers (Adams & Oleksak, 2010). This orientation resulted in the introduction of bureaucratic procedures, which has reduced the creative and innovative ability of New Zealand organisations, mainly because employees are not accorded responsibility or autonomy (Alston, 2014).
In contrast with organisations located in Asian countries, middle managers in New Zealand were disconnected from the processes that support knowledge management (Nonaka & Teece, 2001), and so the movement of strategic and operational information was impeded (Nonaka, 1988). The response has been to establish project teams, consisting of contingent and permanent staff members, as a means of facilitating change (Lundin & Söderholm, 1995), but their impermanence presented an obstacle to the distribution of knowledge throughout the wider organisation (Liebowitz & Yan, 2004). The capacity to establish “Ba” in New Zealand organisations was partially reduced by the country’s national culture, which is individualistic and adverse towards the social processes on which knowledge management depends (Hofstede & Hofstede, 2004).

The organisations considered for this study possessed a differing mix of physical capital resources, human capital resources, and organisational resources, and the role of managers in these institutions was to combine these in a way that that established competitive or comparative advantage (Cardeal & Antonio, 2012). This dynamic capability was underdeveloped and led to the ineffective and inefficient use of resources. The source of this immaturity was a lack of insight into how resources might be managed and combined (Krzakiewicz, 2013). The fragmented knowledge management practices employed in New Zealand organisations contributed to this situation, but another factor was the absence of strategic human resource practices, which resulted in the underutilisation of worker skills, knowledge and competence.

Based on this research, the following recommendations propose changes required to address these flaws and facilitate the management of knowledge within New Zealand organisations. Although grouped under specific headings, these changes are interrelated and should not be considered in isolation, as this decreases the organisations potential for developing an effective knowledge management capability.

7.2 Recommendations

7.2.1 Formalisation of knowledge management practice

The advancement of knowledge management practice within New Zealand organisations is dependent on institutions promoting a greater understanding of the discipline amongst staff members at all levels (Fahey & Prusak, 1998). Essential to this understanding is an appreciation for the interdisciplinary nature of knowledge management, comprehension of the organisational outcomes to be achieved through the management of knowledge and a
description of the means by which individuals contribute to this. It is imperative that the
definition of knowledge management acknowledges the existence of different knowledge
types and the symbiotic relationship between each form. The inclusion of such a distinction
provides the basis for implementing balanced knowledge management strategies that accord
equal weight to the codification and personalisation of knowledge (Shackelford & Sun,
2009).

Deriving a comprehensive and usable definition of knowledge management requires
consultation with a broad range of stakeholders from inside and outside an organisation. The
role played by human capital and information technology in the management of knowledge
makes it imperative that representatives from these two areas are included in the development
of a suitable approach. Once there is consensus, the senior leadership team should devise an
appropriate strategy for implementing knowledge management, and this should include
formal and informal training. As a means of demonstrating support for the initiative, the
formal training could be delivered by middle and line managers. However, informal
knowledge management training would link the discipline to an individual’s role within an
organisation and should be delivered through mentoring relationships. In order to promote a
learning organisation, there is a need to include staff at all levels and ensure that individuals
are valued and heard (Tait & Blinco, 2014).

The establishment of a common understanding in relation to the management of
organisational knowledge alleviates conceptual confusion (De Long & Seemann, 2000), yet it
also serves to emphasise the dynamic capabilities required to support knowledge
management practice. This study established that human capital resources and physical
capital resources (Barney, 1991) were used by New Zealand organisations to manage
knowledge, but also demonstrated the absence of organisational resources required to
construct the requisite dynamic capabilities. This research recommends that organisations
focus on the development of organisational resources for co-ordinating and combining human
capital resources and physical capital resources. Organisations should also extend the
resources used to develop informal group relationships within and across organisational
boundaries. This is because these connections are a basis for the creation of new knowledge.
It is suggested that middle managers assist with the development of these dynamic
capabilities because of their capacity for combining strategic and operational information,
which conforms to the concept of ‘middle-up-down’ management identified by Takeuchi and
7.2.2 Modify the organisational environment

Human capital is the basis for creating new knowledge within organisations, and an institution’s capacity to develop this intangible capital is dependent on their ability to manage employees effectively. The responsibility for managing staff is distributed amongst managers, with human resource management functions providing administrative support. For organisations to better combine their human capital resources and physical capital resources, the role of human resource functions will need to be augmented. There is a need for human resource practitioners to work more closely with other divisions, to identify the knowledge they require and determine the most appropriate means of provisioning the human capital elements. This approach necessitates an understanding of the work undertaken and the resource combinations used to complete associated activities.

The work undertaken by many New Zealand organisations is categorised as knowledge work and the persons employed to perform it are knowledge workers. Human resource management practitioners recognise the value of knowledge-based workers (Teo et al., 2008), but the knowledge worker designation is typically attributed to permanent employees and those employed in management positions. This perception of knowledge workers shapes current human resource practice, and causes knowledge from alternative sources to be overlooked. The advancement of knowledge management within New Zealand organisations requires the inclusion of diverse classes of employee, and this is facilitated by extending existing human resource practices. It is recommended that the human resource functions within organisations employing significant numbers of contingent workers, assign individuals to specifically manage these members of staff. The affiliation of many contingent workers with projects and programmes obliges these human resource practitioners to engage with representatives from an organisation’s EPMO. This relationship would provide human resource practitioners with visibility of the work being undertaken by contingent staff and the knowledge that these employees provide to the organisation.

Disparities between permanent and contingent worker psychological contracts necessitate the use of alternative human resource management practices. The relationship between an organisation and a contingent worker is transactional, and loyalty to an institution on the part of these employees reflects their continuance commitment. The impermanence of contingent relationships impedes the development of affective commitment, which contributes to OCBs including knowledge sharing. However, contingent workers are committed to their professions and are motivated by opportunities to apply their professional knowledge in
different circumstances. It is recommended that human resource practitioners work with EPMOs to provide opportunities for contingent workers to employ their knowledge, and have the occasion to learn through its application within different domains. Affording these opportunities to contingent workers ensures their inclusion in the knowledge creation process, although participation in these activities is also dependent on the trust these members of staff have in an organisation.

Organisational culture is a key determinant of trust and the cultures within selected organisations prevent or inhibit the development of trust. The lack of trust in these organisations suppresses knowledge sharing and creation of new knowledge. However, culture is difficult to change because it comprises interlocking elements, which form a mutually reinforcing system. It is therefore recommended that the senior leadership teams in organisations with low-trust cultures attend directly to the source(s) of the mistrust, which include differences between stated and actual values, power disparities, blaming and censorship of co-workers and subordinates, and withholding knowledge and information. Establishing trust within these organisations necessitates the development and dissemination of a clear vision, supported by values which are transparent and consistently reinforced. Power disparities may be alleviated by converting the role of managers into enablers of self-organising teams, while the implementation of new systems and processes reduces the propensity to withhold knowledge.

The knowledge created by those engaged on projects is not always accessible within the wider organisation, and this is attributable to an institution’s ability to learn. Although human resource functions support formal learning, there is limited understanding of the underlying learning landscapes (Prencipe & Tell, 2001) within New Zealand organisations. In order to advise those responsible for managing projects and programmes, human resource practitioners should develop an understanding of the learning landscapes within their organisations. The guidance afforded to project and programme managers should include descriptions of the strategies, tools and routines to manage knowledge.

Human resource functions and EPMOs are also well placed to assist organisations in establishing communities of practice and communities of interest. These communities are an effective means of bringing together people from different parts of an organisation, allowing them to interact regularly and improve selected practices. During these assemblies, members share information, engage in joint activities and provide assistance with specific challenges.
Communities of interest facilitate learning and provide employees with the opportunity to develop informal relationships. Communities of practice are a means to capturing tacit knowledge and “know-how” that is not so easily articulated. Providing time for employees to engage in community activities is recommended because it demonstrates an organisation’s support for the initiative. Permission to attend such events also demonstrates trust in employees, increases POS and the prospect of OCBs.

Physical capital resources
The role of human capital in the creation of new knowledge cannot be understated; however, in New Zealand organisations, the knowledge management process is dependent on information technologies. These technologies are principally used to store explicit knowledge artefacts, but computers are now widely used as a mechanism for socialising tacit knowledge. The rapid adoption of new technologies has led to a proliferation of systems for managing knowledge, and because most applications are not integrated, locating knowledge content is problematic. In addition organisations have accumulated significant content, much of which is classified as information and is not used to create new knowledge. It is recommended that New Zealand organisations reduce the systems used to manage knowledge and apply architectural principles to integrate those that remain. This change will facilitate the location of knowledge, but there is a need to develop metadata repositories to direct employees to specific knowledge. Although New Zealand organisations make significant use of technology in relation to knowledge management, the capabilities required to derive comparative or competitive advantage from these physical capital resources are absent. The provision of lessons learned databases and analytics is dependent on arrangement of information and knowledge into an appropriate form, so those responsible for managing these technologies should devise processes and procedures relating to the selection and storage of knowledge.

Developing architectural competence
The realisation of knowledge management within New Zealand organisations necessitates “architectural” competence (Pitt & Clarke, 1999, p. 301), which involves combining and coordinating different organisational resources. The capabilities that contribute to this competence are underdeveloped, so there is a lack of coordination in relation to the deployment of resources in New Zealand organisations. The development of architectural competence necessitates a greater emphasis on expertise and the deconstruction of functional boundaries. It is recommended that organisations appoint individuals to establish centres of excellence that provide specialised services across the organisation. Those leading the centres
of excellence are responsible for communicating with one another, and representatives from the wider organisation, but there is a need for middle managers to facilitate and coordinate the work of these groups.

### 7.3 Limitations of the Research

The selection of a non-probability sampling technique for this research introduced the possibility of bias (Doherty, 1994). Nevertheless, the selection of case organisations and research participants using purposive sampling, was carried out with the purpose of including all opinions or views, with less concern for representing these views proportionately (Tansey, 2007). Steps taken to minimise possible bias included careful wording of interview questions and employing multiple methods of data collection. Owing to potential bias, this thesis could be described as introductory study, which provides a basis for further studies into knowledge management and contingent knowledge worker management. The impartiality of future research and the representativeness of the findings could be assured by using a probability sampling method.

Another potential source of bias originates from the researcher’s ontology, which has been influenced by previous engagements with selected case organisations and exposure to information exchanges taking place within the New Zealand contingent employment network.

The methods of data collection used for this study enabled the researcher to develop a broad understanding of knowledge management and the contribution of contingent knowledge workers. However, the development of a more in-depth understanding of these topics could be achieved through the use of focus groups (Smithson, 2000). The development of a deeper understanding derives from the ability of participants to expand on the responses of other contributors and the opportunity for the researcher to interact with multiple respondents simultaneously (Stewart & Shamdasani, 2014). A final limitation of this study was the choice of qualitative data analysis computer software (NVivo™ for Mac), released in 2014. Although NVivo™ for Mac included the majority of features available in the Windows version, some advanced data analysis and diagramming features were absent. The excluded functionality includes pattern-based auto coding, framework matrices, cluster analysis diagrams and concept maps.
A limitation of this research relates to the generalisability of the findings to organisations outside of the study in New Zealand, and outside New Zealand. The country has a small population, isolated geography and a limited number of large multi-national companies, so it is uncertain whether the findings could apply to other countries (Charbonneau & Garland, 2005). However, the consistency in the responses of interviewees and conformity with findings from the literature review provides confidence in the results.

7.4 Suggestions for Further Research

Examination of the findings and limitations emerging from this research led to the identification of a number of topics worthy of further research. Firstly, a further study may consider how the Agile methodology is changing the approach to knowledge work within temporary organisational structures. The Agile methodology necessitates colocation of and collaboration amongst knowledge workers, and it was concluded that these elements enable knowledge sharing within organisations. Agile is being widely adopted within the New Zealand information technology sector as an approach for developing new software applications, but a focus of any future research should attempt to ascertain if the approach has been utilised within other industries, and whether knowledge sharing outcomes were enhanced.

Although there is a considerable body of knowledge describing knowledge sharing in project-based organisations, these have not specifically analysed how the status of leaders within these organisations influences knowledge management practice. In many cases, these managers are temporary employees, so their position and status within the employing organisation is ambiguous. The effect of contingent workers managing contingent workers and its effect on organisational knowledge management justifies further research.

A subject necessitating future research is the relationship between an organisation and workers belonging to third party organisations. The benefits and rewards afforded to these workers are determined by the organisation that employs them and not the institution in which they are working, so there is a need to investigate how an institution builds trust and engenders affective commitment with these members of staff. The capacity to stimulate OCBs amongst these employees determines their willingness to participate in knowledge management activities.
7.5 Concluding comments

This basis for this research was the belief that contingent knowledge workers and their utilisation within overseas and New Zealand organisations was an under-researched phenomenon. This belief was supported by a preliminary literature review undertaken for the research proposal, which confirmed that there was merit in continuing with the study. While justification for the research was established, the development of appropriate research questions presented a significant challenge because of the inter-disciplinary nature of knowledge management and scarcity of studies relating to contingent workers. This ambiguity necessitated revision of the research questions and modification of the principal chapters within the thesis. The imprecise nature of the initial research questions also affected the literature review and the conceptual model, which resulted in the inclusion of unrelated topics and elements in previous drafts. Refinement of the research questions undertaken while the study was in progress entailed editing of the literature review and redevelopment of the conceptual framework. This experience confirms the need to systematically define the research questions, so that they might guide the research throughout its duration.

A stated aim of this research is to establish how contingent workers contribute to knowledge management within New Zealand organisations, and fulfilling this objective was dependent on having a sample which ensured that these individuals were sufficiently represented. Application of a convenience sampling technique resulted in under representation of contingent workers and reduced the validity of the study in relation to their involvement with knowledge management. This discrepancy was resolved by enlarging the sample to include additional contingent workers from each of the case organisations, although the resumption of data collection, analysis and coding significantly increased the duration of the research project. The identification and engagement of additional participants was achieved by reactivating the network created when the case organisations were initially engaged. This experience demonstrates the need to not only consider the size of a sample, but also its makeup and suitability in relation to the research question(s).

When planning this research project a mixed methods approach was considered, because such a method is able to provide additional insights not obtainable using a single technique and it has the capacity for increasing the generalisability of results (Caruth, 2013). The decision to only employ qualitative methods was justified by the need to perform exploratory research, which was demonstrated by the immaturity of the knowledge management literature in
relation to contingent workers. An additional influence on the choice of methods was provided by Southern Cross University during doctoral symposia, which provided candidates with the basis for making such fundamental decisions. This supervisory guidance provided by the institution’s doctoral supervisors was instrumental in resolving the difficulties encountered during the research project, and was an essential component for completing the thesis.
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Appendix A: Letters of Ethics Approval

HUMAN RESEARCH ETHICS COMMITTEE (HREC)
HUMAN RESEARCH ETHICS SUB-COMMITTEE (HRESC)

NOTIFICATION

To:     Dr Graeme Sterne/Adam Donon
        Manukau Institute of Technology, Business & Information Technology
        graeme sterne@manukau.ac.nz, sterne@csar.net.nz, a donon.10@student.scu.edu.au

From:   Secretary, Human Research Ethics Committee
        Division of Research, R. Block

Date:   13 February 2014

Project name:  Human Resource Strategies for Contingent Knowledge Workers in New Zealand

Approval Number ECN-14-026

The Southern Cross University Human Research Ethics Committee has established, in accordance with the National Statement on Ethical Conduct in Human Research – Section 5/Processes of Research Governance and Ethical Review, a procedure for expedited review and ratification by a delegated authority of the HREC.

Thank you for the expected ethics application dated the 12th February 2014. This has been approved by the Chair, HRESC.

All ethics approvals are subject to mandatory conditions of approval. These must be noted by researchers as there is compliance and monitoring advice included in these conditions.

Mrs Louise Charter
HREC Administration
T: (02) 6620 3965
E: ethics.farmers@scu.edu.au

Professor Bill Boyd
Chair, HREC
E: william.boyd@scu.edu.au

It's all about U
scu.edu.au

Lismore
P.O.Box 197, Lismore NSW 2480 Australia
T: +61 2660 3000  F: +61 2660 3000

Coffs Harbour
Highland Civic Centre, Coffs Harbour NSW 2450 Australia
T: +61 2659 5777  F: +61 2659 5721

Gold Coast
Locked Mailbag 4, Coomera QLD 4209 Australia
T: +61 7559 5300  F: +61 7559 5300
Office of Research

SOUTHERN CROSS UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE
(SCU HREC)

NOTIFICATION

Expedited Application Approval

To: Mr Adam Donson and Dr Silva Nelson,
From: Professor Bill Boyd
Chair, Human Research Ethics Committee (HREC)

Project name: Strategies for Managing Contingent Knowledge Workers in New Zealand

Approval Date: 31 August 2017
Approval Number: ECN-17/181
Expiration Date: 30 August 2020

Dear Adam and Silva,

Thank you for the expedited ethics application received 28 August 2017. Your application was considered by the Chair of the Human Research Ethics Committee (HREC), Professor Bill Boyd, and found to be of merit, low risk and meeting the Statement principles.

I am pleased to advise you that ethics approval has been granted for this research project. Please note the ethics approval number above.

Your responsibilities under this approval are as follows:

1. The Coordinating Principal Investigator will report to the SCU HREC annually in the specified format and notify HREC when the project is completed.
2. The Coordinating Principal Investigator will immediately notify the SCU HREC on the appropriate form, of any change in protocol.
3. The Coordinating Principal Investigator will notify the SCU HREC if the project is discontinued at a participating site before the expected completion date, with reasons provided.
4. The Coordinating Principal Investigator will notify the SCU HREC of any plans to extend the duration of the project past the approval period listed above and will submit any associated required documentation.
5. The Coordinating Principal Investigator will immediately report any information that might warrant review of ethical approval of the project on the Adverse Events form.

Researchers conducting a study in a country other than Australia, need to be aware of any protocols for that country and ensure that they are followed ethically and with appropriate cultural sensitivity.

Should you have any queries about the SCU HREC’s consideration of your project please contact ethics.ismomo@scu.edu.au. The SCU HREC Terms of Reference, membership and standard forms are available from http://scu.edu.au/research/institution.php?id=1225&url=1225.

SCU HREC wishes you every success in your research.

Kind Regards,

Bill Boyd
Chair, Human Research Ethics Committee

www.scu.edu.au
Appendix B: Interview Questions

1. What is your understanding of knowledge management?
2. How does your organisation manage knowledge from an information technology and human resource perspective?
3. How widely used are the processes and information technology systems for managing knowledge within the organisation?
4. What training is provided to permanent and non-permanent staff members in relation to knowledge management?
5. What are the main objectives of the knowledge management system?
6. What types of knowledge is the knowledge management system intended to capture?
7. How is the information stored in the knowledge management system used by the organisation?
8. How is the information contained in the knowledge management system maintained and kept current?
9. What are the main reasons your organisation uses contingent workers?
10. In which situations does your organisation use contingent workers?
11. In what ways are contingent workers encouraged to share their knowledge with other employees within your organisation?
12. What proportion of your organisation’s staff is temporary?
13. Is the proportion of contingent / temporary workers increasing or decreasing and what are the reasons for this?
14. What factors have the most influence on your organisation’s decision to recruit temporary staff?
15. How long does temporary / non-permanent staff usually remain with your organisation?
16. Do you believe that contingent workers enhance your organisation’s performance or have a detrimental effect?
17. In what ways is organisation performance enhanced by temporary / contingent workers?
18. In what ways is organisation performance negatively affected by temporary / contingent workers?
19. How often would a non-permanent staff member return to the organisation after periods working at other places?
20. How would you describe your organisation’s efforts to manage knowledge?
21. How is knowledge management promoted by managers and senior managers?
22. Does your organisation employ a knowledge manager or a chief information officer and what are their responsibilities?
23. Has your organisation implemented strategies for managing knowledge and can you describe these?
24. When projects are concluded is there an attempt to capture and disseminate any knowledge created?
25. Do you consider your organisation's efforts to capture this knowledge to be successful?
26. In your opinion do temporary / non-permanent workers increase the organisation's knowledge?
Appendix C: The Road to a New Organisational Culture within CO5

During the final stages of this study the researcher was re-employed in a contingent capacity by CO5, after a four year interlude. Although the researcher had visited CO5’s offices in Wellington, New Zealand to conduct the semi-structured interviews with selected staff members, his return to the organisation as an employee provided a unique opportunity to experience anew the organisational culture and the institution’s approach to managing contingent knowledge workers.

An initial observation made when returning to CO5 is that the organisation is instigating a major programme of change, in an attempt to deconstruct the prevailing siloed structure and move from a closed to an open organisational culture. This is evidenced by the prevalence of inspirational posters and objects placed around the CO5 office. The messages conveyed by the posters are summarised in Table A3.1. The messages contained within the posters can be related to the concepts discussed in this thesis.

Table A3.1: Impact of Information Technology Practice on Knowledge Management

<table>
<thead>
<tr>
<th>Title</th>
<th>Poster messages</th>
<th>Related concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>We will collaborate closely and communicate effectively and achieve collectively</td>
<td>Collaboration</td>
</tr>
<tr>
<td></td>
<td>We will adapt our physical workspace to fit the needs of the team.</td>
<td>Creating “ba”</td>
</tr>
<tr>
<td></td>
<td>Share our knowledge freely.</td>
<td>Knowledge sharing</td>
</tr>
<tr>
<td></td>
<td>Be available to our peers.</td>
<td>Open culture</td>
</tr>
<tr>
<td></td>
<td>Talk to people in person where possible so that we work together to achieve our goals faster.</td>
<td>Socialisation</td>
</tr>
<tr>
<td>Achievement</td>
<td>We will …</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide the right support</td>
<td>Trust</td>
</tr>
<tr>
<td></td>
<td>Remove roadblocks.</td>
<td>Create “ba”</td>
</tr>
<tr>
<td></td>
<td>Work collaboratively and respect individuality.</td>
<td>Open culture</td>
</tr>
<tr>
<td></td>
<td>Empower people to utilise their skills.</td>
<td>Trust</td>
</tr>
<tr>
<td></td>
<td>So …</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Our teams deliver excellence in their work.</strong></td>
<td>Competitive advantage</td>
<td></td>
</tr>
<tr>
<td><strong>Ownership</strong></td>
<td>We are all owners by taking responsibility for our actions and attitudes and fostering independence and trust so that energy and passion in people are released.</td>
<td>Trust, Open culture</td>
</tr>
<tr>
<td><strong>Growth</strong></td>
<td>We will challenge ourselves and others to grow.</td>
<td>Externalisation</td>
</tr>
<tr>
<td></td>
<td>We will …</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seek opportunities to develop.</td>
<td>Learning organisation</td>
</tr>
<tr>
<td></td>
<td>Be courageous by learning from mistakes.</td>
<td>Trust</td>
</tr>
<tr>
<td></td>
<td>Ask why? …</td>
<td>Open culture</td>
</tr>
<tr>
<td></td>
<td>And provide suggestions to effectively overcome obstacles.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>So that we have the skills to work together.</td>
<td>Externalisation</td>
</tr>
<tr>
<td><strong>Fun</strong></td>
<td>We are fun and engaging to work with, which means we will …</td>
<td>Open culture</td>
</tr>
<tr>
<td></td>
<td>Bring ourselves authentically and energetically to the work we do.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Continue to grow and work inclusively and collaboratively with our colleagues.</td>
<td>Open culture</td>
</tr>
<tr>
<td></td>
<td>So that the time we spend at work is both meaningful and enjoyable, manifesting in achievement.</td>
<td>Open culture</td>
</tr>
<tr>
<td><strong>Integrity</strong></td>
<td>We are a fully engaged team of people who act in a consistently honest and sincere way.</td>
<td>Trust</td>
</tr>
<tr>
<td></td>
<td>We will build respect and trust whilst acting courageously.</td>
<td>Trust</td>
</tr>
<tr>
<td></td>
<td>We will continue to challenge perceptions and do what we say by making the right decisions as we work together towards our goals.</td>
<td>Open culture</td>
</tr>
</tbody>
</table>
The organisation is encouraging the behaviours described in Table A3.1 by organising training programmes and drop in sessions to relay the messages. Attendance for these sessions is voluntary but encouraged.

As part of the change CO5 has recruited a new Chief Information Officer, and has initiated a restructure by moving staff out of functional teams and into groups (squads). The squads consist of employees from different functions within CO5, the objective being to increase collaboration. The restructure has resulted in the loss of some positions and accumulated knowledge within CO5, but the organisation has endeavoured to transfer staff into alternative positions where possible. Some institutional knowledge has been lost during the restructure, but the effects have been minimised.

CO5 has taken steps to further embed the Agile software development methodology into its processes and practices, and as a consequence old knowledge is being discarded as new knowledge is created. Efforts to change the CO5 culture are at an early stage and elements of the old culture remain dominant. However, there is high profile support from senior leaders for CO5’s change initiatives, and this is helping to remove barriers obstructing the transformation.
Appendix D: Information Sheet for Participants

Thank you for agreeing to be interviewed for this study, it is greatly appreciated. Before we start I would like to provide you with some background about the research and also about myself.

The research is concerned with how New Zealand organisations are currently managing the knowledge at their disposal, and this comprises what is referred to as explicit knowledge, i.e knowledge that is written down on paper or in computer systems, and tacit knowledge that resides with the people working here. With regards to tacit knowledge I am particularly interested in how the knowledge brought into the organisation by temporary workers is accessed and utilised.

The research I am undertaking is what is referred to as a qualitative study, which means that there are no right and wrong answers, and I am particularly interested in your understandings and observations on the topics I am studying. All information obtained from this interview will be masked as will details of your organisation.

I am undertaking this study on a part-time basis and have worked for many years as a temporary worker in a variety of New Zealand based organisations. My motivation for performing this study is to understand how selected organisations are currently approaching knowledge management and how this links to aspects of their human resource management.

My interest in this topic originates from my experience working as a contractor in a variety of New Zealand organisations, especially as my role requires the utilisation of existing organisational knowledge and very often the creation of new knowledge. When I join a new organisation I am always intrigued by the level of awareness they have about knowledge management and specifically how different employees contribute to this.
Appendix E: Case Organisation and Participant Code Mapping

For comparison purposes, excerpts from interviews included in the text were coded, providing a linkage between the subject matter, case organisation and participant’s role within an institution. The codes used to classify the quotations are shown in Table A5.1.

Table A5.1: Case Organisation and Participant Code Mapping

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Role in case organisation</th>
<th>Employment type</th>
<th>Employment status</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO1</td>
<td>Chief Clinical Advisor</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO1-CCA</td>
</tr>
<tr>
<td>CO1</td>
<td>Change Manager</td>
<td>Contingent</td>
<td>Employee</td>
<td>CO1-CM</td>
</tr>
<tr>
<td>CO1</td>
<td>Recruitment and Selection Manager</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO1-RSM</td>
</tr>
<tr>
<td>CO1</td>
<td>Enterprise Tools Support Advisor</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO1-ETS</td>
</tr>
<tr>
<td>CO1</td>
<td>Senior Information Analyst</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO1-SIA</td>
</tr>
<tr>
<td>CO1</td>
<td>Technical Consultant</td>
<td>Contingent</td>
<td>Employee</td>
<td>CO1-TC</td>
</tr>
<tr>
<td>CO1</td>
<td>Workforce Transition Lead</td>
<td>Contingent</td>
<td>Employee</td>
<td>CO1-WTL</td>
</tr>
<tr>
<td>CO2</td>
<td>Manager Product &amp; Market Development</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO2-PMD</td>
</tr>
<tr>
<td>CO2</td>
<td>Organisation Development Manager</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO2-ODM</td>
</tr>
<tr>
<td>CO2</td>
<td>Manager, Market Strategy and Insight</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO2-MSI</td>
</tr>
<tr>
<td>CO2</td>
<td>Network Build - Governance &amp; Reporting</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO2-GR</td>
</tr>
<tr>
<td>CO2</td>
<td>Assistant General Counsel, Commercial &amp; Compliance</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO2-GC</td>
</tr>
<tr>
<td>CO2</td>
<td>Senior Project Manager</td>
<td>Contingent</td>
<td>Employee</td>
<td>CO2-SPM</td>
</tr>
<tr>
<td>CO2</td>
<td>SAP Database Administrator</td>
<td>Contingent</td>
<td>Employee</td>
<td>CO2-DBA</td>
</tr>
<tr>
<td>CO2</td>
<td>Environment Manager</td>
<td>Contingent</td>
<td>Employee</td>
<td>CO2-ENV</td>
</tr>
<tr>
<td>CO2</td>
<td>Head of Migrations</td>
<td>Contingent</td>
<td>Employee</td>
<td>CO2-HOM</td>
</tr>
<tr>
<td>CO3</td>
<td>Manager Communications and Processes</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO3-MCP</td>
</tr>
<tr>
<td>CO3</td>
<td>Service Delivery Manager</td>
<td>Permanent</td>
<td>Employee</td>
<td>CO3-SDM</td>
</tr>
<tr>
<td>CO3</td>
<td>Business Process Subject Matter Expert</td>
<td>Contingent but made Permanent (post interview)</td>
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<td>CO4</td>
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<td>CO4</td>
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<td>CO4</td>
<td>Manager, Technical Analyst Team</td>
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<td>Employee</td>
<td>CO4-MTAT</td>
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<td>Employee</td>
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<td>CO5-CIO</td>
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<td>CO5-HHR</td>
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<tr>
<td>CO5</td>
<td>Senior Capability Manager – Business Analyst</td>
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<td>Employee</td>
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<td>Employee</td>
<td>CO5-CM</td>
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<td>Employee</td>
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<td>Employee</td>
<td>CO6-PD</td>
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<td>Employee</td>
<td>CO6-LAPCI</td>
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<td>Director Information Systems</td>
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<td>Employee</td>
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</table>

As shown in Table A5.1, three former employees (CO3-BA, CO5-TSA and CO5-SBA) were included in the study, because it was believed that their contribution would enhance the findings from this research. The rationale for including CO3-BA is that she had been responsible for implementing knowledge management practices and developing explicit knowledge resources underpinning many CO3 processes and practices. In order to complete this work CO3-BA developed a large network of contacts and the task was dependent on converting tacit knowledge into explicit knowledge. CO5-TSA is included because she worked closely with contingent knowledge workers (independent and affiliated) over a period.
of many years. She has held many positions within the organisation and understands how the institution has changed and how it currently functions. The motive for including CO5-SBA is that she was responsible for implementing knowledge management practice in a number of organisations including CO5. The consulting business to which she is affiliated specialises in implementing knowledge management practices within third party organisations.