

A Knowledge-Based Strategic Theory Framework for Knowledge Management: Knowledge Creation and Transfer in Businesses

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A thesis submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy (Ph.D.) at the University of Technology, Sydney.

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Certificate of Authorship / Originality

I certify that 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.

Production Note:

Signature removed prior to publication.

Glen William Duncan

Acknowledgements

Little did I realise what I was getting myself into when I started researching my thesis in 1998. The journey that I have been on has been extremely arduous. In a sense, this thesis has been my own personal psychological Mount Everest. During this time my wife and I had two children, I changed jobs four times and we moved house twice. What I have learned is not what I expected to learn when I set out. However, despite the hardship, the process has been worthwhile. The process has taught me the importance of intellectual rigour, the value of revision in writing and to strive for quality in all aspects of the research process.

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Preface

"The third Tajalli is concerning arts, crafts and sciences. Knowledge is as wings to man's life, and a ladder for his ascent. Its acquisition is incumbent upon everyone. The knowledge of such sciences, however, should be acquired as can profit the peoples of the earth, and not those which begin with words and end with words. Great indeed is the claim of scientists and craftsmen on the peoples of the world. Unto this beareth witness the Mother Book on the day of His return. Happy are those possessed of a hearing ear. **In** truth, knowledge is a veritable treasure for man, and a source of glory, of bounty, of joy, of exaltation, of cheer and gladness unto him. Thus hath the Tongue of Grandeur spoken in this Most Great Prison."

Tablets of Baha'u'llih, pp. 51-52)

"Man is the supreme Talisman. Lack of a proper education hath, however, deprived him of that which he doth inherently possess."

(Baha'u'llah, Tablets of Baha'u'llah, p. 161)

"The Great Being saith: Regard man as a mine rich in gems of inestimable value. Education can, alone, cause it to reveal its treasures, and enable mankind to benefit therefrom."

(Baha'u'llah, Tablets of Bahá'u'lláh, p. 162)

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List of Acronyms

ABS	Australian Bureau of Statistics
ATO	Australian Taxation Office
AVCC -	Australian Vice Chancellors Committee
BLS	Business Longitudinal Study
CURF -	Confidentialised Unit Record File
EDI	Electronic Data Interchange
HR	Human Resource
HRM	Human Resource Management
I&CT	Information and Communication Technology
KBV	Knowledge-Based View
KM	Knowledge Management
OO	Organisational Development
OL	Organisational Learning
R&D	Research and Development
RBV	Resource-Based View
TAFE -	Technical and Further Education
TCE	Transaction Cost Economics
TQM	Total Quality Management

Abstract

The discourse on knowledge management (KM) has emerged relatively recently in the field of management. Organisational and strategic theories have been developed which seek to explain the existence, boundaries, structure, management and competitive advantage of organisations based on knowledge. These theories are consistent with one thread from the overall discourse which argues that the management of knowledge within an organisation is an important activity required for maintaining competitive advantage in a hypercompetitive external environment. Despite the extensive interest in this area, there is still limited agreement even about some of its fundamental principles. This plurality of perspectives is due to the diversity of disciplines, theories and objectives with which the area is enriched by both academics and practitioners alike.

Many independent KM initiatives have also been proposed for managerial use under the KM umbrella. Such activities include meetings, mentoring schemes, training, job rotation, site visits, conferences and exhibitions, and internal and external collaborations. Many of these initiatives are relatively autonomous and independent concepts. Generally these concepts have been first identified in the practitioner literature and it is unclear where they fit within academic frameworks. In particular, the relationship between KM initiatives and important related academic concepts such as knowledge transfer, organisational learning, knowledge creation and innovation is not clear. This lack of agreement, clarity and cohesion in the KM discourse naturally suggests the following research problem: What is the relationship between KM initiatives, organisational learning, knowledge transfer, knowledge creation and innovation?

Taking an organisation and strategic management theory perspective, an exploratory framework for understanding and explaining KM is developed within this thesis. Theoretically, this framework draws together perspectives from the resource-based view of the firm, organisational learning and innovation literatures to propose that the two fundamental KM processes are knowledge transfer and creation. Knowledge transfer supports learning and the utilisation of available internal and external knowledge resources within an organisation. Through knowledge transfer and learning, new knowledge can be created and organisational innovation takes place. These two

processes are then integrated into Whittington, Pettigrew et al.'s (1999) framework for organisational change. Various disparate KM initiatives are also positioned within the developed framework based on whether they facilitate knowledge transfer by altering organisational boundaries, processes or structures.

The essence of the developed framework is represented pictorially by a research model. This research model depicts the framework's key concepts and the relationships between them. It also begins to represent some of the complex dimensionality inherent in the framework. The research model is explored empirically using data from the Business Longitudinal Survey conducted by the Australian Bureau of Statistics. Responses from 3014 Australian businesses surveyed yearly from 1994 to 1998 are analysed using chi-squared and logistical regression statistical techniques. This sample consists of 1344 small and 1670 medium businesses across eleven industries. In empirically exploring the research model, some of the dimensionality of the framework is explored. However, the process also provides a confirmatory function by providing empirical support for many of the aspects of the framework.

Statistical support was found for all elements of the research model. Odds ratios for the various KM initiatives examined ranged from 1.292 to 3.554. These results confirm the value of these initiatives for facilitating the transfer of knowledge. They also suggest that the dimensionality of these constructs represented in the model should be explored further. Of all the KM initiatives, research and development emerged as the most effective initiative for facilitating knowledge transfer and creation. This finding suggests that research and development should be the very first initiative considered by managers looking to implement a KM program. It also suggests that future research on knowledge transfer and creation should pay particular attention to this particular initiative. The logistical regression analysis demonstrated that changing organisational boundaries, processes and structures all contribute to facilitating knowledge transfer which lead to knowledge creation. These results provided support for the most important contribution of the thesis. This contribution was the development of an integrated and exploratory conceptual framework which can serve as a foundation stone for the field of KM.

Chapter 1

Introduction

1.1 Introduction and Research Question

The discourse on knowledge management (KM) has emerged relatively recently in the field of management. Organisational and strategic theories have been developed which seek to explain the existence, boundaries, structure, management and competitive advantage of organisations based on knowledge. These theories are consistent with one thread from the overall discourse which argues that the management of knowledge within an organisation is an important activity required for maintaining competitive advantage in a hypercompetitive external environment. Interest in the benefits of knowledge for organisations is not new. Many of the underlying concepts of KM are also not new. What is new is the beginning of a convergence of concepts into a coherent strategic theory of the firm.

Despite the extensive interest in KM, there is still limited agreement about some of its fundamental principles. For instance, there is no general agreement amongst management theorists about what constructs and definitions constitute KM (Quintas 2002). There is not even a generally accepted definition of such a fundamental term as "knowledge" itself. This plurality of perspectives is due to the diversity of disciplines, theories and objectives with which the area is enriched by both academics and practitioners alike.

Many independent KM initiatives have also been proposed for managerial use under the KM umbrella. Such activities include meetings, mentoring schemes, training, job rotation, site visits, conferences and exhibitions, and internal and external collaborations. Many of these initiatives are relatively autonomous and independent concepts. Generally these concepts have been first identified in the practitioner literature and it is unclear where they fit within academic frameworks. In particular, the relationship between KM initiatives and important related academic concepts such as knowledge transfer, organisational learning, knowledge creation and innovation is not clear. This lack of agreement, clarity and cohesion in the KM discourse naturally suggests the following research problem:

What is the relationship between KM initiatives, organisational learning, knowledge transfer, knowledge creation and innovation?

1.2 Background to the Research

Amongst strategic management scholars, there exists a view that the external environment for organisations has become more uncertain, ambiguous, complex, dynamic and interdependent than it was in the past (Ilinitich, D'Aveni et al. 1996; Volberda 1996; Neef 1999). It is argued that the increase in competition has been brought about by a fundamental change in the nature of competition itself (Bettis and Hitt 1995; Hamel and Prahalad 1996; Ilinitich, D'Aveni et al. 1996). Contributing to this change in nature have been developments in key technological areas including computers, telecommunications and transport (Clarke and Clegg 1998; Argote, McEvily et al. 2003a). These technological advances have permitted the globalisation of markets, rapid advances in technology, shorter product life cycles and increased aggression between competitors leading to an external environment considered hypercompetitive (D'Aveni 1994; Volberda 1996). Whilst the existence of a hypercompetitive environment is contested (McNamara, Vaaler et al. 2003), it remains a dominant view for the justification of strategic management research.

In a hypercompetitive environment, traditional management practices and organisational forms are inadequate for ensuring the sustainability of organisations (Daft and Lewin 1993; Fulk and DeSanctis 1995; Volberda 1996; Quintas 2002). In response, management theory and practice are in the process of a paradigm shift across a number of dimensions in order to meet this new need (Clarke and Clegg 1998). An increasing focus on knowledge and intellectual capital has provided the opportunity for new knowledge-based concepts, theories and practices of management to develop (Roos and Von Krogh 1996, p. 333). Knowledge management (KM) is one of a number of multiple changing paradigms that populate the field of ideas and values in management which mark the shift away from classical! neo-classical orthodoxy of thought (Clarke and Clegg 2000).

KM is a field that has generated interest across a number of disciplines (Quintas 2002). In addition to management, these disciplines include information technology, education,

marketing, communication and accounting. In the field of management academic interest has converged on knowledge from a number of perspectives including organisational theory (resource-based view (REV) of the firm, organisational learning (OL) and management of innovation), organisational behaviour, human resource management (HRM), operations management, strategic management, information technology management, communication management, change management, social capital and the management of intangible assets (Nahapiet and Ghoshal 1998; Scarbrough and Swan 2001; Quintas 2002, p. 2). Within management, as a distinct and explicit literature, KM began around 1994 (Gordon and Grant 1999). The strategic management and organisational theory perspectives have converged to form an important strand of the literature.

The basic premise of KM is that organisations can benefit from applying practices and strategies that leverage both internal private knowledge and external public knowledge (Matusik 2002). Fostering the processes of knowledge creation and transfer are intrinsic to these practices and strategies (Kogut and Zander 1992; Staples, Greenaway et al. 2001; Argote, McEvily et al. 2003b; Carlile and Reber 2003; Robertson, Scarbrough et al. 2003). KM encourages managers to give more focus to the role and importance of knowledge in organisations. For example, managers can play a key role in facilitating the transfer of knowledge between organisational units by providing information on the availability of knowledge to potential adopters (Lenox and King 2004). Managers maintain their inventory of knowledge by acquiring, retaining, deploying, idling and abandoning technologies (Miller 2002). By better managing organisational knowledge in the new environment, fundamental performance-based outcomes such as profitability, survival, growth, competitiveness and service can be enhanced (Davenport and Prusak 1998, p. ix). Some empirical support exists that demonstrates a positive empirical relationship between knowledge-based resources and organisational performance (Wiklund and Shepherd 2003). Additional evidence suggests that organisations that share technological knowledge within their innovative system have a greater innovative performance (Spencer 2003). The promise of KM is essentially a strategic one.

The strategic management perspective emphasises the potential for knowledge creation and transfer to create, maintain and erode competitive advantage (Blumentritt and

Johnston 1999). Particular focus is directed towards an organisation's core competencies or capabilities (Kogut and Zander 1992; Zander and Kogut 1995). Organisations that are able to transfer internal capabilities and knowledge successfully are considered more productive and likely to survive than other organisations (Zander and Kogut 1995; Szulanski 1996; Argote, Ingram et al. 2000, p. 2; Schulz 2003). Innovation plays an important role because knowledge developed in one area, if transferred successfully can be exploited by another (Zander and Kogut 1995; Szulanski 1996).

A paradox exists in this argument because the transfer of knowledge internally may provide the opportunity for organisational capabilities to be imitated by competitors resulting in the erosion of competitive advantage (Zander and Kogut 1995; Grant 1996a, p. 380). Organisations even have difficulty signalling the availability of knowledge to other parties without the knowledge losing value (Ndofor and Levitas 2004). Knowledge is both a barrier to and a source of innovation in a product development setting (Carlile 2002). The complexity and tacitness of an organisation's technological knowledge can prevent imitation of an organisation's major product improvements (McEvily and Chakravarthy 2002). The imperfect imitability of organisational capabilities can sustain competitive advantage well (Powell 1995). In certain circumstances, the use of knowledge from other units can actually impede performance (Haas and Hansen 2005). The strategic promise of KM can only be realised through management principles at an operational level (Blumentritt and Johnston 1999).

There are many and varied management theories that inform KM principles. The RBV of the firm, OL and innovation theories have all contributed to the field and have important roles to play in the continued conceptual development of the area (Spender 1996; Easterby-Smith, Crossan et al. 2000; Bueno, de Pablos et al. 2004). Of these, the RBV stands out as the foundation for devising knowledge-based organisational theories and an overarching conceptual framework for KM. Through this lens, knowledge can be viewed as a critical organisational resource (Scarbrough and Swan 2001, p. 5).

The RBV has two strengths for organisational and strategic management theory. One strength is potential to integrate with more established theories such as transaction

cost economics (TCE) (Foss 1996a; Foss 1996b; Barney 2001b). Another strength is its potential to bridge organisation and strategic management discourses (Foss 1999; Barney 2001b). Traditionally, organisation and strategic management theories have been separate. Organisational theories have concentrated on understanding the reasons for the existence, boundaries and internal structuring of organisations (Foss 1999). Strategic management theories on the other hand, have been more concerned with the reasons of organisational competitiveness. The RBV has the potential to combine theories motivated by these different emphases under the one umbrella of knowledge. Of particular note is the disconnect between OL and strategic management which could potentially be bridged within knowledge-based theories of the firm (Crossan, Lane et al. 1999; Crossan and Berdrow 2003). Similarly, the theoretical disconnect currently existing in learning within and learning between organisations can be reconciled within the RBV (Holmqvist 2003). The RBV could also be used to link organisational level and individual level learning through knowledge creation (Akbar 2003). The strengths provided by the RBV make it an ideal management theory for the grounding of the discourse in KM. The value of the RBV to this discourse is considered so great that the theoretical framework developed in this thesis will be grounded in it.

Four specific criticisms have been directed at the theoretical underpinnings of the RBV of the firm. Firstly it is argued that the RBV is based upon a tautology (Priem and Butler 2001b). Secondly in spite of the recognised role of the RBV for entrepreneurial success, the core strategic concept of value is not addressed (Priem and Butler 2001a, p. 36; Priem and Butler 2001 b). Different combinations of resources are able to generate the same value in organisations and therefore not result in competitive advantage (Barney 2001a, p. 41). Thirdly the RBV is criticised for emphasising internal resources at the expense of external product markets. Finally, it is claimed that the RBV does not meet the empirical content criterion for theory and has limited prescriptive implications (Barney 2001a. p. 41; Priem and Butler 2001 a). Problems with the RBV in the areas of tautology, value, definition of resource, distance from other economic traditions and temporal empirical tests are acknowledged by theory proponents (Barney 2001a, p. 54).

It is the nascent knowledge-based theories of the firm that have made the greatest theoretical contribution to the area of KM. These theories usually build upon the RBV

and attempt to explain the existence, boundaries and structure of organisations based upon their ability to co-ordinate, integrate and manage knowledge (Kogut and Zander 1992; Nonaka 1994; Grant 1996a; Grant 1996b; Kusunoki, Nonaka et al. 1998). Communication is central to the organisational co-ordination process (Orlikowski and Yates 1994). The utility of the RBV is evident in these theories because they also inherently provide an explanation for organisational competitive advantage. In effect these theories are knowledge-based strategic theories of the firm (Foss 1999). Recent research has proposed an alternative community view for knowledge transfer and creation for carrying out certain functions such as new product development (Lee and Cole 2003).

Other literatures have enriched KM including collaboration, HRM and information technology (IT). However, none of these associated theories have attempted to establish a theory of the firm or explain organisational strategy. Within the HRM discourse there has been increased recognition for the positive effect that employee skills and capabilities development can have on competitive advantage (Becker and Gerhart 1996). The RBV has been proposed the natural theory within which a strategic HRM discourse can take shape (Colbert 2004).

Due to its diverse theoretical and conceptual base, the field contains many contradictions and inconsistencies. It is unclear how concepts such as learning and knowledge can be applied to organisations (Berends, Boersma et al. 2003). Key discussions such as the characterisation of knowledge along the tacit / explicit dimension has been too simplistic (Tell 2004). There is also no complete and agreed-upon definition of KM (Alvesson and Karreman 2001; Schultze and Stabell 2004). Knowledge is difficult to define and manage because it is an ambiguous, unspecific and dynamic phenomenon (Alvesson and Karreman 2001). It is a subjective perspective of an individual intrinsically related to the context of the organisation (Thompson and Walsham 2004).

Despite the different independent theoretical foundations of the field, there is considerable potential for consistency between aspects of each literature and their contribution to KM (Martin and Salomon 2003). The first of these consistencies relates to two core processes that can be considered intrinsic to KM. These processes are

knowledge transfer which is closely related to OL and knowledge creation which has links to innovation theory (Schultze and Stabell 2004). The second of these consistencies is in relation to the effects KM practices are considered to have on organisations. KM practices involve the changing of boundaries, processes and structures within an organisation (Whittington, Pettigrew et al. 1999; Adair 2004). As yet, the relationship between KM processes, practices and organisational change has not been clearly articulated.

A major concern for the area is the emergence of various KM initiatives, not all of which have clear linkages to a rigorous conceptual framework (Thompson and Walsham 2004). Organisations have implemented different KM related projects or initiatives with varying objectives including creating knowledge repositories, improving knowledge access, enhancing the knowledge environment and managing knowledge as an asset (Davenport, De Long et al. 1998). Some initiatives change the boundaries of an organisation and include developing collaborative alliances (Dyer and Singh 1998; Kogut 2000; Tsang 2002; Grant and Baden-Fuller 2004; Oxley and Sampson 2004), downsizing (Budros 1999; Chadwick, Hunter et al. 2004) and outsourcing (Brusoni, Prencipe et al. 2001; Gainey and Klaas 2003). Other initiatives change internal organisational processes and include benchmarking (Cho, Kim et al. 1998), electronic data interchange (EDI) (HiU and Frei 2002; Mukhopadhyay and Kekre 2002), horizontal networking (Reagans and McEvily 2003), human resource (RR) practices (Cho, Kim et al. 1998; Song, Almeida et al. 2003), information and communication technologies and strategies (Argyres 1999; Bolisani and Scarso 2000; Cabrera 2002), research and development (R&D) (Florice and Miller 2003; Argyres and Silverman 2004; Kastelli, Caloghirou et al. 2004), and training (Hatch and Dyer 2004). Yet other initiatives strategically change organisational structures (Darr and Kurtzberg 2000).

There exists a close relationship between KM initiatives and transfer. Knowledge transfer can occur at both individual and group levels, and is reliant on mechanisms of communication (Ingram and Simons Argote, McEvily et al. 2003b). KM initiatives serve as mechanisms of communication and are thus closely linked to knowledge transfer. By enabling communication channels, KM initiatives facilitate knowledge transfer. Successful transfer of knowledge requires multiple channels that reinforce each other (Davenport, De Long et al. 1998).

1.3 Justification for the Research

Managing is as much an art as it is a science. The discipline of management is continually enriched by new theories and practices as academics and practitioners attempt to find better and different ways of managing and organising. In the past twenty years organisations have been encouraged to downsize, re-engineer their processes, learn, become leaner, restructure, collaborate, concentrate on their core competencies and implement expert systems.

Often organisations embark on new management strategies before the fundamental principles upon which they are based have been sufficiently tested. Support for particular approaches whilst in their infancy are often based on anecdotal evidence or at best case studies which although may appear to work in one organisation have no guarantee of working in another. Ironically it can be the failings or overlooked weaknesses of a particular new management approach that can be the impetus for the development of other new approaches. One need look no further than the concept of business process re-engineering and some of its failings in relation to tacit knowledge to see the roots of KM.

If management is viewed as a science then it is a young discipline and KM is one of its youngest strands (Kuhn 1970; Boyd and Reuning-Elliott 1998). A question of legitimacy envelopes strategic theories of the firm due to their relative youth in contrast to traditional organisational theories such as contingency and institutional theory (Donaldson 1999; Tolbert and Zucker 1999). Proponents of strategic theories of the firm acknowledge that the emerging knowledge-based perspectives are not yet theories of the firm (Grant 1996b, p. 100). However the profound changes in the competitive environment highlight that traditional perspectives of managing are not working and that there is a need for new ways of thinking about organisations.

KM is a strand of management that is characterised by diversity. It consists of variety and disagreement of concepts, definitions, content and focus. The concept of knowledge itself is complex and its relation to management theory has not been adequately developed (Blackler 1995, p. 1021). Many of the fundamental assumptions of KM remain untested, relying on anecdotal evidence or case studies for validation.

The confusion in the KM literature is partly because of the breadth of its different influences (Spender 1996). Each management perspective has tended to simplify its contribution by influencing KM in isolation rather than as an interrelated part of a single system (Spender 1996). The concepts and strategies of KM have been theorised but not gathered together into an integrated framework. The framework that would be generated from a meta-analysis of the KM literature would be a strategic knowledge-based theory of the firm (Spender 1996). Whilst strategic knowledge-based theories have been developed, no attempt has been made to integrate the various KM initiatives within them. As no such integrated framework exists, there has also not been an opportunity to test it empirically.

1.4 Research Processes

In order to develop a single theoretical framework, a meta-analysis was conducted on management literature related to KM. Whilst being grounded in the management literature, the established framework will be of value to other disciplines interested in KM. It identified common themes in the management literature but these themes also overlap with the literature of other disciplines. As there is no existing framework for KM, there is a dearth of empirical research into the fundamental assumptions of KM and particularly their interrelationships. The theoretical framework was analysed empirically using statistics based on a data set generated by a questionnaire survey.

Data for the study was obtained from the Australian Bureau of Statistics (ABS). The ABS regularly surveys thousands of businesses of varying sizes across most industries with a survey titled "Business Growth and Performance Survey". The survey includes a range of indicators across a variety of themes. Although the survey is not specifically designed as a KM questionnaire, nevertheless its items have been inspired by current management thought and many of the concepts of KM can be examined using the available items. The specific data set used was a de-identified data set known as a Confidentialised Unit Record File (CURF) Business Longitudinal Survey for the periods 1994-1995, 1995-1996, 1996-1997 and 1997-1998. The main year chosen to analyse was 1997-1998 because it was the most recent and also furthest from the defining year of 1994. Some questions from earlier years were analysed when they were unique and relevant to the study. Only organisations that existed over the entire

four year period 1994-1998 were included in the analysis because time was needed for the influence of KM principles to be exerted and also to facilitate analysis over different years if necessary.

There are a number of distinct advantages in using data from the ABS. Firstly, organisations are compelled by the Census and Statistics Act 1905 to complete the questionnaire. Response rates are correspondingly extremely high. The questionnaires themselves have been designed over a number of years by experienced statisticians so their reliability and validity are of a high quality. The ABS has access to the contact details of a large number of diverse organisations throughout Australia so respondents are plentiful and rich in variation.

1.5 Outline of the Thesis

This thesis consists of five chapters and is organised as follows (Perry 1998):

Chapter 2 - Theory and Literature Review will begin by establishing the position of KM in the domain of management. This will be achieved by discussing the role and development of management and organisation theory and the part that KM plays in this process. The major theoretical frameworks in which KM can be based will then be introduced. The theoretical frameworks that will be discussed include the RBV, TCE and the information processing model. Justification will be provided as to why the RBV is the most appropriate framework to serve as a theoretical foundation for this thesis. Discussion on the RBV of the firm will be extended to include a review and critique of two knowledge-based theories of the firm: the dynamic theory of organisational knowledge creation and the knowledge-based theory of the firm. The innovation and OL literatures will be reviewed and their relationship to the core knowledge processes of creation and transfer identified. A theory of knowledge transfer and creation will be developed that integrates a number of disparate KM initiatives, principles and concepts into a cohesive framework. The relationship between KM and organisational performance will also be discussed. This framework will incorporate a change management typology that proposes that new innovations in organising improve organisational performance by changing one or more of an organisation's boundaries, processes and structures (Whittington, Pettigrew et al. 1999).

The overall theoretical framework developed will be represented by a model that can be explored empirically.

Chapter 3 - Research Methods will detail the research methods used in the study to test the developed theoretical framework empirically. The existence of multiple research paradigms and methods in management will be acknowledged. Justification will be provided for the use of the functionalist / positivist paradigm and quantitative methods. The research procedures used in the study will then be detailed. The sourcing of a data set will be discussed along with issues surrounding the ethical use of the data as well as reliability and validity issues. Finally, the data manipulation procedures and statistical techniques used to analyse the data will be explained.

Chapter 4 - Results, Analysis and Discussion will present tabular and graphical summaries of the data set to describe the sample of Australian businesses included in the study. The results from bi-variate and multi-variate statistical analysis for each relationship in the model, as well as the model overall, will be presented. These results will be analysed and discussed in relation to the research question.

Chapter 5 - Summary, Conclusions and Implications will state a conclusion for each research question and hypothesis. These conclusions will then be synthesised into an overall conclusion about the research problem. The implications of the theoretical framework for organisational theory will be explained. These theoretical implications will then be applied to management policy and practice and the implications for these areas discussed. The limitations that restricted this study will be identified and their potential effects on the results explained. Finally, suggestions for future research into the field of KM will be made.

1.6 Definitions

Appendices 1-3 contain definitions for a number of conceptual, methodological and statistical terms. Appendix 1 defines conceptual terms including resources, organisational capability, organisational routines and processes, core competencies, dynamic capabilities, organisation size, and substantive, theoretical and methodological contribution. Appendix 2 defines methodological terms including paradigm, ontology,

epistemology, methodology, methods, substantive research, construct validation research, reliability and validity. Appendix 3 defines statistical terms including odds ratio, chi-square analysis and logistic regression.

The term management thought as opposed to management knowledge will be used throughout this thesis in order to avoid any confusion with the term knowledge management.

1.7 Limitations and Key Assumptions

The processes of knowledge transfer and creation which serve as the backbone of the theoretical framework in this thesis are hampered by several challenges. Knowledge-based organisational theories are still in their infancy (Nonaka 1994; Grant 1996a; Grant 1996b; Kusunoki, Nonaka et al. 1998). Thus the conceptual underpinnings on which empirical studies draw are still in a state of evolution. A coherent and generally accepted working definition of knowledge for the organisational environment has not been established. The lack of a common definition makes comparisons between studies difficult. Similarly, comparability between studies is limited because studies differ in the organisational unit of analysis adopted. For example, the transfer of production knowledge between organisations within a network has been examined (Dyer and Nobeoka 2000). On the other hand the transfer of knowledge between subsidiaries in a multinational corporation has been considered (Gupta and Govindarajan 2000). The transfer of best practices between departments within the same organisation has also been studied (Szulanski 1996). These three studies all differ in terms of definition of knowledge and organisational units involved in the transfer.

The task of developing an integrated framework for KM necessitates concentrating on the macro level of the organisation as the unit of analysis. This macro view means that some of the richness of understanding provided by micro processes is lost. Micro knowledge transfer processes underpinning OL are complex, idiosyncratic and influential (Andrews and Delahaye 2000, p. 808).

For confidentiality reasons, the data set provided by the ABS for use in this study was limited to businesses less than 200 employees. The data set didn't contain organisations

that were large, non-Australian, not-for-profit or public. Because the organisations represent a random sample of other small and medium businesses in Australia, the results of the study are generalisable to all other small and medium businesses in Australia. However, the primary objective in analysing the data set was to evaluate empirically the theoretical model and framework developed.

1.8 Conclusion

This thesis will construct and evaluate a conceptual framework for the management of knowledge, one that is applicable to both academics and practitioners alike (Klein, Tosi et al. 1999; Morgeson and Hofmann 1999). The conceptual framework will be at the organisational level of analysis, the level at which many of the benefits of KM are attributed. One of the major outcomes of the thesis will be an integrated framework with which managers can understand and position KM concepts and initiatives. Much of the confusion existing in a number of related literatures including KM, OL and organisational memory is because of a failure to integrate concepts and literatures into a single perspective based on a knowledge-based theory of the firm (Spender 1996, pp.66-67). In addition to being fragmented, the literature is characterised as being in need of refinement before academics and practitioners can fully take advantage of the field. This thesis will contribute to the resolution of these issues.

Chapter 2

Theory and Literature Review

2.1 Introduction

The purpose of this thesis is to develop and explore a knowledge-based strategic theory framework for KM. Its central argument is that the processes of knowledge transfer and creation should constitute the conceptual core of the framework. These are the end points of this literature review. However, before reaching these end points, it is necessary to navigate a diverse body of literature. Although still a young field, much has been written on the topic of KM. However, few attempts have been made to position and integrate it into the core body of management knowledge.

This chapter will begin in Section 2.2. by carving out a position for KM in the field of management. Before discussing what KM is, it is necessary to explore the environment in which it developed and to position it in the historical context of the development of management thought. It will be proposed that new ideas such as KM occur in cycles, and each cycle is related to the last. It is important to discuss the environmental and historical context of KM because this gives important insights into understanding KM. In Section 2.2, the role of organisational and strategic theories in the discipline of management will also be discussed. This discussion is important because it explains why it is necessary to ground the final framework in organisational and strategic theory.

A strategic theory of the firm for KM can be developed from several existing organisational and strategic theories. Section 2.3 will review and critique the three main theories upon which a strategic theory of the firm can be constructed. The theoretical perspectives that will be discussed include the RBV, TeE and the information processing model. The purpose of this section is to justify why the RBV is the most appropriate framework to serve as a theoretical foundation for this thesis. The RBV considers how a firm's resources contribute to achieving sustainable competitive advantage. A stream of this perspective, the KBV particularly focuses on the role that knowledge assets play in this process. In addition to reviewing and critiquing the three grand theories, Section 2.3 also introduces the KBV and positions it as an extension of the RBV.

The discussion of the KBV and the RBV will be extended in Section 2.4. Scholarly work on the KBV has matured to the point that two knowledge-based theories of the

firm have been developed. Each of these theories although having been grounded in the KBV, places a different emphasis on knowledge processes. Nonaka's (1994) dynamic theory of organisational knowledge creation as its name suggests emphasises the process of knowledge creation. On the other hand, Grant's (1996a; 1996b) knowledge-based theory of the firm emphasises the processes of knowledge integration and transfer. Section 2.4 will review and critique both of these theories and draw out the importance of knowledge creation and transfer processes in the KBV.

The various theories associated with innovation or OL are generally not classified as organisational or strategic theories of the firm. As a result, their review has not been included in with that of the RBV, TeE and the information processing model. However, the innovation and OL literatures bring some useful insights into KM. These insights particular enhance understanding of the knowledge transfer and creation processes. For this reason, in Section 2.5 the innovation and OL literatures will be reviewed and their relationship to the core knowledge processes of creation and transfer identified.

The culmination of the previous sections will occur in Section 2.6. In this section, the processes of knowledge creation and transfer will be established as concepts at the core of KM.

Many KM initiatives have been developed by academics and practitioners. These initiatives often are not grounded in a theoretical base. It is also quite often difficult to determine a relationship between them. Section 2.7 develops a framework for structuring KM initiatives. This framework will be based on Whittington, Pettigrew et al.'s (1999) change management typology. This typology proposes that new innovations in organising improve organisational performance by changing one or more of an organisation's boundaries, processes and structures (Whittington, Pettigrew et al. 1999). In Section 2.7, various disparate KM initiatives will be reviewed and then integrated into this framework.

The literature review to this point is represented by Figure 2.1:

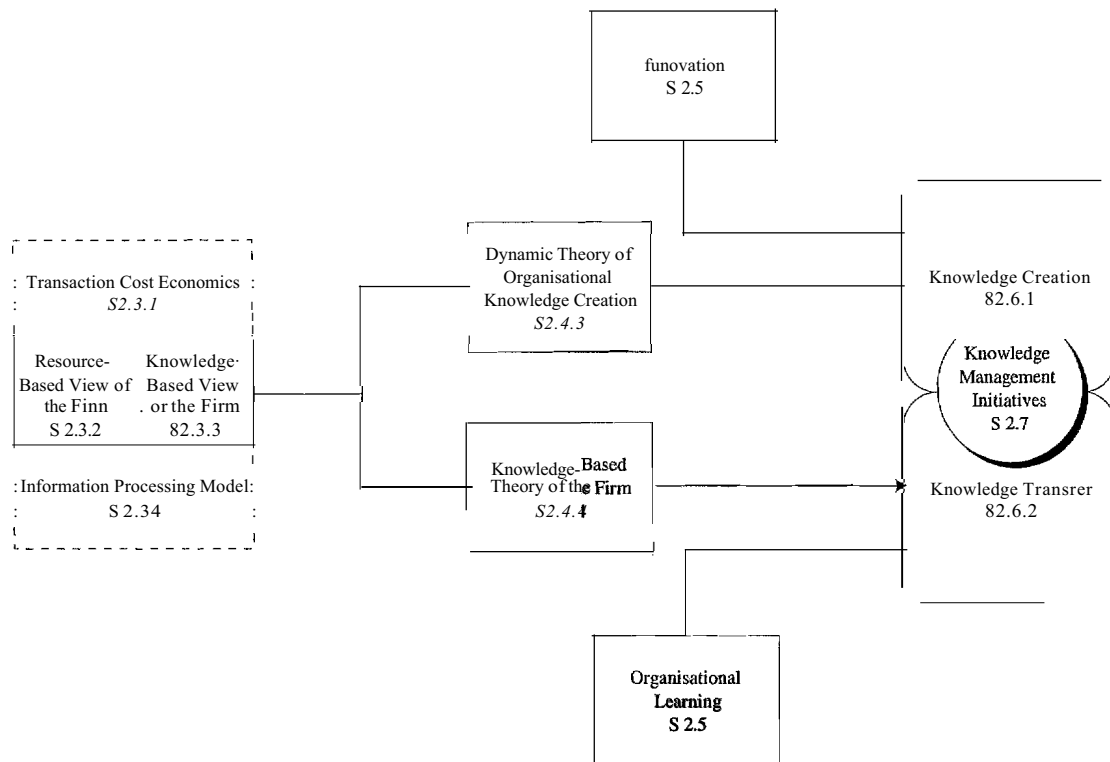


Figure 2.1: Pictorial Representation of Organisational and Strategic Theories

A result of the literature review to this point is the development of a theoretical framework for knowledge transfer and creation. This theory integrates a number of disparate KM initiatives, principles and concepts into a cohesive framework. It is proposed that by changing an organisation's boundaries, processes and structures, the process of knowledge transfer is enhanced. This enhanced knowledge transfer in turn promotes innovation.

The later sections of this chapter develop a model suited for empirical testing and exploration. Section 2.8 will introduce the concept of organisational performance. Enhanced organisational performance is one of the critical outcomes from KM. This relationship between KM and organisational performance will be discussed. Section 2.9 introduces some of the demographic variables that need to be considered and controlled for when analysing KM constructs. The theoretical framework developed in this chapter will be represented by a model in Section 2.10. A number of hypotheses will be presented in relation to this model in Section 2.11. These hypotheses highlight pathways in which the theoretical framework will be explored empirically.

2.2 The Role of Knowledge Management in Management Thought

This section will position KM within the domain of management thought. In order to discuss KM, it is important to consider the environment in which it developed as the emergence of KM is at least partly a product of that environment. Section 2.2.1 begins by framing the environment in which many organisations now face. Two key features of this environment that mark a movement from an industrial economy to a post-industrial knowledge-based economy are hypercompetition and the emergence of knowledge as the primary competitive resource. Section 2.2.2 will highlight the role of organisational and strategic theories as tools useful for many organisations. This discussion is important because one outcome of this study is the development of a strategic theory of the firm which is a theoretical framework that merges organisational and strategic theory. Section 2.2.3 will argue that the field of management consists of a core body of knowledge that is being added to all the time. It will argue that new perspectives are either rationalist or humanist. KM is a field that has been influenced by both academic and practitioner literatures. Rigour in the science of its development has therefore been varied. KM contains both rational and humanist elements. It also contains ideas that have been discussed previously in the management literature. However, it also comes up with new ideas and a new focus on knowledge which marks it as a distinct field.

2.2.1 The New External and Internal Organisational Environments

As predicted by Huber, post-industrialist society has become increasingly complex and turbulent with a greater reliance on knowledge for production (Huber 1984, p. 931). For organisations, this increased complexity and turbulence has markedly influenced competition. Change to the competitive environment has reached a stage that a new term has been created: hypercompetition. Rather than enjoying long periods of sustainable competitive advantage, the environment between organisations is characterised by short periods of advantage punctuated by frequent interruptions (D'Aveni 1994). Hypercompetition has resulted in the blurring of industry boundaries, greater knowledge intensity and discontinuous change (Whittington, Pettigrew et al. 1999). It is characterised by competition at an international level, not just local or national. Products are subject to shorter development times and life cycles as well as mass

customisation (Clarke and Clegg 1998). Almost every country and industry has been affected.

Developing in parallel with hypercompetition has been a shift in emphasis from industrial systems of production to knowledge-based systems (Drucker 1998; Harris 2001). This too is consistent with Huber's forecast that the post-industrial competitive environment will place greater emphasis on decision-making, innovation, and information acquisition and distribution within organisations (Huber 1984, p. 931).

Certain sections of the global economy are now considered to be part of a post-industrial knowledge-based economy (Drucker 1993; Drucker 1998). Features of this new economy include wealth being increasingly generated from intangible assets such as knowledge, the recognition that people are the basis of an organisation's knowledge, the need for continuous learning, the recognition that competitive advantage is dependent upon innovation and knowledge creation, the importance of transferring knowledge both within and across organisational boundaries, and the limits and potential of information and communication technologies (Quintas 2002, p. 4).

In the new knowledge-based economy, intellectual capital is perceived to be more important than physical capital for creating and sustaining competitive advantage (Roos and Von Krogh 1996, p. 333). In knowledge-based organisations such as hospitals and consulting firms, the primary means of production are owned by the employees characterised as knowledge workers (Drucker 1993). Productivity is becoming dependent on the application and development of new knowledge, and on the contributions of specialist knowledge workers.

The recognition of knowledge as a critical factor for production is not new (Marshall 1972). Knowledge is a concept that has theorised by philosophers, sociologists and psychologists for many years (Polanyi 1958; Argote, Ingram et al. 2000). Management theorists have addressed elements of knowledge in studies which have concentrated on other themes. However, only recently has knowledge been made the centrepiece of management theorising and organisational frameworks (Gordon and Grant 1999). It has only been with the realisation of the potential application of knowledge to resolving issues associated with the new competitive environment that

interest has risen to significant levels (Quintas 2002). This knowledge is held internally within the organisation as well as externally with customers, suppliers and even competitors (Von Hippel 1986; Kotabe, Martin et al. 2003; Shankar and Bayus 2003; Hoetker 2005).

As mentioned earlier, the emergence of new organisational forms and structures is another managerial response to the hypercompetitive environment. These new structures also reflect the recognition of the role of knowledge in the economy. Traditional hierarchical, decentralised or matrix organisational structures do not optimise the creation and transfer of knowledge (Drucker 1993). By focusing on knowledge workers or specialists, these networked structures are more team-based and collaborative. The structures are usually flatter, attempt to remove bureaucracy, build networks and foster connections between people through technology (Scarbrough and Swan 2001, p. 5). New organisational forms and KM are closely related with both reflecting and advancing the use of new computer technologies such as groupware, the intranet and internet applications (Coleman 1997; Scarbrough and Swan 2001, p. 5).

Interestingly, interest in KM has followed a period where organisational restructuring, mergers, acquisitions and downsizing had been popular. KM is also a response to problems arising from these practices (Scarbrough and Swan 2001, p. 5). One such problem is the loss of valuable knowledge held in the minds of key organisational employees who are no longer with the organisation. Another is the erosion of important organisational values such as trust, reciprocity and commitment that are necessary to foster knowledge creation and transfer (Marcie 1997).

2.2.2 The Role of Organisational and Management Theories

Organisations are complex, uncertain and ambiguous phenomena (March and Olsen 1975; Daft and Weick 1984). They consist of multiple actors and entities interacting with each other and their external environment. Aspects of organisations at times are not visible because they occur in the minds of individuals or out of sight. Analysis of organisations can be a complex task. As such, tools are required to facilitate this analysis. Organisational and management theories are tools that attempt to be a coherent approach to the analysis and understanding of organisations. Management

theories attempt to minister one of management's central problems, namely the control of complex organisations (Barley and Kunda 1992).

There exist many organisational theories that attempt to understand and explain managing, organising and other organisational phenomena. Each organisational theory is an abstraction that attempts to understand and explain a particular combination of organisational characteristics and behaviours. Each organisational theory is based on a particular set of epistemological, ontological and methodological assumptions. Based on their underlying assumptions, collectively these organisational theories may compete in offering rival explanations for the same organisational phenomena (Grant 1996b, p. 109). Alternatively these organisational theories may complement each other by explaining different phenomena or explaining the same phenomena from different perspectives (Gioia and Pitre 1990).

Organisational theories are conceptualisations and models which offer explanations and predictions concerning organisational structures and behaviours (Grant 1996b, p. 109). They can be categorised into two levels: micro and macro. A micro theory attempts to understand and explain a particular aspect or phenomenon occurring within or between organisations such as strategy or communication. A macro theory attempts to address a number of issues concerning the organising and management of an organisation. These issues ultimately constitute an approach to the analysis of an organisation. The three issues are the reasons for existence of the organisation, the boundaries of the organisation and internal organisation (Foss 1999, p. 727). The issue of existence is concerned with the reasons for the existence of organisations "as distinct mechanisms for resource allocation in a market economy" (Foss 1999, p. 727). In respect to existence, an organisational theory needs to explain not only that organisations exist but why they are needed (Barney 1996). The issue of boundaries is concerned with understanding and explaining why "certain transactions are governed in-house while others are governed through market relations". The issue of internal organisation is concerned with the reason "different types of (formal and informal) organizational structures and accompanying phenomena, such as internal labour markets, job-ladders, profit-centres" (Foss 1999, p. 727) are observed. Consideration for internal organisation includes how an organisation's hierarchy is structured, the rules of decision-making and the nature of rewards (Holmstrom and Tirole 1989, p. 65).

A separate but related body of theories is the field of strategic management. Strategic management is concerned with understanding and explaining organisational performance, determinants of strategic choices and competitive advantage. Competitive advantage is concerned with "which factors account for superior rent-earning capability" and organisational heterogeneity (Foss 1999, p. 727). Organisational and strategic management scholars have attempted to bridge the two fields by developing strategic theories of the firm. A strategic theory of the firm attempts to explain within a single theoretical framework the issue of organisational competitive advantage as well as the issues of existence, boundaries and internal organisation (Foss 1999, p. 726).

2.2.3 Nature and Sources of Organisational and Management Knowledge

Organisational and management knowledge consists of a solid foundation of theories including organisational behaviour, decision-making, innovation, motivation, leadership and group dynamics (Bartol, Tein et al. 2003). These areas have been developed from other disciplines including the social sciences, psychology, philosophy and communication over many decades. This knowledge has been supplemented with new developments suggested by both academics and practitioners alike. Some of the more recent theories include emotional intelligence, business process re-engineering, total quality management (TQM), management by objectives, zero-based budgeting, T groups, Theory Y, Theory Z and participative management (Staw and Epstein 2000, p. 523). At times, these theories ignore developments in the past or rehash old ideas and give them a new form.

New developments in management thought can be characterised in terms of two perspectives: the rationalist and the humanist perspectives (Zald 1993). Rationalist perspectives are oriented towards improving overt organisational efficiency. For example business process re-engineering and TQM are concerned with optimising processes and reducing defects. Humanist perspectives are more concerned with the welfare of all people and environments in which the organisation operates.

The differences in perspectives can be traced to the underlying philosophy that animates it. It links to the reason of existence, the philosophy that one has towards organisations and why they exist in relation to human stakeholders. The rationalist model is profit driven and seeks to maximise returns to shareholders or managers with limited focus on the organisation's role in society. The humanist model views organisation as having a broad role in society which includes consideration for the welfare of all employees and even external employees and the outside environment.

2.2.4 Cycles of Management Thought

There are a number of features of the management discipline that are not consistent with the Kuhnian paradigmatic model of knowledge development (Kuhn 1970). Kuhn predicted a significant period of paradigmatic stability in a discipline of knowledge followed by a punctuated rebellion (Kuhn 1970). Management differs from this expectation in two ways: the duration of the stability and the variation in competing ideas. Management is characterised by a plethora of competing fashions with increasingly shorter life spans (Clarke and Clegg 1998). The violation of this model can be partly explained because management is a social science, rather than a pure science. Management fashions are important because they influence managerial behaviour in dealing with complex managerial problems and challenges (Scarbrough and Swan 2001, p. 5).

Several theories exist that aid in understanding the development and promulgation of management ideas and theories. These theories include the management fashion model (Abrahamson 1991; Abrahamson 1996; Abrahamson and Fairchild 1999), diffusion of innovations model (Rogers 1995) and institutional theory (DiMaggio and Powell 1991; Tolbert and Zucker 1999; Staw and Epstein 2000). Common to all theories is the recognition that there exists a market for new managerial ideas. This market consists of suppliers of new ideas including consulting firms, management gurus, business publications and business schools. It also consists of consumers of new ideas including managers and other organisational stakeholders. The market also operates in an environment where supply and demand are influenced by social, psychological, technical and economic forces. There is considerable overlap in terms of the dynamic of the market.

The management fashion model is based on the proposition that production, distribution and interest in particular management perspectives follows a sharply cyclical pattern consistent with a nonnal distribution and wax and wane within a few years (Abrahamson 1991; Abrahamson 1996; Abrahamson and Fairchild 1999). Endogenous and exogenous forces including social, psychological, technical and economic forces are considered to compete to determine demand for new management fashions. In this model, the provision of management ideas is determined by an interplay between supply and demand. Suppliers of new management ideas are considered to detect collective managerial desires for new management ideas. In response, new management ideas are developed to address the perceived demand. Related rhetorics are developed and used to promote these ideas as leading management thought to managers before other competing ideas are promoted. A similar model is the metaphor of a volcano used in the characterisation of the OL field (Easterby-Smith, Crossan et al. 2000).

The management fashion model attempts to explain the independent rise and fall of management fashions. However, it fails to offer an explanation for the collective emergence of management fashions over time. It also fails to address whether there exists a relationship between more recent management fashions and earlier perspectives. The first distinct perspectives to emerge in the development of management as a discipline were the classical and the behavioural perspectives (Bartol, Tein et al. 2003). Later perspectives such as management science, systems theory, contingency theory, institutional theory, TQM and OL have generally been classified as independent stand-alone theories. An alternative viewpoint is that all management theories can be classified into one of two broad categories which alternate in managerial interest: the nonnative and rational perspectives (Barley and Kunda 1992). In effect, new fashions are an extension of either the classical or the behavioural perspectives. Such a is consistent with the management fashion model. There may exist two interwoven cycles with one rising as the other falls.

This has implications for understanding the emergence of KM. KM can be considered a behavioural and humanistic perspective and its emergence a reaction to recent scientific and rationalist management thought. The 1980's and 1990's saw the re-emergence of theories based on the classical perspective and scientific rationalism including quality

circles, TQM and business process reengineering (Abrahamson and Fairchild 1999). Organisations downsized, restructured and lost vital tacit knowledge through the departure of key employees. Through this loss, organisations realised the importance of knowledge and people to the organisation.

Diffusion is the process through which an innovation is communicated through channels over a period of time among the members of a social system (Rogers 1995, p. 5). There are at least two models of diffusion: trait and institutional (Rura-Polley 2001). Trait models concentrate on the effect particular characteristics of innovation have on the subsequent adoption of the innovation.

One example of a trait model is Rogers' five-factor model which concentrates on the innovational characteristics of relative advantage, compatibility, complexity, trialability and observability (Rogers 1995, pp. 212-244). Relative advantage is the extent an innovation is considered superior to the idea that it supersedes. Compatibility is the extent an innovation is considered consistent with the existing values, past experiences and needs of potential adopters. Complexity is the extent to which an innovation is considered relatively difficult to understand and use. Trialability is the extent to which an innovation can be experimented with to a limited degree. Observability is the degree to which the results of an innovation are visible to others. The model proposes that the greater the relative advantage, compatibility, trialability, observability and the lesser the complexity associated with an innovation, the more likely will be its adoption.

Institutional theory seeks to explain why there is homogeneity of organisational forms and practices (DiMaggio and Powell 1991). It argues that organisations within an organisational field participate in a process of structuration. Throughout the structuration process, a force termed isomorphism is considered to operate which works to constrain organisations and results in organisations that are facing the same set of environmental conditions to resemble each other.

Three mechanisms are considered to exist through which institutional isomorphism can occur: coercive, mimetic and normative. Coercive isomorphism refers to the formal and informal pressures exerted on organisations by other organisations upon which they are dependent and by cultural expectations in the society within which organisations

function. Mimetic isomorphism results when organisational technology is poorly understood, goals ambiguous or when there is symbolic uncertainty in the environment. Organisations may model themselves on other organisations, particularly those that are perceived as being successful. Normative isomorphism arises from professionalism.

A major factor in the adoption of managerial innovations is the desire for legitimacy rather than organisational efficiency (DiMaggio 1991). Whilst characteristics of an innovation may be important determinants of early adoption, they are less important for later adopters as the innovation is increasingly institutionalised (Tolbert and Zucker 1983). A study into the adoption of popular management techniques as part of TQM programs found that implementing companies did not have higher economic performance (Staw and Epstein 2000). However, these companies were perceived to be more admired, innovative and managed. The chief executives were also more highly remunerated.

An optimist would argue that the development of management knowledge is part of the ongoing process of continued development of knowledge or that it is necessary because the environment is changing due to technology and globalisation which requires a new response from organisations and managers. The cynic would argue that the development of new theories only occurs to feed the academic machine of conference papers and publications or the consultant's need for new ideologies or tools to be the expert in and then promote to unwary managers.

2.2.5 The Position of Knowledge Management in Management Thought

The previous three sections have discussed the role, nature and sources of management thought as well as processes of development. This discussion was undertaken in order to provide a framework for considering the position of KM in management thought. This section will seek to establish this position by first discussing definitions for KM. The literature from which KM has developed will be identified. The relationship of KM to the recent OL debate will also be addressed. The degree that the development of KM is consistent with the management fashion model will also be argued. Finally, the influence that the rational and humanistic debate has on the development of KM will be discussed.

There exists no generally accepted definition of KM (Scarbrough and Swan 2001). There also exists many interpretations of the boundaries, scope and content of KM (Quintas 2002, p. 1). Rather than a single definition, a number of different definitions exist. The existence of multiple definitions reflects the stage of development of the field as well as the complexity and diversity of the domain. These multiple definitions are often ambiguous and broad in scope in order to allow for multiple interpretations and thus accommodate the complexity of the field and the diversity of perspectives (Scarbrough and Swan 2001). One broad and inclusive definition offered is that KM is "a loosely connected set of ideas, tools and practices centring on the communication and exploitation of knowledge in organizations" (Scarbrough and Swan 2001, p. 3). Another definition refers to KM as the "capacity (or processes) within an organization to maintain or improve organizational performance based on experience and knowledge" (Pan and Scarborough 1999, p.360).

The way that KM is often presented is excessive. It is often offered as a panacea for managerial problems brought on by environmental changes, even though its principles are largely untested. KM espouses principles such as efficiency, innovation, knowledge sharing and management control despite the irreconcilability of some of these principles (Scarbrough and Swan 2001, p. 9).

KM is a field that has generated interest across a number of disciplines (Quintas 2002). The diversity of perspectives within KM is a reflection of its interdisciplinary nature (Quintas 2002, p. 1). Academics, practitioners, consultants and policy-makers have all contributed to the area and often disagree about fundamental assumptions (Quintas 2002, pp. 1-2). In addition to management, these disciplines include information technology, education, marketing, communication and accounting. In the field of management academic interest has converged on knowledge from a number of perspectives including organisational theory (RBV, OL and management of innovation), organisational behaviour, HRM, operations management, strategic management, information technology management, communication management, change management, social capital and the management of intangible assets (Nahapiet and Ghoshal 1998; Scarbrough and Swan 2001; Quintas 2002, p. 2).

Within organisation theory, one of the debates that has raged is whether KM is a development of or a divergence from another contemporary and related management area: OL. Within management, KM emerged as a distinct and explicit literature from 1994 onwards (Gordon and Grant 1999). Since then, the number of KM related references increased sharply up to 1998 (Scarbrough and Swan 2001, p. 6). In the first six months of 1998 there were more references to KM than in the previous five years combined (Scarbrough and Swan 2001, p. 6). In 1998 interest in KM was still increasing but the rate of increase in this interest suggests that this interest will fall (Scarbrough and Swan 2001, p. 6). The number of OL related references increased sharply from 1990 and began to decline in 1995 (Scarbrough and Swan 2001, p. 6).

There are some indications that KM is an extension or an outgrowth of OL, or that they are at the very least a closely related field (Easterby-Smith, Crossan et al. 2000). However, it has been argued that there has been a lack of learning from OL (Scarbrough and Swan 2001). This is perhaps not surprising given that OL itself is a relatively new discipline and yet to mature.

It has been suggested that if KM had been a development of OL, it would have picked up on critical concerns of the learning organisation such as organisational development (OD), HRM and people development (Scarbrough and Swan 2001, p. 6). Based on this assessment, one position is that KM is a divergence from OL – an emphasis on the prescriptive use technology-based tools and systems, rather than on people and processes (Scarbrough and Swan 2001, pp. 4,7). This assessment is too premature because it is based upon a discourse that is immature and emerging. One of the factors that prevents greater cohesion within the area are conflicting views on which disciplines should dominate (Quintas 2002, p. 1). Whilst rational perspectives involving tools and systems dominate reference counts, it doesn't necessarily mean that more humanistic perspectives are silent. KM has been appropriated by the HRM discourse as well as the information technology discourse (Scarbrough and Swan 2001).

According to Easterby-Smith et al. (2000, p. 790), KM is dominated by a rationalist perspective based on economics and technology. On the other hand OL is dominated by a HRM perspective (Easterby-Smith, Crossan et al. 2000, p. 790). However unlike Scarbrough et al. (2001), Easterby-Smith et al. (2000, p. 790) argues that the two

discourses share similar underlying concepts and problems and that there are signs of convergence. This convergence is related to a greater realisation of the importance of human factors in technology-based projects and the richness that organisational learning can contribute to this understanding. This situation is similar to that of recent research into information technology implementations and associated tensions between people and technology.

The information technology management, strategic management and organisational theory perspectives have converged to form an important strand of the literature. Perhaps unlike organisational learning, KM can develop into a more cohesive discourse through the use of strategic theories of the firm.

The development of KM is consistent with the management fashion model. The distribution of references follows normal distribution (Scarbrough and Swan 2001). There are a number of potential impetuses for the emergence of KM as a new fashion in a cycle or series of fashions. Early articles in KM did not over exaggerate the role of information technology. In some respects, the field has been hijacked by information technology vendors and management consultants to the detriment of the development of more humanistic management practices (Scarbrough and Swan 2001, p. 4). As such, KM was partly a response to the effects of contemporary rationalist management philosophies such as quality management, downsizing and restructuring. It should be noted that at least some of these philosophies such as quality management do have some humanistic elements such as an emphasis on training, an open organisation and employee empowerment (Powell 1995). According to Scarbrough et al. (2001, pp. 5-6), KM is a response to the ideological debate involving the post-industrial society, the changing competitive environment faced by organisations (the need for new management solutions to fill new gaps) and issues brought on by restructuring.

KM therefore exists as a fashion in the cycle between rationalist and humanist perspectives. It is one of the more recent tensions in the rationalist and humanist debate. Both rationalist and humanist perspectives exert influence so in a sense it can be considered a hybrid perspective, similar to TQM. By grounding the area in the RBV of the firm and strategy however, there exists the potential for the development of maturity to the perspective in a way that OL never had.

2.3 Relevant Organisational and Strategic Management Theories

Several organisational theories exist that serve as foundational frameworks for KM perspectives: the RBV of the firm, TCE and the information processing model. These theories will be discussed in turn and an explanation put forward as to why the RBV of the firm is the most appropriate for developing a framework for KM.

2.3.1 Transaction Cost Economics (Industrial Economics of Organising)

TCE argues that the basic unit of organisational analysis should be the transaction and that the study of transaction cost economising is central to the study of organisations (Williamson 1981). Transaction costs are considered to be what holds organisations together and are often considered to result from inefficiencies with communication (Brown and Duguid 1998, p. 90). Transactions are considered to consist of three characteristics: frequency, uncertainty and asset specificity. All transactions are considered to involve costs including contractual compliance costs. TCE is based on three behavioural assumptions in explaining how organisations choose governance structures: bounded rationality, opportunism and risk neutrality (Chiles and McMackin 1996). Individuals are assumed to pursue their own self-interests whilst attempting to minimise transaction costs under conditions of information uncertainty (Williamson 1981).

Under TCE, organisations are considered to exist as a response to uncertain environments (Williamson 1981). Markets are seen as inefficient because of a limited number of participants operating in an untrustworthy manner. Organisations are considered to form in order to overcome these failings of the market through vertical and horizontal integration. From this a hierarchical governance structure is created that internalises transactions, reduces transaction costs and increases efficiency. The inefficiencies of the market also are considered to determine the boundaries of the firm. Under TCE, two forms of governance are considered to occur: the market with its contracts and an integrated hierarchical organisation. Organisations form when transactions conducted within an organisation cost less than transactions conducted through the market. Under TCE, organisation is explained based on interdependence. A particular organisational form is determined by interdependence. Within the hierarchy managers have limited scope for organising internal transactions.

The TCE perspective has some applicability for KM because exchange of knowledge between people can be viewed as a transaction occurring between a buyer, seller and fostered by brokers in internal and external organisational knowledge markets (Davenport and Prusak 1998). This perspective has credence particularly when knowledge is bought and sold through formal contracts and exchange negotiated through contractual collaborations between parties. However the application of TCE to the dynamics of organisational knowledge is too simplistic. By viewing an organisation as an internal market, existing as part of a broader inter-organisational market, the major failing of this perspective is that it doesn't explain how the exchange of knowledge then leads to additional knowledge creation and innovation. Another failing of the perspective is that it is silent on whether a transaction can result in a net loss or gain for one or both of the parties. One of the interesting aspects of the exchange of knowledge is that it can result in a net gain for both parties. Exchange of knowledge does not necessarily need to impoverish one, but can enrich both through the process of learning. It is also unclear whether the issue of trust in relation to knowledge exchange is actually alleviated through the use of organisations rather than markets. Within an organisation, knowledge is a potential source of power and security. Organisations, rather than resolving issues of trust that exist within markets, may only create new trust dynamics.

Whilst there is some agreement and empirical support for certain TCE concepts such as asset specificity, there is considerable disagreement on the operationalisation and empirical support for other concepts such as uncertainty and performance (David and Han 2004).

2.3.2 Resource-Based View of the Firm

The central proposition of the RBV of the firm is that organisations can be conceptualised as a unique collection of both tangible and intangible resources and capabilities (Wernerfelt 1984; Barney 1991; Wernerfelt 1995; Barney 1996). From this assumption, two major theoretical strands have evolved relating to strategic management and organisation theory. The strategic management strand is concerned with how resources relate to organisational performance whereas the organisational theory strand addresses how resources relate to organisational action (Combs and

Ketchen Jr. 1999). Whilst independent elements of the RBV, these strands also complement each other.

The RBV introduces four theoretical concepts: resource, capability (synonymous with competences), distinctive capabilities (synonymous with core competences) and dynamic capabilities.

Resources are defined as intangible and tangible assets connected semi-permanently to an organisation (Wernerfelt 1984, p. 172). The types of assets that are used to design, manufacture and deliver products and services to customers include financial, physical, human, technological and organizational assets (Barney 1991). Specific examples of resources include brand names, employees, patents, routines, processes, manuals, machinery and buildings. Within the RBV literature, the different types of resources have not been adequately teased out (Wernerfelt 1995). However, knowledge has been identified as a legitimate resource (Wernerfelt 1984). Through the KM literature, knowledge as a resource has been developed much more than other types.

A distinction is sometimes made between resources and capabilities. For example, a capability can refer to an organisation's "ability to perform repeatedly a productive task which relates either, directly or indirectly to a firm's capacity for creating value through effecting the transformation of inputs into outputs" (Grant 1996a, p. 377). In contrast to a resource, a capability is firm specific, deeply embedded within the organisation, utilises organisational processes and co-ordinates resources (Makadok 2001). The primary purpose of a capability is to enhance the effectiveness and productivity of resources that an organisation possesses in order to achieve goals (Amit and Schoemaker 1993). A capability can also refer to skills based in human assets whereas resources refer to other non-human assets (Combs and Ketchen Jr. 1999). Other times no distinction is made between the terms (Barney 1991; Peteraf 1993).

Some authors make a distinction between resources / capabilities and competencies. For Hager and Beckett (1995), resources are capabilities that constitute fundamental aspects of competencies. Competencies in organisations are those things that enable it to carry out its activities and to get tasks done. In these various conceptualisations therefore, there are elements of passivity and activity.

Distinctive capabilities are a collection of resources that constitute an organisation's fundamental core business and which also differentiate it from competitors (Wernerfelt 1984; Teece, Pisano et al. 1997, p. 516). They are derived by considering the range of an organisation's and competitors' products and services (Teece, Pisano et al. 1997, p. 516). Dynamic capabilities are a collection of resources that enable an organisation to reconfigure existing capabilities, develop new capabilities and to integrate them together (Teece, Pisano et al. 1997, p. 516). Dynamic capabilities enhance existing and develop new distinctive capabilities by combining them with complementary internal and external assets. Dynamic capabilities are useful in rapidly changing environments because they provide organisations with greater flexibility to innovate and thus respond quickly to market conditions. Given an organisation's existing path dependencies and competitive environment, dynamic capabilities enable innovation and competitive advantage (Teece, Pisano et al. 1997, p. 516). Resources that are associated with the distinctive and dynamic capabilities are the most strategically valuable to an organisation (Barney 1991; Peteraf 1993). The RBV recognises a tension between the exploitation of existing resources (distinctive capabilities) and the development of new resources for growth (dynamic capabilities) (Wernerfelt 1984). This tension is consistent with that experienced by organisations attempting to balance exploratory and exploitative learning (March 1991).

From a strategic management perspective, the RBV focuses on the internal rather than the external environment for competitive success. Strategic emphasis is placed on managing an organisation's resource endowments rather than the continual positioning of products in external markets in response to change (Connor 2002, p. 307). The perspective recognises the important role that managerial acumen and experience play in selecting, accumulating and deploying resources and developing capabilities to create advantages in the competitive environment (Connor 2002, p. 307).

A major assumption of the RBV is that the collection of resources and capabilities is heterogeneous and thus creates an organisation's unique character. Heterogeneity is a result of resource immobility and an imperfect market for internal resources (Barney 1991). The heterogeneity of an organisation's resources and capabilities has strategic implications for creating sustainable competitive advantage. The uniqueness of an organisation's collection of resources creates barriers to innovation for other

organisations and thus a potential source of competitive advantage (Wernerfelt 1984). In order to generate sustainable competitive advantage, resources need to be valuable, rare, imperfectly imitable or not substitutable (Barney 1991; Peteraf 1993). Valuable refers to the willingness of buyers to purchase the outputs of resources at prices greater than costs (Combs and Ketchen Jr. 1999). Rarity and non substitutability refers to the inability of buyers to source the same of substitute resources and products from competitors (Combs and Ketchen Jr. 1999). Imperfectly imitable refers to resources being difficult for competitors to purchase or imitate (Combs and Ketchen Jr. 1999).

Whilst initially developed as a strategic management theory, the RBV of the firm has extended its claim to the domain of organisation theory (Barney 1996). Organisational theories attempt to explain the issues of existence, boundaries and internal structuring in relation to organisations (Foss 1999, p. 726). An established organisation theory already exists within industrial organisation economics so to establish its legitimacy, the RBV of the firm needs to explain why organisations exist as opposed to a collection of market contracts or other organisations (Conner 1991, p. 139).

Compared with five theories within industrial organisation economics, the RBV of the firm addresses the questions of organisational existence, purpose, size and scope which establishes it as an organisation theory (Conner 1991, pp. 139-141). The RBV emphasises the positive value creating potential of organisations rather than the negative value avoidance capacities of opportunism. If organisations are conceptualised as a collection of resources, then under certain conditions, some organisations are better able to utilise, create and transfer certain resources than other organisations and contractual markets because of their particular composition. Under certain conditions, an organisation is superior to contractual markets when internal resource dependencies make it more efficient and more productive to utilise resources internally (Conner 1991, p. 140). This perspective is consistent with asset specificity and small numbers from TCE. The extent of the advantage that can be obtained from a particular resource is dependent on the existing internal resource interdependencies of the organisation. The scale and scope of an organisation is dependent upon how new initiatives are specific to the organisation's existing resource base.

2.3.3 Knowledge-Based View of the Firm

The knowledge-based view (KBV) of the firm extends the RBV by emphasising a single resource: knowledge (Foss 1996a; Foss 1996b; Spender and Grant 1996). Increasingly the KBV is becoming the dominant perspective within the RBV (Conner and Prahalad 1996, p. 477). Organisations are still viewed as a collection of resources however knowledge is considered the most important strategic resource. An organisation is considered to consist of both individual and group knowledge which constitute its distinctive and dynamic capabilities (Spender 1996). However it is an organisation's collective knowledge that is considered the most strategically valuable (Spender 1996). An important contribution that managers can make to an organisation's strategy is to influence the development and co-ordination of an organisation's collective knowledge (Spender 1996). Collective knowledge is often valuable, rare, imperfectly imitable or not substitutable and thus plays a key role in an organisation's distinctive and dynamic capabilities. As in the RBV, these heterogeneous capabilities based on knowledge are considered a source of sustainable competitive advantage. An understanding of the differences in performance between organisations is also reliant upon organisation theory and in particular an explanation as to why organisations exist as opposed to transactions and contracts taking place between the same individuals in a marketplace (Conner and Prahalad 1996, pp. 477-479).

The KBV considers organisations to exist because of a superior efficiency over markets in creating and transferring knowledge within internal boundaries (Kogut and Zander 1992, p. 384). Knowledge rather than transaction costs is considered to hold organisations together because it provide a synergistic effect not found in the marketplace (Brown and Duguid 1998, p. 90). Organisations are viewed as being better than marketplaces in protecting distinctive capabilities from expropriation and imitation, thus ensuring that the benefits from dynamic capabilities are realised (Liebeskind 1996).

A key proposition of the KBV is that organisations consist of social communities which use their relational structures and shared coding schemes to optimise the creation and transfer of knowledge between individuals and groups (Brown and Duguid 1991;

Zander and Kogut 1995, p. 76; Brown and Duguid 1998). These community identities are symbolically coded and reduce the costs of communication, co-ordination and learning (Kogut and Zander 1996). Organisations can therefore be viewed as a repository of social knowledge (Zander and Kogut 1995, p. 76). The boundaries of an organisation (its decision to make or buy) is dependent upon the quality of its current capabilities, its ability to learn new capabilities and the value of these capabilities in the marketplace (Kogut and Zander 1992, p. 395). The capabilities of an organisation consist of the organising principles which enable the structuring, coordination and communication of knowledge (Zander and Kogut' 1995, pp. 76-77). In contrast to the RBV, the KBV acknowledges the role that opportunities and influences in the external environment play, in addition to distinctive and dynamic capabilities for competitive success (Kogut and Zander 1996).

The KBV also extends on the concept of dynamic capabilities from the RBV through the notion of absorptive capacity (Zahra and George 2002). Absorptive capacity is a concept used to explain an organisation's ability to recognise the value of new knowledge, assimilate it and apply it to organisational ends (Cohen and Levinthal 1990, p. 128). It can be facilitated internally by managerial action (Lenox and King 2004). Absorptive capacity is considered to be a function of prior knowledge and diversity of background and is determined by an organisation's form and its combinative capabilities. Combinative capabilities are an organisation's ability to combine, configure and integrate existing and new knowledge and consists of three types of capabilities (systems, coordination and socialisation) (Van den Bosch and Volberda 1999). Whilst initially the concept was developed at the organisational level of analysis, it has been subsequently adapted to differing levels of analysis (Szulanski 2000). At an individual level, the sharing of knowledge between parties is partly determined by their existing knowledge base (Bierly III, Kessler et al. 2000, p. 599). Partial support for the notion that knowledge inflows into a subsidiary are positively associated with a subsidiary's capacity to absorb the incoming knowledge has been found (Gupta and Govindarajan 2000). Experience has been found to be fully mediated by knowledge ambiguity in its effect on the transfer of technological knowledge between strategic alliance partners (Simonin 1999). It has also been found that a lack of absorptive capacity on the part of the recipient is one of the major barriers to the internal transfer of best practices (Szulanski 1996).

Aspects of the KBV of the firm are complementary with theories from industrial organisation economics such as TCE but is based upon irreducible differences between individual's knowledge rather than opportunism, threats of cheating or holding back information (Conner and Prahalad 1996, p. 477). Individuals bring different knowledge to bear to their roles when acting as employees or contractors which influences their contribution and when anticipated determines the choice of organisation or market (Conner and Prahalad 1996, pp. 477, 484). An employee's contribution is also subject to knowledge-substitution (way knowledge is blended and used) as well as flexibility (dynamics of learning and developments) affects from the choice of organisation or market (Conner and Prahalad 1996, pp. 478, 484). Organisations therefore exist because they are better at economising over the marketplace on certain transaction costs relating to flexibility, communication, learning and bargaining that are independent of opportunism (Foss 1996b, p. 520).

2.3.4 Information Processing Model

Another theory that is necessary to mention but not a serious contender for a foundational knowledge-based organisational theory is the information processing model. At a very basic level, the KBV of the firm considers an organisation to be a system processing different kinds of information and knowledge (Spender 1996).

The information processing model consists of two aspects: managerial (decision-making) and organisational. Information is defined as "stimuli (or cues) capable of altering an individual's expectations and evaluation in problem solving or decision making" (Dngson, Braunstein et al. 1981, p. 117). Information processing is defined as the "specific cognitive processes in which information is selected, combined, weighted, and altered" (Dngson, Braunstein et al. 1981, p. 117).

Organisations process information to reduce uncertainty and equivocality in organisational actions and environmental events (March and Olsen 1975, pp. 154-155; Daft and Lengel 1984; Daft and Lengel 1986; Trevino, Lengel et al. 1987). Uncertainty refers to the absence of information (Daft and Lengel 1986, p. 556). Equivocality is ambiguity resulting from the existence of multiple and conflicting interpretations of a particular organisational problem or situation resulting in a lack of clarity (Weick 1995). The equivocality may be inherent in the actions and events or may be caused by

difficulties individuals have in observing them. Seldom are interpretations based on individual observations but rather on the interpretations offered by others. Trust in these interpretations is dependent upon the trust placed in the interpreter. Equivocality is characterised by confusion. Under conditions of equivocality, provision of greater quantities of information does not necessarily provide a resolution, quality is the issue.

The concept of information richness conceptually links uncertainty and equivocality (Trevino, Lengel et al. 1990). Information richness is the potential information carrying capacity of data (Daft and Lengel 1984). In uncertain situations, agreement already exists about the interpretation of the situation. Tasks can be defined clearly and resolved through the acquisition of sufficient lean information which reduces uncertainty. For management coordination and control of uncertainty, structural mechanisms are required that facilitate the amount of information required. In equivocal situations, no such agreement about the interpretation of the problem exists. Equivocality can only be reduced through the processing of rich information and the exchange of subjective views to define the problem and resolve disagreements (Weick 1995). To facilitate equivocality reduction, structural mechanisms need to be put in place by managers to enable debate, clarifications and enactment. Only when equivocality surrounding the situation is reduced can managerial action and decision-making occur.

There are two approaches to managerial information processing: normative and descriptive (Ungson, Braunstein et al. 1981). Normative approaches advocate courses of action which are consistent with the decision-makers values and beliefs. Descriptive approaches are concerned with how individuals process information in order to make decisions. Within this approach there are three streams: model-fitting, process-tracing and cognitive decision styles. Model-fitting approaches based on statistics attempt to explain the ways information is integrated, 'weighted and traded-off. Process-tracing approaches develop a detailed model of an individual's cognitive processes based on their verbalisations. Cognitive decision style approaches are concerned with how individuals and groups as systems develop characteristic response patterns to informational input.

Within organisational theory, there are two theoretical perspectives that have had significant impact on the conceptualisation of information processing within organisations: vertical and horizontal (Daft and Lengel 1984). The vertical perspective proposes that managers are confronted with equivocal cues from the external environment. When managers are faced with equivocal cues, the only way to make sense of the issue is to discuss it amongst themselves and agree on a common interpretation and frame of reference. Organisations are considered to exist in order to reduce equivocality from the environment. The horizontal perspective proposes that as the levels of uncertainty increases for managers, the amount of information processing should also increase to reduce this uncertainty. At the interdependencies between departments, information is processed to provide coordination for performance. By analysing the areas of uncertainty within an organisation, a structure can be implemented that facilitates appropriate information processing and exchanges.

The information processing model provides a perspective of experience-based learning that enables the integration of the information processing model with the RBV and the KBV. Experience-based learning can contribute to the development of both knowledge and skills within employees and organisations. Under this perspective, knowledge refers to the policies, processes and procedures within an organisation. Skills refers to the capabilities gained from experience-based learning that enable an organisation to process information and generate new policies, processes and procedures (Nass 1994). This experience-based learning perspective is consistent with the distinctive and dynamic capabilities perspective from the RBV. The model can be integrated with the RBV and the KBV, providing an opportunity to theoretically enrich the KM literature with contributions from decision-making, business forecasting and operations management literature. Whilst contributions from these areas exist in KM, they have not been provided from a firm theoretical foundation.

The information processing model suggests that innovation and competitive advantage is enhanced through the more accurate and timely provision of information for decision-making. The original dominance of General Motors in the automotive industry was partly attributable to distinctive capabilities in information processing and forecasting consumer demand (Norton 1997). As the industry and its stock of knowledge matured, this competitive advantage was eroded through knowledge imitation. This enabled

other companies such as Toyota to develop strong positions in the marketplace through distinctive capabilities in information processing such as just-in-time methods (Norton 1997). The accumulation of a stock of tacit knowledge can lead to competitive advantage but this advantage cannot be maintained when the knowledge is routinised and formalised (Berman, Down et al. 2002, p. 27).

Whilst the information processing model contains elements that relate to KM, it has yet to develop to a theory of organisation or strategic management and thus has limited application. Through integration with the RBV and KBV, all theories discussed can be enriched. The information processing model will benefit from better explanation of organisation and performance. The RBV and KBV will benefit from a better understanding of decision-making, business forecasting and operations management.

2.3.5 Critique of Organisational and Strategic Management Theories

The comparative strengths and weaknesses of TCE and RBV / KBV have been well debated (Conner 1991; Barney 1996; Foss 1996a; Foss 1996b; Kogut and Zander 1996; Barney 2001a; Priem and Butler 2001a). All three perspectives have the potential to explain managerial actions and organisational performance (Combs and Ketchen Jr. 1999, pp. 867-868). The RBV considers that managers choose actions that take advantage of the organisation's core resources and capabilities. Internal management of resources is considered the key to competitive advantage and performance. TCE considers that the primary responsibility of managers is to organise efficiently. The matching of strategic decisions with exchange conditions is considered the key to competitive advantage and performance.

Theories of the economics of organising such as TCE began as organisation theories before being adapted to incorporate a strategic management perspective (Foss 1999, p. 726). It is in the area of strategic management that TCE contains significant weaknesses. The major explanatory mechanism within TCE relates to the alignment of incentives and opportunism. Concepts important to strategic management research such as cognitive frames (including bounded rationality) as well as organisational routines, values and capabilities as co-ordinating devices are neglected within the theory (Foss 1999, p. 726). Additionally, such a narrow theoretical foundation severely limits the explanation for a number of issues important for strategic management including OL,

innovation, culture and diversification (Levitt and March 1988; Dodgson 1993b; Rogers 1995; Foss 1996a, p. 475; Slappendel 1996). The neglect of these issues means that it is very difficult to account for systematic and sustained differences between organisations, particularly with respect to competitive advantage (Foss 1999, pp. 732-734).

TCE argues that collaborative relationships are a collection of discrete transactions between organisations with clear goals, partner selection criteria, performance monitoring and termination arrangements designed to protect competitive advantage and opportunistic partners (Hardy, Phillips et al. 2003). TCE proposes that organisations enter into collaborative relationships such as alliances when the external production and co-ordination costs are lower than internalising the cost of the transaction (Williamson 1991). The primary emphasis of the organisational economics perspective is on minimising the costs of governing and organising. In so doing, performance can be maximised under conditions of exchange. Collaboration is only necessary to reduce the transaction costs of monitoring and controlling the organisation (Combs and Ketchen Jr. 1999, pp. 867-868).

TeE contains several weaknesses in its explanation of collaborative relationships. In response to a hypercompetitive environment, TCE proposes that transactions existing within the market be internalised in the organisation's formal structures. However, organisations respond to uncertain environments by transacting more with other organisations rather than internalising transactions (Podolny 1994). Transaction costs do not necessarily increase with relationship specific investments (Dyer 1997). TCE focuses on optimising certain costs in the relationship but fails to account for others (Zajac and Olsen 1993). TCE usually emphasises transactions involving tangible assets however competitive advantage is also dependent on intangible assets such as tacit knowledge. With an emphasis on dyadic relationships, TCE is unable to explain knowledge transfer and creation at the level of a network of organisations (Powell, Koput et al. 1996).

Due to the current hypercompetitive environment, the survival and growth of an organisation is dependent upon its ability to develop new products and services (Zander and Kogut 1995, p. 76). The inability of industrial economics of organising theories such as TCE to explain contemporary management phenomena critical for competing

has provided scope for other theories such as the RBV and the KBV to emerge as rival explanations for organising and performance (Foss 1999, p. 726).

There is some consistency between the RBV and the various industrial economics of organisation theories (including TCE) with the RBV both incorporating and rejecting one key aspect of each (Conner 1991, pp. 143-144). The concepts of asset specificity and small numbers found in TCE are consistent with the RBV. The inimitability of certain resources and capabilities as a source of competitive advantage is a foundation stone of the RBV. However, the RBV is not dependent upon the concepts of alignment of incentives and opportunism for explaining organisational phenomena. Even the concept of asset specificity is subject to somewhat different interpretations between the theories (Conner 1991, p. 142). Apart from considerations of opportunism, TCE views organisations and markets as equally well equipped to carry out particular tasks. The RBV argues that this view ignores the synergistic benefits to accrue to organisations resulting from bringing together a collection of resources. As a result, internal assets are more specific to the organisation than to the marketplace. Over time, resources are shaped by the cultural and contextual needs of the organisation rather than to those opportunities available in the marketplace. Whilst there are areas of consistency, the RBV represents an independent theory. It is a theory with weaknesses that are currently explained using TCE which would suggest that there is benefit in tighter integration with industrial economics of organisation theories.

The RBV and KBV of the firm began as strategic theories and then were developed to incorporate an organisational perspective (Wernerfelt 1984; Barney 1991; Barney 1996; Grant 1996a; Grant 1996b).

It has been argued that the RBV of the firm is a theory of sustainability rather than a theory of competitive advantage (Priem and Butler 2001a; Priem and Butler 2001b). A number of important criticisms have been directed at the theoretical foundations of the perspective. The first criticism is that the RBV of the firm is based upon a tautology (Priem and Butler 2001b). The second criticism is that the core strategic concept of value is not addressed by the RBV of the firm in spite of the recognised role of this concept for entrepreneurial success (Priem and Butler 2001a, p. 36; Priem and Butler 2001b). Additionally, different combinations of resources could generate the same

value in organisations and therefore not result in competitive advantage (Barney 2001a, p.41). The third criticism is that internal resources are emphasised to the detriment of external product markets. The fourth criticism is that the RBV of the firm does not meet the empirical content criterion for theory and has limited prescriptive implications (Barney 2001 a, p. 41; Priem and Butler 2001a). Problems with the RBV in the areas of tautology, value, definition of resource, distance from other economic traditions and temporal empirical tests are acknowledged by theory proponents (Barney 2001a, p. 54). In spite of these problems, the conceptual body of work based on the RBV of the firm still constitutes legitimate theory (Priem and Butler 2001a).

Extending the RBV, an organisation therefore consists of a complex combination of distinctive and dynamic capabilities. Collectively, these capabilities cannot be replicated by the market nor completely specified through contracts but can only be recreated through the replication of the organisation itself (Shenkar and Li 1999, pp. 135-136). The extent to which its capabilities are distinctive determines the sustainability of its competitive advantage through inimitability. The extent to which its capabilities are dynamic determines its ability to develop new competitive advantages. As such, the RBV is a theory of competitive advantage as well as a theory of sustainability.

It is argued that the KBV does not provide sufficient reasons for the existence of organisations, only necessary reasons (Foss 1996a, pp. 519-520; Foss 1996b, p. 475). Advocates of economics of organising theories argue that organisation theories cannot avoid discussion of concepts such as incentives, property rights, opportunism and moral hazard. The KBV also does not explain the differences between autonomous contracting and employment contracts. They concede that limited aspects of economic organisation can be explained without considering such concepts however these are confined to circumstances where organisational capabilities are diverging and communication costly.

The KBV is a non-economic explanation of organisation which counters these arguments by pointing out that organisations are different from marketplaces because the co-ordination, communication and learning that takes place in them are situated not only in a physical locality also in a mental identity (Conner and Prahalad 1996;

Kogut and Zander 1996, p. 515). Critics of this view agree that organisations consist of higher order organising principles but that this is a contractual issue consistent with industrial economics of organising theories. They argue that it is unnecessary to discard the body of literature already developed. They also argue that it is unclear why organisations are necessary for creating social communities and shared identities (Foss 1996b, p. 520).

The KBV of the firm has characteristics that make it more attractive than other organisational theories. Based on the foundations of knowledge and organisational capabilities it is able to offer theoretically grounded explanations for many new developments in managerial practice such as cross-functional teams, TQM and organisational change (Grant 1996a, p. 384; Grant 1996b, p. 120). More established organisational theories have difficulties explaining these new organisational phenomena. Additionally, as a strategic theory of the firm it offers interesting insights into both strategy and organisation. This study will be theoretically positioned within the RBV / KBV because the natural emphasis on knowledge as a resource provides a firm foundation for theorising KM. These theories also combine strategic management and organisation theory which reconciles the strategic emphasis with the KM literature with the practical managerial initiatives that affect the existence, boundaries, internal dynamics and structuring of organisations.

2.4 Knowledge-Based Theories of the Firm

The development of the KBV of the firm from the RBV has resulted in several alternative knowledge-based theories of the firm. The various perspectives of knowledge that are intrinsic to these theories will now be discussed. The dynamic theory of organisational knowledge creation (Nonaka 1994) and the knowledge-based theory of the firm (Grant 1996a; Grant 1996b) have served as the impetus for many of the empirical studies of intra-organisational knowledge transfer published in the major management-oriented North American journals (Castaneda 2000). The extent of the influence of these knowledge-based theories will be gauged through an analysis of citations. These theories will then be reviewed and critiqued.

2.4.1 Perspectives on Knowledge

Whilst the publication of knowledge related literature has grown (Gordon and Grant 1999), a coherent and generally accepted working definition of knowledge for the organisational environment has yet to be established (Foss 1999). In spite of this lack of definitional agreement, there still exists agreement that organisational knowledge is a source of competitive advantage (Argote and Ingram 2000, p. 156). Each perspective used in research on knowledge is influenced by its theoretical framework. A distinction is often made between data, information and knowledge (Nonaka 1994; Court 1997). Definitions vary in their breadth and are often very broad or specific. Often knowledge is explained by categorising it into different types or dimensions. The level at which knowledge occurs, usually at an individual or group level is also a differentiating feature.

Knowledge has been referred to as an "elusive concept" (Castaneda 2000, p. 3) and described as "a multifaceted concept with multilayered meanings" (Nonaka 1994, p. 15). Definitions of knowledge have tended to be very broad or very specific. Examples of broad definitions include "the certainty that phenomena are real and that they possess specific characteristics" (Berger and Luckmann 1967, p. 13), "justified true belief" (Nonaka 1994, p. 15) and "that which is known" (Grant 1996b, p. 110). In other studies, a relatively specific definition of knowledge with respect to a particularly narrow problem domain has been adopted. For example, knowledge has been defined as a "causally ambiguous set of routines" which is relevant to the study of stickiness in the transfer of organisational best practices (Szulanski 2000, p. 10). In other studies, knowledge hasn't been defined at all but rather specified by particular types or instances such as organisational manufacturing capabilities (Zander and Kogut 1995), assets (Spender 1996), innovation (Rogers 1995) and best practices (Szulanski 1996).

One approach to understanding knowledge based on the information processing model is to contrast knowledge with data and information. In this approach, data are unanalysed facts and figures that can be communicated and stored (Spender 1996; Bartol, Tein et al. 2003, p. 557). They are representations which require a representation system to give them meaning (Bierly III, Kessler et al. 2000, p. 599). Information on the other hand is data that has been analysed into a form (representation

of accumulated data) that is useful for making decisions (Bierly III, Kessler et al. 2000, p. 600; Bartol, Tein et al. 2003, p. 557). It has also been defined in terms of the characteristics of the output of a process, in the sense that the output informs both the process and the input (Losee 1997, p. 254). Like data, information can be communicated and stored (Bierly III, Kessler et al. 2000, p. 599). Knowledge is the combination of information with experience, context, interpretation and reflection which creates a valuable resource useful for making decisions and action (Davenport, De Long et al. 1998, p. 43).

The distinction between data, information and knowledge is not always clear (Spender 1996). At times this distinction has been blurred and studies have classified information as knowledge. A common approach closely relates information and knowledge and argues that knowledge is simply a stock of information (Bierly III, Kessler et al. 2000, p. 600). However, this approach ignores the subjectivity inherent in individual mental processes, the problem domain and the organisational context. The KBV enriches the information processing model by suggesting that in addition to the objective creation and processing of data, there also exists a process of interpretation that needs to take place to transform the data into meaning (Spender 1996).

Sensemaking is the process of forming a perspective and refers to placing data in a "framework thinking process that uses retrospective accounts to explain surprises the reciprocal interaction of information seeking, meaning ascription and action process in which individuals develop cognitive maps of their environment grounded in both individual and social activity" (Weick 1995, pp. 5-6). Knowledge of a phenomenon is always from a certain perspective and the more perspectives that are brought to bear the greater the understanding (Berger and Luckmann 1967, p. 22). Perspectives are developed at an individual and social level, and shared within an organisational grouping by narrating and rationally analysing experiences (Boland Jr. and Tenkasi 1995, p. 351). In effect individuals and organisational groups engage in the construction of perspectives through a process of sense making. An organisation is a system of distributed cognition in which communities of practice with particular foci integrate to form a larger network that attempts to make sense of the ambiguity in the environment (Boland Jr. and Tenkasi 1995, p. 351; Weick 1995; Wenger 2000).

Rather than attempt to define knowledge, some studies have identified different types. One perspective proposes that there are five conventional images of knowledge within the OL literature: embrained (dependent on conceptual skills and cognitive abilities), embodied, encultured (process of achieving shared understandings), embedded (resides in systemic routines) and encoded (information conveyed by signs and symbols) (Blackler 1995). In a similar vein, another perspective proposes that an organisation consists of four distinct types of knowledge: conscious, objectified, automatic and (Spender 1996). Within the embrained (conscious) knowledge type, two further sub-types have been developed: procedural (components of individual skilled actions for both motor and cognitive skills) and declarative (facts, propositions and events) (Cohen and Bacdayan 1994, p. 557). Procedural knowledge is difficult to transfer across different modes of communication (Cohen and Bacdayan 1994, p. 566). In some studies procedural knowledge has been synonymous with know-how and declarative knowledge with information (Zander and Kogut 1995, p. 77; Kogut and Zander 1996).

Rather than attempt to define knowledge, some studies have identified different dimensions. The identification of dimensions recognises that organisations consist of a large body of inarticulate knowledge that forms the foundation of its capabilities (Cohen and Bacdayan 1994, p. 566). Two dimensions of knowledge that have been identified are tacitness and complexity.

The two end points of the tacitness dimension are explicit and tacit. Explicit knowledge is defined as that which can be written down (Grant 1996a, p. 379). Conversely, tacit knowledge is that which cannot be written down (Grant 1996a, p. 379). Tacit knowledge is "deeply rooted in action, commitment, and involvement in a specific context" and therefore has a personal quality which makes it difficult to formalise and communicate (Nonaka 1994, p. 16). Explicit knowledge can be articulated and communicated but tacit knowledge can only be conveyed through application. Codifiability is a concept similar to tacitness and refers to the extent to which knowledge can be encoded (Zander and Kogut 1995, p. 79). An example of the tacitness dimension is the understanding of how something works which can be an explicit communicable set of rules, procedures and policies or a tacit model or representation such as a schemata or framework (Bierly III, Kessler et al. 2000, p. 600).

Tacit knowledge is often valuable, rare, imperfectly imitable or not substitutable and thus plays a key role in an organisation's distinctive and dynamic capabilities (Osterloh and Frey 2000). As knowledge becomes more tacit, it becomes less teachable, codifiable and transferable (Kogut and Zander 1992). It has been argued that tacitness of knowledge associated with an organisational capability was a source of ambiguity to competitors and therefore created barriers to imitation (Reed and DeFillippi 1990, p.91). Tacitness has been closely related with the concept of causal ambiguity which has been found impeding the internal transfer of best practices (Szulanski 1996). It has been determined that tacitness is fully mediated by knowledge ambiguity in its effect on the transfer of technological knowledge between strategic alliance partners (Simonin 1999). It has been found that the degree of codification of organisational manufacturing capabilities associated with the production of new innovations, had a significant influence on its internal cross-border transfer (Zander and Kogut 1995).

Like tacitness, complexity exists as one end of a continuum with simplicity at the other end. Complexity refers to the degree to which knowledge is perceived as relatively difficult to understand (Rogers 1995, p. 242). Complexity has three elements: numerosity, diversity and interdependence (Weick 1995, p. 87). The degree of complexity is determined by the number of diverse elements interacting in a variety of ways. Knowledge can be complex because its acquisition relies upon pre-existing knowledge (Cohen and Levinthal 1990). The scope of integration of an organisational capability is reflected in the breadth of specialised knowledge upon which it draws (Grant 1996a, p. 380). The wider the scope of knowledge being integrated, the lower will be the level of common knowledge and the more inefficient the communication and integration of knowledge (Grant 1996a, p. 380).

Complex knowledge is more difficult to transfer and imitate than simple knowledge (Kogut and Zander 1992, p. 387). The complexity of knowledge associated with an organisational capability has been found to be a source of ambiguity to competitors and therefore create barriers to imitation (Reed and DeFillippi 1990, pp. 91-92). It is considered one of the characteristics of an innovation that negatively affects its rate of adoption (Rogers 1995). It has also been shown to be fully mediated by knowledge ambiguity in its effect on the transfer of technological knowledge between strategic

alliance partners (Simonin 1999). However, the degree of complexity of organisational manufacturing capabilities associated with the production of new innovations was found not to have a significant influence on its internal cross-border transfer (Zander and Kogut 1995).

Different types of knowledge implies that knowledge dwells at different levels. Knowledge exists at the individual, group and organisational levels (Spender 1996; Bierly III, Kessler et al. 2000; Easterby-Smith, Crossan et al. 2000, p. 787). Embrained knowledge occurs at the individual level. Encultured knowledge exists independently of the individual and occurs at group levels. One example of the group level where encultured knowledge exists is a community of practice. A community of practice is a group that is often non-canonical, not formally recognised by the organisation, is more fluid and interpenetrative than bounded, crosses organisational boundaries to incorporate external people and is formed through the process of activity rather than being created to carry out a task (Brown and Duguid 1991, pp. 70-71). Communities of practice weave together identities, artefacts, ideologies, rules, language, morality and interests into a process of collective learning (Easterby-Smith, Crossan et al. 2000, p. 788). Similarly embedded knowledge can exist independently of the individual and occurs at the system or the level of organisational routines (Cohen and Bacdayan 1994). Within an organisation, the types interact to form an integrated system of knowledge which constitutes the organisation's capabilities (Spender 1996).

Embrained knowledge existing at the individual level is often enacted in the form of a perspective. A perspective is an interpretation of a problem or task based on an individual's unique social and cognitive repertoire (Boland Jr. and Tenkasi 1995, p. 351). Within an organisation, a perspective is influenced by the organisational member's particular role and the organisational unit in which they are positioned (Hardin and Higgins 1996). A perspective is often socially constructed and integrates with organisational groupings to form encultured knowledge in a thought world (Berger and Luckmann 1967). A thought world is a community of organisational members who are involved and share a common understanding in the same domain of work (Dougherty 1992, p. 181). A thought world is composed of a fund of knowledge which refers to what it knows and systems of meaning which relates to how it knows it

(Dougherty 1992). Thought worlds may exist within formal organisational structures as well as between members of different organisations (Orlikowski and Yates 1994).

Studies in KM often choose between an epistemology of possession versus an epistemology of practice for organisational knowledge and knowing (Cook and Brown 1999). The epistemology of possession assumes that static objective knowledge can be abstracted from processes associated with its creation, transfer and use (Spender 1996). It is usually applied at either the individual or organisational levels of analysis. At the individual level of analysis, the cognitive view based on the information processing model focuses attention on individual perception, sensemaking and belief. Learning is considered an individual activity of processing information and modifying mental structures and models (Easterby-Smith, Crossan et al. 2000, p. 788). At the organisational level, the structural view focuses on knowledge held in organisational structures, processes, systems and routines (Levitt and March 1988; Cohen and Bacdayan 1994).

The core problem for sensemaking in an organisation is the management of ambiguity (Weick 1995, p. 27). Many organisational sensemaking occasions are ambiguous. To make sense of these organisational problems or situations requires the provision of different types of knowledge based on multiple cues constructed from face-to-face communication (Weick 1995, p. 99). These types of knowledge include values, priorities and clarification. Such a view is consistent with the concept of "perspective taking" in which knowledge is exchanged, evaluated and integrated between organisational members (Boland Jr. and Tenkasi 1995, p. 358).

The epistemology of practice assumes that dynamic subjective knowledge exists in the interactions between individuals and groups (Brown and Duguid 1991; Pentland 1992). Based on a social constructionist perspective, learning and knowledge creation is considered a socially oriented group activity rather than an activity that takes place in individual minds or organisational structures and routines (Easterby-Smith, Crossan et al. 2000, pp. 787-788). It is argued that an epistemology of practice is more appropriate for organisational knowledge because organisations are more interested in purposive activity than in objective truth (Spender 1996).

However, social systems such as organisations possess both objective truth and are constructed from activity that expresses subjective meaning (Berger and Luckmann 1967, p. 22). Perspectives of knowledge must therefore be complementary. The interplay between individual level and group knowledge is a source of innovation that can be harnessed through supporting organisational and technological infrastructures (Cook and Brown 1999).

The common theme that links all characterisations of knowledge is that it can be viewed as a stock or flow (DeCarolis and Deeds 1999; Gupta and Govindarajan 2000; Bontis, Crossan et al. 2002; Madsen, Mosakowski et al. 2003; Tallman, Jenkins et al. 2004). This perspective characterises an organisation as a system consisting of stocks of learning at the individual, group and organisational levels connected to each other by flows of learning. Individual learning consists of individual capabilities and motivation. Group learning consists of group dynamics and shared understanding. Organisation level learning consists of alignment between systems, structure, strategy, procedures and culture. This framework integrates the information processing model and the KBY. Knowledge as a stock captures the explicit, objective, declarative, individual and elements of knowledge. Knowledge as flow captures the tacit, subjective, procedural and social dimensions of knowledge.

2.4.2 Influence of Knowledge-Based Theories

An analysis of citations was conducted for the period 1995-2004 on three articles that collectively constitute two distinct knowledge-based theories of the firm. An analysis of citations was also conducted on four articles published in 1988 which have been identified as being exemplary (Frost and Stablein 1992). To provide an indication of the extent of the influence of the knowledge-based theoretical essays, the citation counts were compared with those of the exemplary articles (Barley, Meyer et al. 1988; Gersick 1988; Latham, Erez et al. 1988; Sutton and Rafaeli 1988).

A two-step process was undertaken to select a list of journal articles to be considered exemplars (Frost and Stablein 1992). The first step involved creating a panel of nominators comprised of forty scholars in the field of organisational studies. This panel was drawn from current and former editors of major relevant journals, from scholars familiar with qualitative research, with specific research techniques and with particular

organising frameworks and younger scholars whose judgment on research quality was respected. Each panel member was sent a brief description of the research project and questionnaire which asked for instances of outstanding research method and design in the field of organisational studies. The second step involved assessing the nominations based on a number of criteria. These criteria were organisation of study, methodology, status of researchers, intention, relationship to theory, gender and single versus multiple authorship. After considering these criteria, the final list was decided. It is important to note that the papers were not ranked. The final choice involved a degree of subjectivity.

The process used to identify the list of exemplars had objective and quantitative elements to it (Frost and Stablein 1992). The process, however, also required the use of subjective perceptions from individual experts. Ultimately the identification of an instance of exemplary research is a subjective activity leaving the judgement open for critique, analysis and evaluation. Judgement of an exemplary research study is based on a broad range of criteria. An examination in detail highlights the success and failure across each individual criterion item.

The Web of Science citation search tool was used to determine the number of citations each article had received since its publication. The Web of Science is a database and search tool that identifies the journal articles that a particular article is cited in within the Science, Social Sciences and Arts and Humanities Citation Indexes from 1987 onwards. The articles of interest were all published in or after 1988 and were therefore comprehensively within the date window within which the tool operates.

The results of the analysis are presented in Table 2.1 and Figure 2.2. Table 2.1 indicates the number of citations each article has received up until the end of 2004. Collectively the two knowledge-based theories of the firm have been cited more than 900 times since their publication. The theory of organisational knowledge creation article has been cited more than 450 times, the most out of all articles analysed (Nonaka 1994). The two articles that constitute the knowledge-based theory of the firm have a combined citation count of more than 450 (Grant 1996a; Grant 1996b). In contrast, only one exemplary article has received more than 100 citations with over 250 citations (Gersick 1988). Collectively, the exemplary articles have received a little over 550 citations.

Article	Total Number of Citations
<i>Knowledge-Based Theories</i>	
(Nonaka 1994)	457
(Grant 1996a)	211
(Grant 1996b)	274
	942
<i>Exemplary Articles</i>	
(Barley, Meyer et al. 1988)	95
(Gersick 1988)	274
(Latham, Erez et al. 1988)	85
(Sutton and Rafaeli 1988)	103
	557

Table 2.1: Number of Citations to 2004 in Web of Science Database

Figure 2.2 charts the yearly increase in citations for the dominant knowledge-based theory articles. The number of citations has increased consistently each year. These results support the assertion that the dynamic theory of organisational knowledge creation and the knowledge-based theory of the firm have had significant conceptual and theoretical influence on the field of KM. One of the reasons for the prominence of these theories in the emerging KM literature was their timeliness. These articles were published on the cusp of the emergence of the field. Subsequent researchers, owing to an initial dearth of KM literature in leading management journals, had limited theoretical frameworks on which to draw.

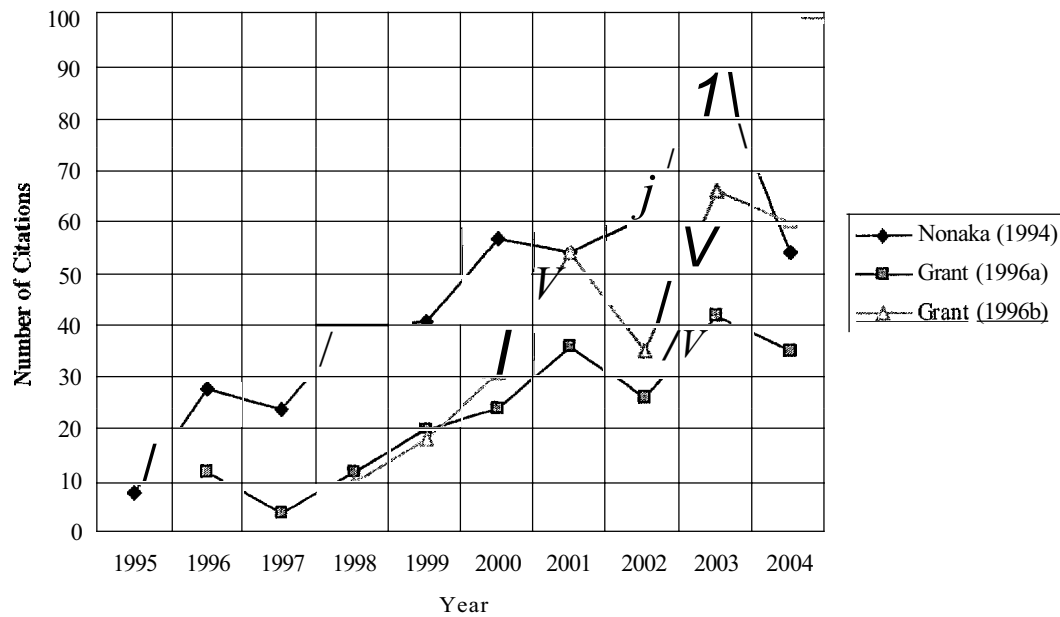


Figure 2.2: Number of Citations per Year by Article (1995-2004)

2.4.3 Dynamic Theory of Organisational Knowledge Creation

The dynamic theory of organisational knowledge creation is a theoretical framework for understanding organisational knowledge creation and a paradigm for managing the dynamic aspects of organisational knowledge creating processes (Nonaka 1994; Nonaka, Takeuchi et al. 1996; Nonaka, Umemoto et al. 1996; Sakakibara, Nonaka et al. 1997; Nonaka and Konno 1998). Although the theory emphasises knowledge creation, the process of knowledge transfer is also intrinsic to it. The central theme of the framework is that knowledge is created and transferred through a continuous dialogue between tacit and explicit knowledge. Through an examination of this dialogue, four modes of knowledge creation and transfer involving tacit and explicit knowledge are identified. These four modes are "socialization" (conversion of knowledge from tacit to tacit), "externalization" (conversion of knowledge from tacit to explicit), "internalization" (conversion of knowledge from explicit to tacit) and "combination" (conversion of knowledge from explicit to explicit). The theory proposes that while new knowledge is developed by individuals, organisations play a critical role in articulating and amplifying that knowledge. The theoretical framework also consists of an analytical perspective on the constituent dimensions of knowledge creation. This perspective is applied in two operational modes for facilitating the dynamic creation of appropriate organisational knowledge.

The dynamic theory of organisational knowledge creation acknowledges that analysis of an organisation based on its ability to process environmentally imposed information is an important activity towards furthering organisational understanding (Nonaka 1994). It is therefore sympathetic to the traditionally dominant theories of organisational understanding that conceptualise organisations as systems of information processes consistent with the information processing model. However, more in line with the RBV and the KBV of the firm, the theory suggests that in order to understand organisations operating in a changing environment, it is more important to focus on the organisation's interaction with its environment and its knowledge creation and transfer mechanisms. One example of an organisational phenomenon that makes the distinction between the information processing model and the RBV / KBV is innovation, a key form of organisational knowledge creation. Innovation cannot be fully understood using theories that conceptualise organisations as a collection of information processes (Nonaka 1994, p. 14). It can be better understood as an organisational process whereby problems are cultivated and defined, and then solved through active development of new knowledge (Nonaka 1994, p. 14).

The initial framing of the paradigm, theory and concepts (Nonaka 1994) are developed in later articles (Nonaka, Takeuchi et al. 1996). In particular, information technology is introduced as a key tool for implementing the concept of the knowledge creating organisation (Nonaka, Umemoto et al. 1996). Later the theory is extended through the introduction of the Japanese concept of "ba" (Nonaka and Konno 1998). Ba refers to the shared physical, virtual or mental space for emerging relationships.

2.4.4 KnOWledge-Based Theory of the Firm

The knowledge-based theory of the firm is an organisation theory which moves even further away from the information processing model position of organisations consisting of systems of information processes (Grant 1996a; Grant 1996b). The theory is constructed by building upon four overlapping theoretical streams: competition as a dynamic process, the RBV of the firm, organisational capabilities and competencies, and organisational learning and knowledge. It is based upon a number of epistemological and ontological assumptions concerning the characteristics and application of knowledge, and the knowledge requirements of production. These assumptions have implications for organisational existence, boundaries, internal

organisation (analysis of hierarchy, nature of co-ordination, organisational structure, role of management, distribution of decision-making authority), competitive advantage and the basis of organisational capability.

The essence of the knowledge-based theory of the firm is that the primary role of organisations and the fundamental characteristic of organisational capability is the integration of knowledge (Grant 1996a; Grant 1996b). Integration involves co-ordination, communication and the transfer of knowledge between individuals. The theory examines how knowledge is integrated to form organisational capability and identifies characteristics of capabilities which are associated with superior firm rent. Knowledge is viewed as residing within the individual and knowledge application rather than knowledge creation is emphasised. Knowledge is integrated within organisations to form organisational capability. Consistent with the RBV, characteristics of capabilities are associated with creating and maintaining competitive advantage in dynamically competitive markets.

The knowledge-based theory of the firm makes the epistemological distinction between knowing how and knowing about. This distinction is reflected in the dimensions tacit versus explicit, and procedural versus declarative. Knowing how is identified with tacit and procedural knowledge while knowing about is identified with explicit and declarative knowledge.

The ontological assumptions of the theory concerning the characteristics and application of knowledge can be arranged within five categories: knowledge requirements of production, transferability, specialisation, capacity for aggregation and appropriability. From these assumptions propositions are developed with respect to the nature of organisational capability, the linkage of capability to organisational structure and the determinants of competitive advantage.

The knowledge requirements of production assumption considers that knowledge is the critical input into production and the primary source of value. Production is transformation of inputs into outputs. This assumption is based on the belief that knowledge accounts for the greater part of value added and barriers to transfer and replication endow knowledge with strategic importance. The transferability assumption

argues that the transfer of resources and capabilities both within and between organisations is a critical determinant for conferring sustainable competitive advantage (Grant 1996a, p. 377; Grant 1996b, pp. 110-111). Tacit knowledge is considered more difficult to transfer than explicit. The specialisation assumption considers individuals to have limited cognitive capacity to acquire store and process knowledge. Individuals therefore specialise in particular fields of knowledge. Tacit knowledge is acquired and stored by individuals in highly specialised form. Production requires a wide array of knowledge and it is considered that this is obtained by combining the specialised knowledge of a number of individuals. The capacity for aggregation assumption is based upon knowledge transfer requiring both transmission and receipt. The receipt of knowledge is dependent upon the recipient's absorptive capacity for aggregated knowledge. The ability to transfer and aggregate knowledge is a key determinant for the optimal location of decision-making authority in organisations. The appropriability assumption refers to the ability of the holder of knowledge to receive a return equal to the value created by that knowledge. Tacit knowledge is not directly appropriable because it cannot be directly transferred, it can only be appropriated indirectly through application. Explicit knowledge is appropriable directly because it can be communicated but is affected by two concerns which make it generally unsuitable for market transfer: public good and lack of property rights.

Given the assumptions that knowledge is the fundamental resource deployed in the production process, is acquired and stored by individuals in highly specialised form and production requires many types of specialised knowledge, then the purpose of organisation is the integration of knowledge. Organisations are required for the integration of knowledge because the alternatives are less efficient. For example, individuals are limited by their cognitive constraints in their ability to integrate knowledge and the nature of knowledge makes it difficult to integrate across markets. It is not practical for individuals to learn the knowledge required in the production process. Explicit knowledge integrated across markets is susceptible to appropriation by other parties not involved in the contractual arrangement. Tacit knowledge is difficult to transfer between individuals. It is not suited to market contracts that rely on the ability to explicitly define and measure the elements of the agreement. The theory is similar in one respect to TeE because organisations are deemed to exist to avoid the costs associated with market transactions for knowledge. However, the theory diverges

on this issue from TeE in that it emphasises the role of the organisation to manage team production rather than transactions.

Organisational boundaries are determined at points where explicit knowledge such as a product can be transferred. This is due to the inability and costs associated with the transfer of tacit knowledge.

The ontological assumptions of the knowledge-based theory of the firm have four implications for internal organising: organisational capabilities, hierarchy, distribution of decision-making authority and integration / co-ordination. The theory adopts a very different perspective to the functions of organisational structure which traditionally have relied on concepts such as division of labour, unit of command and grouping of similar tasks (Grant 1996a, p. 384).

Organisational capabilities are considered to consist of the integration of specialist knowledge to perform a discrete productive task. This integration is represented as a hierarchy. At the base of the hierarchy is the specialised knowledge of the individual organisational members. The hierarchy consists of levels of integration of capabilities: single-task, specialised, activity-related, broad functional and cross-functional. Higher levels of the hierarchy of capabilities involves broader spans of specialised knowledge and are more complex to create and manage.

Based on the ontological assumptions of the theory, hierarchical co-ordination fails. Tacit knowledge can only be exercised by those who possess it, so the organisation is required to integrate and co-ordinate this knowledge. Knowledge resides in the minds of many individuals. To integrate this knowledge, the most appropriate forms of organising are team-based structures. Due to potential limitations of numbers, teams may not be able to access all tacit knowledge required for a task. Fluid team membership is necessary to overcome this problem. If solving of problems requires fluidity amongst employees then employees will need to be flexible in adopting multiple organisational roles within multiple teams.

The knowledge-based theory of the firm has interesting implications for the distribution of decision-making authority. The theory assumes that the most important

organisational resource is knowledge. Knowledge is predominantly tacit, owned by employees and cannot be transferred. In contrast to traditional organisational theories, decision rights and ownership are recognised for individual organisational members. Decision-making that involves tacit knowledge should be decentralised with employees whilst decision-making involving explicit knowledge should be centralised with managers.

The most critical process in the theory is integration. Integration is a process of co-ordination, communication and knowledge transfer. It is achieved through four mechanisms: rules and directives, sequencing, routines and group problem solving and decision making. Rules and directives refers to the plans, schedules, forecasts, policies, procedures and communication and information systems which enable the holder of specialised knowledge in one area to communicate it to others without the need for the recipient to learn what the sender knows. The extent of rules and directives required is dependent upon the complexity of the task, the number of locations at which the task must be carried out and the stringency of performance specifications associated with the task. Explicit knowledge is relatively easy to integrate because by definition it is codifiable. Rules and directives essentially involve communication and the transfer of explicit knowledge through the codification of tacit knowledge into explicit instructions. Tacit knowledge is inherently difficult to communicate and transfer. Codification of tacit knowledge into explicit involves considerable knowledge loss. Sequencing involves the organisation of production activities into sequences so that specialists' inputs occur independently. Organisational routine allows the communication and transfer of tacit knowledge without the need for conversion to explicit form. An organisational routine is a patterned sequence of learned behaviour "involving multiple actors who are linked by relations of communication and / or authority" (Cohen and Bacdayan 1994, p. 555). Organisational routines represent sequential patterns of interaction between individuals through which their knowledge is integrated but not with a language-based communication channel. Organisational routines consist of informal procedures including generally accepted roles and interactions developed through training and experiential learning and facilitated by various explicit and implicit signals. Group problem solving and decision making is an integration mechanism suited to complex, unusual, difficult and important tasks. This mechanism involves a relatively high volume of tacit knowledge transfer.

The knowledge-based theory of the firm recognises that knowledge transfer is not an efficient process within the integration mechanisms. It proposes that modes of interaction be established that minimise knowledge transfer within integration. As such the use of mechanisms of rules and directives, sequencing and routines are encouraged and the limiting of group problem solving and decision making to appropriate tasks. This recognises the high costs associated with this mechanism because of the difficulties of transferring tacit knowledge. The moderating role of ambiguity in knowledge transfer is recognised because the greater the scope of knowledge integrated within a capability, the greater the difficulty competitors faced in replicating that capability due to increased causal ambiguity (Grant 1996a, p. 381).

The competitive advantage provided by an organisational capability is influenced by three characteristics of the underlying knowledge integration: efficiency, scope and flexibility. Efficiency of knowledge integration refers to the degree to which the specialist knowledge of individual organisational members is accessed and utilised. It is dependent upon the level of common knowledge amongst organisational members, the frequency and variability of task performance and activity and a structure that economises on communication. Scope of knowledge integration refers to the span of specialised knowledge upon which the organisational capability is based. Flexibility of knowledge integration refers to the degree to which additional knowledge can be accessed and existing knowledge reconfigured by an organisational capability. The characteristic of flexibility is particularly important for continuous innovation which is required for maintaining competitive advantage under conditions of dynamic competition.

2.4.5 Critique and Limitations

Both the dynamic theory of organisational knowledge creation and the knowledge-based theory of the firm are knowledge-based organisational theories. As the analysis in Section 2.4.2 suggests, both theories are also still developing and have had considerable influence on the field of KM.

There are three major differences between the theories. The dynamic theory of organisational knowledge creation emphasises knowledge creation, knowledge located at various levels within the organisation and the role of the organisation as the creation

of knowledge through a dialogue between tacit and explicit knowledge. The knowledge-based theory of the firm emphasises knowledge application, knowledge location and acquisition with the individual and the role of the organisation as integration and application of the individuals' specialised knowledge.

Both theories are relatively young in a relatively young field and thus suffer from several similar definitional, conceptual and methodological weaknesses.

Both theories adopt very broad definitions of knowledge ("justified true belief" (Nonaka 1994, p. 15) and "that which is known" (Grant 1996b, p. 110)). Instead of resolving this definitional issue, the knowledge-based theory of the firm emphasises the five knowledge related characteristics (knowledge requirements of production, transferability, specialisation, capacity for aggregation and appropriability). The ambiguity inherent in these definitions has introduced inconsistency into subsequent KM research because the consistency and comparability of studies are hampered.

Conceptually, the theories have not yet developed to the extent that they can explain concepts and activities developed by practitioners. Although the theories form the foundation for the field of KM, they have yet to be integrated with KM initiatives. The theories also fail to illuminate important social and cultural processes including trust and power, critical for KM. A major criticism that questions the legitimacy of these theories as KBVs of the firm relates to their explanation for the existence of organisations. These theories argue that organisations exist because flexible markets are unable to carry out the function of knowledge integration, sharing and transfer. However, markets can cultivate learning capabilities and shared context required for these knowledge related processes (Foss 1999, pp. 737-738). Scope exists for integrating these theories with TCE to build a more comprehensive strategic theory of the firm.

Methodologically, these theories have tended to be more explanatory than predictive (Foss 1999). The definitional problems have created difficulties in operationalising constructs such as knowledge and capabilities. The resulting lack of comparability across studies limits the continued theoretical growth of KM.

In summary, these knowledge-based theories are legitimate theories for explaining organisational and strategic issues. However, more conceptual and empirical work is required. Over time these theories may integrate with other theories to form a more comprehensive strategic theory of the firm.

Theoretically, there remain two major issues with these theories requiring resolution. The RBV of the firm identifies the need for both distinctive and dynamic capabilities for ensuring sustainable competitive advantage. In terms of distinctive capabilities, the knowledge-based theory of the firm provides more insight by focusing on knowledge application. However considerable theoretical and empirical research is required to further understanding of the organisational processes through which knowledge is transferred and integrated (Grant 1996a, p. 384). Consideration for KM initiatives can provide some insights for resolving this. One of the major limitations of the knowledge-based theory of the firm is a lack of emphasis on knowledge creation and hence dynamic capabilities (Grant 1996b, p. 121). The dynamic theory of organisational knowledge creation in contrast provides more understanding of dynamic capabilities by focusing on knowledge creation processes. A comprehensive knowledge-based theory of the firm requires a balanced treatment of both knowledge application and creation (Grant 1996b, p. 121).

Opportunity therefore exists to better integrate aspects of both theories. At the heart of these knowledge-based theories are the twin processes of knowledge transfer and creation. These processes represent a point of intersection between the two theories from which other critical concepts such as distinctive and dynamic capabilities, and OL and innovation can be better explained. These processes also represent an opportunity to reconcile a single perspective of knowledge based on stocks and flows. This conceptualisation of a KBV of the firm has already been used to propose that organisational strategic capabilities consist 'of an ability to integrate knowledge and to transform dispersed knowledge into a collective body of organisational capabilities (Lorenzoni and Lipparini 1999).

2.5 Innovation and Organisational Learning

Previous discussion on dynamic capabilities and knowledge creation has established innovation as a process considered vital to the growth, survival and competitiveness of organisations (Dougherty 1992; Salaman and Storey 2002). Innovation contributes to organisational adaptation and thereby is a means by which organisations remain competitive in a changing external environment (Kraatz 1998). There exists an extensive literature on innovation however understanding of innovation within organisations is still underdeveloped (Wolfe 1994, p. 406). There has been research interest in the processes through which organisations learn existing innovations (Levitt and March 1988). However, less attention has been directed towards the question of what organisations do when they learn to innovate. This question is at the heart of the development of distinctive and dynamic capabilities.

This section will address this question by first providing a definition of innovation and outlining the various perspectives and models of innovation used in the organisational literature. The transfer of innovation as a process of diffusion will also be introduced. The assumptions underpinning OL will be identified and a number of perspectives on OL will be introduced. Innovation and OL will be positioned within the broader organisational literature and several critical perspectives on the concepts will be offered. Finally, the various concepts will be integrated to explain what organisations do when they learn to innovate based on the inherent tensions generated by the concepts. This explanation will be framed with reference to the processes of knowledge transfer and creation from the KBV of the firm.

2.5.1 Definition of Innovation

An innovation has been defined as an "idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers 1995, p. 11). Based on similar concepts, it has also been defined as a "process through which new ideas, objects and practices are created, developed, or reinvented" (Slappendel 1996, p. 108). This process includes periods of design and development, adoption, implementation and diffusion. Therefore innovation consists of a number of key elements. It is an idea, practice, object or process whose newness is dependent upon the perceptions of the individual. The impetus for innovation may be a change in the organisational

environment that threatens the survival of the organisation (Attewell 1992). Innovation is a potential catalyst for organisational change, not only in terms of mimicry by other organisations but also in other indirect strategic and operational activities (Greve and Taylor 2000).

Innovation is closely related to the concept of technology (Rogers 1995). Three types of technologies have been identified that highlight the differences in the forms an innovation can take: mechanical, human and knowledge (Roberts and Grabowski 1999, p. 161). Mechanical technology include the machines, tools and equipment used in production. Mechanical technology is the most common type in innovation studies. Human technology consist of the skills and physical effort involved in production. Often human technology can be substituted by mechanical technologies. Knowledge technology include the abstract meanings and concepts used in production.

Innovations can be classified on a number of dimensions (Rura-Polley 2001). The most common typology distinguishes between product, process and service innovations. Product innovation results in changes in an organisation's product base, for example a computer chip manufacturer superseding one processor with another. Process innovation include changes in the manufacturing and delivery of product, for example the introduction of quality management principles into the production process (Winter 1996). The three technologies outlined above are found within the process innovation category. Service innovation incorporates aspects of product and process innovation and includes the changes involved in providing a service.

2.5.2 Perspectives on Innovation

Three perspectives in the innovation literature: individualist, structuralist and interactive process (Slappendel 1996, pp. 108-109). The main features of each of these perspectives is listed in Table 2.2. The order of the perspectives reflects their historical development and relative influence. Such perspectives assist with the construction of cognitive maps and mental models for what is a vast literature.

	Individualist	Structuralist	Interactive Process
Basic assumptions	Individuals cause innovation	Innovation determined by structural characteristics	Innovation produced by the interaction of structural influences and the actions of individuals
Conceptualisation of an innovation	Static and objectively defined objects or practices	Static and objectively defined objects or practices	Innovations are subject to reinvention and reconfiguration. Innovations are perceived.
Conceptualisation of the innovation process	Simple linear, with focus on the adoption stage	Simple linear, with focus on the adoption stage	Complex process
Core concept.	Champion Leaders Entrepreneurs	Environment Size Complexity Differentiation Formalisation Centralisation Strategic Type	Shocks Proliferation Innovative capability Context
Research methodology	Cross-sectional survey	Cross-sectional survey	Case studies Case histories
Main authors	Rogers March and Simon	Zaltman	Van de Ven

Table 2.2: Innovation Literature Perspectives (Slappendel 1996, p. 108)

The major disadvantages of the individualist and structuralist perspectives are that they over emphasise causal factors and thus lead to errors of attribution and simplistic theorising of complex phenomena (Slappendel 1996, p. 122). Additionally, theory building using survey instruments has been hampered by inconsistencies in the operationalisation of key variables, inadequate control over interaction effects and problems in the measurement of structural variables (Slappendel 1996, p. 122). It has been argued that a fresh perspective on innovation is necessary because the established views do not address all the problems, and the gap between theory and practice is considerably apart (Dougherty 1999, p. 174). This view suggests that this new perspective should be constructed from the activities of the innovation with a shift in the unit of analysis and should recognise that complex organisations have difficulty with

innovation (Dougherty 1999, pp. 174-175). Innovation is viewed as process that can be organised through four steps (Dougherty 1999, pp. 174-175). These four steps are conceptualising the product to integrate market needs and technological potential, organising the process to accommodate creative problem solving, monitoring the process and developing commitment to effort. It has also been suggested that new insights into innovation can be obtained by integrating concepts from other theories such as OL into multilevel innovation models (Rura-Polley 2001).

2.5.3 Theories of Organisational Innovation

There exist multiple theories of organisational innovation. These theories are considered adequate but each is relevant under differing conditions and contexts (Wolfe 1994, p. 406). Research effort should therefore be directed at determining the contingencies under which each theory holds. A number of theoretical models that attempt to explain organisational innovation including rational, evolutionary and punctuated equilibrium models (Rura-Polley 2001). These models differ on the fundamental assumption of whether innovation can be planned or evolves. Rational models assume that innovation can be strategically planned through a process of information gathering, analysis, evaluation and action. Evolutionary models are based upon a repeated variation-selection-retention cycle. Such models assume that variation exists in the organisational environment and that managers select particular variations with which to innovate. Punctuated equilibrium models assume that organisations evolve through alternating periods of convergence and reorientation. Changes in the environment motivate radical innovation which upset stable patterns of interaction and power relations. These environmental changes are then followed by a period of organisational convergence, reorientation and incremental innovation.

The organisational innovation literature consists of three distinct streams: diffusion of innovation, organisational innovativeness and process theory (Wolfe 1994, p. 407). Each addresses a different question, has a different unit of analysis and a different variable.

Research Question	Research Approach	Research Focus
What is the pattern of diffusion of an innovation through a population of potential adopter organisations?	Diffusion of innovation (01) research	Addresses the diffusion of an innovation over time and space
What determines organisational innovativeness?	Organisational innovativeness (01) research	Addresses the determinants of the innovativeness of organisations
What are the processes organisations go through in implementing innovations?	Process theory (PT) research	Addresses the process of innovation within organisations

Table 2.3: Organisational Innovation Literature Streams (Wolfe 1994)

2.5.4 Sources of Organisational Innovation

An innovation can be developed internally within the organisation or it can be sourced from suppliers of technology (Attewell 1992), collaborative partners (Liebeskind, Oliver et al. 1996), competitors or a combination of all. It can be argued that an innovation sourced externally is not innovation. However, externally sourced innovations are often not used as intended. It has been proposed that complex new production technologies are often too complex to be grasped by a single individual's cognitive capacities (Attewell 1992). They are also often too complex to be acquired or deployed by a single individual. Operation of these technologies is learned through experience and often is not completely consistent with the specifications of the designers. In addition, the development of innovations rarely occurs in isolation. Typically an innovation is based on knowledge accumulated from a variety of sources (Powell, Koput et al. 1996).

2.5.5 Organisational Learning

The term organisational learning has existed for a number of decades yet a general theory of OL has not emerged and there is little convergence or consensus as to what is meant by the term. Convergence has not eventuated because researchers have applied the concept to different domains including information processing, product innovation and bounded rationality (Crossan, Lane et al. 1999, p. 522). Some authors have concentrated on learning at the individual level (Beckett and Hager 2000). However, the focus of this study is the organisation as the unit of analysis.

Theories of OL are founded upon three fundamental assumptions (Levitt and March 1988, p. 320). The first assumption is that organisational behaviour is based on routines. Organisations are perceived as matching procedures to situations rather than choosing between alternative responses. The second assumption is that organisational actions are dependent upon history. Routines develop incrementally based on response to feedback about outcomes. The third assumption is that organisations are goal oriented. Organisational actions are influenced by the difference between actual and desired outcomes. From these assumptions, OL is considered a basic learning process through which routines are developed based on interpretations of experience (Lant and Mezias 1996, p. 269). Organisational routines are the forms, rules, procedures, conventions, strategies and technologies with which organisations are constructed and operate (Levitt and March 1988, p. 320). They are patterned sequences of learned behaviour consisting of multiple actors linked by relationships involving communication and authority (Cohen and Bacdayan 1994, p. 555). Support for the assumptions of OL has been found in the airline industry where airlines learn incrementally from their own and other airlines' prior accident incidents and experiences (Haunschild and Sullivan 2002, p. 634).

OL models typically have three basic components (Lant and Mezias 1996, p. 269). Firstly, organisations are perceived as having target levels of performance which are compared each period with actual levels. Secondly, the degree of divergence or convergence between target and performance levels determines the perceptions of organisational success. This in turn is considered to influence the willingness of an organisation to enact change. Thirdly, learning models suggest that the acquisition and processing of information about different options is a relatively costly process of search usually conducted under conditions of ambiguity (March and Olsen 1975). Learning is viewed as a "purposive quest to retain and improve competitiveness, productivity, and innovativeness in uncertain technological and market circumstances" (Dodgson 1993b, p.378).

The process of OL has been traditionally considered an intentional one with the goal of improving organisational effectiveness (Huber 1991, pp. 88-89). OL need not be intentional, conscious, absolute or effective as suggested by the literature. OL is the

change in the range of behaviours of an entity through the processing of information. The processing of information involves knowledge acquisition, and information distribution and interpretation. Knowledge acquisition is the process by which knowledge is obtained. Information distribution is the process by which information from different sources is shared and thereby leads to new information and understanding. Information interpretation is the process by which distributed information is given one or more commonly understood interpretations.

The organisational literature consists of five types of learning or processes through which organisations acquire information or knowledge: congenital, experiential, vicarious, grafting and searching (Huber 1991, pp. 91-100). Congenital learning involves learning taken place before an organisation is formed but which it benefits in the form of congenital knowledge. Congenital knowledge is a combination of the knowledge inherited at conception, for example through its new employees, and knowledge acquired prior to its conception, for example knowledge of company laws obtained through registering a new company. Experiential learning includes all the systematic and unsystematic, intentional and unintentional learning that takes place through organisational experiences. Vicarious learning involves learning based on the experiences of others including their strategies, administrative practices and technologies. Grafting involves adding to an organisation's knowledge base through the addition of new employees with knowledge not presently available in the organisation. Searching involves scanning and undertaking focused searches in the organisation's external environment in order to monitor internal conditions of performance. .

Similar to KM, OL has always been a part of organisations, however its emergence as an area of interest has been influenced by advances in technology, globalisation and the increasing competitive environment (Andrews and Delahaye 2000). Similar to innovation, OL is a process considered vital to the growth, survival and competitiveness of organisations (Dodgson 1993b; Lynn 1998). OL is considered of value to management and organisational theory because of its ability to explain dynamic and changing relationships (Dodgson 1993b), emergent phenomena (Miner and Mezias 1996) and the management of complexity and ambiguity (Andrews and Delahaye 2000).

2.5.6 Critical Perspectives on Innovation and Organisational Learning

Critical perspectives on innovation are now beginning to emerge (Rura-Polley 2001). These perspectives are questioning the adaptive capacity of innovation and argue that innovation has led to change but not necessarily progress. Critical perspectives on innovation also consider the causal link between innovation and organisational productivity to be problematic.

It has been posited that the normative and prescriptive discourse on OL is a means by which managers exert control over their employees and mobilise power resources in support of claims for legitimacy and validity (Gherardi 1999, pp. 106-107). Four themes in the OL literature have been identified that support this assertion. These themes are that OL is always ameliorative and disinterested, intentional, an extorted result, and presumes change but not its understanding. An emphasis on an ameliorative and disinterested nature of OL neglects the role of power in the structuration of organisational knowledge. The intentional nature of organisational routines is reflected in the maintenance of standard operating procedures which envisage a single way of learning or operating. Learning and the transfer of knowledge are encouraged as a process for the collective good that leads to organisational performance improvement. The role of power in the transfer process is neglected. OL requires an actual or potential change in the behaviour or cognition of individuals or groups. It does not necessarily require the individuals involved in the change process to understand the logic associated with the change.

Organisations that employ learning principles do so not necessarily to employ the benefits that supposedly accrue but due to institutionalism, a desire for creditability and identity (Gherardi 1999). It is argued that adherence to OL is the outcome of a four-step social process in which a concept matures into an identifiable field. The first step of this process involves the concept acquiring legitimacy with the scientific community. In the second step, the concept spreads through a community of practitioners and consultants. The third step involves the production of the characteristics that distinguish the concept from other concepts. The fourth step involves the explicit identification of the concept with the term OL.

There exists a differentiation between old and a new perspectives on OL which is summarised in Table 2.4 (Gherardi 1999; p. 109). According to the new perspective, OL is an inseparable and integral part of all organisational practices, a heuristic device employed to study how knowledge is socially constructed in organising practices which do not stop the organisational boundaries of formal organisations (Gherardi 1999, p. 113). Support for this perspective is provided by findings that another organisational theory (an essay on institutional isomorphism) has been socially constructed (DiMaggio and Powell 1983; Mizruchi and Fein 1999). Authors have selectively appropriated aspects of the essay which are consistent with prevalent discourse in the field. For example, one aspect of article, the discussion of mimetic isomorphism has received disproportionate attention compared to its role in the essay.

Old Organisational Learning	New Organisational Learning
Coherent centre	Incoherent centre: loosely coupled sub-systems at the least
The organisation has a clear voice	Organisational life is seen as a polyphony, as carnevalesque
Learning in the face of problems	Learning in the face of mystery
Complete learning cycles envisaged, though these may sometimes be fractured or interrupted	The cycle is difficult to characterise
Learning as an exclusively cognitive process	The learning process is complicated by a variety of factors: level shifts, paradigm fluctuations, ambiguities, metaphors, fuzziness, corruptions of knowledge, broad and multiple-meaning symbols, and the reframing of situations, problems and mysteries
Unlearning seen as a rational process of updating and correction, though the rational cycles of unlearning may be complex because fractured or interrupted	Forgetting seen as a complex, holistic, gestalt-related activity, involving the organism in ways not fully understood
Rationality is aspired	Rationality is bracketed
Non-problematic use of written records, files, computers and internal or external regulations to improve performance	Use of records, files, computers, regulations seen as problematic
There is an aim of completeness in learning	Completeness is seen as contentious
Appropriate methods: conventional social and management science	Appropriate methods: interpretative ethnography and a variety of schemes of rhetorical analysis

Table 2.4: Old and New Organisational Learning (Turner 1991)

2.5.7 Relevance to Organisation Theory

Neither innovation nor OL are organisational theories of the firm. The two concepts are closely related in the literature (Cohen and Levinthal 1990; Attewell 1992; Van de Ven and Polley 1992). Of the two, perhaps only OL has the conceptual breadth to develop into a full organisational theory that attempts to explain the existence, boundaries and structuring of organisations. In its view of the firm, OL shares some similarities with the information processing model. Organisations are characterised as history-dependent, routine-based systems that adapt incrementally to past experiences (Haunschild and Sullivan 2002, p. 634). However, OL is less able to explain issues such as boundaries when learning takes place at a group level across the boundaries of formal organisations (Gherardi 1999).

It has been suggested that the most influential researcher in the field of OL is a school revolving around James G. March with the majority of citations involving his and associates work (Cohen and Sproull 1995, p. xiv). This school has been criticised as being too "introspective and parochial" in its treatment of OL and a call made for the regeneration of OL through new insights and external influences from inter-disciplinary perspective (Dodgson 1993b, p. 376, 390).

KM and in particular the RBV and KBV of the firm is an area with the potential to provide new insights into OL. OL and knowledge are very closely related. The knowledge-based theories of the firm have foundations based on OL (Nonaka 1994; Grant 1996a; Grant 1996b). OL and KM are potentially consistent in their view of the perspectives of knowledge as well as the level where learning takes place (Gherardi 1999). OL takes place in the minds of individuals as well as the social relationships between them (Tyre and Von Hippel 1997). Two fundamental sources of learning have been characterised, learning from direct experience and learning from the experience of others, the latter of which parallels current knowledge debates in intra and inter-organisational knowledge (Levitt and March 1988; Argote, Ingram et al. 2000). An example of new insights stimulated by the KM literature is in relation to the nature of tacit knowledge and its relationship with innovation and OL which have traditionally been hampered by a coherent conceptual framework (Lam 2000, p. 489). In response, a framework is developed that links knowledge types, organisational forms and societal

institutions which in turn are shown to shape the learning and innovative capabilities of organisations.

2.5.8 Learning to Innovate

OL has been characterised as an oxymoron because to organise is to "forget and reduce variety" whilst to learn is to "disorganize and increase variety" (Weick and Westley 1999, p. 190). A tension exists between organising and learning (Dodgson 1993b, p. 380). Learning is considered an exploratory process which results in innovation whereas organising is viewed as an exploitative process conducive to productivity and efficiency. Exploration involves search, variation, risk taking, experimentation, play, flexibility, discovery and innovation (March 1991, p. 71). Exploitation on the other hand involves refinement, choice, production, efficiency, selection, implementation and execution (March 1991, p. 71). Organisations that encourage exploration to the exclusion of exploitation may incur the costs of experimentation without enjoying many of its benefits (March 1991, p. 71). These organisations may experience an abundance of underdeveloped ideas and too few distinctive capabilities. Organisations that encourage exploitation to the exclusion of exploration "are likely to find themselves trapped in suboptimal stable equilibria" (March 1991, p. 71). The excessive management of distinctive capabilities reduces variance in organisational routines, shifts the focus to efficiency, and at best encourages incremental innovation at the expense of exploratory or radical innovation (Benner and Tushman 2002). Officially sanctioned innovation processes dominated by bureaucracies tend to stifle innovation (Salaman and Storey 2002). Organisational routines related to interdepartmental relations, market definition and product standards have been found to negatively affect product innovation (Dougherty 1992, p. 192).

Increasingly, organisations need to develop learning strategies that involve collaboration with other organisations in order to innovate. When the knowledge base of an industry is both complex and expanding and the sources of expertise are widely dispersed, the locus of innovation is found within networks of learning rather than individual organisations (Powell, Koput et al. 1996). Strong network ties are valuable for promoting organisational adaptation (Kraatz 1998, pp. 637-638). They are considered to create high-capacity information links which created motivation for information sharing, reduced uncertainty and allowed organisations to vicariously

benefit from the insights and experiences of others. Social network exchanges between new biotechnology organisations have been demonstrated to contribute to the scope of OL and the integration of knowledge (Liebeskind, Oliver et al. 1996, pp. 438-439).

It is suggested that innovation results from the activities and inspiration of individuals, and the practices and policies of organisations, either in isolation or combined (Slappendel 1996; Dougherty 1999). OL to innovate involves discovering a balance between exploratory and exploitative processes so that individuals have an environment conducive to learning and the results from learning are enjoyed by the organisation. Both exploratory and exploitative processes are essential for organisations but compete for scarce organisational resources and so it is necessary for organisations to make explicit and implicit choices between the two (March 1991, p. 71).

The tension in OL can be reconciled by viewing learning as a process that ultimately will result in better methods of organising (Dodgson 1993b, p. 380). This implies that an organisation must balance its distinctive and dynamic capabilities in order to both innovate and to enjoy the benefits. Dynamic capabilities need not only develop new product and service innovation but also internal process innovation. Organisations learn to innovate by balancing the competing demands of organising and learning so that innovations can be developed through processes of exploration and enjoyed through processes of exploitation.

2.6 Processes of Knowledge Creation and Transfer

Greater understanding of the processes within dynamic capabilities that encourage innovation is necessary to theoretically advance the RBV of the firm (Hadjimanolis 2000; Salaman and Storey 2002). The strategic management of innovation involves encouraging, facilitating and directing the development and application of organisational knowledge (Pitt and Clarke 1999). The two core processes of knowledge transfer and creation within knowledge-based theories of the firm provide an opportunity to develop this understanding. Additionally, these two processes bring a new perspective to the innovation and OL literature.

2.6.1 Knowledge Creation

Knowledge is created in an organisation through a dynamic process involving a continual dialogue between tacit and explicit knowledge spiralling between various organisational levels and carriers of knowledge (Nonaka 1994, p. 15). Innovation occurs as knowledge is developed and clarified through its transfer between individuals, groups and organisations. Specific learning processes occur at each of these levels (Inkpen and Dinur 1998, p. 456). At the individual level the dominant learning is interpreting and sensemaking, whilst at the group level it is integrating and at the organisational it is integrating and institutionalising. The individual is intrinsic to knowledge creation however if valuable individual knowledge is not shared with other individuals and groups then organisational performance is hindered (Inkpen and Dinur 1998, p. 456). The strength of ties between individuals has a greater effect on knowledge creation than the number of ties (McFadyen and Cannella Jr. 2004).

The constructivist perspective sheds valuable insights into knowledge creation (Tsoukas and Mylonopoulos 2004). A constructivist perspective is concerned with the social processes and practices through which organisational knowledge is constructed and created. It assumes that knowledge presupposes work and seeks to explore how what comes to be considered as organisational knowledge is established and validated. By seeing organisational knowledge as work it aids in probing how knowledge is shaped by organisational strategies and incentives. It also considers how power and politics influence the struggle between competing bodies of knowledge in organisations.

Yanow (2004) considered aspects of organisational power relationships and knowledge construction for a particular type of organisational member. These members were located on the organisation's fringes and boundaries. Despite their position within the organisation they possessed local knowledge that had strategic implications for the organisation. However because of their underprivileged and remote position in the organisation, the local knowledge from these organisational members was undervalued. Marshall and Rollinson (2004) considered the importance of power in shaping the criteria for what is considered valuable. Organisational members use strategies such as the construction of expertise (claim to be an expert) and construction of formal

authority (claim to be in charge) to influence how knowledge is constructed. In so doing they make use of resources that lie outside of narrow process of argumentation.

In addition to power, the quality of social relationships among organisational members and social capital impacts the way in which knowledge is constructed. In complex team-based projects such as Enterprise Resource Planning system implementations, team members need to bond and form strong united ties and develop a shared purpose in order to access and integrate heterogeneous organisational processes and knowledge (Newell, Tansley et al. 2004). Social capital can have both beneficial and negative effects on knowledge construction (Edelman, Bresnen et al. 2004). On the positive side, strong bonds between groups can facilitate knowledge construction. However particular groups that rely heavily on internal members can have gaps in their knowledge. The strong bonds that tie social capital groups together can also act as obstructions to linking the knowledge of different groups. This linkage and interaction among individuals with heterogeneous knowledge sets is critical for the creation of new knowledge (Un and Cuervo-Cazurra 2004). However, for knowledge creating interaction to take place, individuals need to first be willing to share knowledge and secondly be capable of understanding each other.

In the literature on organisations and management, innovation and knowledge creation are generally treated as separate and distinct concepts. This is evidenced by the discussion in Section 2.4 Knowledge-Based Theories of the Firm and Section 2.5 Innovation and Organisational Learning. In Section 2.4 knowledge creation emerges as a relatively new and critical process for KM from the KBV literature. Innovation has a much longer and different theoretical tradition which is established in Section 2.5. Despite these different theoretical backgrounds, it is proposed that these concepts are very closely related. Innovation is a form of knowledge creation because the development of new products, services or organisational processes are intrinsically knowledge-based. Innovation is also the most important form of knowledge creation from a KBV perspective. This is because it is only through innovation that an organisation can achieve its strategic edge, its competitive advantage.

2.6.2 Knowledge Transfer

Knowledge transfer occurs both within and between organisations. Intra-organisational knowledge transfer has been defined as the transmission of knowledge from a source to a recipient (Szulanski 1996). Another view of knowledge transfer sees it as a process in which a complex causally ambiguous set of routines is recreated and maintained by an organisation in a new setting (Szulanski 2000, p. 10). Intra-organisational knowledge transfer has also been defined as "the process through which one unit (e.g., individual, group, department, division) is affected by the experience of another" (Argote, Ingram et al. 2000, p. 3). This final definition is preferable because it captures three important elements of knowledge transfer: knowledge as a process, process functioning at various organisational levels and the influence of a source on a recipient. Inter-organisational knowledge transfer is a process whereby individuals in different organisations learn through sharing experiences on specific problems and procedures (Darr and Kurtzberg 2000, pp. 29-30). Knowledge transfer and learning can also occur between parties in markets such as banking (Uzzi and Lancaster 2003).

Empirical studies of internal knowledge transfer have considered the transfer of best practices within large companies (Szulanski 1996), the transfer of organisational capabilities from specially created business units (Smith and Zeithaml 1996) and the transfer of knowledge between subsidiaries within a multinational corporations (Gupta and Govindarajan 2000).

Data and information can be readily transferred through electronic media but knowledge is shared through intensive and extensive interaction between a human network (Lam 1997, p. 978; Davenport, De Long et al. 1998, p. 56). Such networks are constructed through formal organisational and informal social relationships between individuals and groups. According to the RBV, an organisation's resources are imperfectly imitable, partly because they consist of tacit knowledge and incur transfer costs (Teece, Pisano et al. 1997, p. 516). Managers can foster the transformation of individual knowledge to group and organisational knowledge by encouraging and enabling knowledge transfer, sharing and communication to overcome the barriers created by tacit knowledge (Inkpen and Dinur 1998, p. 457).

In order for a decision to be made or an action to be carried out in an organisation, it may be first necessary to gain an understanding of the particular situation or problem being experienced. At the individual unit of analysis this process is termed "sensemaking" (Weick 1995, p. 4) or "sense-reading" (Polanyi 1969, pp. 187-189). At the group unit of analysis this process is termed "perspective making" (Boland Jr. and Tenkasi 1995, p. 356). In order to make sense and form a perspective of an organisational problem or situation, an organisational member may need to source knowledge from other organisational members. In effect, knowledge transfer is a critical process to the success of sensemaking.

It may be difficult to transfer a perspective because the source and recipient may have differences in thought worlds. Individuals with thought worlds with different funds of knowledge and systems of meaning cannot share ideas easily (Dougherty 1992, p. 182; Boland Jr. and Tenkasi 1995, p. 351). The lack of a shared thought world requires that one be developed so that perspectives can be shared. It is necessary for knowledge to be exchanged back and forth between source and recipient. A thought world is developed when the knowledge is subjected to interpretation, the process through which knowledge is given meaning (Daft and Macintosh 1981, p. 294). The development of a thought world requires a source and recipient who both contribute to its construction. The foundation for this construction is trust.

Knowledge transfer is therefore not a uni-directional process. The transfer of an individual or group perspective can require multiple instances of communication, which collectively facilitate the transfer of the perspective. The development of common thought worlds requires considerable exchange between source and recipient. As such, knowledge transfer requires a channel that supports multiple exchanges, clarification and multiple cues (Weick 1995, p. 99). It incorporates all three OL processes of sharing, acquiring and interpreting information and knowledge (Huber 1991; Andrews and Delahaye 2000, p. 798).

An organisation's ability to create knowledge and to innovate is dependent on its ability to transfer knowledge. For example, international product development capabilities have been found to be dependent upon an organisation's ability to transfer tacit knowledge about overseas markets between countries (Subramaniam and

Venkatraman 2001, p. 359). Competitive advantage whilst originally thought to exist because of organisation-specific capabilities is now also considered to exist at the level of a cluster of organisations (Tallman, Jenkins et al. 2004). The dynamics of transfer and creation of knowledge between organisations within a cluster creating the advantage.

Earlier discussion extended the RBV and KBV through the notion of dynamic capabilities which provided deeper insight into the reasons for competitive advantage (Teece and Pisano 1994; Teece, Pisano et al. 1997). They result in greater flexibility to changed market conditions, reduced time to market and greater innovative capacity (Lorenzoni and Lipparini 1999). A dynamic capability has both functional and integrative components that enable the generation and utilisation of knowledge (Verona 1999). Innovative capabilities are the specific expertise and competence related to the development and introduction of new processes and products (Hagedoorn and Duysters 2002, p. 168). They include mechanisms by which organisations develop and share resources and capabilities in spite of path dependencies and core rigidities in existing capabilities (Lorenzoni and Lipparini 1999). Managers can contribute to these innovative capabilities by promoting these mechanisms which encourage knowledge transfer.

2.7 Knowledge Management Initiatives

The previous sections discussed the theoretical foundations upon which a conceptual framework for KM was constructed. However, for managers KM is very much a practical consideration. For practitioners, it is concerned with enhancing organisational structures and systems through the use of new governance and management techniques in order to improve the flow of knowledge and encourage knowledge creation and sharing (Neef 1999). In this way people can be connected, obstacles removed, more effective mechanisms for transfer used, and opportunity given to people to communicate and develop shared context. Many initiatives have been developed by practitioners that have been put forward under the conceptual umbrella of the term KM. However, whilst these initiatives are proposed under a common conceptual umbrella, there has been little effort to integrate them into a cohesive framework. This partly reflects the field of KM being in a stage of developmental infancy.

It has been proposed that KM initiatives facilitate both internal and external organisational transfer of knowledge (Argote, Ingram et al. 2000). Without transfer, knowledge available from both internal and external sources cannot be fully utilised by an organisation. Through the transfer of knowledge, new knowledge is created and organisations learn to innovate. Members of organisations participate in various activities that are designed to facilitate the transfer of knowledge. Such activities include holding meetings, setting up mentoring schemes, running training sessions, hiring new employees and consultants, participating in conferences and exhibitions, and forming collaboration with other organisations. Other activities that act as mechanisms through which knowledge can be transferred include personnel movement, training, communication, observation, technology transfer, reverse engineering products, replicating routines, patents, scientific publications, presentations, interactions with suppliers and customers, and alliances and other forms of inter-organisational relationships (Argote, Ingram et al. 2000, p. 3).

Attempts have been made to identify and summarise core issues and themes within the KM literature. Based on these categorisations, KM initiatives can then be located and better understood. One study that simultaneously considered both the OL and KM literatures determined that training, HR practices, information technology and strategic management were dominant issues and themes (Scarbrough and Swan 2001, pp. 7-8). These results are consistent with a change model previously developed to classify new organisational practices and initiatives (Whittington, Pettigrew et al. 1999). The change model which will be extended in this thesis consists of three change types: changing boundaries, changing processes and changing structures. These change types are consistent with two of the three aspects of theories of the firm: boundaries and internal organisation. Each change type consists of a number of elements, many of which map or link to KM practices and initiatives. Similar to the field of KM, the change model has not been explored empirically to the effect its elements have on performance outcomes (Whittington, Pettigrew et al. 1999, p. 583).

2.7.1 Changing Boundaries

An ability to explain and understand organisational boundaries and forms is a fundamental issue within organisation theory. In response to the new competitive environment different organisational forms are required. In a hypercompetitive

environment, organisations based on traditional large hierarchies are finding it difficult to compete due to a lack of flexibility. New forms are more flexible and adaptive and enable knowledge creation and transfer (Grant 1996a; Ilinitich, D'Aveni et al. 1996; Volberda 1996). They allow organisations to better respond to opportunities and threats in the hypercompetitive environment. New forms to emerge include the network and virtual organisations (Fulk and DeSanctis 1995). The type of form required is dependent on the particular environmental context faced (Volberda 1996).

Earlier sections identified the important contribution that technological innovation has made to organisations by making available many new communication media (Webster and Trevino 1995; Roberts and Grabowski 1999). These new communication media and other tools resulting from advances in information technology have the potential for improving an organisation's ability to transfer and integrate knowledge (Rulke, Zaheer et al 2000, p. 135; McPhee and Zaug 2001). Without this ability, many new organisational forms such as network and virtual organisations would not have been possible (Clegg 1990, pp. 120-125). Effective knowledge transfer also takes on increased importance in new organisational forms based on teams rather than hierarchies. For instance, the negative effect of turnover on task-based efficiency and effectiveness is greater for teams than for hierarchy (Carley 1992). Thus, as organisations adopt new organisational forms incorporating team-based structures, effective internal knowledge transfer is increasingly important (Van den Bosch and Volberda 1999).

Strategically, organisations are increasingly focusing on distinctive capabilities in which they have a competitive advantage (Whittington, Pettigrew et al 1999, p. 587). Secondary capabilities are often jettisoned in order to concentrate on those activities that create economic value. Necessary ad hoc capabilities are often sourced through external networks or collaborations. This change type is categorised as changing boundaries and it is argued that organisations reconstruct their boundaries around distinctive capabilities through the elements of alliances, downscoping and focus, and outsourcing (Whittington, Pettigrew et al 1999, p. 587). The RBV the firm regards the organisation as consisting of its resources and in the case of the KEV, that resource is knowledge. An action taken by an organisation to change its boundaries adjusts its knowledge base. Boundaries may also have varying permeability. Although permeable

organisational boundaries allow for greater accessibility to externally located knowledge, they also allow provide easier access to outside parties to an organisation's capabilities and knowledge base (Matusik and Hill 1998, p. 680).

2.7.1.1 Alliances (Interorganisational Collaboration and Networks)

Interorganisational collaboration is a cooperative relationship between two or more organisations in order to derive mutual benefit (Hardy, Phillips et al. 2003).

Collaboration has been studied from a number of perspectives including the RBV, organisational economics, strategic management and power (Powell, Koput et al. 1996; Shenkar and Li 1999). Generally, these literatures have developed independently, rarely acknowledge each other and emphasise different effects and outcomes (Hardy, Phillips et al. 2003). Even within the RBV, perspectives on collaboration differ in respect to emphasis. One perspective emphasises the knowledge transfer aspect of collaboration and its potential to supply requisite capabilities. Another perspective emphasises the knowledge creation aspect of collaboration occurring from ongoing partnering amongst a network of organisations (Powell, Koput et al. 1996; Hardy, Phillips et al. 2003).

According to the RBV, organisations enter into collaborative relationships in order to share resources and develop new capabilities (Combs and Ketchen Jr. 1999, pp. 867-868; Lorenzoni and Lipparini 1999). The types of resources shared vary but may include physical assets, intellectual property including patents, personnel, financial expertise and technical expertise (Shenkar and Li 1999, p. 135; Hardy, Phillips et al. 2003). Usually these resources and capabilities cannot be developed internally, are considered critical and are needed in order to survive (Powell, Koput et al. 1996; Shenkar and Li 1999). Collaborative relationships such as alliances constitute some of the most effective means of internalising another organisation's capability (Simonin 1999, p. 595). Capabilities developed can be dynamic and therefore enable the organisation to better innovate (Hardy, Phillips et al. 2003). The ability to integrate, interact and share knowledge with other organisations is itself a distinctive organisational capability termed relational capability (Lorenzoni and Lipparini 1999). By sourcing and developing capabilities with external partners, organisations are able to concentrate on their core competencies provided by their core base of knowledge.

Collaborative relationships may result in a number of strategic outcomes including improved manufacturing operations, access to scarce assets, the sharing of R&D risks, access to and understanding of new markets, faster product development times, development of new products, acquisition of new distribution outlets and the identification of new technological opportunities (Lorenzoni and Lipparini 1999; Hardy, Phillips et al. 2003). These strategic outcomes can lead to collaborative advantage which is the achievement of competitive outcomes that otherwise could not be reached individually (Huxham and Vangen 2000, p. 772).

There exist numerous collaborative arrangements including business networks such as professional associations and chambers of commerce, joint ventures, partnerships and strategic alliances (Hagedoorn and Duysters 2002). Collaborative relationships can include connections with customers, suppliers and competitors (Adler, Goldoftas et al. 1999). Strategic alliances have been a popular theme in the KM literature embracing a diversity of collaborative forms including supplier-buyer partnerships, outsourcing agreements, technical collaboration, joint research projects, shared new product development, shared manufacturing arrangements, common distribution agreements, cross-selling arrangements and franchising (Grant and Baden-Fuller 2004, p. 63).

Strategic alliances and joint ventures are commonly used when organisations seek to transfer tacit and embedded knowledge found in other organisations (Shenkar and Li 1999). There exists an asymmetry of knowledge transfer in joint ventures due to the different tacit knowledge bases, different knowledge transfer mechanisms and different absorptive capacities (Lam 1997). An organisation's absorptive capacity limits its ability to integrate knowledge held externally. Organisations seek knowledge which complements their existing knowledge base rather than knowledge which duplicates what they already have (Shenkar and Li 1999). Organisations collaborate in order to develop core competencies rather than augment the capabilities of other organisations (Lorenzoni and Lipparini 1999).

Collaboration leads to sharing and transfer of knowledge between organisations ultimately resulting in organisational learning (Dodgson 1993a; Dyer and Nobeoka 2000). Rather than exclusively residing or being generated within an individual or organisation, knowledge can also reside or be generated within a community of practice

or a network of collaborating organisations (Brown and Duguid 1991; Powell, Koput et al. 1996; Hardy, Phillips et al. 2003; Lee and Cole 2003). In addition to facilitating the transfer of existing knowledge between partner organisations, collaboration also generates new knowledge between a community of individuals and organisations (Hardy, Phillips et al. 2003).

Collaborations produce several effects including knowledge creation however these effects are influenced by the type of collaboration. Knowledge creation is most likely when the collaboration is both involved and embedded but transfer is usually only likely when the collaboration is involved (Hardy, Phillips et al. 2003). Knowledge loss is more likely to occur collaborations that are involved and embedded. Managers must balance this loss with the need for knowledge creation the environment. There is a tradeoff between strategic and innovation effects (Hardy, Phillips et al. 2003). Knowledge transfer is associated with gaining competitive advantage but creation more with innovation. This suggests that long-term sustainable competitive advantage can only be achieved by organisations as part of a network of collaboration organisations that both transfer and create knowledge together.

The use of interorganisational networks is particularly well suited to organisations in industries which are hypercompetitive or where requisite knowledge is complex, scattered and specialised (Lorenzoni and Lipparini 1999). Collaboration is more dominant in certain industries where knowledge is disparate such as the biotechnology industry and in which the locus of innovation is within a network of interorganisational relationships (Powell, Koput et al. 1996). In the biotechnology industry where the critical resource is scientific knowledge, biotechnology organisations enter into a large number of collaborative arrangements with scientists at other organisations (Liebeskind, Oliver et al. 1996). Usually the collaborative arrangements are determined by social networks more than market contracts. Traditional organisational structures such as hierarchy have proved useful in supporting the use of the social networks.

The ontological and epistemological assumptions of the knowledge-based theory of the firm have a number of implications for organisational networks. Integration of knowledge within organisational networks rather than within an organisation or through market contracts is appropriate under particular circumstances. These circumstances

are when the knowledge involved can be made explicit, when there is uncertainty or ambiguity concerning the knowledge and product domains, or when the knowledge base of the organisation needs to be extended rapidly in order to create competitive advantage. Under these circumstances, organisational networks are an efficient and effective basis for integrating knowledge.

Within collaborative relationships such as alliances there exists a tension between sharing and holding back knowledge for exchange (Oxley and Sampson 2004). There exists a risk of unintended knowledge loss seeping to other parties in the relationship. There is some protection for partners in the form of inimitability of the organisations capabilities and core competencies due to their embedded, tacit and idiosyncratic nature. Many resources and capabilities are imperfectly mobile and thus are protected from undesired appropriation in collaborative relationships (Peteraf 1993). However, certain alliances such as joint ventures are well suited to the transfer of knowledge of this nature because employees from the partner organisations are brought together for significant periods of time and organisational routines are replicated (Shenkar and Li 1999). Nevertheless, alliances fail because of partners pursuing their own interests rather than the alliances, because of costs associated with co-ordinating the alliance and because of difficulties in aligning the long-term goals of parents with those of the alliances (Park and Ungson 2001).

Certain alliances and collaboration such as joint ventures create competitive advantage in the child organisation through an inflow of complementary resources from parent organisations. Whilst joint ventures receive skills and capabilities of their partners, the process is bi-directional so that parents also may also acquire knowledge from the agreement (Tsang 2002). Other alliances create competitive advantage through the sharing of complementary resources between partnering organisations. Other collaborations such as industry networks create knowledge that is not held by any of the individual organisations. Value from alliances is therefore created within a single organisation, within a particular relationship and within a network of multiple collaborative relationships (Powell, Koput et al. 1996; Dyer and Singh 1998; Kogut 2000). Whilst simple exchanges between organisations may result in knowledge transfer, knowledge creation only results from multiple exchanges from considerable social interaction within ongoing collaborations (Hardy, Phillips et al. 2003).

Organisations are increasingly building collaborative relationships with multiple partners creating networks of alliances (Lorenzoni and Lipparini 1999). Traditional collaborative relationships such as joint ventures are common in the automotive industry (Inkpen and Dinur 1998). In the automotive industry, manufacturers have now extended these relationships to develop networks of suppliers which have reduced development risks, time-to-market, defect rates and inventory levels whilst increasing the organisations capacity for innovation and flexibility (Helper 1991). In particular, Toyota is renowned for sharing its manufacturing knowledge within its production network (Dyer and Nobeoka 2000). The ability to create and manage network level knowledge sharing processes gave Toyota and first-tier suppliers in its production network productivity advantages (Dyer and Nobeoka 2000). It achieves this in its own operations and joint ventures such as NUMMI by promoting information sharing amongst its suppliers through a supplier association (Adler, Goldoftas et al. 1999). Toyota also provides extensive technical support to suppliers which enriches the value that suppliers bring to it. At NUMMI it does this by utilising suppliers' product design capabilities and also participating in continuous improvement in both its own and suppliers' internal processes (Adler, Goldoftas et al. 1999).

The use of strategic alliances and collaborative networks to transfer technical knowledge is not limited to the automotive industry (Simonin 1999). The transfer of specialised product level knowledge through inter-organisational networks occurs amongst manufacturers of automatic packaging machinery (Lorenzoni and Lipparini 1999). The transfer of scientific knowledge from universities to new biotechnology organisations in the biotechnology industry (Liebeskind, Oliver et al. 1996). Organisations that learn from diverse parties within their network typically make better quality decisions (Beckman and Haunschild 2002). Additionally, the maintenance of a loosely couple network structure enables organisations to adjust to the differing organisational requirements related to innovation (Brusoni, Prencipe et al. 2001).

Collaborative relationships are negotiated in an ongoing process of communication but are not dependent upon market or formal structural control mechanisms (Hardy, Phillips et al. 2003). As such, the governance mode may be formal or informal including contractual agreements, ownership links as well as informal relationships (Grant and Baden-Fuller 2004, p. 63). The primary advantage that alliances have over market

forms is the extent of access to knowledge (Grant and Baden-Fuller 2004). These scenarios are more consistent with the RBV.

Hypothesis 1: Businesses that have links to other businesses or network either formally or using the internet with other businesses are more likely to develop or introduce new or improved procedures, services or products than businesses that do not have alliances.

Whilst various patterns for collaboration and alliances have been considered in previous studies, no study has considered whether the type of partner influences the innovative relationship. This study will consider this question by considering the following partner types: Australian Taxation Office (ATO), banks, business consultants, customers, family or friends, Government small business agencies, industry associations or chambers of commerce, local business, others in industry and solicitors. Empirical analysis will be carried out as a hypothesis generating exercise to determine if there is the potential for future research.

2.7.1.2 Downscoping and Focus

The premise of downscoping and focus is that organisations in response to the hypercompetitive environment reconstitute their boundaries around core competencies and capabilities that provide competitive advantage (Whittington, Pettigrew et al. 1999, p. 589). The pressures for downscoping in order to compete in this new environment include increased international competition, corporate raiding, deregulation and changes in consumer preferences (DeWitt 1993). Large hierarchical organisations such as conglomerates and multinationals are considered sluggish in their capacity to respond to the challenges of the hypercompetitive environment. The strategic logic behind reducing human and capital resource levels argues that an organisation can be both internally and externally aligned in a much better fashion with the competitive environment (DeWitt 1993). By reducing their size organisations are better able to focus on those capabilities that add economic value.

The completion of the same work with less people is achieved through eliminating or redesigning tasks, using technology and changing structures (Freeman 1999, p. 1515). For example, downscoping can involve restructuring the organisation by changing the number of hierarchical levels, selling business units or merging business units.

One common technique managers use to downscope an organisation is downsizing. Downsizing is a set of intentional management activities that seeks to improve organisational efficiency, effectiveness, productivity and competitiveness by reducing the size of an organisation's permanent work force and altering the work processes used (Freeman and Cameron 1993, p. 12; Budros 1999, p. 70). Downsizing is an intentional reduction in employee numbers and is accomplished by a set of managerial actions including hiring freezes, layoffs, normal attrition and induced attrition (Freeman 1999, p. 1507). Downsizing has both positive and negative effects. These effects can be felt and viewed at multiple levels of knowledge within the organisation: individual, group and organisation. Often managers downsize whilst concentrating on the positive effects at a certain level without appreciating the negative effects occurring at other levels.

The positive effects of downsizing can be improved productivity, efficiency and speed (Freeman and Cameron 1993). Unrequired knowledge held at the individual and group levels can be divested and thus reduce costs for the organisation. Results suggest that organisations recover or adapt to downsizing. However there exists a paradox between downsizing and innovation. For innovation certain parts of production and operation need to be outsourced in order to exploit flexibility and cut costs, however innovation is dependent on existing internal capabilities which are reduced by downscoping (Brusoni, Prencipe et al. 2001, p. 599).

Downsizing can be a destructive process (Kets de Vries and Balazs 1997). When an organisation lets an individual go, it loses all the knowledge, learning, skills, experience and potential of that employee. Downsizing ignores the organisation's contribution to the development of that employee. The value of the individual alone is difficult to estimate let alone their value in various intra-organisational relationships and networks. Survivors of downsizing also react negatively to the loss of friends but positively to co-workers in similar structural positions (Shah 2000). Downsizing upsets the social fabric of an organisation and thus potentially can retard knowledge transfer and creation (Shah 2000, p. 111). The loss of valuable knowledge when employees leave can be amplified when it also involves activities such as downsizing, re-engineering and outsourcing (Van de Vliet 1997).

By downsizing, organisations lose the tacit knowledge and skills held by those individuals lost. Organisations also lose the tacit knowledge held in the relationships of the networks in the groups that those individuals participate. This argument is the reverse of the absorption of personnel argument (Madsen, Mosakowski et al. 2003). Movement of personnel between organisations transfers tacit knowledge and skills and broadens the organisation's stock of knowledge. Rather than disrupt, it can contribute to maintaining traditional modes of organising (Madsen, Mosakowski et al. 2003).

Downsizing is often made for short term financial gain and as such ignores the long term implications of breaking the psychological contract and the effect this has on the value and belief systems of lost and surviving employees (Kets de Vries and Balazs 1997).

At the individual level, downsizing can result in the unanticipated loss of valuable employees (Kets de Vries and Balazs 1997). This can translate into a degrading of distinctive capabilities at group and organisational levels. It is the difficulty in gauging the social and cultural effects of downsizing on the social networks and organisational knowledge loss that makes downsizing a difficult proposition. After downsizing, fewer employees remain to do the required work which can result in increased workload, stress, erosion of employee loyalty, loss of motivation, resentment, resistance, low morale, conflict and burnout (Freeman and Cameron 1993; Kets de Vries and Balazs 1997).

From a resource / knowledge based perspective the value of downsizing is not clear. There exists a tension because whilst downsizing might allow organisations to focus more clearly on core knowledge, it also reduces the stock of knowledge available internally with which to innovate. If the benefits from focusing on core competencies and capabilities are greater than a loss in knowledge stock and absorptive capacity, it would be expected that the net effect of downsizing on innovation would be positive. However, it is recognised that downsizing generally does not result in improved organisational performance unless combined with strategic HR practices (Chadwick, Hunter et al. 2004).

The costs and benefits of downscoping and downsizing have parallels in the turnover literature. There is a cost associated with turnover which can be reduced through knowledge transfer (Levitt and March 1988, p. 328; Carley 1992; Simon 1996, p. 178). When organisational members leave without first transferring their knowledge, the lessons of history are lost and knowledge disappears. The human components of an organisation's memory is reduced and its efficiency, effectiveness and productivity may decrease (Huber 1990; Huber 1991; Walsh and Ungson 1991). One way such a loss can be avoided is if experience-based knowledge is transferred from those who experienced it to those who did not. Such knowledge transfer is particularly important when managers engage in downsizing.

Whilst downsizing is not synonymous with reducing employees, reducing employees is one of the most common downsizing tactics (Freeman 1999, p. 1508).

The preceding discussion suggests that downscoping and downsizing could have either a positive or negative effect on an organisation's innovativeness. The following exploratory hypothesis is put forward to examine this relationship further.

Hypothesis 2: Businesses that decrease employment levels are more likely to develop or introduce new or improved procedures, services or products than businesses that do not downsize.

Whilst various reasons for downscoping and focus have been considered in previous studies, no study has considered whether the type of reasons influences the innovative relationship. This study will consider this question by considering the following reason types: decreased demand, improvements in business efficiency, reduced range of activities, replaced permanent employees with casual staff and a temporary decrease in employment levels. Empirical analysis will be carried out as a hypothesis generating exercise to determine if there is the potential for future research.

2.7.1.3 Outsourcing

Outsourcing refers to the practice of an organisation divesting activities of low value or low strategic significance to external parties (Whittington, Pettigrew et al. 1999). For example, organisations are increasingly using external providers for their training needs,

however the effects of this outsourcing are unclear (Gainey and Klaas 2003). The argument for outsourcing is a corollary of downscoping and focus. If an organisation reduces the scope and scale of its internal activities to concentrate on those capabilities that provide competitive advantage, it still has certain value chain activities that need to be undertaken. These activities can often be carried out more efficiently by other external organisations that have a competitive advantage in those activities.

Organisations are more likely to outsource activities that involve production knowledge than technical knowledge creating an imbalance of capabilities around technical knowledge (Brusoni, Prendpe et al. 2001). For example, an electronics company may choose to outsource the provision of a certain sub-assembly whilst retaining the capability provided by a surface mount device that populates circuit boards with computer chips. From a resource / knowledge based perspective, this tension can be explained in terms of competing objectives. The outsourcing of the production knowledge allows the organisation to enjoy the innovative and competitive benefits of specialisation. However, by retaining the technical knowledge even if it does not have a competitive advantage in this technical knowledge, it maintains its absorptive capacity in this area and maintains its capability to innovate.

Hypothesis 3: Businesses that contract out work are more likely to develop or introduce new or improved procedures, services or products than businesses that do not outsource.

2.7.2 Changing Processes

An ability to explain and understand the internal dynamics of organisations is a fundamental issue within organisation theory. The change model recognises that in order to compete in the new environment, certain distinctive and dynamic capabilities such as flexibility are required to be competitive (Whittington, Pettigrew et al. 1999). These capabilities can be achieved by changing processes to increase vertical and horizontal interactions between employees and organisations. This increased interaction leads to increased knowledge transfer across organisational units and up and down organisational levels. This argument is consistent with the principle of transferability from the KBV which is the view that the ability to transfer an

organisation's knowledge and resources is a factor in creating competitive advantage (Barney 1986; Grant 1996b).

The changing processes type of the change model includes a number of initiatives and activities that increase horizontal and vertical knowledge transfer including I&CT, EDI, HR practices, horizontal networking and organisational integration (Whittington, Pettigrew et al. 1999). Some of these initiatives such as I&CT provide the infrastructure across which interactions can take place. People are no longer bound by time and space. Other initiatives such as HR practices and horizontal networking formalise the legitimacy of interactions and promote knowledge transfer across and within organisational boundaries. For example, the movement of employees across organisational boundaries and the utilisation of conferences and seminars create novel opportunities for people to share and create knowledge (Whittington, Pettigrew et al. 1999). In addition to these, the initiatives of benchmarking, R&D and training have also been added to the changing processes type. Training has been specifically identified as a KM transfer mechanism (Argote, Ingram et al. 2000, p. 3). Training and benchmarking have been recognised as being most closely related to processes in improvement rather than changing boundaries and structures (Upton 1996).

2.7.2.1 Benchmarking

TQM is an eclectic science-based, non-hierarchical and non-market oriented management system, philosophy and business strategy that seeks to improve the quality and efficiency of products and services (Wruck and Jensen 1994; Reed and Lemak 1996). The guiding precepts of TQM include a focus on customer satisfaction, stressing continuous improvement and treating the organisation as a total system (Sitkin, Sutcliffe et al. 1994). It consists of a suite of practices and techniques that need to be implemented as a collective and integrated system in order to align the organisation with its competitive environment (Hackman and Wageman 1995). Some of the practices and techniques advocated include senior management commitment and involvement, quality philosophy and culture, related quality training, customer-driven changes, continuous improvement, teams-based problem solving and decision-making and management by objectives (Douglas and Judge Jr. 2001). TQM creates value in an organisation through enabling creation and utilisation of valuable specific knowledge at all organisational levels (Wruck and Jensen 1994).

The success of TQM and benchmarking in particular has been proposed as one of the major reasons why organisations in industrialised countries have attempted to become more knowledge-based in a hypercompetitive environment (Hanssen-Bauer and Snow 1996). The cost of technology and the difficulty in transferring it has declined. The competitive advantage of organisations has been eroded through international continuous improvement and benchmarking and so unable to compete on labour or technology, organisations have turned to knowledge for a competitive edge. Benchmarking has increased competition in and between companies and perpetuated the dominant western systems of management into organisations (Walgenbach and Hegele 2001). Many organisations have established competitor analysis capabilities in order to systematically analyse their competitors and respond to the complexity of the competitive environment (Ghoshal and Westney 1991). Benchmarking is an aspect of this competitive analysis capability.

Learning is an inherent process in TQM and benchmarking is one of the key learning tools provided (Hackman and Wageman 1995; Reed and Lemak 1996). Benchmarking is a concept loosely linked to management theory involving comparison through measurement in order to compete by reducing a performance gap between a superior other (Cox, Mann et al. 1997). It is a popular, formalised organisational activity whereby an organisation gathers and compares data, information and best practices available on peer or competitor organisations in order to improve performance (Wruck and Jensen 1994; Fedor, Parsons et al. 1996). Many organisations have achieved world-class status by adopting TQM related practices such as continuous improvement and benchmarking (Hanssen-Bauer and Snow 1996, p. 413). Benchmarking is recognised as a particularly effective technique for late entrants establishing themselves in a market by transferring insights from competitors (Cho, Kim et al. 1998).

Benchmarking is similar to scientific management in that both prescribe certain universal organisation principles (same ideology of efficiency and methodology) (Walgenbach and Hegele 2001). For example, benchmarking involves establishing specific measures with which an organisation can compare itself with competitors on key variables such as capital investment, productivity and quality (Ghoshal and Westney 1991). However, unlike scientific management, benchmarking does not prescribe a detailed model of organisation design. According to the approach, anything

can be benchmarked and examples of units of analysis include products, structures and processes. Advocates of benchmarking suggest that it should be integrated throughout an organisation in order to support continuous improvement (Walgenbach and Hegele 2001).

Benchmarking is consistent with several aspects of TQM philosophy including evaluating customer requirements, developing alternative practices and establishing quality improvement goals (Hackman and Wageman 1995). Benchmarking is a form of OL because it involves internal comparisons with self as well as external comparisons with other organisations (Fedor, Parsons et al. 1996). In addition to a management system, it can be viewed as a cognitive process that serves as a framework for strategic decision making because managers continuously compare themselves against internal and external measures (Bamberger and Fiegenbaum 1996). In a study of strategic decisions by senior managers in North American organisations, benchmarking was identified as an approach used to identify alternative solutions for strategic decision making, particularly preferred and successful in third-sector organisations (Nutt 2000). Strategic decision makers usually visit organisations considered to be exemplary in order to identify external solutions that can potentially be easily adapted for local use.

Benchmarking is an additional aspect to the change framework used in this thesis (Whittington, Pettigrew et al. 1999). It has been added to the framework due to its key role in transferring knowledge about organisational performance. Benchmarking can be applied to the HR function and can facilitate the adoption of HR practices and innovations, develop core capabilities and assist in achieving competitive advantage (Bamberger and Fiegenbaum 1996). Benchmarking is an area where practice has developed much further than research and theory (Fedor, Parsons et al. 1996). Support has been found for the notion that the philosophical and cultural aspects of TQM such as an open culture, employee empowerment and executive commitment are what provides sustainable competitive advantage rather than individual techniques such as benchmarking (Powell 1995). Each technique is considered as a necessary but not sufficient condition for providing competitive advantage (Reed and Lemak 1996). It has been argued that TQM is most likely to be successful when there is a match between environmental uncertainty and an organisation's orientation and are most likely to be unsuccessful when there is a mismatch that is already leading to poor performance

(Reed and Lemak 1996). However, it has been difficult to establish the effectiveness of competitor analysis on organisational performance (Ghoshal and Westney 1991).

When managers compare and adopt fIR policies and practices based on internal, external and temporal targets, depending on whether they are daring or less daring an organisation's performance will be impacted (Bamberger and Fiegenbaum 1996). An example of benchmarking is when an organisation obtains reliable manufacturing cost information on its competitors from an outside agency (Ghoshal and Westney 1991). With this information the organisation is able to establish cost benchmarks for its own manufacturing operations. Another example of benchmarking is an organisation that evaluates the quality of all the components of products sold by its competitors (Ghoshal and Westney 1991). The components with the highest quality in each product are identified and used to establish the benchmark measures for quality.

Four aspects of competitor analysis have been identified that can benefit an organisation: sensitisation, legitimisation, benchmarking and inspiration (Ghoshal and Westney 1991). Benchmarking forces an organisation to reconsider basic assumptions about its own operations and its competitors and can suggest potential solutions for problems (Ghoshal and Westney 1991). Rather than identify a model to copy from another organisation, benchmarking can inspire and demonstrate that a particular problem is solvable and also suggest solutions that may be consistent with an organisation's current capabilities and absorptive capacity (Ghoshal and Westney 1991).

Hypothesis 4: Businesses that compare their performance with other businesses are more likely to develop or introduce new or improved procedures, services or products than businesses that do not benchmark.

Whilst various areas of benchmarking have been considered in previous studies, no study has considered whether the type of area influences the innovative relationship. This study will consider this question by considering the following area types: cost product or service, marketing or advertising, price product or service, quality client service, quality product or service and range product or service. Empirical analysis will

be carried out as a hypothesis generating exercise to determine if there is the potential for future research.

2.7.2.2 Electronic Data Interchange

Advances in I&CT have seen the availability of different communication media to organisations increase considerably (Webster and Trevino 1995). In the past, organisations were limited to traditional media such as face-to-face, telephone, memo, letter and computer report. Now such media as teleconferencing, voice mail, electronic mail and facsimile are also readily available. Traditionally the design of organisational forms has been bounded by the constraints of time and space (Fulk and DeSanctis 1995). New electronic technologies enable individuals and organisations to communicate across the boundaries of time and space and results in an increase in the volume of communication (Sarbaugh-Thompson and Feldman 1998). For example, electronic mail enables personnel to instantly send messages long distances and teleconferencing enables group meetings of participants located geographically apart (Trevino, Lengel et al. 1987; Lee 1994). These new media have the capacity to alter and influence the social and communication-related activities of organisations and therefore the potential to alter organisational structures and process (Barley 1986). The richness of communication through these media is at least partially socially constructed (Fulk, Schmitz et al. 1995).

The use of I&CT to facilitate communication and knowledge transfer is an established KM theme that will be continued in a later section. However one of the specific elements of the change framework used in this study is electronic data interchange (EDI) between organisations which is enabled by the infrastructure of I&CT (Whittington, Pettigrew et al. 1999). EDI involves the inter-organisational exchange of business transactions in an electronic or computer format (Stegman 1997, p. 110). EDI represents the merging of electronic mail and transaction-based computer systems to automate the transfer of transaction data between organisations. Examples of organisational functions that involve EDI include procurement (purchasing and payment) (Mukhopadhyay and Kekre 2002) and product and service delivery provided by electronic distribution systems (Hitt and Frei 2002).

The use of EDI alters the relationship between organisations and how an organisation manages its value chain (Fulk and DeSanctis 1995). Often the coupling between organisations is tightened through EDI as each organisation is required to adopt particular EDI formats. This coupling can act as a form of competitive advantage if customers find it more difficult to change to alternative suppliers because of investments and integration of EDI. EDI increases flows of data and information in the customer-supplier relationship resulting in increased participation and flexibility between organisations (Whittington, Pettigrew et al. 1999). The demand and supply information transmitted through an EDI system enables both supplier and buyer to gain a better knowledge of the other's position as well as the operational efficiencies (Wang and Seidmann 1995). In terms of the value chain, EDI facilitates accurate, frequent and timely exchange of information for co-ordination, for example in just-in-time systems (Srinivasan and Kekre 1994).

In summary, EDI creates efficiencies in the value chain by increasing the speed at which business transactions take place and also by improving accuracy. When EDI is implemented in organisations, innovation occurs because it results in new or improved business processes. These improvements can give an organisation a strategic edge if their competitors are not using similar systems. By binding customers to the organisation more closely through proprietary coupling, positive competitive effects can also result. EDI has certain strategic benefits and operational efficiencies but no research has been undertaken into any knowledge benefits (Mukhopadhyay and Kekre 2002).

Hypothesis 5: Businesses that use the internet for business to business data transfer are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use EDI.

Little empirical research has been conducted into the various types of EDI and their respective associations with innovation (Mukhopadhyay and Kekre 2002). This study will consider this question by considering the relationship of the following EDI types to innovation: co-ordinate delivery (internet), electronic banking or funds transfer, electronic ordering (internet), electronic stock monitoring, lodge forms or tenders, make payments (internet), marketing or promotional activities, place orders (internet), receive

invoices (internet), receive orders (internet), receive payments (internet), send invoices (internet) and web site or home page (sales). Empirical analysis will be carried out as a hypothesis generating exercise to determine if there is the potential for future research.

2.7.2.3 Horizontal Networking (Internal Collaboration)

Organisations have an advantage over markets for developing social capital and this is what gives them an advantage because social capital enables the internal transfer and creation of knowledge (Nahapiet and Ghoshal 1998). Despite an advantage in social capital, the transfer of knowledge within organisations is often difficult to achieve. Not only are there impediments to knowledge transfer but identification and access to knowledge can also be difficult. The socially embedded nature of tacit knowledge varies greatly between organisations and can itself impede the cross boundary transfer of knowledge (Lam 1997).

Individual level tacit knowledge resides within the individual. An appropriate organisational climate including flexible organisational structures and effective motivation techniques are required in order facilitate sharing (Davenport, De Long et al. 1998, p. 56). Group level knowledge is transferred, created and stored within relationships and networks (Lam 1997). In order to transfer socially embedded tacit knowledge, intensive and extensive interaction between individuals and groups is required (Kogut and Zander 1992; Lam 1997). This interaction builds trust and develops shared frames of reference (Dougherty 1992). Individuals' awareness of others' capabilities and knowledge is enhanced through the development of a broad organisational network of internal relationships (Cohen and Levinthal 1990, p. 134). Through interaction, knowledge spirals throughout the various levels of the organisation (Nonaka 1994).

Horizontal networking recognises that people are an organisation's key resource and their capabilities and knowledge need to be made available and utilised across organisational boundaries (Whittington, Pettigrew et al. 1999). Horizontal networking consists of activities or initiatives that bring key people together who may otherwise would not meet. Internally oriented collaborative relationships involve internal units and generally facilitate the crossing of formal organisational structures or boundaries. Internal collaboration involves interactions between participating organisational units,

results in the formation of a variety of structures from the relationships forged and facilitates the exchange of information and learning between organisational units (Hardy, Phillips et al. 2003). Individuals who interact with others within an organisation across formal organisational structures may be exposed to knowledge that is novel, useful or insightful. Internal collaboration involves making better use of existing knowledge. In effect the internal structures of the organisation are re-oriented.

Examples of horizontal networking activities include conferences, seminars, yellow pages, mentoring schemes, knowledge maps, talk rooms, knowledge fairs and open forums (Davenport, De Long et al. 1998; Davenport and Prusak 1998; Whittington, Pettigrew et al. 1999). Informal horizontal networking opportunities can even be engineered through the design of office layouts including the positioning of lunch rooms, meeting areas, water coolers and smoking areas. In the case of joint ventures, parties to the joint venture can share technology through visits and tours of facilities or the more common technique of meetings (Inkpen and Dinur 1998). In addition to occurring between people, horizontal networking can result in knowledge transfer at a network level facilitating horizontal integration (Reagans and McEvily 2003).

An activity that can take place during horizontal networking and which can be considered a horizontal networking activity in its own right is brainstorming. Brainstorming is a scheduled face-to-face meeting designed to generate ideas through interaction and the exchange of rich information (Sutton and Hargadon 1996). For example in a product design organisation, design teams may call and lead brainstorming sessions with engineers, industrial designers and support staff to generate ideas about the design of products. In addition to generating ideas brainstorming strengthens the organisation's memory by dispersing knowledge between participants.

Hypothesis 6: Businesses that hold seminars, workshops or conferences are more likely to develop or introduce new or improved procedures, services or products than businesses that do not engage in horizontal networking.

2.7.2.4 Human Resource Practices

HR practices develop an organisation knowledge and human capital base by building employee skills through activities such as job rotation, coaching, mentoring and management development (Huseiid 1995, p. 637). Empirical links have been found between HR practices and organisational performance however there is a need for more research on strategic fit (Huselid 1995).

The RBV of the firm provides a previously unavailable explanation as to why HR practices lead to competitive advantage (Wright, Dunford et al. 2001). The RBV of the firm emphasises internal organisational resources as sources of competitive advantage rather than external factors (Hoskisson, Hitt et al. 1999). This focus allows people to be positioned as strategically important assets for an organisation's success. This view is consistent with KM that considers employees as assets to be developed rather than expenses to be minimised and cut. Organisations that view people as valuable assets with the potential for development rather than fixed costs often focus on internal recruitment, externally hire only at entry level and expect their employees to develop organisation-specific skills (Hiltrop 1996).

By aligning HR practices with business strategy, strategic HRM systems provide an explanation for competitive advantage and organisational success. Strategic human management systems are the comprehensive combination of human capital elements including the development of stocks of skills, the promotion of strategically relevant behaviours and supporting people management systems (Wright, Dunford et al. 2001). Strategic HRM systems contribute to sustained competitive advantage by facilitating the development of capabilities that are unique, based on complex social relationships, are embedded in the organisation's culture and create and transfer knowledge (Taylor, Beechler et al. 1996).

In the change framework, it is argued that infrastructures of information technology require new strategies and structures and that the HRM function is critical to the success of these new forms of organising (Whittington, Pettigrew et al. 1999). Two dimensions are identified in relation to the role of HR practices in organisation: support for horizontal networking and the maintenance of organisational integration. From a KM viewpoint, HR practices should foster a culture of knowledge creation, transfer and

sharing through appropriate policies and reward systems, This is not made explicit in the change framework.

One framework for understanding which HR practices have the potential for improving organisational performance identified ten dimensions (Hiltrop 1996). These dimensions are reliance on internal recruitment and promotion, an emphasis on teamwork, strategic career systems, openness and information sharing, decentralisation and delegation of authority, concern for people in the management philosophy, recognition and reward for high performance, rewards for skills and capabilities, training and development and a longer-term focus on HR decisions.

KM recognises that the mobility of employees is an effective way of transferring technology and knowledge (Cho, Kim et al. 1998; Song, Almeida et al. 2003). The HR practice of job rotation has been considered in a number of KM studies (Kusunoki, Nonaka et al. 1998; Argote and Ingram 2000; Argote, Ingram et al. 2000; Szulanski 2000). Job rotation refers to the temporary transfer of employees between jobs in an organisation without promotion or return to former jobs (Campion, Cheraskin et al. 1994, pp. 1518-1519). Job rotations and transfer aids organisational members to understand the organisation from a multiplicity of perspectives, makes organisational knowledge more fluid and easier to put in practice and builds redundancy of knowledge (Nonaka 1994, p. 29). It can potentially give employees a more holistic understanding of the organisation's processes. For example in the automobile manufacturer NUMMI, team members on a production team were rotated within jobs in their team which gave them a broader understanding of the production system (Adler, Goldoftas et al. 1999).

Job rotation can create redundancy of knowledge, however the diversity of organisational members is also enhanced which can contribute to the development of absorptive capacity (Cohen and Levinthal 1990, p. 135). Individuals are crucial for the transfer and creation of knowledge through informal networks but can be hindered by the quality and availability of communication mechanisms (Inkpen and Dinur 1998; Almeida and Kogut 1999). Job rotation and transfer is a useful mechanism for developing these networks.

There are a number of examples of job rotation given in the KM literature. In one study job rotation was not found to be an important activity for successful organisations that employed high performing work practices (Rowden 2002). However, in most other studies results have supported the notion that job rotation is a beneficial activity.

Japanese manufacturing organisations rotate their R&D personnel through various functions including marketing and manufacturing (Cohen and Levinthal 1990, p. 135). In various joint ventures forged between American and Japanese companies, personnel were transferred between the joint venture and both parent companies (Inkpen and Dinur 1998). Personnel were transferred to the joint venture when it was first established to provide key setup knowledge and then later returned to their parent company. For example, the chief executive officer of one parent was transferred to the joint venture to act as mentor for less senior joint venture managers.

In a study of the characteristics of job rotation, it was quantitatively determined that it involved learning and business, technical and administrative skill acquisition (Campion, Cheraskin et al. 1994). By definition, job rotation involves experiencing different parts of the business and one would expect that the greatest skill outcomes would be with business knowledge. However, technical and then business skills are the greatest knowledge outcomes from job rotation (Campion, Cheraskin et al. 1994). The greater the number of rotations, the greater the improvement in outcomes. Job rotation also was found to benefit organisational integration through the development of an increased network of contacts and transfer of company culture.

Another study undertook a quantitative analysis on characteristics of interfunctional transfers of engineers in Japanese organisations (Kusunoki and Numagami 1998). The study connected data related to the actual frequencies, timing and patterns of interfunctional transfer. Based on this data, it was suggested that interfunctional transfers provide Japanese organisations with critical organisational capabilities for cross-functional integration, which are deeply embedded in the social context of the organisation.

Job rotation overcomes some of the issues associated with the search-transfer problem of knowledge (Hansen 1999). Strong relational ties hinder the search for knowledge

whereas, weak relational ties hinder transfer because of lessened trust. Job rotation expands the opportunities for identifying potential sources of knowledge whilst at the same time building trusting relationships and its ultimate effectiveness is independent of the complexity of knowledge.

Hypothesis 7: Businesses that use job rotation or exchanges are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use these HR practices.

2.7.2.5 Information and Communication Technologies and Strategies

One of the drivers for hypercompetition identified earlier were advances in information and communication technology (I&CT) (Clarke and Clegg 1998). The types of communication media and the information processing power available to organisations has increased considerably. The effect of these advances has been to alter the patterns of communication with the development of each new technology (Trevino, Webster et al. 2000, p. 163). Ironically, advances in I&CT which have contributed to the significant change in the competitive environment, also play a key role in fulfilling the promise of KM. The premise that the new knowledge economy requires intensive interaction is based upon the foundation that an infrastructure of I&CT is required to support that interaction (Whittington, Pettigrew et al. 1999).

In an analysis of the KM literature, it was determined that KM has been championed much more in the information technology literature than in the HR literature (Scarbrough and Swan 2001, p. 10). This interest is at least in part due to the commercial opportunities pursued by information technology vendors who have rushed to flood the technology market with so called KM products (Cole-Gomolski 1998). Approximately 70% of all KM articles reviewed in one study were based on the theme of information technology (Scarbrough and Swan 2001, p. 7).

One of the key issues in relation to the role of I&CT in KM is whether I&CT is effectively KM or only an enabler for KM processes. The change framework used in this study suggests that I&CT is only an enabler because it is offered as a mechanism for facilitating horizontal and vertical interactions (Whittington, Pettigrew et al. 1999). This view has found some support in the academic literature by those who argue that

KM generally emphasises simplicity by appealing to technology as an enabler (Scarbrough and Swan 2001, p. 8). I&CT is considered to have the ability to facilitate co-ordination within and between organisations (Argyres 1999). In the practitioner literature however, the relationship between I&CT and KM is exaggerated. Some vendors and consultants equate their particular technology with KM, often without consideration for the human dimensions associated with their particular tool.

The human dimension consists of the development of human capabilities, skills and competencies and is another key issue in the role of I&CT and KM. Technology consists of objective physical aspects but it also involves the more subjective interaction and mediation that takes place between people and machines (Orlikowski 1992). There is a need for the human, social and technical aspects of I&CT to be in harmony for KM to be successful (Pan and Scarborough 1999).

Information exchange between parties is a critical KM process facilitated by modern I&CT but impeded by social dilemmas (Cabrera 2002). The greatest benefits from I&CT are achieved when they are integrated with existing organisational practices and processes, however institutional, social and political impediments retard effectiveness (Purvis, Sambamurthy et al. 2001). For example, information technology managers have at times used executive interest in KM as a means of legitimising and gaining support for information technology change programs and infrastructure whilst again neglecting the human dimension (Scarbrough and Swan 2001, p. 10).

The relationship between the use of I&CT and organisational performance lacks a coherent and synthesised conceptual foundation as well as empirical testing (Powell and Dent-Micallef 1997). The availability and use of I&CT leads to increased information accessibility and changes in organisational structures and design (Barley 1986; Barley 1990). It also changes communication patterns and can result in improvements in the effectiveness of intelligence development and decision making (Huber 1990). However, technology alone is insufficient to generate and sustain competitive advantage because most technology is readily available to all organisations. According to the RBV, competitive advantage can be created and sustained by information technology if combined and embedded with complementary business and human resources (Powell and Dent-Micallef 1997).

I&CT facilitates knowledge transfer or is a mechanism for knowledge transfer because it acts a channel or medium through which individuals can communicate. For example, the telephone and electronic mail allow communication between geographically remote individuals and thus facilitate knowledge transfer. However, each medium also has inherent limits which restrict communication and thus knowledge transfer (Duncan 1996). Communication mediated through an electronic format is restricted because it contains only what can be collected and processed through machines and excludes important sensory information, feelings, intuitions and context (Weick 1985). Therefore, I&CT is recognised as an effective enabler of knowledge transfer but restricts the type of knowledge that can be transferred (Bolisani and Scarso 2000).

Three of the four processes required for knowledge creation involve the human mind at some point: socialisation, internalisation and externalisation (Nonaka 1994). I&CT deals entirely with information in an explicit form and is therefore limited in terms of knowledge transfer and creation capability. However, I&CT has two important capabilities that allow it to play an important role in KM. The strength of I&CT is in its ability to transform and to transport information. I&CT is able to take information in one explicit form and convert it to another explicit form. This process is consistent with the fourth knowledge creating process: combination (Nonaka 1994). An example is the way SPSS transforms numerical information into statistical output.

A conceptual framework has been proposed for the dynamic interaction between technological and product development problem-solving in the context of product innovation (Kusunoki 1997). This conceptual framework was then illustrated by examining a case of radical innovation in the Japanese facsimile industry. The article considered the tensions / issues between organisations that have technological leadership and organisations attempting to erode this barrier to competition. It was proposed that organisations with technological leadership have product development / technological capabilities which tend to encourage or engage in incremental technological innovation. Such capabilities perpetuate the competitive advantage based on current technologies. However, the technological leadership can be threatened by organisations which have product development / technological capabilities that tend to encourage or engage in radical technological innovation.

I&CT have been characterised as advanced information technologies and defined as recently developed devices that transmit, manipulate, analyse or exploit information, through the use of a digital computer that processes information integral to the user's communication or decision task (Huber 1990, p. 48). Advanced information technologies provide new, improved or increased data storage, transmission and processing capacity (Huber 1990, p. 49). Advanced information technologies are used by organisations to enhance their ability in achieving organisational goals (Huber 1990, p. 52). Advanced information technologies also enable a much larger and diverse group of people to engage in information provision for the decision-making process (Huber 1990, p. 53).

There are a number of different types of advanced information technologies: business intelligence, collaboration and distributed learning, knowledge discovery, knowledge mapping, knowledge application and opportunity generation (Gold, Malhotra et al. 2001, p. 188). Business intelligence technologies generate knowledge about an organisation's competitors and economic environment. Collaboration and distributed learning technologies enable collaboration between geographically dispersed parties. Knowledge discovery technologies identify internal and external knowledge of value to an organisation. Knowledge mapping technologies identify the location internal organisational sources of knowledge and create an index of the structure. Knowledge application technologies enable an organisation to take advantage of its existing knowledge. Opportunity generation technologies develop a base of knowledge regarding customers, partners, employees and suppliers.

The types of technologies that are now available to organisations include the internet, intranet, electronic mail, accounting software and production technology (Yates, Orlikowski et al. 1999). The internet and intranet are used for information collection and publication. Electronic mail is a communication medium. Accounting software automates some of the processes of the accounting function. Production technology automates some of the processes of the production function. All of these technologies have at their core a computer or central processing unit technology. Increasingly computer networks, particularly the internet are serving as essential channels that connect individual computers together.

I&CT are part of the infrastructure of an organisation. The physical assets as well as how well the organisation uses these assets contributes to an organisation's core capabilities. This study will examine the impact of technological infrastructure on innovation. It will look at whether availability of computers, internet, intranet, electronic mail, accounting software and production technology have any impact on innovation. The internet will also be examined in the overall model because it is a good representative of technology in general. It represents both the storage and processing capability provided by a computer as well as the communication capability of the channels. It merges information and communication technologies into one.

Hypothesis 8: Businesses that access the internet are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use these I&CT strategies.

Organisations are making significant investments in new technologies, including electronic mail, voice mail and video conferencing (Trevino, Webster et al. 2000, p. 163). Various I&CT strategies have been considered in previous studies, however no study has considered whether the type of information and communication technology strategy influences the innovative relationship. This study will consider this question by considering the I&CT strategies: accounting software, e-mail, intranet, production technology, number personal computers and number staff using computers. Empirical analysis will be carried out as a hypothesis generating exercise to determine if there is the potential for future research.

2.7.2.6 Organisational Integration

Integration is a process of co-ordination, communication and knowledge transfer (Grant 1996b). The RBV considers integration as a capability that leads to patterns of shared knowledge between organisational members (Hoopes and Postrel 1999). It requires committed leadership to develop a sense of shared organisational identity on which to build cross-functional relationships through the development of project teams and internal networks (Whittington, Pettigrew et al. 1999). Complementary functions may become so interconnected through integration that redundancy of capabilities and cross-functional absorptive capacity is created (Cohen and Levinthal 1990, p. 134). However, the networks created through integration enable organisations to enjoy the benefits from

both integration and specialisation (Brusoni, Prencipe et al. 2001, p. 597). Support has been found for the notion that shared knowledge is an important resource underlying product development capability (Hoopes and Postrel 1999, p. 861). A study on product development efforts in a scientific software company determined that gaps in shared knowledge caused the company to incur significant excess costs (Hoopes and Postrel 1999, p. 837).

There exists agreement amongst academics and practitioners that integration across functional or disciplinary boundaries is a dynamic capability and the source of sustainable competitive advantage (Hoopes and Postrel 1999, p. 837). The concept of integration within organisations is fundamental to the KBV and the change framework used in this study (Grant 1996a; Grant 1996b; Whittington, Pettigrew et al. 1999). Integration seeks to enhance the efficiency and effectiveness of communication between individuals, units and organisations through the use of such techniques as flatter hierarchies, cross-functional teams and new communication media (Hoopes and Postrel 1999, p. 837). The KM initiatives discussed in this thesis all affect organisational integration in some way. Integration aids the understanding of all KM initiatives. Typically a KM initiative will contribute to the degree of integration and thus knowledge transfer. Integration is achieved through four mechanisms: rules and directives, sequencing, routines and group problem solving and decision making (Grant 1996b, pp. 114-115).

Rules and directives refers to the plans, schedules, forecasts, policies, procedures and information and communication systems which enable the holder of specialised knowledge in one area to communicate it to others without the need for the recipient to learn what the sender knows. The extent of rules and directives required is dependent upon the complexity of the task, the number of locations at which the task must be carried out and the stringency of performance specifications associated with the task. Explicit knowledge is relatively easy to integrate because by definition it is codifiable. Rules and directives essentially involves communication and the transfer of explicit knowledge through the codification of tacit knowledge into explicit instructions. Tacit knowledge is inherently difficult to communicate and transfer. Codification of tacit knowledge into explicit involves considerable knowledge loss.

Sequencing involves the organisation of production activities into sequences so that specialists' inputs occur independently. The use of sequencing and integration has been attributed to the competitive success of manufacturing organisations. Close relationships between design and manufacturing within Japanese businesses has contributed to their capability of quickly taking products through the design, development and manufacturing stages (Kusunoki, Nonaka et al. 1998). The proliferation of technology brought about by the hypercompetitive environment has increased the complexity of production significantly in terms of the knowledge and specialised suppliers required (Brusoni, Prencipe et al. 2001, p. 597). Increasingly, organisations dependent upon multiple complex technologies are integrating and sequencing their communication and co-ordination activities through loosely coupled networks of suppliers of equipment, components and specialised knowledge (Brusoni, Prencipe et al. 2001, p. 597). This ability to integrate and sequence complex systems constitutes a dynamic capability.

An organisational routine is a patterned sequence of learned behaviour "involving multiple actors who are linked by relations of communication and / or authority" (Cohen and Bacdayan 1994, p. 555). Organisational routines represent interlocking, reciprocally-triggered sequential patterns of interaction between individuals through which their knowledge is integrated but not with a language-based communication channel. Organisational routines consist of informal procedures including generally accepted roles and interactions developed through training and experiential learning and facilitated by various explicit and implicit signals. Organisational routines provide an effective mechanism for responding to environmental conditions that are relatively stable or certain and thus contribute to the efficiency of decision-making and collective action.

Organisational routines arise in situations that are repetitive and their creation constitute part of an organisation's memory (Walsh and Ungson 1991). The stability associated with organisational routines usually means that they are shared with other individuals and units over time. Experience transferred within an organisation is beneficial because it takes advantage of the lessons learned during the construction of the routine. Experience is stored in a form that permits the rapid transfer of organisational activities to new situations (Cohen and Bacdayan 1994, p. 555). Typically they allow for the

communication and transfer of tacit knowledge without the need for conversion to explicit form. The existence of a routine is evidence that knowledge has been transferred and learned.

Group problem solving and decision making is an integration mechanism suited to complex, unusual, difficult and important tasks. It involves a relatively high volume of tacit knowledge transfer. Of the four integration mechanisms, group problem solving and decision making is particularly important. This mechanism is suitable for the development of thought worlds between the source and recipient involved in knowledge transfer. Additionally, the mechanism is suitable to sensemaking under conditions of ambiguity. Frequently organisational tasks and problems are ambiguous because there exist multiple perspectives related to the task or problem (Daft and Macintosh 1981, p. 211). It has been suggested that it is only through meetings that this ambiguity can be reduced through shared observations and discussion until a common grammar can form and course of action can be agreed on (Weick 1995, p. 186). It has been proposed that in order to reduce multiple perspectives on a task or problem, rich personal media such as meetings and face-to-face communication are required that enable debate, clarification and enactment (Daft and Lengel 1986, p. 559). In essence, meetings facilitate ambiguity reduction through the sharing of perspectives and sensemaking. Support for the important role of meetings is provided in a study of brainstorming groups which found that meetings supported the organisational memory, involved the sharing of individuals' perspectives and supported the crystallisation of perspectives into solutions (Walsh and Ungson 1991; Sutton and Hargadon 1996).

Traditionally meetings were conducted using face-to-face communication. More recently however with advances in I&CT, it is possible to conduct meetings using alternative channels such as videoconferencing, telephone conference calls and electronic mail. It has been argued that technologies that improve the efficiency and effectiveness of meetings and interactions are of importance to organisations experiencing increasing knowledge, complexity and turbulence (Roberts and Grabowski 1999, p. 170). For example, the development of CONIMON LISP, a standard for hitherto predominantly incompatible dialects of the artificial intelligence language LISP was accomplished almost completely through dispersed university and company-based designers communicating with electronic mail using the United States of America's

Defense Department's ARPANET network (Orlikowski and Yates 1994). This achievement would probably not have been possible without the electronic messaging system. Unusually, face-to-face meetings were only required twice throughout the whole project.

Although integration is an important part of both the KBV and Whittington, Pettigrew et al.'s (1999) change framework, exploratory empirical analysis of this construct was beyond the scope of this study. Integration was one of the few constructs not measured in the BLS CURF. As a result, a hypothesis will not be framed for this construct. Future studies that consider this construct will need to reconcile the contradictory definitions presented in this section.

2.7.2.7 Research and Development

Research is planned investigation carried out in order to gain new scientific or technical knowledge (Khadaroo, Shaikh et al. 2003). Development on the other hand is the translation of these research findings into a plan or design for implementation (Khadaroo, Shaikh et al. 2003). The goal of R&D and its implementation is to develop or improve products, services, processes or techniques.

R&D is an additional aspect to the change framework (Whittington, Pettigrew et al. 1999). It has been added to the framework due to its key role in transferring knowledge surrounding product, process and service innovation. R&D is a process of sharing and creating knowledge where the output is newly created knowledge or innovation. Whilst R&D groups may generate knowledge and innovations, this knowledge needs to transfer through the organisation for economic gain (Thamhain 2003). The purpose of R&D is innovation so it is expected that organisations who engage in R&D are more likely to be innovative.

In order to respond to the hypercompetitive environment organisations must learn, develop and apply new knowledge to improve efficiency and responsiveness (Hanssen-Bauer and Snow 1996, p. 413). Often this learning process requires collaboration with other organisations. The R&D function is recognised as a major source of learning in an organisation and a central activity for competitive success and survival (Dodgson 1993b, p. 388). R&D is also recognised as a means of transferring and creating

knowledge (Kastelli, Caloghirou et al. 2004). Organisations that put in place processes and structures that create a greater strategic emphasis on R&D, accelerate innovation (Florice and Miller 2003). However, little research has been conducted on the organisation of R&D and its effect on the direction and impact of innovation and performance (Argyres and Silverman 2004).

R&D not only generates new information and innovation but also enhances an organisation's ability to assimilate and exploit existing information through learning and its absorptive capacity (Cohen and Levinthal 1989; Cohen and Levinthal 1990). An organisation's level of prior related knowledge influences the degree to which it can conduct and absorb R&D efforts (Cohen and Levinthal 1990, p. 129). Support for this view is provided by a study which found that creation of new coal conversion knowledge by organisations in the petroleum industry was dependent upon the existence of a variety of pre-existing resources (Helfat 1997, p. 339). These resources included complementary knowledge generated by R&D in technologically related businesses which existed in a physical form. However, conducting R&D itself, builds on the organisation's knowledge base. Absorptive capabilities that allow an organisation to recognise and assimilate internal and external information relevant to achieving organisational goals are important for its ability to innovate (Cohen and Levinthal 1990, p. 128).

One study found that internal R&D and technical linkages with buyers and suppliers had a stronger effect on innovation in organisations operating in a new technology setting rather than a traditional technology setting (Lee 1995). Another study determined that small technology-based organisations in developing countries form joint R&D projects with technology institutions in order to overcome a lack of infrastructure or technical expertise (Prabhu 1997). Small organisations generally account for a disproportionately large number of new innovations compared with large organisations (Lee 1995).

Hypothesis 9: Businesses that perform or pay others to perform R&D are more likely to develop or introduce new or improved procedures, services or products than businesses that do not engage in R&D.

2.7.2.8 Training

In order to remain productive in a hypercompetitive environment, employees need to learn new knowledge and skills (Sonnenfeld and Ingols 1986, p. 76). Employees need to understand the environment in which their organisation competes. They also need to develop both a holistic perspective of the organisation as well as an understanding of relationships between different functions such as sales, production and service (Sonnenfeld and Ingols 1986, p. 68). Employees learn through a process of self-reflection and questioning their experiences which ultimately results in the liberation of knowledge (Antonacopoulou 2001, p. 328). Managers can provide training opportunities to their employees which aids in their learning of new knowledge and skills. By investing in training, an organisation increases the current and future professional and personal usefulness and worth of its employees (Rowden 2002). When considering training programs, managers need to consider the effects training has on employee effort and turnover (Glance, Hogg et al. 1997). Training can improve the productivity of employees and their attractiveness to other organisations. Such training opportunities can therefore be considered KM initiatives.

Training is defined as "the collection of structured (e.g. off-the-job courses) and unstructured (e.g. on-the-job, day-to-day problem solving) initiatives that seek to instil a greater awareness and understanding of work practices while providing the scope for development and growth" (Antonacopoulou 2001, p. 329). Usually training initiatives are planned targeted or organisation-wide programs designed by managers to benefit the organisation in some way. These benefits can accrue from permanently changing employee knowledge, skills, attitudes and behaviours (Russell, Terborg et al. 1985, p. 850). The relationship between training and actual learning is assumed to be a linear relationship but this is not always the case. This assumption neglects the historical, social, and political dimensions of training which are aimed at meeting organisational rather than individual needs (Antonacopoulou 2001).

Theorising about training has occurred in the individual psychology, HRM, management development, OD and OL literatures. The individual psychology perspective, specifically cognitive psychology has focused on the effect that experience with one task has on the performance on another (Argote, Ingram et al. 2000, p. 3). It

has also considered the effectiveness of training programs on transferring knowledge to participants (Argote, Ingram et al. 2000, p. 3). For HR managers, training can be viewed as an initiative that promotes organisational goals and objectives and thus contribute to HR playing a strategic role. It is therefore a bridge between the HR literature and other literatures such as strategy and the RBV through KM. The management development literature includes discussion on a number of activities including performance appraisal, career and succession planning, assignments, projects, job rotations, fast-track placements and other on-the-job development and education and training activities (Lees 1992, pp. 90,93).

There are at least ten perspectives on management development including functional-performance, agricultural, functional-defensive, socialisation, political reinforcement, organisational inheritance, environmental legitimacy, compensation, psychic defence and ceremonial (Lees 1992). The dominant management development perspective and the one mostly closely aligned to KM is functional-performance.

The functional-performance perspective argues that management development activities such as training improves managerial functioning and performance and as a result organisational performance is also improved (Lees 1992, p. 92). The role of managers is considered to involve arranging for the imparting of new knowledge, skills and techniques either in a classroom or experientially (Lees 1992). Training is considered both an individual or collective activity. Training collectively may bring about technical or social change in particular functions of the organisation (Lees 1992, p. 92). The performance of groups is usually enhanced if they are trained together rather than apart, mainly due to the development of transactive memory systems rather than improved communication between group members (Moreland and Myaskovsky 2000). Training should be included as part of a comprehensive perspective of HR renewal linked to OD objectives, rather than as an isolated initiative (Sonnenfeld and Ingols 1986). If it is, it has the potential to contribute to large scale organisational change and therefore integrate management development and OD activities (Lees 1992, p. 92). Research has indicated that over time such HR programs often benefit organisations (GaUiker 1995). Training and increases in organisational productivity can continue indefinitely as long as technology improves and managers are able to move to exploit this technology (Glance, Hogg et al. 1997).

The agricultural and the functional-defensive perspectives extend the functional-performance perspective (Lees 1992). The agricultural perspective recognises that there is value in conducting training that meets individual goals and objectives as well as organisational ones. Managers are encouraged to promote systematic and rigorous attention on management education. The actual experience is viewed as being as important as the content. The functional defensive perspective proposes that there is value in developing a knowledge and skills base in case it is ever required. This knowledge base may not be immediately useful. This perspective is consistent with the need for an organisation to develop absorptive capacity for the transfer of knowledge and dynamic capabilities for the creation of new knowledge. Organisations invest directly in absorptive capacity when they send employees for advanced technical training (Cohen and Levinthal 1990, p. 129).

The OL perspective argues that organisations engage in activities like training in order to either enable the exploration of new knowledge or the exploitation of existing knowledge (March 1991). Rather than being forced into choosing one or other of these objectives, organisations can simultaneously develop efficiency and flexibility objectives by using mechanisms such as metaroutines and job enrichment which are dependent upon critical contextual factors such as training (Adler, Goldoftas et al. 1999).

Metaroutines (organisational routines that change or develop other routines) contribute to dynamic capability because they systematise the creativity process and increase the efficiency of a given level of flexibility. Job enrichment involves training workers in areas not directly relevant to their current role and promoting improvement and flexibility objectives. As a result, employees become more innovative and flexible in both routine and non-routine activities. It also develops an organisation's dynamic capability by increasing an organisation's innovative capabilities and flexibility.

Owing to its diverse theoretical heritage, training has been classified as a standalone KM initiative. KM initiatives such as training have been found to increase OL and improve performance (Hatch and Dyer 2004). The theories discussed above complement the RBV and the KBY. Training develops a better understanding of the technical and social workings of an organisation. It therefore promotes organisational

knowledge integration through contextually reinforcing rules / directives, sequencing, routines, procedures and administrative structures (Grant 1996b; Adler, Goldoftas et al 1999). Training, particularly when conducted as a collective activity can also benefit organisational integration when it involves and aids group problem solving and decision making (Grant 1996b). Training can promote co-operation amongst employees thus reducing the need for management monitoring and controlling practices (Glance, Hogg et al. 1997).

The relationship between training and knowledge transfer and organisational performance has been considered in previous studies. Based on nine case studies of work units involving contingent workers in a large high technology business that competed in a knowledge intensive, highly cyclical industry, training was found to act as a socialisation mechanism that facilitated knowledge transfer (Castaneda 2001). Low performing work units were hindered by problems including insufficient training. Contingent workers typically received less on-the-job training than permanent employees. A descriptive study of the characteristics of successful, small, high performing manufacturing and processing companies in the USA identified that training and development and information sharing were major contributors to success (Rowden 2002). In a study of 62 retail stores, a strong relationship was found to exist between training and organisational performance (Russell, Terborg et al. 1985). Training is recognised as a critical activity in successful organisations such as NUMMI where employees are trained to identify improvement opportunities in their work (Adler, Goldoftas et al. 1999).

Lepak and Snell (1999; 2003) make an important contribution to the understanding of training. This contribution stems from a framework they developed for studying alternative employment arrangements used by organisations in allocating work. They term this framework the human resource architecture. Employees are considered a critical resource for competitive advantage. However, employees differ in terms of their ability to contribute knowledge, innovation and creativity to an organisation. As a result, not all employees possess knowledge and skills that are of equal strategic value or uniqueness. From this, four employee groupings are identified: core knowledge employees, traditional employees, contract workers and alliance partners. Of these four

types, core knowledge and traditional employees are internal to the organisation and contract workers and alliance partners are external.

Lepak and Snell (1993; 2003) argue that when organisations invest in human capital through training, the resulting knowledge and skills may be idiosyncratic to the particular organisation. Training that increases tacit knowledge held by workers in particular, develops firm specificity of human capital. This is because explicit knowledge is more readily transferred to other organisations and thus has lesser value. The increased development of capabilities based on tacit knowledge makes it increasingly difficult for competitors to copy or acquire through purchasing. Training reverses human capital decay by continuously enhancing employee skills and also increases the uniqueness of human capital.

Hypothesis 10: Businesses that provide training for their staff are more likely to develop or introduce new or improved procedures, services or products than businesses that do not provide staff training.

There is a great variety in the nature of training provided by organisations however most successful organisations provide training in some form (Rowden 2002). Training can be carried out on-the-job, at an education facility and undertaken full-time or part-time (Gattiker 1995). Training typically varies in terms of its content and the provider of education.

Training can vary in its content and can include health and safety training, management training, professional training, trade and apprenticeships training and traineeships and training for computer specialists. The knowledge to be learned in a training initiative can be declarative (knowledge about something) obtained through general training or procedural (knowledge how to do something) obtained through on-the-job training (Gattiker 1995).

In a study of government sponsored training programs for semi-skilled workers, it was found that such programs were advantageous to taxpayers and organisations when the content was general and not firm-specific (Gattiker 1995). The inability to market skills specific to an organisation made specific training to workers unattractive. From the

organisation's perspective, a combination of on-the-job training for practice and classroom instruction for general training appeared the most beneficial.

Whilst training has been considered in previous studies, no study has considered whether the content of training influences the innovative relationship. This study will consider this question by considering the following training contents: health and safety training, management training, professional training, trade and apprenticeships training and traineeships and training for computer specialists. Empirical analysis will be carried out as a hypothesis generating exercise to determine if there is the potential for future research.

Training can be provided to employees internally or outsourced to external parties such as suppliers or education institutions (Sonnenfeld and Ingols 1986, p. 72). Internal trainers typically have a deeper understanding of an organisation and how it operates which can be reflected in the teaching (Sonnenfeld and Ingols 1986, p. 73). There are many potential internal providers of education and training including training managers, HR executives, division managers, specialists in customer education, technical and engineering trainers, software and systems developers, marketing and sales executives, and operations managers (Sonnenfeld and Ingols 1986, p. 71). Training can also be provided by various parties including equipment manufacturer or supplier, industry associations, internal on the job training, private training consultants, professional associations, internal structured training, Technical and Further Education (TAPE) colleges, and universities.

Successful organisations have been found to use internal training providers for developing technical, problem-solving and management skills (Rowden 2002). External training providers tended to be used more for management development.

Sometimes organisations contribute to training by reimbursing training fees for programs that are delivered by external providers (Rowden 2002). Sometimes, organisations will collaborate with vocational or technical institutions to provide technical or computer related training opportunities (Rowden 2002).

Similarly no study has considered whether the provider of training influences the innovative relationship. This study will consider this question by considering the following training providers: equipment manufacturer or supplier, industry associations, on the job training (internal), private training consultants, professional associations, structured training (internal), TAFE and universities. Empirical analysis will be carried out as a hypothesis generating exercise to determine if there is the potential for future research.

2.7.3 Changing Structures

An ability to explain and understand the structuring of organisations is a fundamental issue within organisation theory. In response to the hypercompetitive environment, many managers have restructured their organisation in order for their organisations to remain competitive. New organisational structures have evolved to enable managers to cope with the implications of the hypercompetitive environment. However, many managers have adopted new structures without a clear understanding of the reasons for and implications of the change (Ilinitich, D'Aveni et al. 1996, p. 211). Changing structures consists of restructuring and strategic decentralisation (Whittington, Pettigrew et al. 1999). The final effect of KM initiatives is to alter existing organisational structures and a strategic approach to implementation.

2.7.3.1 Decentralisation, DeJayering and Project-Based Structure

Traditional hierarchical organisational structures such as bureaucracies and divisional structures are giving way to decentralised models for co-ordinating activities that involve cross-functional and cross-boundary teams (Daft and Lewin 1993; Whittington, Pettigrew et al. 1999). This trend to restructure has seen a reduction in middle managers and administrative staff with organisations becoming leaner and flattening their hierarchies (Fulk and DeSanctis 1995). Each organisational structure enables a different kind of motivation and has a different capacity to create and transfer tacit knowledge (Osterloh and Frey 2000, p. 538). Traditional organisational structures such as bureaucracies and divisional structures are viewed as less conducive than other forms for knowledge transfer, knowledge creation and innovation (Salaman and Storey 2002, p. 159). The added layers and compartmentalisation of traditional structures have hampered information flows and created divisions (Whittington, Pettigrew et al. 1999).

The trend in Australia leading up to and during the period in which the data set was collected (1994-1998) is generally consistent with the international movement towards more decentralised, de]ayered and project-based structures. Australian managers now work in flatter delayed structures which have forced a rethinking of the traditional management practices of centralised decision-making and control (Avery, Everett et al. 1999). Generally Australian businesses have been moving in this direction however there has been inconsistency and contradictions in the implementation of these approaches. For example, from 1981-1995 Australian retail banks implemented structural changes that delayed their operations and empowered their customers (Roberts and Amit 2003). They achieved this through using such technologies as automatic teller machines, EFTPOS and telephone banking. However these changes were brought in at similar times to when the banks were engaging in more centralisation (Roberts and Amit 2003). A longitudinal analysis of practices in Australian organisations that had implemented quality management practices found similar results (Terziovski, Sohal et al. 1999). It was found that from 1991-1993 reliance on centralised quality management departments and quality management decision-makers fell. However, this shift reversed in the period 1993-1996. In contrast the allocation of responsibility and decision-making to individuals increased for both periods 1991-1993 and 1993-1996. Despite the potential] for more centralised control and decision-making, the following hypothesis explores the overall trend.

Hypothesis 11: Businesses that change their business structure are more likely to develop or introduce new or improved procedures, services or products than businesses that do not decentralise, delay or adopt project-based structures.

2.7.3.2 Operational Strategic

According to the RBV, an organisation's potential for sustainable competitive advantage is dependent upon the constitution of its resources and capabilities (Grant 1991). Within the KBV, knowledge is considered the most important strategic resource and an organisation's dynamic capabilities of acquiring, integrating, storing, sharing and using knowledge are the most important capabilities for competitive advantage (Grant 1996a). The strategic potential of knowledge can be partly realised structurally through the operational and strategic decentralisation of organisational activities (Whittington, Pettigrew et al. 1999). The characteristics or resources and capabilities

that are most likely to support sustainable competitive advantage include durability, transparency, transferability and replicability (Grant 1991). For the optimum benefit, these characteristics need to be identified during the strategy formulation process.

Consideration for an organisation's resources and capabilities should therefore be central to the strategy formulation process (Grant 1991). It has been argued that an organisation's KM strategy needs to be linked with its business strategy in order to be successful (Bontis, Crossan et al. 2002). This process requires the mapping of knowledge to critical business processes (Davenport and Prusak 1998). Relating an organisation's KM initiatives with its strategic planning process ensures that those activities support the organisation's mission and competitive position and thus create value for owners (Zack 1999, p. 126). A shared and challenging knowledge vision is considered vital for the success of KM because it provides the focus and energy for knowledge sharing (Pan and Scarborough 1999, p. 369). For such a vision to lead to innovation, it must be more than financial and include consideration for the market direction and subsequent organisational positioning, future technology, and future relationships with customers, suppliers and competitors (Salaman and Storey 2002, p. 158).

The strategy formulation process requires an understanding of the relationship between resources, capabilities, competitive advantage and profitability (Grant 1991). Due to the pervasiveness of strategic planning, undertaking this process of itself is not a guarantee of sustained competitive advantage, however by undertaking this process organisations may be able to recognise and exploit resources that achieve this outcome through considering how rare, imperfectly imitable and substitutable they are (Barney 1991, p. 113). One of the eventual outcomes of business strategy is innovation. For the type of innovation required in the current competitive environment, the strategic planning process will require consideration of fundamental issues related to product and service offerings (Salaman and Storey 2002, p. 159).

The most important initiative for guiding KM is the strategic plan (Zack 1999). One of the most important initiatives for the effective sharing of knowledge is a clear and conscious knowledge strategy (Pan and Scarborough 1999, p. 370). An organisation's

knowledge strategy are strategic models that link knowledge-based processes, technologies and organisational forms to business strategy (Zack 1999, p. 126). Its final design should fully exploit the organisation's particular bundle of resources (Grant 1991). In considering in the activities it can engage, an organisation can consider an explorative versus exploitative approach, and consider internal versus external knowledge (Zack 1999, pp. 136-139).

There has been some evidence that has demonstrated the linkage between business strategy and KM. A favourable context for knowledge transfer was created when organisations used a similar business strategy (Darr and Kurtzberg 2000). This finding was consistent with another study in which the linkage of a joint venture's strategy with that of its parents was considered more conducive to the sharing of knowledge (Inkpen and Dinur 1998, p. 462).

KM is promoted as a strategy that organisations can employ to promote competitive advantage. Such an approach implies that organisations have a formal strategic plan that provides direction. The existence and absence of strategy is a legitimate organisational phenomenon worthy of study because the absence of strategy identifies many useful insights (Inkpen and Choudhury 1995). The absence of a formal strategic plan may indicate that an informal process is taking place.

Hypothesis 12: Businesses that have a formal strategic or business plan are more likely to develop or introduce new or improved procedures, services or products than businesses that do not have formal strategies in place.

2.8 Organisational Performance

The strategic promise of KM is that sustainable competitive advantage can be achieved through managerial action that enables knowledge transfer and creation. KM initiatives are dynamic capabilities that result in new distinctive capabilities. High-performing organisations are more innovative and innovate differently than low-performing organisations (Whittington, Pettigrew et al. 1999, p. 583). The most common approach under the RBV for assessing competitive advantage is to use the concept of organisational performance as the dependent variable (Ray, Barney et al. 2004).

Organisational performance is an umbrella construct used to encompass and account for a diverse set of phenomena (Hirsch and Levin 1999). Organisational performance is an outcome of both internal organisational and external environmental factors. Each factor has a significant and independent effect on organisational performance, however organisational factors have approximately twice the effect of environmental factors (Peteraf 1993). The use of organisational performance as a means of gauging the competitive effects of KM initiatives is problematic. It is difficult to gauge the impact of a given initiative on measures of organisational performance because performance advantage is competitively unstable and causality surrounding performance is complex which creates greater noise and threats to validity (Terpstra and Rozell 1994, p. 286; March and Sutton 1997). Even the existence of the relationship between competitive advantage and organisational performance has been called into question (Coff 1999; Powell 2001; Durand 2002; Powell 2002; Arend 2003;

Is also possible that an organisation's performance may lead to its innovativeness. Talented individuals are often attracted to high performing organisations because of the opportunities, wealth and prestige that may be on offer. There is therefore a potentially circular relationship between these two concepts.

Due to the problems of measurement with organisational performance, results related to this concept are not emphasised in this study. However, the concept has been included because any relationship found between a KM initiative and organisational performance will represent useful initial evidence of the utility of the initiative (Terpstra and Rozell 1994, p. 286).

The measurement of performance is usually framed in financial terms that have more relevance to businesses than for non-commercial organisations (Montgomery and Wemefelt 1988; Powell 1995; Douglas and Judge Jr. 2001). Organisational performance has been measured using indicators collected from financial accounting reports including sales revenue, annual change in sales revenue, net income and annual change in net income (Mosakowski 1997, p. 433). These indicators measured performance across two types (revenues and net income) and in two forms (absolute levels and annual fluctuation). Sometimes operational measures of organisational

performance are used such as volume per employee or organisational image (Russell, Terborg et al. 1985).

The use of a financial measure such as profit is considered to be an appropriate measure of success, particularly for small and medium sized businesses (Rowden 2002). Profit is a suitable indicator for these types of businesses because of their motivation and because they are less likely to enter profit reducing strategies to minimise tax

Hypothesis 13: Businesses that develop or introduce new or improved procedures, services or products are more likely to be profitable than businesses that do not innovate.

2.9 Organisational Demographics

Consideration for organisational demographics for KM is important because they represent a distinctive class of theoretical concepts, often have predictive value and are relatively easy to measure (Lawrence 1997, p. 20). A comprehensive analysis of the relevance of demographic concepts for KM has not yet been undertaken. It is beyond the scope of this thesis to undertake such an analysis here. However, five demographic concepts be considered here in order to begin this process as well as to act as controls for the main hypotheses. Analysis of these demographic concepts will provide some sense of the importance for organisational demographics in general for the overall KM framework.

In previous research, the link between organisational demographics and other organisational concepts has been tenuous and not grounded on sufficient theory meaning that identified relationships could not adequately be explained (Lawrence 1997). Consideration for organisational demographics has not been emphasised in previous KM research so multiple arguments based on the literature will be presented for each concept. Whilst many organisational demographics could potentially have been considered the following five were included in the study: age, industry type, legal type, number of locations and size.

2.9.1 Age

The effect of an organisation's age on its propensity to transfer and create knowledge is difficult to predict. Innovation, creativity and openness are characteristics of the entrepreneurial, collectivity and elaboration of structure stages of the organisational life cycle, but these are de-emphasised for efficiency, stability, procedures and rules during the formalisation and control stage (Quinn and Cameron 1983). Whilst formalisation in the early stages of the organisational life contributes to the efficiency and effectiveness of organisations, in later stages it may contribute to ineffectiveness and decline (Walsh and Dewar 1987). The transfer and creation of knowledge can be hindered by the formal rules, procedures and structures put in place. Contrary to this perspective is the view that organisational aging is associated with increasing rates of innovation (Sorensen and Stuart 2000).

Breakthrough inventions are often associated with new organisations however some older /large organisations are able to establish routines that generate technological breakthroughs (Ahuja and Lampert 2001). Failure in younger, smaller organisations can be attributable to deficiencies in managerial knowledge and financial management abilities (Thornhill and Amit 2003). Older organisations are subject to three learning traps: the familiarity trap, the maturity trap and the propinquity trap but can overcome these traps by experimenting with novel, emerging and pioneering technologies (Ahuja and Lampert 2001). During the changing organisational life cycle, managerial priorities can also change between technical efficiency, organisational coordination and political support priorities (Smith, Mitchell et al. 1985). By altering their priorities to knowledge transfer and creation depending on the organisational life cycle stage they are operating within, managers can better match the organisation's KM needs.

Hypothesis 14: Younger businesses are no more likely to develop or introduce new or improved procedures, services or products than older businesses.

2.9.2 Industry Type

There has been a shift in the global economy, towards industries that are considered to be knowledge-based. This shift is particularly evident amongst industrialised countries where labour and manufacturing are increasingly relocated to underdeveloped countries

whilst retaining knowledge-based activities locally. The increased emphasis of industrialised countries to become knowledge-based has been brought about by the competitive pressures of globalisation. The declining cost of technology and its transfer, continuous improvement and benchmarking has eroded the traditional competitive advantage held by organisations in industrial economies (Hanssen-Bauer and Snow 1996). Organisations competing in a global market are unable to maintain competitive advantage based on labour or technology so they are now looking to knowledge for these benefits. In an economy like Australia, this shift has taken the form of a movement from a commodity and manufacturing economy to one that is more oriented towards specialist products and services.

The increasing dominance of knowledge as a corporate asset and a commercial product, is reflected in the shift from manufacturing to service industries. Small research-intensive organisations such as those in the biotechnology industry engage in highly knowledge-intensive activities such as scientific research and the development of scientific innovations (Gittelman and Kogut 2003). However, organisations operating in such high-technology industries face differing conditions than those in traditional industries (Qian and Li 2003). As a result, the importance of knowledge sources varies across industries and organisations (King and Zeithaml 2003). In addition to being a factor of production, knowledge can also be the final output in the form of a product such as a book or a service such as the provision of medical advice. For some organisations such as universities, publishers of information, and consulting firms, knowledge is not only a factor of production but the final product as well.

The implications for KM are that implicit in this shift is the notion that certain industries have more demanding knowledge requirements for transfer and creation (Hagedoorn and Duysters 2002). For example, high technology industries such as computer chips are more knowledge-intensive than others because of their short life cycles, reliance on intellectual capital and dependence on innovation. One of the trends in the new economy is growth in service industries, much of which is knowledge-based. For example, the transfer of knowledge in pizza franchises is effected by frequency of phone calls, personal acquaintances, meetings and ownership considerations and is generally slower than that in manufacturing organisations (Darr, Argote et al. 1995).

Manufacturing industries are considered relatively mature, with relatively mature methods and less reliance on knowledge for competition.

Hypothesis 15: Non-manufacturing businesses are no more likely to develop or introduce new or improved procedures, services or products than manufacturing businesses.

2.9.3 Legal Type

Whilst the majority of evidence suggests that complexity has been identified as a dimension of knowledge that impedes its transfer (Reed and DeFillippi 1990; Kogut and Zander 1992; Rogers 1995; Simonin 1999), there has been little consideration whether the complexity of the organisation itself effects the ability to transfer and create knowledge. One way that an organisation's complexity can be gauged is whether or not it is incorporated. Legal type is a recognised control variable (Rothaermel and Deeds 2004). Incorporated organisations are generally more complex than unincorporated organisations. In Australia, incorporated organisations are subject to more government regulation imposed by the Australian Securities and Investments Commission and the ATO.

Hypothesis 16: Incorporated businesses are no more likely to develop or introduce new or improved procedures, services or products than non-incorporated businesses.

2.9.4 Number of Locations

An organisation's location has an important effect on the knowledge flows that it is party to (DeCarolis and Deeds 1999). The number of locations an organisation has effects the manner and extent to which knowledge is co-ordinated and integrated (Grant 1996a; Grant 1996b). However, it is unclear whether the number of locations impacts upon an organisation's ability to transfer and create knowledge. The greater the number of locations, the greater the geographic distance between individuals, groups and organisational units. This geographic distance would suggest an impediment to the transfer of knowledge, particularly tacit knowledge requiring face-to-face communication (Daft and Lengel 1984; Daft and Lengel 1986). Individuals, groups and organisational units are less independent than those that are geographically separated

(Darr, Argote et al. 1995, p. 1760). However, contrary to this expectation an innovative, high-quality, knowledge-based product (Linux) was developed through a community of software developers that traversed organisational and geographic boundaries through the internet (Lee and Cole 2003).

Hypothesis 17: Businesses with zero or one location are no more likely to develop or introduce new or improved procedures, services or products than businesses with two or more locations.

2.9.5 Size

Organisational size is considered a relevant control and predictive variable (Parae, Thomas et al. 1995; Kusunoki, Nonaka et al. 1998; Rothaermel and Deeds 2004). Small and medium sized businesses comprise the majority of organisations throughout the world (Rowden 2002). Small organisations have a number of resource disadvantages including financial, technical human resources, marketing resources and management skills (Rothwell 1983). Small organisations also require innovative products to maintain technological advantages over large organisations (Lee 1995, p. 400). Partnering in mergers and acquisitions seems to increase with the size of companies (Hagedoorn and Duysters 2002, p. 177).

The two common measures of organisational size relate to number of employees and sales for a specified year (Porac, Thomas et al. 1995, p. 213). Measuring organisational size using number of employees is an acceptable alternative to sales (Shan, Walker et al. 1994). Organisational size has been measured in terms of employees in a number of studies (Marsh and Mannari 1981; Terpstra and Rozell 1994; Kusunoki, Nonaka et al. 1998; Gupta and Govindarajan 2000; Rothaermel and Deeds 2004). Organisational size has been measured in terms of sales in a number of studies (Porac, Thomas et al. 1995, p. 213; Kusunoki, Nonaka et al. 1998; Hagedoorn and Duysters 2002, p. 177).

Most studies set cut off points in order to specify varying categories of size. For example less than 300 employees was a cut off point in one study (Kusunoki, Nonaka et al. 1998). In another study, 200 employees was used as a cut off to categorise organisations at the lowest end of the size scale (Terpstra and Rozell 1994). A further

study used the size range 100-199 employees to represent its lowest end category (Marsh and Mannari 1981).

Hypothesis 18: Small businesses are more likely to develop or introduce new or improved procedures, services or products than medium businesses.

2.10 Research Model

The conceptual framework developed in the literature review is represented by the following research model in Figure 2.3.

Knowledge Transfer (Knowledge Management Initiatives)

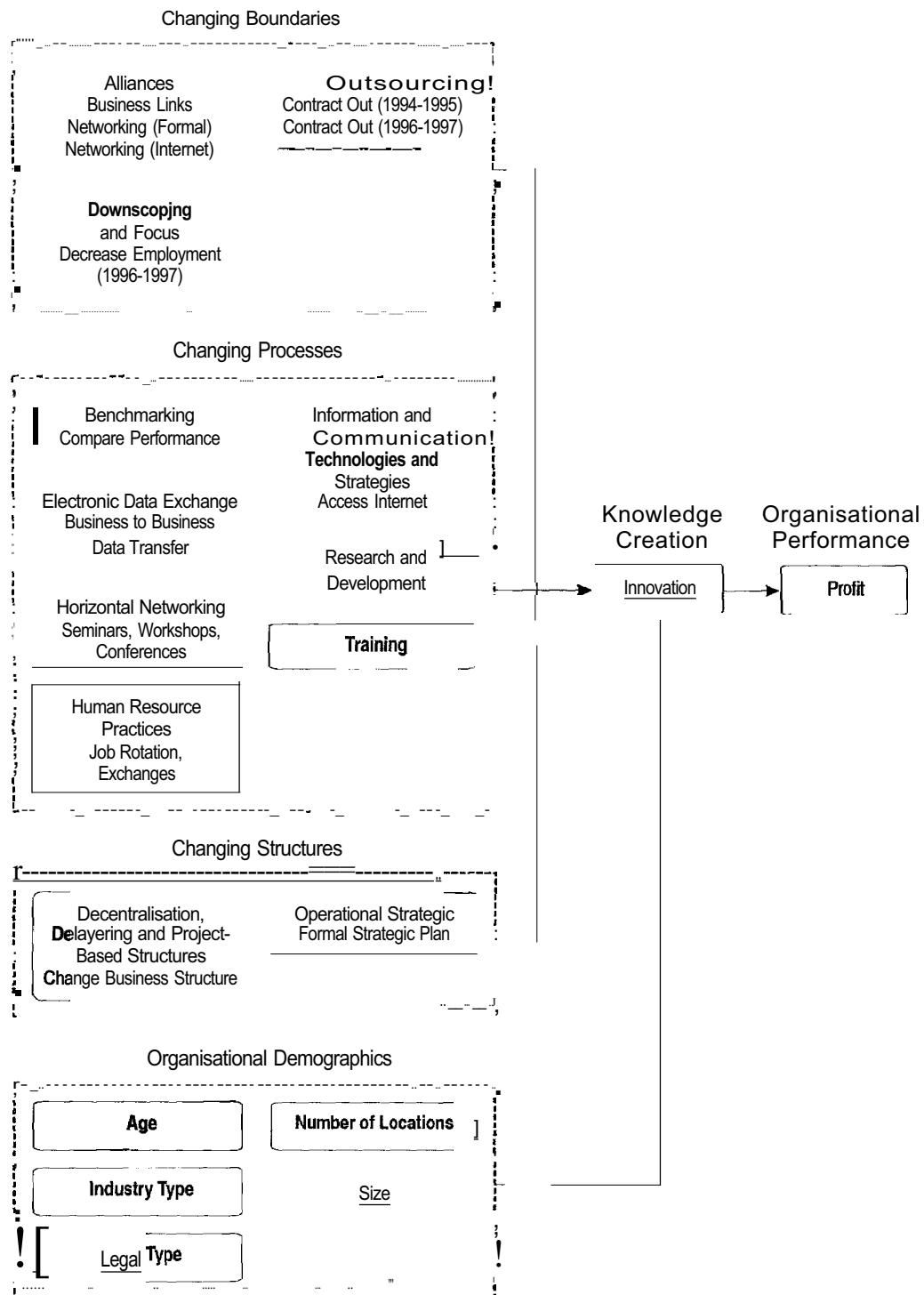


Figure 2.3: Research Model

2.11 Hypotheses

The following hypotheses are a summary of the main and null hypotheses to emerge from a review of the literature.

2.11.1 Main Hypotheses for Knowledge Transfer and Creation Relationship

The following hypotheses summarise the KM initiatives that facilitate knowledge transfer in a relationship with knowledge creation.

Hypothesis 1: Businesses that have links to other businesses or network either formally or using the internet with other businesses are more likely to develop or introduce new or improved procedures, services or products than businesses that do not have alliances.

Hypothesis 2: Businesses that decrease employment levels are more likely to develop or introduce new or improved procedures, services or products than businesses that do not downsize.

Hypothesis 3: Businesses that contract out work are more likely to develop or introduce new or improved procedures, services or products than businesses that do not outsource.

Hypothesis 4: Businesses that compare their performance with other businesses are more likely to develop or introduce new or improved procedures, services or products than businesses that do not benchmark.

Hypothesis 5: Businesses that use the internet for business to business data transfer are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use EDI.

Hypothesis 6: Businesses that hold seminars, workshops or conferences are more likely to develop or introduce new or improved procedures, services or products than businesses that do not engage in horizontal networking.

Hypothesis 7: Businesses that use job rotation or exchanges are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use these HR practices.

Hypothesis 8: Businesses that access the internet are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use these I&CT strategies.

Hypothesis 9: Businesses that perform or pay others to perform R&D are more likely to develop or introduce new or improved procedures, services or products than businesses that do not engage in R&D.

Hypothesis 10: Businesses that provide training for their staff are more likely to develop or introduce new or improved procedures, services or products than businesses that do not provide staff training.

Hypothesis 11: Businesses that change their business structure are more likely to develop or introduce new or improved procedures, services or products than businesses that do not decentralise, delay or adopt project-based structures.

Hypothesis 12: Businesses that have a formal strategic or business plan are more likely to develop or introduce new or improved procedures, services or products than businesses that do not have formal strategies in place.

2.11.2 Main Hypothesis for Knowledge Creation and Performance Relationship

The following hypothesis summarises the knowledge creation and organisational performance relationship.

Hypothesis 13: Businesses that develop or introduce new or improved procedures, services or products are more likely to be profitable than businesses that do not innovate.

2.11.3 Null Hypotheses for Controls

The following hypotheses summarise the null controls for the knowledge transfer and knowledge creation relationship.

Hypothesis 14: Younger businesses are no more likely to develop or introduce new or improved procedures, services or products than older businesses.

Hypothesis 15: Non-manufacturing businesses are no more likely to develop or introduce new or improved procedures, services or products than manufacturing businesses.

Hypothesis 16: Incorporated businesses are no more likely to develop or introduce new or improved procedures, services or products than non-incorporated businesses.

Hypothesis 17: Businesses with zero or one location are no more likely to develop or introduce new or improved procedures, services or products than businesses with two or more locations.

Hypothesis 18: Small businesses are more likely to develop or introduce new or improved procedures, services or products than medium businesses.

2.12 Conclusion

This chapter has developed a theoretical framework for understanding the way KM initiatives affect organisational activities. KM initiatives alter an organisation's boundaries, processes or structures. Such changes can enable knowledge transfer and ultimately knowledge creation. The next chapter will elaborate the steps undertaken to empirically explore the model that emerged from a review of the literature.

Chapter 3

Research Methods

3.1 Introduction

This chapter will detail the methods used in order to address the research question. The chapter will begin by justifying the use of a quantitative methods for the given research question. In doing so, it will also discuss the relative strengths and weaknesses of quantitative and qualitative methods as well as the circumstances under which each should be used. Quantitative and qualitative methods will also be compared and contrasted. The research procedures in the study will then be detailed. Data used to test the hypotheses was obtained from the ABS. Details of this process will be discussed as well as the relative merits of this approach. Ethical issues associated with this particular approach to data collection will be discussed. Finally, the data manipulation procedures and statistical techniques used to examine the research hypotheses will be detailed. Statistical reliability and validity issues will also be addressed.

3.2 Justification for the Paradigm and Methods

This study was framed within a functionalist / paradigm and employed quantitative methods. The decision to use a functionalist / positivist paradigm reflects the influence of the literature and the research problem that emerged from that literature. The field of KM is awash with theories, principles and concepts. Most of these are framed within the dominant functionalist / positivist paradigm. They have not been integrated nor have they been explored empirically. The methods chosen for this study were therefore a logical outcome of both the paradigm chosen and the research problem.

3.2.1 Justification for the Paradigm

A paradigm refers to the agreed set of theoretical constructs and research methods contained within a particular science (Kuhn 1970). It involves the assumptions, practices and agreements amongst a scholarly community (Lewis and Grimes 1999, p. 672). Paradigm development is important for the advancement of science and consensus a critical precondition for paradigm development (pfeffer 1993, p.,600). The social science of organisation studies consists of many areas with varying levels of paradigm development (Pfeffer 1993, p. 607). Overall organisation studies consists of a relatively low level of paradigm development (Pfeffer 1993, p. 607). This is partly due

to the theoretical and methodological openness and pluralism brought about by values that emphasise representativeness, inclusiveness and diversity (Pfeffer 1993, pp. 599, 618). This openness and pluralism can be useful for the field (Pfeffer 1993). It can enrich the understanding and theorising of organisational phenomena such as complexity, ambiguity and paradox (Lewis and Grimes 1999). However it has been argued that in order for a field to advance and thus compete for scarce resources, its diversity must be resolved by reaching some level of consensus (Pfeffer 1993). Multiparadigmatic approaches for developing theory and conducting research have been developed (Gioia and Pitre 1990; Schultz and Hatch 1996; Lewis and Grimes 1999). However, the resolution of paradigms is a contentious unresolved issue with disagreement centred on the commensurability and value of multiple paradigm approaches (Schultz and Hatch 1996, p. 552; Lewis and Grimes 1999, p. 672).

A typology has been previously developed that assists in the classification and better understanding of existing sociology of science theories (Burrell and Morgan 1979). This typology consists of four paradigms structured into a matrix as depicted in Figure 3.1. In this typology, paradigms represent tightly coupled ideological, ontological, epistemological and methodological assumptions that guide organisational analysis (Burrell and Morgan 1979). Each paradigm is positioned based on the dimensions of objective-subjective and regulation-radical. These dimensions reflect the major assumptions about the nature of social science and assumptions about the nature of society referred to as the order-conflict debate. Objectivity involves an external reality of deterministic and predictable relationships, subjectivity involves contextually bound and fluid social constructions, regulation involves harmonious and orderly social relations and radical change involves conflict and power asymmetries (Lewis and Grimes 1999, pp. 673-674). The functionalist (also known as positivist) paradigm is characterised by an objective view of organisational phenomena with an orientation towards maintaining current structures. The interpretivist paradigm is characterised by a subjective view of organisational phenomena with an orientation towards maintaining current structures. The radical structuralist paradigm is characterised by an objective view of organisational phenomena with an orientation towards changing current structures. The radical humanist paradigm is characterised by a subjective view of organisational phenomena with an orientation towards changing current structures.

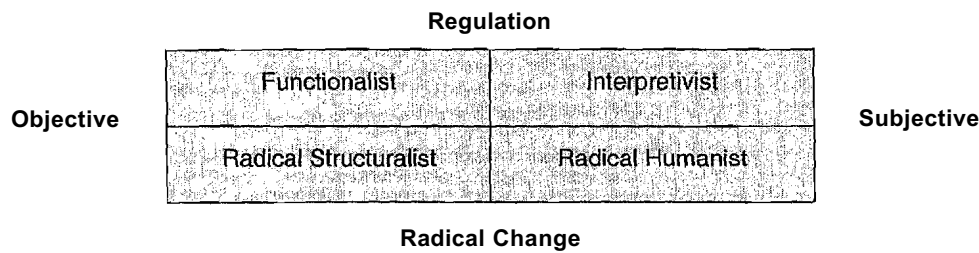


Figure 3.1: Typology of Four Paradigms (Burrell and Morgan 1979)

The dominant paradigm in organisation studies has been functionalist / positivist (Gioia and Pitre 1990, p. 586; Johnson and Duberley 2000). The functionalist / positivist paradigm consists of several core features which constitute its epistemological and ontological foundations. Many of these assumptions and features have been brought in to the social sciences from the influence of the natural sciences (Johnson and Duberley 2000). This paradigm is based on the assumption that organisational phenomena are objective and rational, can be discovered and explained through impartial enquiry and is deeply rooted in sociological positivism (Burrell and Morgan 1979). The goal of research is perceived to be the identification of fundamental constructs, causal relationships and frameworks that explain particular phenomena such as management and organisations (Judd, Smith et al. 1991). Constructs and relationships are perceived to be fixed and can be identified and measured, usually through a deductive approach to theory building, hypothesis driven data and statistical analysis (Gioia and Pitre 1990, p. 586). The researcher is viewed as and encouraged to remain an independent and objective observer of the phenomenon of interest (Johnson and Duberley 2000). Considerable importance is placed on the operationalisation of constructs and validity and reliability issues surrounding the study.

Table 3.1 summarises the main differences between positivism and social constructionism.

	Positivism	Social Constructionism
The observer	Must be independent	Is part of what is being observed
Human interests	Should be irrelevant	Are the main <i>drivers</i> of science
Explanations	Must demonstrate causality	Aim to increase general understanding of the situation
Research Processes Through	Hypotheses and deductions	Gathering rich data from which ideas are induced
Concepts	Need to be operationalised so that they can be measured	Should incorporate stakeholder perspectives
Unit of Analysis	Should be reduced to simplest terms	May include the complexity of "whole" situations
Generalisation Through	<u>Statistical probability</u>	Theoretical abstraction
Sampling Requires	Large numbers selected randomly	Small numbers of cases chosen for specific reasons

Table 3.1: Contrasting Implications of Positivism and Social Constructionism
(Easterby-Smith, Thorpe et al. 2002, p. 30)

Whilst functionalism / positivism is the dominant paradigm in organisation studies, researchers are conducting a significant number of studies grounded in other paradigms (Pfeffer 1993, p. 616; Lewis and Grimes 1999, p. 672). It has been suggested that organisation studies would be better served if researchers were more explicit about the nature of their beliefs brought to the subject of study (Morgan and Smircich 1980, p. 499). There is a need to approach discussions of methodology so that the link between theory and method is highlighted as well as the link between the paradigmatic bias a researcher may have, the type of research question posed and the technique to be adopted for the research (Morgan and Smircich 1980, p. 499). Such a call is consistent with the view that it is increasingly necessary for research students to demonstrate a reflective understanding of the epistemological and ontological positions they take in management and organisational research conducted for theses and dissertations (Johnson and Duherley 2000).

This research study was not determined by a paradigmatic but rather by the nature of the research problem itself. The research problem was framed in a literature that is

dominated by a functionalist / positivist perspective. The core promise of strategically managing organisational knowledge is that innovation will result and organisational outcomes will be improved. This is a rational and objective perspective. The constructs and relationships have been identified but they have not been examined in a cohesive framework. This particular problem is well suited to the deductive, hypothesis testing statistical paradigm of functionalism. In fact advocates of a multiparadigmatic perspective do not advocate the dismissal of functionalist / positivist approaches which are viewed as being particularly relevant when issues are defined according to their basic assumptions (Gioia and Pitre 1990, p. 587).

Whilst some authors argue that paradigms are incommensurable (Jackson and Carter 1991; Jackson and Carter 1993), others argue that anomalies within existing theories can be identified and remedied (Willmott 1993). However, no paradigm has incontestable ontological and epistemological assumptions (Johnson and Duberley 2000). Rather than engage in the competitive debate between paradigms, this study has adopted a pragmatic approach because of the nature of the research problem and used the dominant functionalist / positivist paradigm. This approach acknowledges that each paradigm allows management and organisations to be studied in particular ways (Johnson and Duberley 2000). Whilst this study uses a functionalist / positivist paradigm, it acknowledges the validity of other paradigms.

3.2.2 Justification for the Methods

In order to address the research question and the hypotheses deduced from the review of the literature, this study statistically analysed secondary data obtained from the ABS. The data was originally collected by the ABS using a questionnaire survey method. The use of a survey method to measure knowledge creation and transfer across organisations is consistent with other studies that have employed this approach for OL (Bontis, Crossan et al. 2002). It reflects a contingency view that different methods are appropriate for different kinds of research problems (Easterby-Smith, Crossan et al. 2000, p. 789).

It has been argued that qualitative and quantitative methods exist at opposite ends of a subjectivist / objectivist approach to social science continuum (Morgan and Smircich 1980). Rather than attempt to reconcile or combine these approaches (and by

association qualitative and quantitative methods), organisational researchers are encouraged to make explicit the nature of their beliefs that influence methods used in their study (Morgan and Smircich 1980, p. 499). A less rigid view has been adopted by other organisational and management researchers with respect to combination of methods (Van Maanen 1979, p. 520). Whilst acknowledging that qualitative methods are more commonly used by researchers with a subjectivist approach to social science, they assert that qualitative methods can be employed by researchers using an objectivist approach. They also assert that qualitative and quantitative methods are not mutually exclusive. This view is consistent with others who consider qualitative and quantitative methods to be complementary and can be combined for triangulation (Jick 1979).

For this study, the methods were in large part determined by the functionalist / positivist paradigm adopted. The objective and rational perspective applied to organisational and management phenomena results in a three step process where data collection is separated from data analysis (Easterby-Smith, Thorpe et al. 2002, p. 83). The three ordered steps are data collection, statistical analysis and writing. The data collection and analysis steps are carried out in such a way as to minimise researcher bias and thus maintain objectivity. Quantitative methods differ from qualitative methods particularly in the separation of the stages of data collection as well as modes of analysis (Easterby-Smith, Thorpe et al. 2002, p. 83). There is more an iterative approach to the three stages where there is much closer physical contact with the phenomenon of interest. Data generated is usually more textual. Rather than statistical analysis, text is analysed to identify emergent themes, ideas and understanding. Again, this approach is heavily influenced by the paradigm under which it is inspired.

The choice of methods has implications for the understanding of the phenomenon of interest. Generally, qualitative methods generate richer data that allow for the development of subtle understanding. In quantitative methods, this study is limited in terms of the detail or richness of the conclusions that can be made.

A four-step method framework for research in the RBV of the firm and sustained competitive advantage has been proposed, due to a perceived weakness in traditional strategy research methods for this perspective (Rouse and Daellenbach 1999). The framework is essentially a quantitative one but calls for more attention to detail within

organisations rather than only between organisations. Critics of this framework argue that it is flawed because it confuses the distinction between knowing-how and knowing-what, fails to recognise the importance of observable variables in verifying the sources of sustainable competitive advantage and calls for sampling of the dependent variable (Levitas and Chi 2002). Supporters counter that the framework does not invalidate the need for large questionnaire surveys and secondary data but rather relies upon this for the first step (Rouse and Daellenbach 2002).

3.3 Business Longitudinal Survey / Data Sample

Data used in the study was obtained from the 1994-1995, 1995-1996, 1996-1997 and 1997-98 Business Growth and Performance Surveys. Collectively, these surveys are known as the Business Longitudinal Survey (BLS). These surveys were developed and implemented by the ABS and provided under the legislative authority detailed in Appendix 4. The purpose of these surveys is to gather data in relation to the performance and growth of Australian employing businesses across selected structural and economic characteristics. The data collected at each point in time was based on the organisation's operations for the year ending June 1995, June 1996, June 1997 and June 1998. The questionnaires constituting the Business Growth and Performance Surveys distributed by the ABS are included in Appendix 5.

The BLS data used was obtained in a de-identified form referred to as a confidentialised unit record file (CURF). It constituted the second release of the BLS CURF. The ABS makes available CURFS to Australian universities in order to support academic research and teaching. CURFS are made available under a Deed of Agreement between the Commonwealth of Australia (represented by the ABS) and the Australian Vice Chancellors Committee (AVCC) (ABS 2000). The present term of the agreement is January 1999 until December 2004.

The data contained in the BLS CURF is longitudinal because it represents measurements for a set of businesses at four equidistant time points. In organisation studies and particularly strategic management, the use of large secondary data sources typically has involved cross-sectional data analysis methods (Bowen and Wiersema 1999, pp. 625-626). The RBV with its emphasis on internal organisational resources

has contributed to the focus of research on effects that are organisation specific. Cross-sectional data analysis methods whilst more useful to external organisational factors are not suited to this internal emphasis. Organisation specific effects are often not constant across organisations and over time, and attempts to measure unstable effects with cross-sectional methods can result in inaccurate and inefficient results (Bowen and Wiersema 1999, pp. 625-626). Whilst the importance of longitudinal data analysis methods is acknowledged, this study employed cross-sectional data analysis methods. Whilst the BLS CURF is longitudinal, many of the questions of relevance to this study were only asked in the 1997-98 Business Growth and Performance Survey and thus could not be analysed longitudinally.

3.3.1 Scope of Survey

The sample for the 1994-1995 Business Growth and Performance Survey consisted of all businesses on the Business Register of the ABS. The ABS Business Register consists of all businesses in the Australian economy that had registered as group employers with the ATO. In total approximately 13000 businesses were selected for inclusion in the first survey. Subsequent surveys involved a sub sample of the surviving original organisations selected for the first survey. This sub sample was supplemented by a sample of new businesses added to the ABS Business Register over the later years. Organisations that had not registered as group employers with the ATO (did not have employees) and certain types of organisations were excluded from the survey. The types of organisations that were excluded from the sample include Government, agriculture, forestry, fishing, electricity, gas, water supply, communication services, Government administration and defence, education, health and community services, private households employing staff, libraries, museums, parks and gardens.

The BLS CURF contains many and varied business related data items. Researchers are able to tabulate, manipulate and analyse data to examine a diverse range of research problems / questions. Complex linking and weighting procedures have also been incorporated into its design. Each organisation is classified by industry and size (number of employees) (ABS 1993; ABS 1999).

For confidentiality reasons, the second release of the BLS CURF only provides a subset of the data collected and does not include large businesses which are defined as those

employing 200 people or more. Thirty additional businesses were dropped as being large based indicators other than number of employees. The number of organisations included in the data file is 9732, down from approximately 13000 surveyed.

The use of small to medium businesses is consistent with emphasis today on reducing the size and focus of organisations.

3.3.2 Unit of Analysis

The unit of analysis for the study is the organisation. In the BLS CURF this is referred to as the management unit and is the highest level accounting unit within a business for which detailed accounts are maintained. As the BLS CURF consists of businesses that are not large (less than 200 employees) nearly all management units are consistent with the legal entity owning the business such as a company, partnership, trust or sole operator.

3.3.3 Justification of the Use of BLS CURF

There is no clear consensus amongst organisational researchers as to what data can be considered legitimate and valid (Stablein 1996, p. 255). Secondary focus of data are legitimate however the onus is on the researcher to demonstrate that the data represent the organisational phenomena of interest (Stablein 1996, p. 267). The collection of appropriate data can be a difficult process and influenced by accessibility to people and organisations, cost, time and the interests of third parties in the outcomes (Aldag and Stearns 1988, p. 259). These problems can be resolved through large secondary data sets that have wide representation, subjects that are measured repeatedly over time and are provided at minimal cost in a format readily analysable with statistical computer software (Aldag and Stearns 1988, p. 259).

The BLS CURF is a form of secondary data strongly suited for adoption by many different research studies. The questionnaires are designed by experienced researchers. Where appropriate, questions involve national standards or classifications (ABS 1993; ABS 1998). The questionnaire items have been developed over a number of years. Businesses are required by law to complete the questionnaires so response rates are extremely high. Non-response to questionnaire surveys is common and can reduce the

sample size and introduce bias (Edwards, Roberts et al. 2002). The ABS has access to address information for thousands of Australian businesses and the resources to distribute and process large volumes of questionnaires. As a result, the ABS CURF consists of 787 measured for 9732 organisations. So additional advantages of using the ABS CURF include a high quality survey design, high response rate, large sample sizes and representative sample sizes.

It is common for organisational surveys to have low response rates which can introduce sample bias (Tomaskovic-Devey, Leiter et al. 1994). Responses to organisational surveys can be affected by the authority, capacity and motive to respond of both the organisation sampled and the respondents within the organisation (Tomaskovic-Devey, Leiter et al. 1994).

The use of an existing data set is consistent with conducting exemplary management research (Frost and Stablein 1992). A published study that examined the cause and effect relationships between displayed employee emotions, store sales and store pace in a single chain of convenience stores used an existing data set (Sutton and Rafaeli 1988). This article is considered exemplary and received the award for the best paper published in the Academy of Management Journal in 1988 (Frost and Stablein 1992, p. 127). The initial impetus for the study was a quantitative data set that Sutton and Rafaeli were given from Sutton's good friend Larry Ford (Frost and Stablein 1992, p. 119). It was hypothesised that there was a positive relationship between employees' display of pleasant emotions to customers and sales in retail stores (Sutton and Rafaeli 1988). This relationship was subsequently tested quantitatively using a sample of 576 convenience stores. An unexpected negative result was gained from this study. In response to this unexpected result, an additional qualitative study was carried out. The results from this inductive study suggested that sales are indicative of a store's pace, the amount of time pressure on customers and employees, and that pace leads to displayed emotions. A re-analysis was conducted on the quantitative data which confirmed that fast paced stores with high sales and long lines were less likely to display positive emotions than employees in slow-paced stores.

Whilst the study may be exemplary, there were flaws in the research process (Sutton and Rafaeli 1988). Conceptually, the study was partially grounded in management

practitioner folklore (Frost and Stablein 1992, p. 130). The use of practitioner literature for theorising and the failure of their initial hypotheses suggests that the researchers may have initially conducted an insufficient literature review and theorising (Sutton and Rafaeli 1988). Alternatively, the authors perhaps should have conducted a qualitative study and were biased in the methodological choice by the gift of the data set and Rafaeli's ability to conduct the quantitative analyses (Frost and Stablein 1992, pp. 120, 129).

This study also uses a pre-existing data set, however it avoids the problems detailed above. This study is based on a literature review that consists of both academic and practitioner literature in a field that is rich in theories, principles and concepts. In such a situation it is appropriate to conduct a deductive study in order to integrate the field and empirically explore the causal relationships.

3.4 Measures for Each Construct

A publicly available data set was obtained from the ABS through the University of Technology, Sydney library under an agreement between the ABS and the vice-chancellors. The data set, titled "Business Longitudinal Survey" was manipulated by recoding variables and creating new variables. These variables were then subjected to descriptive, chi-square, odds ratio, relative risk and logistic regression analysis.

3.4.1 Changing Boundaries

3.4.1.1 Alliances

The following questions and response categories were used to measure the construct of alliances:

- Did the business have any links with other businesses during the financial year (1995-1996)? (No, Yes)
- Did the business use the business practice of formally networking with other businesses (1997-1998)? (No, Yes)
- Does the business use the internet for business networking (1997-1998)? (No, Yes)

The following questions and response categories were used to generate hypotheses in relation to partners for alliances:

- How frequently did the business seek business information or advice from (1995-1996):
 - ATO (Never, 1-3 times, More than 3 times)
 - banks (Never, 1-3 times, More than 3 times)
 - business consultants (Never, 1-3 times, More than 3 times)
 - customers (Never, 1-3 times, More than 3 times)
 - family or friends (Never, 1-3 times, More than 3 times)
 - Government small business agencies (Never, 1-3 times, More than 3 times)
 - industry associations or chambers of commerce (Never, 1-3 times, More than 3 times)
 - local business (Never, 1-3 times, More than 3 times)
 - others in industry (Never, 1-3 times, More than 3 times)
 - solicitors (Never, 1-3 times, More than 3 times)

These variables were subjected to a chi-square linear-by-linear association analysis. They were then recoded into a binary variable (Never, 1 or more times) and subjected to chi-square, odds ratio and relative risk analysis.

3.4.1.2 Downscoping and Focus

The following question and response categories were used to measure the construct of downscoping and focus:

- Did total employment (excluding casuals) decrease during the year (1996-1997)? (No, Yes)

The following questions and response categories were used to generate hypotheses in relation to reasons for downscoping and focus:

- Did total employment (excluding casuals) decrease during the year because of a decrease in demand (1996-1997)? (No, Yes)
- Did total employment (excluding casuals) decrease during the year because of improvements to business efficiency (1996-1997)? (No, Yes)
- Did total employment (excluding casuals) decrease during the year because of a reduced range of activities (1996-1997)? (No, Yes)
- Did total employment (excluding casuals) decrease during the year because of the replacement of permanent employees with casuals (1996-1997)? (No, Yes)
- Did total employment (excluding casuals) decrease during the year because of a temporary decrease in employment levels (1996-1997)? (No, Yes)

3.4.1.3 Outsourcing

The following questions and response categories were used to measure the construct of outsourcing:

- During the financial year, did this business contract out activities previously done by its own employees (1994-1995)? (No, Yes)
- During the financial year, did this business contract out activities previously done by its own employees (1996-1997)? (No, Yes)

3.4.2 Changing Processes

3.4.2.1 Benchmarking

The following question and response categories were used to measure the construct of benchmarking:

- Did the business compare its performance with other businesses (1997-1998)⁷ (No, Yes)

The following questions and response categories were used to generate hypotheses in relation to areas of benchmarking:

- Did the business compare the cost of its products or services with other businesses (1994-1995)⁷ (No comparison, formal documented comparison, informal comparison)
- Did the business compare its marketing or advertising with other businesses (1994-1995)⁷ (No comparison, formal documented comparison, informal comparison)
- Did the business compare the price of its products or services with other businesses (1994-1995)⁷ (No comparison, formal documented comparison, informal comparison)
- Did the business compare the quality of its client service with other businesses (1994-1995)? (No comparison, formal documented comparison, informal comparison)
- Did the business compare the quality of its product or service with other businesses (1994-1995)? (No comparison, formal documented comparison, informal comparison)

- Did the business compare the range of its products or services with other businesses (1994-1995)? (No comparison, formal documented comparison, informal comparison)

These variables were then recoded into a binary variable (No comparison, Comparison) and subjected to chi-square, odds ratio and relative risk analysis.

3.4.2.2 Electronic Data Interchange

The following question and response categories were used to measure the construct of EDI:

- Does the business use the internet for business to business data transfer (1997-1998)? (No, Yes)

The following questions and response categories were used to generate hypotheses in relation to types of EDI:

- Does the business use the internet for the co-ordination of delivery arrangements (1997-1998)? (No, Yes)
- Did the business change its usage of electronic banking or funds transfer (1997-1998)? (Not applicable, no major change, increased, decreased)

This variable was then recoded into a binary variable (Decreased, no major change, increased) and subjected to chi-square, odds ratio and relative risk analysis.

- Did the business change its usage of electronic ordering / purchasing via the internet (1997-1998)? (Not applicable, no major change, increased, decreased)

This variable was then recoded into a binary variable (Decreased, no major change, increased) and subjected to chi-square, odds ratio and relative risk analysis.

- Did the business change its usage of electronic stock monitoring (1997-1998)?
(Not applicable, no major change, increased, decreased)

This variable was then recoded into a binary variable (Decreased, no major change, increased) and subjected to chi-square, odds ratio and relative risk analysis.

- Does the business use the internet to interactively lodge forms / tenders (1997-1998)? (No, Yes)
- Does the business use the internet to make payments (1997-1998)? (No, Yes)
- Does the business use the internet for other marketing / promotional activities (1997-1998)? (No, Yes)
- Does the business use the internet to place purchase orders (1997-1998)? (No, Yes)
- Does the business use the internet to receive invoices (1997-1998)? (No, Yes)
- Does the business use the internet to receive sales orders (1997-1998)? (No, Yes)
- Does the business use the internet to receive payments (1997-1998)? (No, Yes)
- Does the business use the internet to send invoices (1997-1998)? (No, Yes)
- Does the business use the internet for a web site / home page (1997-1998)? (No, Yes)

3.4.2.3 Horizontal Networking

The following question and response categories were used to measure the construct of horizontal networking:

- Estimate the percentage of employees in the business who participated in seminars, workshops or conferences (1997-1998)? (None, up to 25%, 26% to 50%, 51 % to 75%, 76% to 100%)

This variable was then recoded into a binary variable (None, 1% - 100%) and subjected to chi-square, odds ratio and relative risk analysis.

3.4.2.4 Human Resource Practices

The following question and response categories were used to measure the construct of human resource practices:

- Estimate the percentage of employees in the business who participated in job rotation or exchanges during the 1997-1998 financial year? (None, up to 25%, 26% to 50%, 51 % to 75%, 76% to 100%)

This variable was then recoded into a binary variable (None, 1% - 100%) and subjected to chi-square, odds ratio and relative risk analysis.

3.4.2.5 Information and Communication Technologies and Strategies

The following question and response categories were used to measure the construct of I&CT:

- Did the business access the internet,(1997-1998)? (No, Yes)

The following questions and response categories were used to generate hypotheses in relation to types of I&CT:

- Did the business change its usage of accounting software (1997-1998)? (Not applicable, no major change, increased, decreased)

This variable was then recoded into a binary variable (Decreased, no major change, increased) and subjected to chi-square, odds ratio and relative risk analysis.

- Does the business use the internet for e-mail (1997-1998)? (No, Yes)
- Does the business use the internet for an intranet (1997-1998)? (No, Yes)
- Did the business change its usage of production technology (1997-1998)? (Not applicable, no major change, increased, decreased)

This variable was then recoded into a binary variable (Decreased, no major change, increased) and subjected to chi-square, odds ratio and relative risk analysis.

- Did the business change its usage of the number of personal computers (1997-1998)? (Not applicable, no major change, increased, decreased)

This variable was then recoded into a binary variable (Decreased, no major change, increased) and subjected to chi-square, odds ratio and relative risk analysis.

- Did the business change its usage of the number of staff using computers (1997-1998)? (Not applicable, no major change, increased, decreased)

This variable was then recoded into a binary variable (Decreased, no major change, increased) and subjected to chi-square, odds ratio and relative risk analysis.

3.4.2.6 **Research and Development**

The following question and response categories were used to measure the construct of R&D:

- Has the business performed or paid others to perform R&D (1997-1998)? (No, Yes)

3.4.2.7 Training

The following question and response categories were used to measure the construct of training:

- How has the number of people being trained by the business changed (1997-1998)? (Increased, decreased, stayed the same, no training provided)

This variable was then recoded into a binary variable (None, decreased / stayed the same / increased) and subjected to chi-square, odds ratio and relative risk analysis.

The following questions and response categories were used to generate hypotheses in relation to content of training:

- Estimate the percentage of employees in the business that received health and safety training (1997-1998)? (none, up to 25%, 26% to 50%, 51 % to 75%, 76% to 100%)
- Estimate the percentage of employees in the business that received management training (1997-1998)? (none, up to 25%, 26% to 50%, 51 % to 75%, 76% to 100%)
- Estimate the percentage of employees in the business that received professional training (1997-1998)? (none, up to 25%, 26% to 50%, 51 % to 75%, 76% to 100%)
- Estimate the percentage of employees in the business that received trade and apprenticeship training and traineeships (1997-1998)? (none, up to 25%, 26% to 50%, 51 % to 75%, 76% to 100%)
- Estimate the percentage of employees in the business that received training for computer specialists (1997-1998)? (none, up to 25%, 26% to 50%, 51 % to 75%, 76% to 100%)

The following questions and response categories were used to generate hypotheses in relation to provider of training:

- Did the business use an equipment manufacturer or supplier to train its employees (1997-1998)? (No, Yes)
- Did the business use industry associations to train its employees (1997-1998)? (No, Yes)
- Did the business use employees or owners of the business to train its employees (1997-1998)? (No, Yes)
- Did the business use a private training consultant to train its employees (1997-1998)? (No, Yes)
- Did the business use professional associations to train its employees (1997-1998)? (No, Yes)
- Did the business use employees or owners of the business to provide structured training (1997-1998)? (No, Yes)
- Did the business use TAFE to train its employees (1997-1998)? (No, Yes)
- Did the business use a university to train its employees (1997-1998)? (No, Yes)

3.4.3 Changing Structures

3.4.3.1 Decentralisation, Delaying and Project-Based Structure

The following question and response categories were used to measure the construct of decentralisation, delaying and project-based structure:

- Did the business change its business structure (1997-1998)? (No major change, changed)

3.4.3.2 Operational Strategic

The following question and response categories were used to measure the construct of operational strategic:

- Did the business use a formal strategic or business plan (1997-1998)? (No, Yes)

3.4.4 Organisational Demographics

3.4.4.1 Age

The following question and response categories were used to measure the construct of age:

- What is the age of the business? (4-9 years, more than 10 years)

3.4.4.2 Industry Type

The following question was used to measure the construct of industry type:

- What is the main industry of operation of the business?

3.4.4.3 Legal Type

The following question and response categories were used to measure the construct of legal type:

- What is the type of legal organisation of the business? (Incorporated, unincorporated)

3.4.4.4 Number of Locations

The following question and response categories were used to measure the construct of number of locations:

- How many are the number of business locations?

3.4.4.5 Size

The following question was used to measure the construct of number of locations:

- What was the total number of people employed (1997-1998)?

This variable was then recoded into a binary variable (Other small business, medium business) and subjected to chi-square, odds ratio and relative risk analysis.

3.4.5 Innovation (Knowledge Creation)

The following question and response categories were used to measure the construct of innovation:

- For non-manufacturing businesses, did the business introduce new or improved goods and services, or introduce new or improved procedures for the supply of goods and services during the 1997-1998 financial year? (No, Yes)
- For manufacturing business, did the business develop or introduce any new or substantially change products or services during the 1997-1998 financial year? (No, Yes)

A binary variable (Not innovative, innovative) was created from the combination of the above questions and subjected to chi-square, odds ratio and relative risk analysis.

3.4.6 Organisational Performance

The following question was used to measure the construct of innovation:

- What was the derived profit or loss, of the business during the 1997-1998 financial year?

This variable was then recoded into a binary variable (No profit, profit) and subjected to chi-square, odds ratio and relative risk analysis.

3.5 Data Manipulation Procedures and Statistical Techniques

This section will identify the significant data manipulation procedures carried out by the ABS and the study on the BLS CURF. The process of perturbation carried out by ABS on the BLS CURF potentially raises issues of data accuracy for this study. These issues will first be discussed. The data manipulation procedures carried out on the BLS CURF as distributed will then be discussed. The statistical techniques used in the study will be introduced and the justification for their use provided.

3.5.1 Implications of ASS De-identification Process

The only de-identification process that potentially had ramifications for this study was perturbation of the financial variable measuring business profit. The process is applied to each variable individually for each year. Values for a variable are initially sorted into ascending order. The highest values and the lowest values are grouped into two separate groups and then adjusted to the mean of that group. The remaining values are examined and adjusted slightly where the number of occurrences of a particular value is few. After perturbation the values are checked again for any remaining extreme outliers. For this study, profit was recoded into whether a business experienced a profit or not. This process depended on the sign of the value and not its size. Perturbation only affects the size of a value and not its sign.

3.5.2 Data Manipulation

The generation of the sample for analysis is summarised in the figure contained in Appendix 6.

This study did not use all the records or all the variables contained in the BLS CURF. The BLS CURF contains records for 9732 businesses across 787 variables. The businesses in the CURF were themselves a sub set of the total number of approximately 13000 businesses collected in the BLS. Large businesses had already been excluded.

The number of records and thus businesses was first reduced to 4068 by eliminating all businesses that had not been in existence for each of the four years a questionnaire was distributed. This decision was based on a combination of factors. 9732 a large sample and it was desirable to reduce the statistical power so that very small differences

were not statistically significant. KM became part of popular management culture during the period of 1994-1998 so it was desirable to include organisations that were in existence throughout this period to give the maximum opportunity for principles to be absorbed. New businesses tend to be more consumed with survival over organisational development than more mature businesses. The elimination of these new businesses reduced the bias of startup businesses. By eliminating businesses, a more complete data for any potential variable of analysis was created.

The number of records and thus businesses was further reduced to 3014 by eliminating all small businesses with less than five employees. This decision was made to counter any bias that might result from including businesses that had very few employees and for which it would be difficult to determine or justify as organisations.

The statistical techniques were applied to a subset of the BLS CURF which excluded small and large businesses. Other small and medium businesses which had been in existence for all four years of the surveys were included.

In statistics, the greater the sample size, the greater the chance that statistical significance will be attained which leads to the notion of statistical and practical significance (Cohen 1993; Hinkin 1995, p. 981). Whilst a small effect size in a statistical analysis can be significant given a large enough sample size, from a practical perspective this effect size can be irrelevant (Peat 2001). It is necessary to move away from traditional reliance on statistical significance tests and give more emphasis on effect sizes and confidence intervals to build a more cumulative body of knowledge (Cohen 1994). A large sample size is excellent for generating tight confidence intervals. As long as the practical significance is considered (through effect size), in conjunction with statistical significance, the issue of overpower from large sample sizes can be controlled.

3.5.3 Statistical Techniques

The final data set was analysed using a combination of descriptive and inferential statistical techniques (Altman and Bland 1996). These analyses were generated using the statistical computer program SPSS 10.0 for Windows. The inferential statistical techniques used included chi-square, odds ratios, relative risk and logistic regression

analysis. Chi-square is a standard technique for examining relationships between bi-variate categorical variables. Logistic regression is a multivariate technique that estimates the relationship between one or more independent (predictor) variables and a dichotomous dependent variable (Wright 1995, p. 217). It also assists in examining the inter-relationships between independent variables of a model.

The use of these statistical techniques was dictated by the type of data contained in the BLS CURF. These techniques are used when the dependent variable and to a lesser extent independent variables in bi-variate or multi-variate relationships are categorical. The two dependent variables tested in the model were innovation and profit. Innovation was a categorical variable and profit was transformed into a categorical variable to counter the effects of the perturbation process. All independent variables were categorical except for number of employees which was recoded into a categorical variable to indicate size.

The final sample size of 3014 is relatively large ensuring that the study has sufficient power to detect statistical differences. Care was exercised to ensure that the actual size of these differences was meaningful.

After each relationship was examined using chi-square analysis, the relationships were sorted from strongest to weakest (by odds ratio). Each variable was then loaded manually into the logistical regression model by strength of relationship. The standard error and significance values of all variables in the model were monitored on the addition of each new variable to maintain model stability. If the introduction of a new variable altered the standard error of a previously loaded variable by more than about 10% or any variable in the model was no longer significant, the newly loaded variable was left out of the model.

3.6 Reliability and Validity

The development of the field of management and organisation studies is dependent upon reflection of the appropriateness and rigour of the research methods used in studies (Hinkin 1995, p. 983; Scandura and Williams 2000, p. 1248). The ability to draw causal inferences and well-informed conclusions from data is central to sound

research and the provision of recommendations for practice (Scandura and Williams 2000, p. 1262). The current trend in management and organisation studies is a lack of emphasis on rigour, particularly consideration and reporting of validity and reliability issues (Scandura and Williams 2000, pp. 1259, 1261). In strategic management in particular, researchers focus on the relationships between variables much more than the conceptualisation and measurement of constructs (Boyd and Reuning-Elliott 1998, p. 151). They are more concerned with *research* versus *construct validation* research. Failure to adequately address validity and reliability issues casts uncertainty over sound measurement and thus a study's results (Hinkin 1995, p. 981). The development and implementation of questionnaire surveys is subject to a number of issues in relation to reliability and validity (Bland and Altman 2002).

3.6.1 Reliability

Reliability involves consideration for two issues: consistency of items within a measure and stability of the measure over time (Hinkin 1995, p. 978). Some usual analyses for reliability were not carried out because most constructs were measured with single item scales. Analyses from a survey are vulnerable to two types of reliability error: sampling error and non-sampling error.

3.6.1.1 Sampling Error

The businesses contained within the BLS CURF are a sample representing all the units from a population of businesses. Analyses are subject to sampling variability which means that they may differ from the analyses that would have been produced if all businesses in the population had been included in the survey.

The extent of this difference can be gauged by the variable's standard error, which indicates the extent to which an estimate might have varied by chance because only a sample of businesses was included. The probability that a variable's summary measure will differ by less than one standard error from the value that would have been obtained if all businesses had been included in the survey is 66.66%. The probability that a variable's summary measure will differ by less than two standard errors from the value that would have been obtained if all businesses had been included in the survey is 95%.

The relative standard errors for some basic aggregates are provided in Appendix 7 as a representation of the sampling error.

3.6.1.2 Non-Sampling Errors

Some errors occur irrespective of whether a sample or population is surveyed and are referred to as non-sampling errors. These errors result from the data collection and processing procedures. The data may be incomplete for certain variables because there may be differences in characteristics of respondents. Respondents may answer questions incorrectly due to the inappropriate wording of questions, misunderstanding of what data are required, inability or unwillingness to provide accurate information and mistakes in answering questions. Errors may also be introduced during the processing of the survey data. These processing errors may arise through mistakes in data entry, coding and recording.

Limited information is provided by the ABS in relation to how non-sampling errors were managed. It can only be assumed that these were managed to a professional and high standard. The ABS is a respected research institution with many years of survey experience and employees highly skilled in the intricacies of research.

3.6.2 Validity

There exists at least four main types validity: construct, internal, external and statistical conclusion (Judd, Smith et al. 1991, p. 29; Scandura and Williams 2000, p. 1262).

Construct validity refers to the extent to which the constructs of theoretical interest for the organisational phenomena are successfully operationalised through survey questions and data (Judd, Smith et al. 1991, p. 29). Indirect inferences about construct validity can be made rather than measurement because a construct itself is a theoretical item which measurement attempts to estimate (Boyd and Reuning-Elliott 1998, p. 190). Lack of consistency of construct measurement such as performance, particularly in strategic management is a restriction to its development and limits the generalisability and comparability of studies (Boyd and Reuning-Elliott 1998, p. 181). Construct validity can be maximised by building a study on a strong theoretical framework which tightly links questionnaire measurements, constructs and the theoretical domain (Hinkin

1995, pp. 971,980,982). This principle has been strongly adhered to in this study. Confidence in construct validity is enhanced to the degree that hypotheses using measures of the constructs are confirmed (Hinkin 1995, p. 980). This process in part relies upon generally agreed construct definitions (Hinkin 1995, p. 983), however such definitions do not yet exist for many constructs in KM. The dimensionality of many of these constructs is also undetermined. This study predominantly uses single-item scales for measurement of constructs. Whilst single-item scales are suitable for relatively simple constructs or when measurement error is unlikely, they are less suited to complex multi-dimensional constructs (Boyd and Reuning-Elliott 1998, p. 189). The use of single-item scales with complex multi-dimensional constructs can contribute to measurement error and the inappropriate representation of the construct (Hinkin 1995, p. 979; Boyd and Reuning-Elliott 1998, p. 189). The use of multi-item scales is better suited to the measurement of complex constructs because of their sensitivity to the dimensions of the construct (Duncan 1996).

Internal validity refers to the extent to which the research design supports causal conclusions to be made about the effect of the independent variables on the dependent variable (Judd, Smith et al. 1991, p. 29). The causal relationships identified in the model have been developed after an extensive review of the literature. This process enhances the internal validity of the study and the statistical analysis conducted confirms the identified relationships.

External validity refers to the extent to which the results from the sample and setting of the study can be generalised to other populations and settings (Judd, Smith et al. 1991, p. 29). External validity is influenced by the type of sample, type of subjects and the research strategy (Scandura and Williams 2000, p. 1249). The use of large samples of organisations is increasing in management and organisation studies research and can provide good representation and greater generalisability of results (Aldag and Steams 1988, pp. 259, 267).

For this study, statistically the results can only be externalised to all other small and medium businesses in Australia. The results can not be externalised to large or overseas organisations or organisations that are not businesses. However, the purpose of this research was not to externalise its results to all organisations in the world. Rather it was

to examine the relationship between KM concepts with a sample broad and large enough to provide legitimacy for the results in organisational contexts.

Statistical conclusion validity is influenced by the sample size, number of dependent variables and the data analysis approaches (Scandura and Williams 2000, p. 1249).

3.7 Ethical Considerations

Two ethical issues were considered in using the BLS CURF. The first issue was whether ethics approval was required. The second issue was adherence to the Conditions of Release and Conditions of Sale of the BLS CURF.

3.7.1 Ethics Approval

The data set provided in the BLS CURF was released by the ABS in accordance with a Ministerial Determination (Clause 7, Statutory Rules 1983, No. 19) made in pursuance of Section 13 of the Census and Statistics Act 1905 (see Appendix 4). This legislative authority permits the release of data in the form of files where it is unlikely that an individual or organisation can be identified. Certain data items collected in the surveys such as the names and addresses of organisations, foreign ownership details, franchising details and details of participation in government programs are excluded from the BLS CURF. Geography is limited to Australia and no indicator of state is provided. Other data items such as industry and age of business are provided but with a reduced level of detail. Classification details for industry have been reduced by collapsing specific industry into a mixture of ANZSIC division and sub-division levels (ABS 1993).

Specific ages for businesses have been collapsed into age ranges. In addition, values for all financial variables such as profit have been perturbed. Perturbation involves slightly modifying outlying values for a variable toward a group mean. All of these measures have been taken in order to prevent the identification of individual businesses.

Clarification was sought with the University of Technology, Sydney Ethics Committee as to whether the use of a de-identified and publicly available data set required approval from the committee. The e-mail response of the committee to this query is contained in Appendix 8. No ethics approval was required.

3.7.2 Adherence to Conditions of Release and Conditions of sale

The use of the BLS CURP was subject to the approval of the Australian Statistician and adherence to Conditions of Release and Conditions of Sale (see Appendix 9 and 10 respectively). The purpose of these conditions is to protect the identity of individuals and organisations. The conditions require not attempting to identify individuals or organisations, not attempting to match data with administrative lists of individuals or organisations, using the data for statistical purposes only and not sharing the data with any other individual or organisation. Statistical purposes include the manipulation of the data to produce descriptive or summary measures, graphical or pictorial representations, the estimation of population characteristics, development of mathematical models or other types of statistical analysis.

An undertaking was signed to adhere to these conditions. The BLS CURP was used in accordance with these conditions for the development of this thesis.

3.8 Conclusion

This chapter has elaborated the steps undertaken to empirically explore the model that emerged from a review of the literature. The next chapter will discuss the results from the statistical analysis of the research data gathered.

Chapter 4

Results, Analysis and Discussion

4.1 Introduction

This chapter will present tabular and graphical summaries of the data set to describe the sample of Australian businesses included in the study. The results from bi-variate and multi-variate statistical analysis for each relationship in the model as well as the model overall, will be presented. These results will be analysed and discussed in relation to the research question.

Detailed statistical results for the study are contained in Tables A11.1 - A11.16 in Appendix 11.

4.2 Subjects

The study sample consisted of 3014 other small and medium Australian businesses surveyed by the ABS between 1994 and 1998.

Table 4.1 lists the frequency, percent and confidence interval for percent, for each organisational demographic within the sample of businesses.

Demographic	Frequency	Percent	Confidence Interval (Percent)
Age (Years)			
4-9	928	30.8	(29.1, 32.4)
10+	2086	69.2	(67.6, 70.9)
Industry Type			
Manufacturing	1255	41.6	(39.9, 43.4)
Service	1720	57.1	(55.3, 58.8)
Legal Type			
Unincorporated	815	27	(25.5, 28.6)
Incorporated	2198	73	(71.4, 74.5)
Number of Locations			
0-1	2051	68	(66.4,
2+	963	32	(30.3,
Size			
Other Small Business	1344	44.6	(42.8,
Medium Business	1670	55.4	(53.6,

Table 4.1: Organisational Demographics

The *age* variable measured whether the business was between 4 and 9 years old or whether the business was older than ten years. Those businesses less than 4 years old were excluded from the sample. There were 928 businesses aged between 4 and 9 years which represented 30.8% of the sample. There were 2086 businesses aged more than 10 years which represented 69.2% of the sample. Whilst the sample was dominated by older businesses, there were still a sufficient numbers of younger businesses to conduct analysis between groups.

The *industry type* variable recorded whether the business was manufacturing or service oriented. There were 1255 manufacturing businesses which represented 41.6% of the sample. There were 1720 service businesses which represented 57.1 % of the sample. Both manufacturing and service businesses were well represented in the sample which ensured sufficient numbers to conduct analysis between groups.

The *legal type* variable recorded whether the business was an unincorporated or incorporated legal entity. There were 815 unincorporated businesses which represented 27% of the sample. There were 2198 incorporated businesses which represented 73% of the sample. Whilst the sample was dominated by incorporated businesses, there were still a sufficient numbers of unincorporated businesses to conduct analysis between groups.

The *number of locations* variable measured whether the business operated from 0 or 1 locations or whether the business operated from 2 or more locations. There were 2051 businesses that operated from 0 or 1 location which represented 68% of the sample. There were 963 businesses that operated from 2 or more locations which represented 32% of the sample. Whilst the sample was dominated by businesses that operated from 0 or 1 location, there were still a sufficient numbers of businesses that operated from 2 or more locations to conduct analysis between groups.

The *size* variable measured whether the business was other small and employed between 5 and 19 staff members or whether the business was medium and employed between 20 and 199 staff members. Small businesses that employed less than 5 staff members were excluded from the sample. Large businesses that employed more than 200 staff members were not provided in the data set. There were 1344 other small

businesses which represented 44.6% of the sample. There were 1670 medium businesses which represented 55.4% of the sample. Both other small and medium businesses were well represented in the sample which ensured sufficient numbers to conduct analysis between groups.

Table 4.2 lists the frequency, percent and confidence interval for percent, for other characteristics of the study sample of businesses.

Characteristic	Frequency	Percent	Confidence Interval (Percent)
Profitable			
No	786	26.1	(24.5, 27.6)
Yes	2228	73.9	(72.4, 75.5)
Innovative			
	2300	76.3	(74.8, 77.8)
	714	23.7	(22.2, 25.2)

Table 4.2: Other Characteristics of the Study Sample

The *profitable* variable measured whether or not the business was profitable. There were 786 businesses that were not profitable which represented 26.1 % of the sample. There were 2228 businesses that were profitable which represented 73.9% of the sample. Whilst the sample was dominated by profitable businesses, there were still a sufficient number of businesses that were not profitable to conduct analysis between groups.

The *innovative* variable recorded whether or not the business was innovative. There were 2300 businesses that were not innovative which represented 76.3% of the sample. There were 714 businesses that were innovative which represented 23.7% of the sample. Whilst the sample was dominated by businesses that were not innovative, there were still a sufficient numbers of innovative businesses to conduct analysis between groups.

Table 4.3 lists the frequency, percent and confidence interval for percent, for the breakdown of industry type into further sub-classification of industry for the study sample of businesses. All industries were represented with at least more than 25 businesses. Apart from manufacturing, the most strongly represented industries were wholesale trade with a frequency of 522 businesses which represented 17.3% of the sample, property and business services with a frequency of 371 businesses which represented 12.3% of the sample and retail trade with a frequency of 318 businesses which represented 10.6% of the sample.

Industry	Frequency	Percent	Confidence Interval (Percent)
Mining	27	0.9	(0.6, 1.3)
Manufacturing	1260	41.8	(40.0, 43.6)
Construction	129	4.3	(3.6, 5.1)
Wholesale Trade	522	17.3	(16.0, 18.7)
Retail Trade	318	10.6	(9.5, 11.6)
Accommodation, Cafes and Restaurants	109	3.6	(3.0, 4.4)
Transport and Storage	102	3.4	(2.8, 4.1)
Finance and Insurance	62	2.1	(1.6, 2.6)
Property and Business Services	371	12.3	(11.1, 13.5)
Cultural and Recreational Services	67	2.2	(1.7, 2.8)
Personal and Other Services	47	1.6	(1.2, 2.1)

Table 4.3: Businesses by Industry

The following Figure 4.1 depicts Table 4.3 visually.

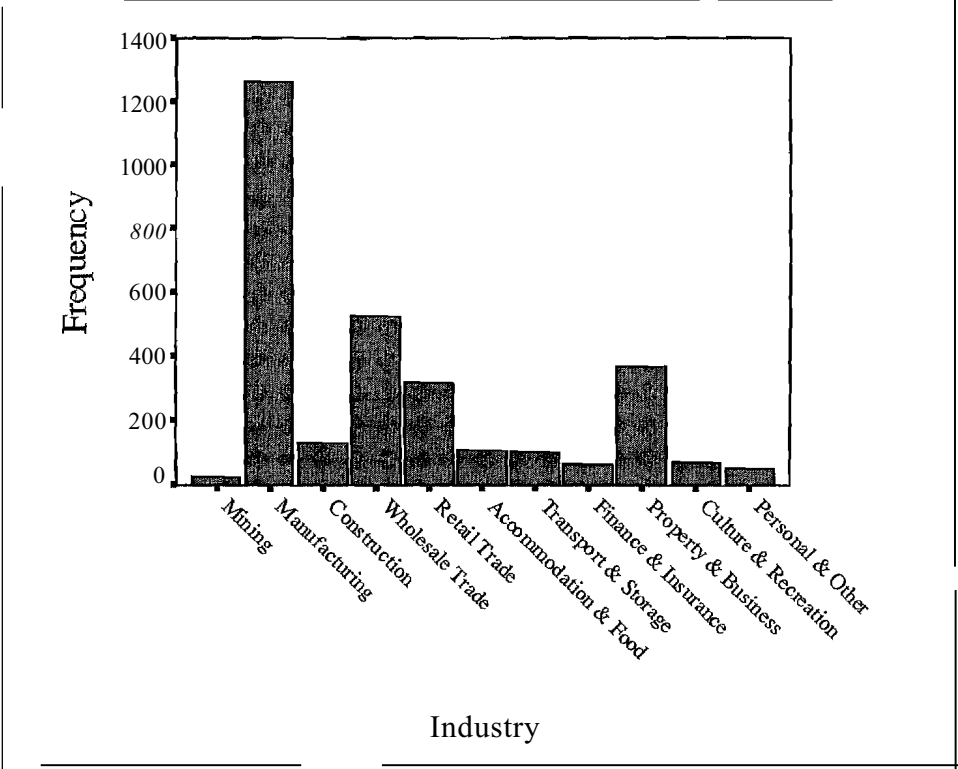


Figure 4.1: Businesses by Industry

4.3 Patterns of Data for Each Research Question or Hypothesis

4.3.1 Changing Boundaries

The results for the examination of the various organisational change practices classified as changing boundaries and the innovation relationship are summarised in Table AII.1 in Appendix 11. Figure 4.2 visually summarises the results for the changing boundaries and innovation relationships.

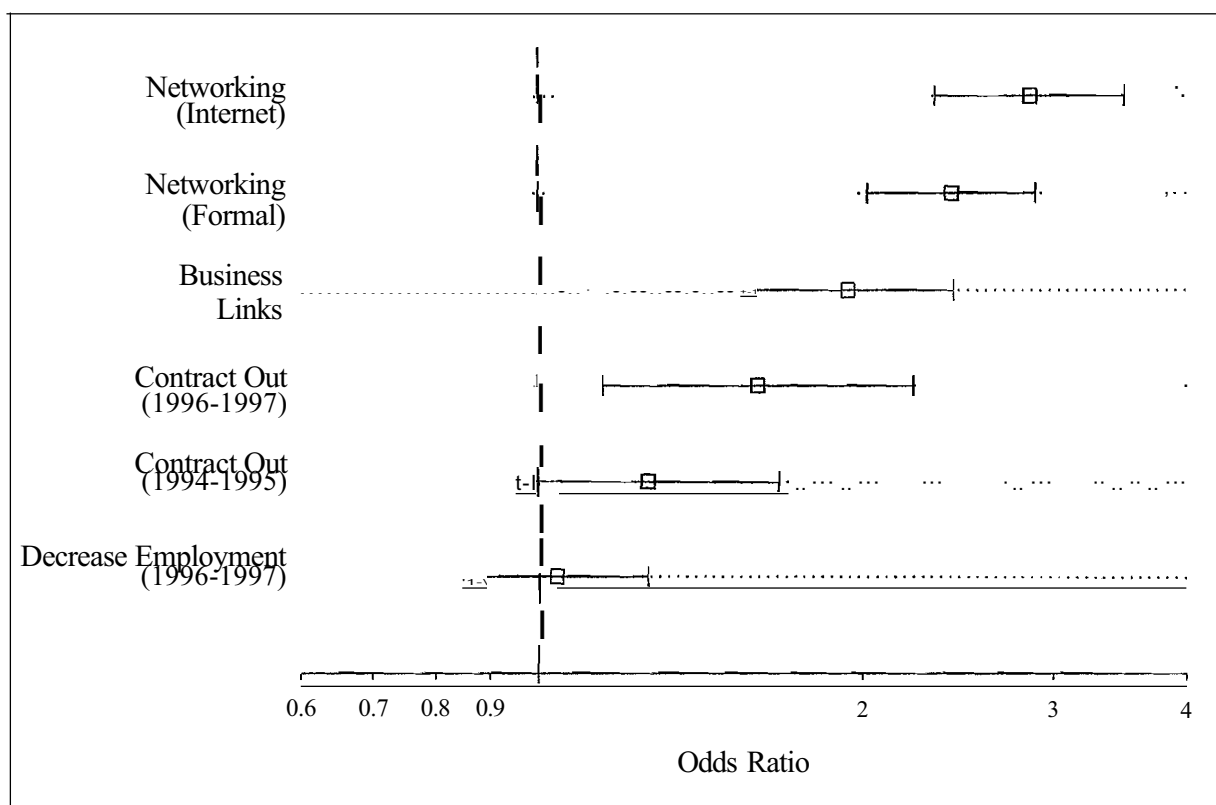


Figure 4.2: Odds Ratios for the Changing Boundaries Variables and Innovation Relationship

4.3.1.1 Alliances

Hypothesis 1: Businesses that have links to other businesses or network either formally or using the internet with other businesses are more likely to develop or introduce new or improved procedures, services or products than businesses that do not have alliances.

Results consistent with a relationship between alliances and innovation were obtained using three separate analyses.

There was a significant relationship found between links to other businesses and innovation ($P=0.000, \chi^2=34.941, d.f.=1$). 35.3% of businesses that had links to other businesses developed or introduced new or improved procedures, services or products. 21.9% of businesses that had links to other businesses developed or introduced new or improved procedures, services or products. The relative risk was 1.613 and the 95% confidence interval for relative risk between 1.389 and 1.876.

These results suggest with 95% certainty that businesses that have links to other businesses are at least 1.3 times as likely to develop or introduce new or improved procedures, services or products.

There was a significant relationship found between networking formally with other businesses and innovation ($P=0.000, X^2=97.158, d.f.=1$). 36.4% of businesses that formally networked with other businesses developed or introduced new or improved procedures, services or products. 19.1% of businesses that formally networked with other businesses developed or introduced new or improved procedures, services or products. The relative risk was 1.905 and the 95% confidence interval for relative risk between 1.681 and 2.160.

These results suggest with 95% certainty that businesses that network formally with other businesses are at least 1.6 times as likely to develop or introduce new or improved procedures, services or products.

There was a significant relationship found between networking with other businesses using the internet and innovation ($P=0.000, X^2=109.677, d.f.=1$). 41.8% of businesses that networked with other businesses using the internet developed or introduced new or improved procedures, services or products. 20.1% of businesses that networked with other businesses using the internet developed or introduced new or improved procedures, services or products. The relative risk was 2.083 and the 95% confidence interval for relative risk between 1.832 and 2.375.

These results suggest with 95% certainty that businesses that network with other businesses using the internet are at least 1.8 times as likely to develop or introduce new or improved procedures, services or products.

Collectively the results provide strong support to the hypothesis that there exists a relationship between alliances and innovation.

Partners for Alliances

The results for the examination of the various partners for alliances and the innovation relationship are summarised in Table A11.2 in Appendix 11. There were significant relationships found between many of the partners for alliances and innovation including the ATO ($P=0.000, X^2=12.788, dJ.=1$), banks ($P=0.002, X^2=9.927, dJ.=1$), business consultants ($P=0.001, X^2=11.955, dJ.=1$), customers ($P=0.015, X^2=5.911, d.f.=1$), Government small business agencies ($P=0.000, X^2=23.003, dJ.=1$), industry associations or chambers of commerce ($P=0.000, X^2=20.351, d.f.=1$), others in the industry ($P=0.000, \chi^2=18.779, d.f.=1$) and solicitors ($P=0.000, X^2=31.724, d.f.=1$). The relative risk and 95% confidence intervals for relative risk of all these partners was between 1 and 2. A positive chi-square linear-by-linear association trend was also found for the ATO ($P=0.001, X^2=11.947, dJ.=1$), banks ($P=0.001, X^2=11.375, dJ.=1$), business consultants ($P=0.002, X^2=9.682, dJ.=1$), customers ($P=0.012, X^2=6.315, d.f.=1$), Government small business agencies ($P=0.000, X^2=19.290, dJ.=1$), industry associations or chambers of commerce ($P=0.000, X^2=20.944, dJ.=1$), others in the industry ($P=0.000, X^2=17.256, dJ.=1$) and solicitors ($P=0.000, \chi^2=29.890, d.f.=1$) as detailed by Table A11.14 in Appendix 11. These results indicate that whilst the relationships exist they are at best moderately strong. The linear association found suggests that the more often that information or advice is sought, the greater the innovative effect. No single partner is more conducive to innovation than others.

No significant relationships were found between two of the partners for alliances and innovation: family or friends ($P=0.609, X^2=0.262, d.f.=1$) and local business

No positive chi-square linear-by-linear association trend was found for family or friends ($P=0.536, X^2=0.384, d.f.=1$) or local business ($P=0.325, X^2=0.969, dJ.=1$).

4.3.1.2 Downscoping and Focus

Hypothesis 2: Businesses that decrease employment levels are more likely to develop or introduce new or improved procedures, services or products than businesses that do not downsize.

No significant relationship was found between downscoping and focus and innovation ($P=0.683, X^2=0.167, d.f.=1$). 24.3% of businesses decreased employment levels developed or introduced new or improved procedures, services or products. 23.5% of businesses that did not decrease employment levels developed or introduced new or improved procedures, services or products. These results do not support the hypothesis that there exists a relationship between downscoping and focus innovation.

Whilst downscoping and focus may allow an organisation to redraw boundaries around competitive advantage by reducing hierarchy and scale, there are several issues that may have implications on downsizing and the ability of an organisation to innovate. One issue relates to the temporal nature of the data set. It may take time for benefits to be realised. The BLS CURF covers at most a four-year window so sufficient time may not have passed. Another issue relates to critical organisational knowledge. By decreasing employment levels, organisations are losing tacit knowledge that they may not realise is important for future activities. Finally, perhaps the reason why downsizing was not significant was because the organisations did not downsize to a great extent due to their size. This is consistent with the proposition that larger firms have higher downsizing rates than smaller firms (Budros 1999).

The results for the examination of the various reasons for downscoping and focus and the innovation relationship are summarised in Table A11.3 in Appendix 11.

Reasons for Downscoping and Focus

There was a significant relationship found for only one of the reasons for downscoping and focus and innovation: and improvements in business efficiency ($P=0.022, X^2=5.227, d.f.=1$). The relative risk was 1.304 and the 95% confidence interval for relative risk of improvements in business efficiency was between 1.047 and 1.621. These results indicate that whilst the relationship exists, at best it is moderately strong.

No significant relationships were found for the other reasons for downscoping and focus and innovation: decrease demand ($P=0.568, X^2=0.326, d.f.=1$), reduced range of activities ($P=0.692, X^2=0.157, d.f.=1$), replaced permanents with casuals ($P=0.948, \chi^2=0.004, d.f.=1$) and temporary decrease in employment levels ($P=0.717, X^2=0.131, d.f.=1$). These results

are consistent with the earlier result that there exists no relationship between downscoping and focus and innovation.

4.3.1.3 Outsourcing

Hypothesis 3: Businesses that contract out work are more likely to develop or introduce new or improved procedures, services or products than businesses that do not outsource.

Conflicting results were obtained for the relationship found between outsourcing and innovation.

A significant relationship was found between contracting out work during 1996-1997 and innovation ($P=0.005$, $X^2=7.936$, $dJ.=1$). 32.6% of businesses that contracted out work during 1996-1997 developed or introduced new or improved procedures, services or products. 23.2% of businesses that contracted out work during 1996-1997 developed or introduced new or improved procedures, services or products. The relative risk was 1.406 and the 95% confidence interval for relative risk between 1.122 and 1.761. Whilst a significant relationship was found, the strength of this relationship was weak. The large sample size ($n=3014$) probably contributed to this result. However, the direction of the result was as expected.

No significant relationship was found between contracting out work during 1994-1995 and innovation ($P=0.098$, $X^2=2.742$, $dJ.=1$). 27.8% of businesses that contracted out work during 1994-1995 developed or introduced new or improved procedures, services or products. 23.3% of businesses that contracted out work during 1994-1995 developed or introduced new or improved procedures, services or products.

Taken together, these results provide weak support to the hypothesis that there exists a relationship between innovation and performance. Whilst outsourcing allows organisations to focus on their core competencies it interrupts existing dynamics and the organisation may also lose valuable tacit that it is not aware it has.

It was thought that a stronger relationship between outsourcing and innovation would be found. Organisations which increase their focus on core competencies have a better

picture of what their success is specifically derived from. It was expected that this increased emphasis on core competencies would lead to innovation. However this was not the case. The work of Lepak and Snell (1993; 2003) provides some explanation for the ambiguous result.

Lepak and Snell (1999; 2003) developed a framework for studying alternative employment arrangements used by organisations in allocating work. They term this framework the human resource architecture. Employees are considered a critical resource for competitive advantage. However, employees differ in terms of their ability to contribute knowledge, innovation and creativity to an organisation. As a result, not all employees possess knowledge and skills that are of equal strategic value or uniqueness. From this, four employee groupings are identified: core knowledge employees, traditional employees, contract workers and alliance partners. Of these four types, core knowledge and traditional employees are internal to the organisation and contract workers and alliance partners are external.

According to Lepak and Snell (1999; 2003), organisations tend to externalise the employment relationship (contract workers and alliance partners) for those workers who are not considered strategically valuable. On the other hand, the employment relationship is internalised (core knowledge and traditional employees) when the employee is considered strategically valuable. By identifying strategically valuable workers, organisations are able to develop those workers (particularly core knowledge workers). The goal of intensive and continuous employee development is to build up organisation specific tacit knowledge which is a source of competitive advantage.

However, Lepak and Snell (1999; 2003) argue that HR systems need to be contingent on the employee group. Not only should HR systems be contingent, but collectively they should be managed as a single system. Consideration needs to be given from complementarities and interdependencies between the different worker groupings. They also argue that competing on knowledge requires the establishment of HR mechanisms that exchange knowledge across employee groups to engender learning and innovation. This study did not consider whether a contingent HR system was in place in the organisations studied. The lack of such systems could have been the cause of the ambiguous result found for outsourcing.

Morris, Snell et al. (2004) extend the human resource architecture further by proposing that innovation from learning stem from two different types of knowledge-creating activities. The first of these are entrepreneurial activities among employees that result in creation of new knowledge. The second are co-operative activities among employees that involve refining and combining existing knowledge to create new knowledge. This extended architecture was also not considered in this study and may be a cause of the ambiguous result found for outsourcing.

4.3.2 Changing Processes

The results for the examination of the various organisational change practices classified as changing processes and the innovation relationship are summarised in Table AHA in Appendix 11. Figure 4.3 visually summarises the results for the changing processes and innovation relationships.

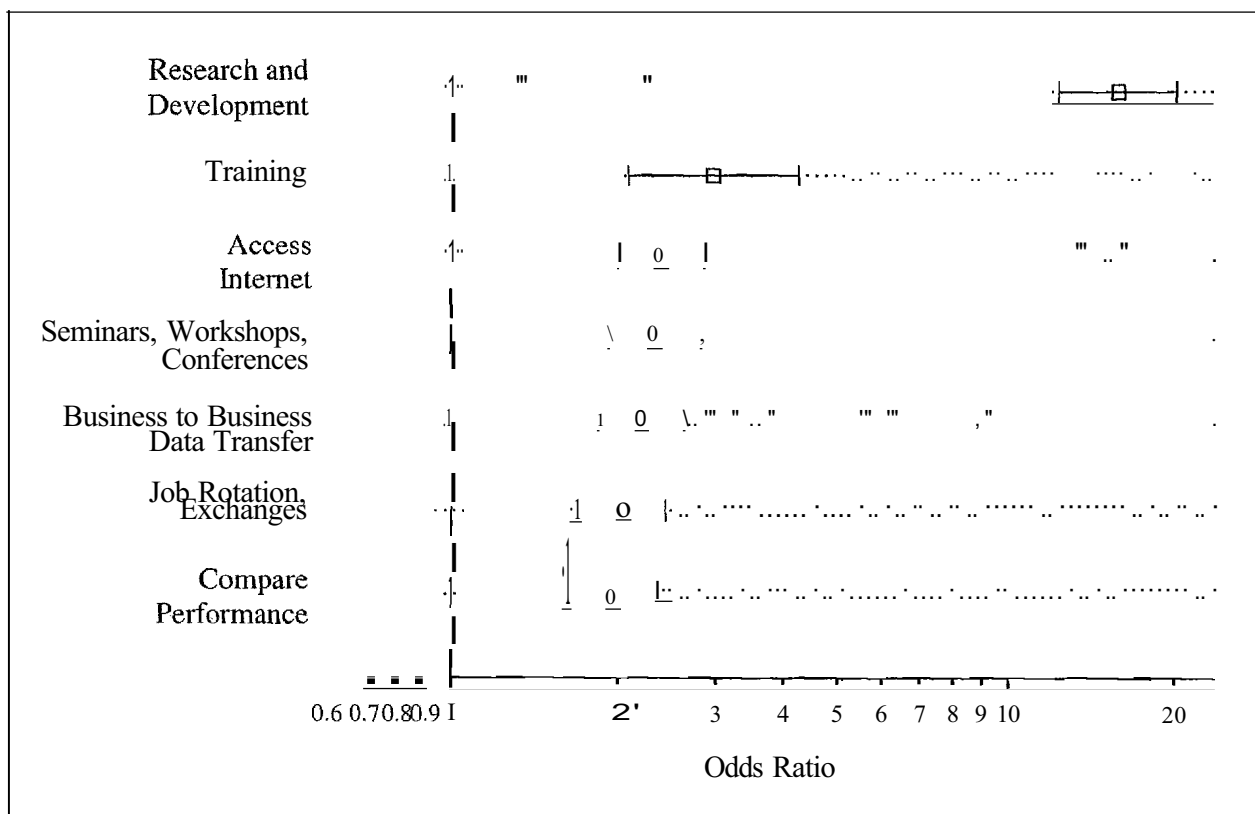


Figure 4.3: Odds Ratios for the Changing Processes Variables and Innovation Relationship

4.3.2.1 Benchmarking

Hypothesis 4: Businesses that compare their performance with other businesses are more likely to develop or introduce new or improved procedures, services or products than businesses that do not benchmark.

There was a significant relationship found between benchmarking and innovation ($P=0.000, X^2=55.633, d.f.=1$). 33.1% of businesses that compared their performance with other businesses developed or introduced new or improved procedures, services or products. 20.2% of businesses that did not compare their performance with other businesses developed or introduced new or improved procedures, services or products. The relative risk was 1.645 and the 95% confidence interval for relative risk between 1.447 and 1.869.

These results suggest with 95% certainty that businesses which compare their performance with other businesses are at least 1.4 times as likely to develop or introduce new or improved procedures, services or products. These results provide reasonable support to the hypothesis that there exists a relationship between benchmarking and innovation.

Of all the variables associated with changing organisational processes, benchmarking was found to have the weakest relationship with innovation. This means that although benchmarking may enable knowledge transfer, its impact on knowledge creation is much less pronounced. One possible reason for this result could relate to the way in which benchmarked knowledge is used. Rather than inspire knowledge creation, benchmarked knowledge may only be appended to an organisation's knowledge base. This would suggest then that organisations use benchmarking to imitate rather than innovate. This is consistent with the view of institutional theory. However, perhaps organisations can and should be using benchmarked knowledge to innovate. Such a view has some support.

For example, Becker and Huselid (2003) propose that HR professionals have routinely relied on benchmarked comparisons of cost and other efficiency-based performance outcomes associated with activities of the HR function to justify their contribution to

the organisation. The reliance on these types of benchmarking measures not only fails to measure HR's important contributions to organisational success, it also encourages policies that inhibit workforce productivity (Huselid et al. 2005). Rather than judge their performance relative to the HR efficiency of other organisations, they argue that organisations should judge their performance relative to their organisation's internal strategy. Such a move would shift the emphasis of employee incentives from efficiency to innovativeness. It would also highlight the potential contribution of the HR function to organisational performance.

Areas of Benchmarking

The results for the examination of the various areas of benchmarking and the innovation relationship are summarised in Table A11.5 in Appendix 11. Significant relationships were found between all areas of benchmarking and innovation including cost of product or service ($P=0.007, X^2=7.214, d.f.=1$), marketing or advertising ($P=0.000, X^2=18.167, d.f.=1$), price of product or service ($P=0.000, X^2=12.683, d.f.=1$), quality of client service ($P=0.000, X^2=17.875, d.f.=1$), quality of product or service and range of product or service ($P=0.000, X^2=13.748, d.f.=1$).

The relative risk and 95% confidence intervals for relative risk of all these areas of benchmarking was between 1 and 2. These results indicate that whilst the relationships exist they are at best moderately strong. No single area of benchmarking is more conducive to innovation than others.

4.3.2.2 Electronic Data Interchange

Hypothesis 5: Businesses that use the internet for business to business data transfer are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use EDI.

There was a significant relationship found between EDI and innovation ($P=0.000, X^2=77.228, d.f.=1$). 35.1% of businesses that used the internet for business to business data transfer developed or introduced new or improved procedures, services or products. 19.6% of businesses that didn't use the internet for business to business data transfer developed or introduced new or improved procedures, services or products.

The relative risk was 1.786 and the 95% confidence interval for relative risk between 1.575 and 2.028.

These results suggest with 95% certainty that businesses which use the internet for business to business data transfer are at least 1.5 times as likely to develop or introduce new or improved procedures, services or products. These results provide reasonable support to the hypothesis that there exists a relationship between EDI and innovation.

Types of Electronic Data Interchange

The results for the examination of the various types of electronic data interchange and the innovation relationship are summarised in Table A1 1.6 in Appendix 11. Significant relationships were found between all types of electronic data interchange and innovation including co-ordinating delivery over the internet ($P=0.000, \chi^2=48.873, d.f.=1$), electronic banking or funds transfer ($P=0.000, X^2=78.400, dJ.=1$), electronic ordering over the internet ($P=0.000, \chi^2=54.082, d.f.=1$), electronic stock monitoring ($P=0.000, X^2=38.377, dJ.=1$), lodge forms or tenders ($P=0.000, X^2=98.624, d.f.=1$), make payments over the internet ($P=0.000, r=51.080, d.f.=1$), marketing or promotional activities over the internet ($P=0.000, X^2=119.402, dJ.=1$), placing orders over the internet ($P=0.000, X^2=75.063, dJ.=1$), receiving invoices over the internet ($P=0.000, X^2=42.528, dJ.=1$), receiving orders over the internet ($P=0.000, X^2=86.746, dJ.=1$), receiving payments over the internet ($P=0.000, X^2=26.673, dJ.=1$), send invoices over the internet ($P=0.000, X^2=16.792, dJ.=1$) and use a web site or home page for sales ($P=0.000, X^2=137.412, dJ.=1$). The relative risk and 95% confidence intervals for relative risk of most of these types of electronic data interchange was between 1.4 and 2.6. These results suggest that the relationships exist and that the strength of the relationships are moderate to strong. No single type of electronic data interchange is more conducive to innovation than others.

4.3.2.3 Horizontal Networking

Hypothesis 6: Businesses that hold seminars, workshops or conferences are more likely to develop or introduce new or improved procedures, services or products than businesses that do not engage in horizontal networking.

There was a significant relationship found between horizontal networking and innovation ($P=0.000, X^2=77.545, d.f.=1$). 34.4% of businesses that held seminars, workshops or conferences developed or introduced new or improved procedures, services or products. 18.3% of businesses that held seminars, workshops or conferences developed or introduced new or improved procedures, services or products. The relative risk was 1.880 and the 95% confidence interval for relative risk between 1.621 and 2.183. A positive chi-square linear-by-linear association trend was also found ($P=0.000, X^2=54.320, d.f.=1$) as detailed by Table A11.16 in Appendix 11.

These results suggest with 95% certainty that businesses that hold seminars, workshops or conferences are at least 1.6 times as likely to develop or introduce new or improved procedures, services or products. The linear association indicates that as the percentage of employees attending seminars, workshops and conferences increases, so too does organisational innovation. These results provide reasonable support to the hypothesis that there exists a relationship between human horizontal networking and innovation.

4.3.2.4 Human Resource Practices

Hypothesis 7: Businesses that use job rotation or exchanges are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use these HR practices.

There was a significant relationship found between HR practices and innovation ($P=0.000, X^2=63.920, d.f.=1$). 35.6% of businesses that used job rotation or exchanges developed or introduced new or improved procedures, services or products. 21.3% of businesses that did not use job rotation or exchanges developed or introduced new or improved procedures, services or products. The relative risk was 1.675 and the 95% confidence interval for relative risk between 1.473 and 1.905. A chi-square linear-by-linear association trend was also found ($P=0.000, X^2=42.108, d.f.=1$) as detailed by Table A11.16 in Appendix 11.

These results suggest with 95% certainty that businesses which use job rotation or exchanges are at least 1.4 as likely to develop or introduce new or improved procedures, services or products. The linear association indicates that as the percentage of employees participating in job rotation or exchanges increases, so too does

organisational innovation. These results provide reasonable support to the hypothesis that there exists a relationship between HR practices and innovation.

4.3.2.5 Information and Communication Technologies and Strategies

Hypothesis 8: Businesses that access the internet are more likely to develop or introduce new or improved procedures, services or products than businesses that do not use these I&CT strategies.

There was a significant relationship found between I&CT and innovation ($P=0.000$, $\chi^2=95.451$, $d.f.=1$). 30.8% of businesses that had access to the internet developed or introduced new or improved procedures, services or products. 15.6% of businesses that did not have access to the internet developed or introduced new or improved procedures, services or products. The relative risk was 1.972 and the 95% confidence interval for relative risk between 1.709 and 2.273.

These results suggest with 95% certainty that businesses which have access to the internet are at least 1.7 times as likely to develop or introduce new or improved procedures, services or products. These results provide reasonable support to the hypothesis that there exists a relationship between I&CT and innovation.

Information and Communication Technology Strategies

The results for the examination of the various information and communication technology strategies and the innovation relationship are summarised in Table A11.7 in Appendix 11. Significant relationships were found between all information and communication technology strategies and innovation including accounting software ($P=0.000$, $\chi^2=39.681$, $d.f.=1$), e-mail ($P=0.000$, $\chi^2=96.752$, $d.f.=1$), intranet

production technology ($P=0.000$, $\chi^2=87.473$, $d.f.=1$), number personal computers ($P=0.000$, $\chi^2=174.283$, $d.f.=1$) and number staff using computers

The relative risk and 95% confidence intervals for relative risk of most of these types of electronic data interchange was between 1.5 and 2.7. These results suggest that the relationships exist and that the strength of the relationships are moderate to strong. No single type of information and communication technology strategy is more conducive to innovation than others.

4.3.2.6 Research and Development

Hypothesis 9: Businesses that perform or pay others to perform R&D are more likely to develop or introduce new or improved procedures, services or products than businesses that do not engage in R&D.

There was a significant relationship found between R&D and innovation ($P=0.000, X^2=663.961, d.f.=1$). 75.0% of businesses that had that performed or paid others to perform R&D developed or introduced new or improved procedures, services or products. 15.9% of businesses that did not perform or pay others to perform R&D developed or introduced new or improved procedures, services or products. The relative risk was 4.717 and the 95% confidence interval for relative risk between 4.237 and 5.236.

These results suggest with 95% certainty that businesses that perform or pay others to perform R&D are at least 4.2 times as likely to develop or introduce new or improved procedures, services or products. These results suggest that a very strong relationship exists between R&D and innovation.

4.3.2.7 Training

Hypothesis 10: Businesses that provide training for their staff are more likely to develop or introduce new or improved procedures, services or products than businesses that do not provide staff training.

There was a significant relationship found between training and innovation ($P=0.000, X^2=40.069, d.f.=1$). 29.9% of businesses that provided training for their staff developed or introduced new or improved procedures, services or products. 12.5% of businesses that provided training for their staff developed or introduced new or improved procedures, services or products. The relative risk was 2.387 and the 95% confidence interval for relative risk between 1.761 and 3.236. A positive chi-square linear-by-linear association trend was also found ($P=0.000, X^2=95.251, d.f.=1$) as detailed by Table A11.16 in Appendix 11.

These results suggest with 95% certainty that businesses that provide training for their staff are at least 1.7 times as likely to develop or introduce new or improved procedures, services or products. The linear association indicates that as the amount of training increases, so too does organisational innovation. These results suggest that a moderate to strong relationship exists between training and innovation.

The relationship between training and innovation behaved as expected. The result is somewhat distorted however because it does not take into account the concepts of value and uniqueness which are dimensions to Lepak and Snell's (1993; 2003) human resource architecture. Strategic value of human capital can be ascertained by analysing the benefits that employees provide to customers, shareholders and other relevant stakeholders in comparison with the costs they incur in providing those benefits. What is valuable is different between organisations because each organisation's goals and objectives differ. Uniqueness refers to the degree to which knowledge or skills are organisation-specific or need to be applied in unusual ways. Human capital that is unique and has high strategic value is most likely to contribute to an organisation's core competencies and competition based on knowledge. An organisation has an incentive to develop these skills through training. Employees that have knowledge that is neither unique nor valuable do not directly contribute to competitive success. There is thus less incentive to contribute to skill development and training for these types of workers.

According to Lepak and Snell (1999; 2003), organisations tend to offer different training regimes for different types of workers. Workers in employment relationships that have been externalised such as contract workers and alliance partners are generally offered very limited training. If offered at all, alliance partners will receive training on process facilitation and team building, whereas contract workers will receive training on company policies, systems and procedures. This is because these workers are generally not considered strategically valuable. On the other hand, workers in employment relationships that have been internalised such as core knowledge and traditional employees are generally offered extensive training in order to develop organisation specific tacit knowledge which is a source of competitive advantage. These employees receive this training because they are considered strategically valuable.

Although the hypothesis behaved as expected for the construct of training, it may have been even stronger if the analysis had considered the types of workers that the organisation was training. The data set did not contain this information nor was it the scope of this thesis to include such analyses. However, future studies may wish to consider the question of how the type of worker and the training they receive impacts on an organisation's dynamic capabilities.

Content of Training

The results for the examination of content of training and the innovation relationship are summarised in Table AII.8 in Appendix 11. There were significant relationships found between all but one of the content of training and innovation including health and safety training ($P=0.000, X^2=18.710, d.f.=1$), management training ($P=0.000, X^2=61.193, d.f.=1$), professional training ($P=0.000, X^2=30.815, d.f.=1$) and training for computer specialists ($P=0.000, X^2=63.371, d.f.=1$). The relative risk and 95% confidence intervals for relative risk of all types of training content was between 1 and 2. A positive chi-square linear-by-linear association trend was also found for health and safety training ($P=0.000, X^2=14.017, d.f.=1$), management training ($P=0.000, X^2=31.951, d.f.=1$), professional training ($P=0.000, X^2=20.003, d.f.=1$) and training for computer specialists ($P=0.000, X^2=46.707, d.f.=1$) as detailed by Table AII.15 in Appendix 11. These results indicate that whilst the relationships exist they are at best moderately strong. Management training and training for computer specialists were slightly more conducive to innovation than health and safety training and professional training because the relative risk values and relative risk 95% confidence intervals were higher.

No significant relationship was found between a single content of training and innovation: trade and apprenticeships training and traineeships ($P=0.300, X^2=1.073, d.f.=1$). No positive chi-square linear-by-linear association trend was found for trade and apprenticeships training and traineeships ($P=0.743, X^2=0.107, d.f.=1$).

Provider of Training

The results for the examination of provider of training and the innovation relationship are summarised in Table A11.9 in Appendix 11. There were significant relationships found between all providers of training and innovation including equipment manufacturer or supplier ($P=0.000, \chi^2=146.211, dJ.=1$), industry associations ($P=0.000, X^2=95.092, dJ.=1$), on the job training ($P=0.000, X^2=147.759, dJ.=1$), private training consultants ($P=0.000, X^2=72.661, dJ.=1$), professional associations ($P=0.000, X^2=90.746, dJ.=1$), internal structured training ($P=0.000, X^2=126.286, dJ.=1$), TAPE ($P=0.000, X^2=38.629, dJ.=1$) and universities ($P=0.000, \chi^2=30.944, d.f.=1$).

The relative risk and 95% confidence intervals for relative risk for on the job training was between 2 and 3.5. The relative risk and 95% confidence intervals for relative risk for equipment manufacturer or supplier, industry associations, private training consultants, professional associations and structured internal training was between 1.5 and 2.5. The relative risk and 95% confidence intervals for relative risk for TAPE and universities was between 1 and 2. These results indicate that relationships exist and they range from moderate to strong. On the job training was more conducive to innovation than the rest of the providers of training because the relative risk values and relative risk 95% confidence intervals were higher.

4.3.3 Changing Structures

The results for the examination of the various organisational change practices classified as changing structures and the innovation relationship are summarised in Table A11.10 in Appendix 11. Figure 4.4 visually summarises the results for the changing structures and innovation relationships.

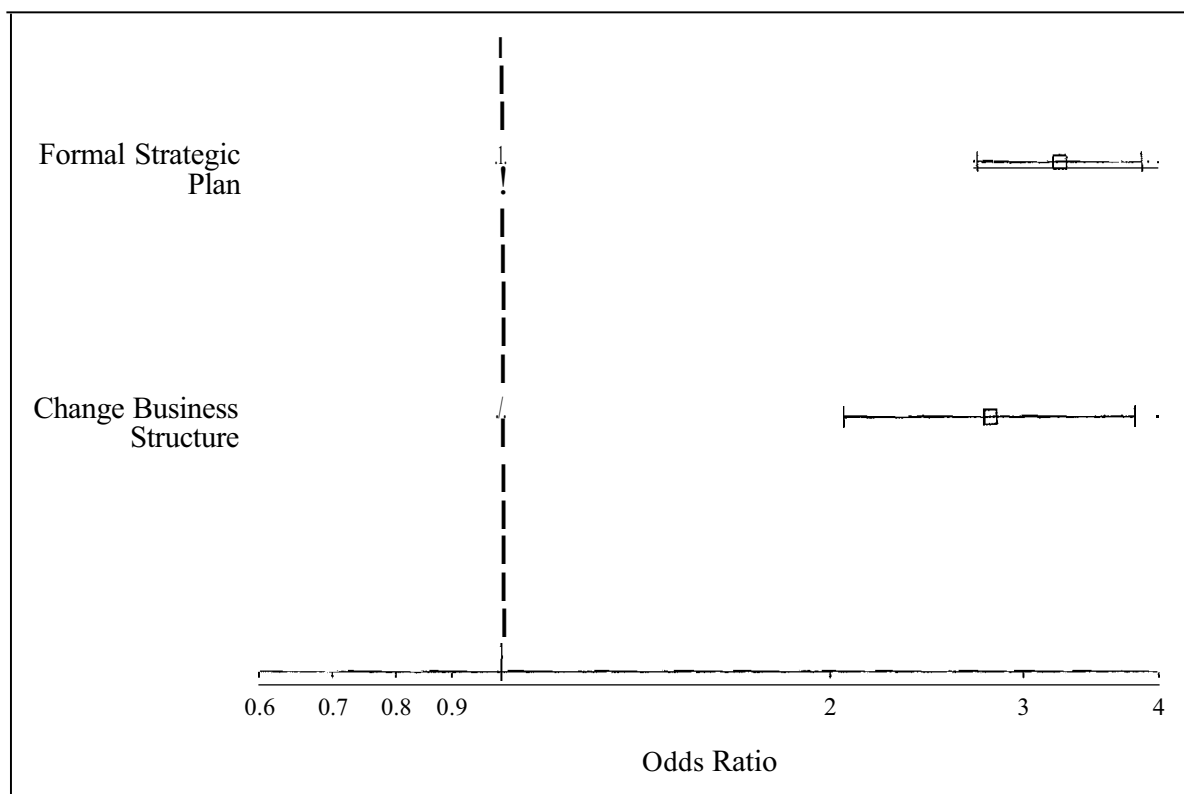


Figure 4.4 Odds Ratio for the Changing Structures Variable and Innovation Relationship

4.3.3.1 Decentralisation, Delaying and Project-Based Structure

Hypothesis 11: Businesses that change their business structure are more likely to develop or introduce new or improved procedures, services or products than businesses that do not decentralise, delay or adopt project-based structures.

There was a significant relationship found between changing structure and innovation ($P=0.000, X^2=46.469, d.f.=1$). 51.1 % of businesses that changed their business structure developed or introduced new or improved procedures, services or products. 27.2% of businesses that did not change their business structure developed or introduced new or improved procedures, services or products. The relative risk was 1.880 and the 95% confidence interval for relative risk between 1.605 and 2.203.

These results suggest with 95% certainty that businesses which change their business structure are at least 1.5 times as likely to develop or introduce new or improved

procedures, services or products. These results suggest that a strong relationship exists between changing business structures and innovation.

4.3.3.2 Operational Strategic

Hypothesis 12: Businesses that have a formal strategic or business plan are more likely to develop or introduce new or improved procedures, services or products than businesses that do not have formal strategies in place.

There was a significant relationship found between strategy and innovation ($P=0.000, X^2=186.478, d.f.=1$). 37.3% of businesses that had a formal strategic or business plan developed or introduced new or improved procedures, services or products. 15.5% of businesses that had a formal strategic or business plan developed or introduced new or improved procedures, services or products. The relative risk was 2.410 and the 95% confidence interval for relative risk between 2.119 and 2.740.

These results suggest with 95% certainty that businesses which have a formal strategic or business plan are at least twice as likely to develop or introduce new or improved procedures, services or products. These results suggest that a strong relationship exists between strategy and innovation.

4.3.4 Organisational Demographics

The results for the examination of the various organisational demographics and the innovation relationship are summarised in Table A11.11 in Appendix 11. Figure 4.5 visually summarises the results for the organisational demographics and innovation relationship.

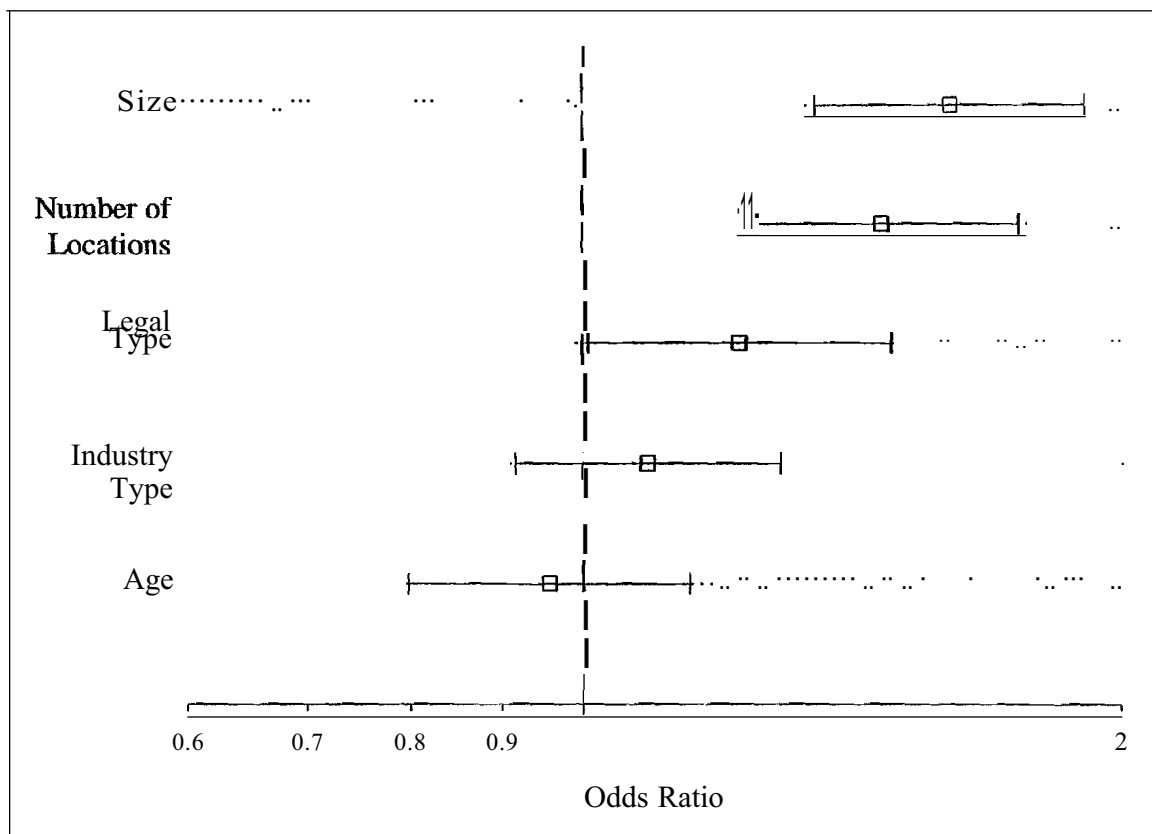


Figure 4.5: Odds Ratios for the Organisational Demographics Variables and Innovation Relationship

4.3.4.1 Age

Hypothesis 14: Younger businesses are no more likely to develop or introduce new or improved procedures, services or products than older businesses.

No significant relationship was found between age of organisation and innovation ($P=0.632, \chi^2=0.229, df=1$). 24.2% of younger businesses developed or introduced new or improved procedures, services or products. 23.4% of older businesses developed or introduced new or improved procedures, services or products. These results do not support the hypothesis that there exists a relationship between the age of an organisation and innovation.

This result was not as expected. It was expected that younger organisations would be more innovative than older ones because they are generally more flexible, creative and energetic. The organisational life cycle model developed by Bartol, Tein et al. (2003) may provide some explanation for this unanticipated result. They argue that organisations pass through four life cycle stages including the entrepreneurial,

collectivity, formalisation and control and elaboration of structure stages. Organisations generally become less innovative and more formalised as they get older. However, most organisations reach a point of maturity where they need to revert back to an emphasis on innovation in order to survive. This is because the organisation has become too bureaucratic, formalised and controlled to the point that creativity has been stifled. Breaking this calcification usually takes place in the elaboration of structure stage. Often the organisation resorts to management practices that are unconventional such as creative abrasion in managing teams, hiring unusual staff and incubating innovation (Sutton 2001). Perhaps a significant number of the older businesses were in this category and impacted the results.

4.3.4.2 Industry Type

Hypothesis 15: Non-manufacturing businesses are no more likely to develop or introduce new or improved procedures, services or products than manufacturing businesses.

No significant relationship was found between the industry type of the organisation and innovation ($P=0.333, X^2=0.936, d.f=1$). 24.3% of service / manufacturing businesses developed or introduced new or improved procedures, services or products. 22.8% of service / manufacturing businesses developed or introduced new or improved procedures, services or products. These results do not support the hypothesis that there exists a relationship between the type of industry and innovation.

4.3.4.3 Legal Type

Hypothesis 16: Incorporated businesses are no more likely to develop or introduce new or improved procedures, services or products than non-incorporated businesses.

There was a significant relationship found between legal type of organisation and innovation ($P=0.042, X^2=4.154, d.f=1$). 24.7% of incorporated businesses developed or introduced new or improved procedures, services or products. 21.1 % of unincorporated businesses developed or introduced new or improved procedures, services or products. The relative risk was 1.168 and the 95% confidence interval for relative risk between 1.004 and 1.359.

These results suggest that a weak relationship exists between size and innovation.

4.3.4.4 Number of Locations

Hypothesis 17: Businesses with zero or one location are no more likely to develop or introduce new or improved procedures, services or products than businesses with two or more locations.

There was a significant relationship found between number of locations and innovation ($P=0.000, X^2=18.544, dJ.=1$). 28.6% of businesses with more than one business location developed or introduced new or improved procedures, services or products. 21.4% of businesses with one business location or less developed or introduced new or improved procedures, services or products. The relative risk was 1.333 and the 95% confidence interval for relative risk between 1.172 and 1.520.

These results suggest with 95% certainty that businesses with more than one business location are at least 1.15 times as likely to develop or introduce new or improved procedures, services or products. These results suggest that a weak relationship exists between number of business locations and innovation.

4.3.4.5 Size

Hypothesis 18: Small businesses are more likely to develop or introduce new or improved procedures, services or products than medium businesses.

There was a significant relationship found between size and innovation ($P=0.000, X^2=28.911, dJ.=1$). 27.4% of medium businesses developed or introduced new or improved procedures, services or products. 19.0% of small businesses developed or introduced new or improved procedures, services or products. The relative risk was 1.439 and the 95% confidence interval for relative risk between 1.258 and 1.647.

These results suggest with 95% certainty that medium businesses at least 1.2 times as likely to develop or introduce new or improved procedures, services or products. These results suggest that a weak relationship exists between size and innovation.

4.3.5 Organisational Change Model

The results from the logistical regression analysis are summarised in Table A11.12 in Appendix 11. Figure 4.6 visually summarises the results from this analysis.

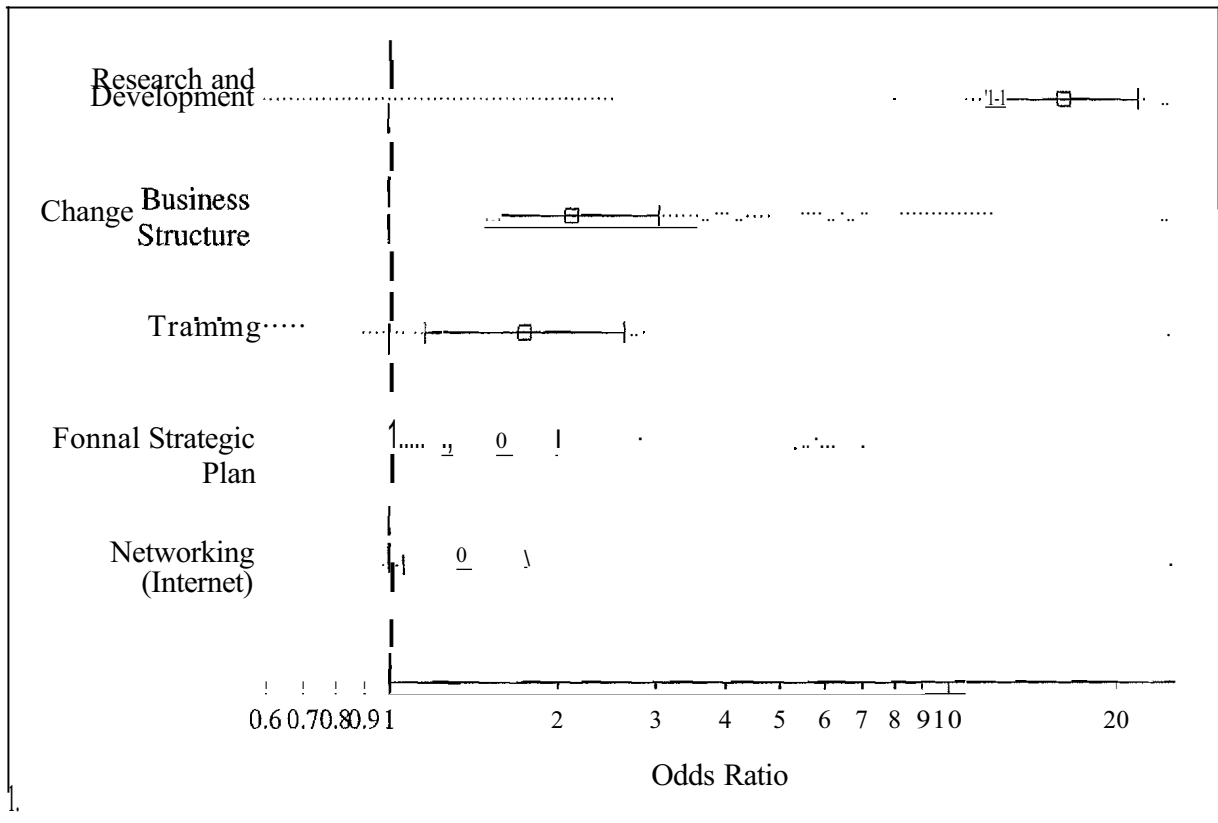


Figure 4.6: Organisational Change Model

Five variables loaded into the final logistic regression model. These were R&D ($P=0.000$, Wald=319.074, d.f.=1), change business structure ($P=0.000$, Wald=17.279, d.f.=1), training ($P=0.008$, Wald=7.117, d.f.=1), formal strategic plan ($P=0.000$, Wald=18.269, d.f.=1) and networking (internet) ($P=0.018$, Wald=5.632, d.f.=1). For R&D, the odds ratio was 16.132 and the 95% confidence interval for the odds ratio between 11.890 and 21.887. For change business structure, the odds ratio was 2.139 and the 95% confidence interval for the odds ratio between 1.495 and 3.062. For training, the odds ratio was 1.751 and the 95% confidence interval for the odds ratio between 1.160 and 2.644. For formal strategic plan, the odds ratio was 1.607 and the 95% confidence interval for the odds ratio between 1.293 and 1.998. For networking (internet), the odds ratio was 1.361 and the 95% confidence interval for the odds ratio between 1.055 and 1.756.

4.3.6 Innovation and Performance (Profit)

The results for the examination of the innovation and performance relationship are summarised in Table A11.13 in Appendix 11.

Hypothesis 13: Businesses that develop or introduce new or improved procedures, services or products are more likely to be profitable than businesses that do not innovate.

There was a significant relationship found between innovation and profit ($P=0.030, X^2=4.692, df=1$). 77.0% of businesses that developed or introduced new or improved procedures, services or products were profitable. 73.0% of businesses that did not develop or introduce new or improved procedures, services or products were profitable. The relative risk was 1.056 and the 95% confidence interval for relative risk between 1.007 and 1.107.

Whilst a significant relationship was found, the strength of this relationship was weak. The large sample size ($n=3014$) probably contributed to this result. However, the direction of the result was as expected. These results provide moderate support to the hypothesis that there exists a relationship between innovation and performance. As mentioned earlier, the use of profit is only one potential measure of performance. Future studies that consider other measures such as market share, quality of service or share price will develop further this aspect of the model. Profit was only measured in 1998, so it is difficult to ascertain when the effects of innovation influenced profit.

4.3.7 Conclusion

The analysis of the data has found support for the relationship between a number of KM initiatives and innovation including alliances, benchmarking, EDI, horizontal networking, HR practices, I&CT, R&D, training, changing business structures and strategy. The strength of the relationship between R&D and innovation was markedly stronger than any other KM initiative. Support was also found for the applicability of the change framework to KM initiatives. KM initiatives within each change type were found to be related to innovation. The final change model that considered the effects of all significant KM initiatives contained elements from each change type thus providing

support for the independence of each change type as a valid dimension. A weak relationship was found between innovation and profit.

The analysis of the data has also provided some other relevant findings. It was found that the greater the distance of a business partner in a business link relationship, the greater the effect on innovation. This finding provides support for the notion that alliances and collaborative relationships are formed to provide access to scarce resources and capabilities that are complementary. The findings also suggest that the only valid reason for downsizing is to improve business efficiency. Consideration of the various types of benchmarking, EDI and I&CT found that none were more conducive to innovation than any other.

With respect to training, the analysis suggests that training in professional content is more conducive to innovation than training in a trade content. In addition, the closer the training provider is to the organisation, the greater the value generated. All the various training providers were of value. However, the training providers that were able to provide the most tacit and context specific or specialised knowledge were the most valuable. Those training providers that provided explicit knowledge which was generic and organisation independent were the least valuable. These findings suggest that the type and context of knowledge transferred influences dynamic capability.

Chapter 5

Summary, Conclusions and Impl,ications



5.1 Introduction

Throughout this final chapter, the contribution of this study to the field of management and organisational studies will be highlighted at the appropriate points. It is stated that a doctoral thesis in management requires a synthesis of ideas and data, critical evaluation of relevant work and an original contribution to the field (Easterby-Smith, Thorpe et al. 2002, p. 153). The original contribution can consist of one or more of three main forms: substantive, theoretical and methodological contributions. How this contribution is made should be stated explicitly in the conclusions of the thesis which should connect with the theories and methods that were reviewed and evaluated.

This chapter will begin by stating a conclusion for the research questions and hypotheses. These conclusions will then be synthesised into an overall conclusion about the research problem. The implications of the development and empirical testing of the theoretical framework for organisation studies will be discussed. These theoretical implications will then be applied to management practice and the implications for this area discussed. The limitations that restricted this study will be identified their potential effects on the results explained. Finally, suggestions for future research into the field of KM will be made.

5.2 Conclusions About Each Research Question or Hypothesis

5.2.1 Knowledge Creation (Innovation) and Organisational Performance (Profit)

A weak relationship was found between knowledge creation and organisational performance. Although the strength of the relationship was not great, the relationship was in the expected direction. A greater proportion of organisations that had been innovative were profitable than those that had not been innovative. One of the possible reasons why the relationship was not strong is because the effects of innovation take time to appear. Both innovation and profit were measured in the same year. It should also be noted that profit is only one potential measure of organisational performance (Boyd and Reuning-Elliott 1998, p. 181). Profit may therefore have been a poor operationalisation of this construct.

5.2.2 Changing Boundaries and Knowledge Creation

A moderate to strong relationship was found between alliances and knowledge creation. Businesses that had links to other businesses or networked with other businesses were found to be more innovative than those that had not networked. The particular type of partner in the business link or network did not have a great effect on the resultant innovation. However, the frequency with which information or advice was sought from a partner did have a positive effect on innovation. This result is consistent with the notion that more frequent interaction is required to build shared context and thought worlds so that valuable tacit knowledge can be transferred. A non-existent to moderate relationship was found between outsourcing and knowledge creation. Combining all results, businesses that contracted out work were generally found to be no more innovative than those that did not outsource. No relationship was found between downscoping and focus and knowledge creation. Businesses that had decreased employment levels were not found to be more or less innovative than those that reduced employment.

Overall these results confirm that KM initiatives associated with changing an organisation's boundaries contributes to knowledge creation and innovation but primarily because of the dimension of alliances. Such an outcome is consistent with the RBV and KM principles such as perceiving an employee as an asset and not an expense. Alliances result in an increase in an organisation's knowledge base without necessarily detracting from the initial base of knowledge. Outsourcing on the other hand often results in the loss of knowledge through departing employees but also potentially a gain in new knowledge from the newly contracted supplier. Downscoping and focus results in a reduction of an organisation's knowledge base without necessarily any gain in new knowledge. This suggests that the more an organisation's knowledge base is depleted without any subsequent replenishment of new knowledge, the greater the impact on its knowledge creating ability.

These results lend some support to the argument that in the new hypercompetitive environment, organisations need to reconstruct their boundaries around distinctive capabilities. In adopting new forms such as the network organisation which requires alliances and collaboration, organisations become more flexible in responding to

environmental opportunities and threats because of the new channels for knowledge transfer that have been established. The construction of these new boundaries has at least partially been enabled by new I&CT. Alliances and collaboration give organisations access to necessary but non-distinctive capabilities. Organisations need to be wary of outsourcing or downscoping knowledge that contributes to distinctive or dynamic capabilities as this can influence its ability to innovate and remain competitive.

5.2.3 Changing Processes and Knowledge Creation

A very strong relationship was found between R&D and knowledge creation. A strong relationship was found between training and I&CT and knowledge creation. A moderate to strong relationship was found between horizontal networking, EDI, HR practices and benchmarking and knowledge creation. Businesses that had compared their performance to other businesses, used the internet for business to business data transfer, held seminars workshops or conferences, used job rotation or exchanges, accessed the internet, performed or paid others to perform R&D or provided training for their staff were found to be more innovative than those that did not engage in these activities. The particular type of business comparison, EDI or I&CT did not have a great effect on the resultant innovation. However, the type and content of training did have an effect on the resultant innovation. All of these results confirm that changing processes contributes to knowledge creation. R&D is a process that has knowledge creation as a targeted outcome whereas all the other processes facilitate knowledge transfer without necessarily requiring that knowledge be created as an outcome. These results lend support to the argument that in the new hypercompetitive environment, new internal dynamics are required. In order to allow flexibility which includes knowledge transfer, new vertical and horizontal interactions between employees and organisations are required.

5.2.4 Changing Structures and Knowledge Creation

A moderate to strong relationship was found between decentralisation, layering and project-based structure and knowledge creation. Businesses that had changed their business structures were found to be more innovative than those that had not changed their structure. A strong relationship was found between operational strategic and knowledge creation. Businesses that had a formal strategic plan were found to be more

innovative than those without one. These results both confirm that KM initiatives associated with changing an organisation's structure can facilitate knowledge creation and innovation.

These results lend support to the argument that traditional hierarchical structures are less conducive to knowledge transfer than new forms based on cross-functional or cross-boundary teams. Traditional hierarchical structures such as bureaucracies and divisions influence the frequency and scope of both horizontal and vertical communication within and between departmental and divisional boundaries. Vast hierarchical structures impede knowledge transfer because tacit knowledge passes slowly from individual to individual. It takes time and opportunity for the necessary shared context and thought worlds to develop between employees. I&CT has increased the efficiency and scope of communication between organisational members. It has enabled the existence of organisational forms such as network and virtual that otherwise would not have existed. Restructuring an organisation and the adoption of different forms can remove formal obstacles that prevent people from connecting and interacting. The results also support the argument that consideration for an organisation's resource and knowledge base needs to be part of the formal strategic planning process.

5.2.5 Organisational Demographics and Knowledge Creation

A weak to moderate relationship was found between size and number of locations and knowledge creation. A weak relationship was found between legal type and knowledge creation. No relationship was found between industry type and age and knowledge creation. These results suggest that the organisational demographics considered in this study have a limited impact on knowledge creation.

5.3 Conclusions About the Research Problem

The research question addressed by this thesis is as follows:

What is the relationship between KM initiatives, organisational learning, knowledge transfer, knowledge creation and innovation?

KM initiatives can be classified into the three categories of Whittington, Pettigrew et al's (1999) framework: those that change boundaries, those that change processes and those that change structures. Conceptually, KM initiatives facilitate knowledge transfer and OL. This knowledge transfer fosters knowledge creation and innovation. Organisational performance is enhanced through the creation of these new products, processes and services.

This study provides a framework with which managers can understand how the processes of knowledge transfer and creation affect organisational performance. Individual KM initiatives can be understood in terms of how they change boundaries, processes and structures. This framework is theoretically grounded in the RBV of the firm, OL and innovation.

5.4 Contributions of Study

This section will discuss how this study contributes to the development of theory in management and specifically organisation studies. In so doing, it will adopt the view that theory is a systematic structure consisting of relational statements and generalisations designed to understand, explain and predict phenomena and which can be tested empirically (Priem and Butler 2001a, pp. 25-26). This section will also discuss how the study contributes to the development of methodology in management and research generally.

5.4.1 Implications for Theory

This study makes numerous contributions to the body of knowledge in the field of organisation studies and theory. Its most important contribution has been the development of an integrated and exploratory conceptual framework which can serve as a foundation stone for the field of KM. A number of complementary theoretical threads have been weaved together to create this framework. In so doing, the study acknowledges that organisational phenomena are too complex to be described by a single theoretical perspective although there is a degree of complementarity between certain perspectives (Tolbert 1985, p. 12). A unified theoretical framework for understanding KM is seductive, however the need for multiple theoretical approaches to add depth of understanding to phenomena is also necessary (Powell 1995). In weaving

theoretical perspectives together, this study has gone some way towards addressing one recognised problem in the field of KM. The literature has been characterised as fragmented and being in need of refinement so that academics and practitioners can more fully understand and take advantage of its potential.

Demonstration of a linkage between a number of independently developed organisation theories is another key contribution of the study. There is considerable value in specifying the points of intersection between perspectives and ultimately combining perspectives to provide more complete explanations of the phenomena of interest (Tolbert 1985, p. 12). The inclusion of multiple independent variables based upon different theoretical perspectives has been recognised in other studies as providing a key contribution to comprehensiveness in the area (Trevino, Webster et al. 2000, p. 179). By empirically exploring the complete theoretical framework, support has been found for it in its entirety as well as for its elements (Tolbert 1985, p. 12).

The empirical results provide support for numerous elements of the theoretical framework which was grounded in the RBV and KBV of the firm. The RBV and KBV were extended by focusing on the resource of knowledge and the concepts of distinctive and dynamic capabilities which are closely aligned to concepts and processes from the innovation and OL traditions. The final conceptual framework included the processes of knowledge transfer and creation from the KM literature which are also complementary. This approach attempts to resolve criticisms in the field that confusion in the KM, learning and memory literatures is due to *their* fragmented nature rather than considering them as essential parts of a single system (Spender 1996). Not only do the positive empirical results lend weight to the argument for the legitimacy of these theories but also that KM as both a theoretical and practical field can be positioned within all of these theoretical traditions.

In addition to establishing a foundational theoretical framework for KM, this study has also developed a conceptual framework for understanding KM processes and initiatives. Another significant contribution of the study was to highlight and confirm the twin processes of knowledge transfer and creation as existing at the conceptual heart of KM. The relationship between these twin processes was also established and confirmed. By integrating a organisational change framework into the conceptual framework, various

KM initiatives could be categorised and better understood in terms of their effect on fostering knowledge transfer. The final empirical model provided support for this change framework because elements from all three change types were represented (Whittington, Pettigrew et al. 1999). This demonstrated that the three types from the change framework were independent and relevant. It also confirmed that changing boundaries, processes and structures were constructs that helped in understanding the performance effects of KM. KM practices and initiatives were recognised as complementary aspects of the framework and R&D, training and benchmarking were established as additional elements to the changing processes type (Whittington, Pettigrew et al. 1999). The study therefore also contributed to the theoretical extension of this change framework. Certain KM initiatives such as R&D were demonstrated as being particularly conducive to knowledge transfer and creation. The enabling role of I&CT for knowledge transfer was confirmed by the results however it is clear that I&CT are not compulsory for KM. People are the key to KM, not I&CT.

It has been previously suggested that one avenue in which KM needs to be developed further is its strategic orientation (Davenport and Prusak 1998). This study has contributed to this call in several ways. By using the RBV as the foundation stone for the theoretical framework, the theoretical underpinnings existed for constructing a strategic theory of the firm. The empirical results thus support the theoretical basis of the RBV that organisation specific resources such as knowledge are the source of competitive advantage. This support extends to the KBV and the argument that fostering the critical processes of knowledge transfer and creation also stimulates organisational performance. Consideration for HR concepts and practices within the framework of the RBV and KBV has contributed to the strategic firm literature. The empirical results show support that certain HR practices such as job rotation have performance related outcomes. A further contribution of the study to understanding KM and strategy is through highlighting the importance of the formal strategic planning process in identifying and opening routes for knowledge transfer. Overall, strategic theories of the firm are themselves relatively new knowledge and research in this area adds to the knowledge base of understanding.

In terms of organisational demographics, this study determined that these had limited effects on knowledge transfer and creation. This contradicts the view that KM is more relevant for service organisations than manufacturing.

5.4.2 Implications for Methodology

It has been argued that research in strategic management has been plagued by methodological errors. Some strategic management researchers do not adequately conceptualise and measure individual constructs which are necessary to ensure accurate research results (Boyd and Reuning-Elliott 1998, pp. 181, 190). Some of the methodological weaknesses identified include the failure to measure multi-dimensional constructs with multi-dimensional scales, the loss of statistical power for studies that collapse continuous variables into categorical variables, failure to report tests of scale reliability and validity and the need to balance precision versus parsimony when designing survey length. A common problem with questionnaire surveys is non-response which reduces the sample size, introduces bias, introduces uncertainty and can be associated with higher levels of missing or incomplete responses (Edwards, Roberts et al. 2002, p. 1183; Smeeth and Fletcher 2002, p. 1168).

Apart from the issue of multi-dimensionality, this study avoided all of these methodological weaknesses by using a publicly available data set. By using this data set, the study contributed to methods in the field of organisation studies and management through the development of a number of insights. The use of an existing data set is not common in organisation studies and management. Use of an existing data set (particularly from the ABS) is an efficient use of available resources and takes advantage of good quality work completed by others. In this case it allowed for a comprehensive analysis of a framework that may not otherwise have been possible because of the resources that would otherwise have had to be employed.

The use of the ABS data set avoided many methodological weaknesses because of the resources that could be utilised in operationalising constructs and collecting data. Most of the variables analysed were categorical in their original form. The continuous variable profit was categorised because it was supplied in a perturbed form and it was thought that categorisation would eliminate the perturbation effect. The large sample size of the study ensured that every analysis had sufficient statistical power even though

this analysis was generally categorical (Peat 2001). The study was probably statistically over powered for some analyses but it was decided not to reduce the sample size because of the rarity in obtaining a data set of such size which would allow the analysis between groups with such precision. The effects of being statistically over powered are that even small differences between proportions from groups are statistically significant, for example in the innovation and profit relationship. However in instances such as these, more weight was given to the direction of the relationship than to significance. The use of ABS data meant that the reliability and validity of the scales were already considered and these have been provided. The need to balance precision and parsimony is brought about by a desire to maximise response rates. Shorter questionnaires result in higher response rates (Edwards, Roberts et al. 2002). The range of variables measured can at times be minimised to trade off for a higher response rate. Using an ABS data set reduced the importance of this balance because respondents were required by law to complete the questionnaire. Data collected was across many respondents, variables and industries and the response rates were very high.

5.5 Implications for Practice

The theoretical framework developed in this study was heavily influenced by academic literature. However, KM has a considerable practitioner literature which this study has also been influenced by and tried to accommodate. The final outcomes bridge academic and practitioner realities and thus have a valuable contribution towards contemporary management practice.

This study has a number of important implications for managers. It demonstrates that KM is not a passing fashion but a field that contains frameworks, concepts and principles of real value to managers. KM provides insight and guidance for contemporary management practice and problems. The development of an integrated framework for KM based on a sound theoretical foundation provides managers with a means of classifying and understanding the various KM concepts and initiatives that are developed. In addition, the key relationships between knowledge transfer, knowledge creation and organisational performance provide managers with a model for understanding the distinctive processes that underpin any KM activity.

When managers employ KM initiatives, they should consider whether they are impacting the boundaries, processes and structures of the organisation in order to foster knowledge transfer. If managers are changing the boundaries, they should be careful not to outsource or downscope knowledge that contributes to the organisation's distinctive or dynamic capabilities. When outsourcing, care should also be exercised in integrating and aligning the outsourced knowledge with the remaining base. The use of alliances and collaboration is an effective way of creating organisational forms that concentrate on distinctive and dynamic capabilities. If managers use these types of KM initiatives, they should consider that the benefit derived from collaborative relationships is dependent more on the development of the relationship than on the particular type of partner. If managers are changing processes, it is likely that various KM initiatives will be effective in enabling interactions between people. R&D, training, I&CT enabled activities such as EDI and the use of such activities as seminars, workshops, conferences, job rotations and exchanges and benchmarking all have an application. The most effective KM initiative for changing processes for innovation considered in this study was R&D. Managers need to pay particular attention to the critical role that R&D plays in transferring knowledge and fostering knowledge creation within an organisation. Managers should be aware that I&CT is an enabler of knowledge transfer but should not be the central focus of KM. If managers are changing structures, they need to have a formal strategic plan that considers important knowledge in the organisation. The formal linkages that are required to connect this knowledge then also need to be created.

All of the change types categories can contribute to knowledge creation and innovation. The logistical regression model suggests that KM programs, that use multiple initiatives and seek to optimise organisational performance, should blend KM initiatives from all three change types rather than draw from a single one.

5.6 Limitations

This study was ambitious in its objective of developing and testing an exploratory integrated framework for KM. In parts, depth was sacrificed for breadth. It was considered more important to establish the broad scaffolding upon which later work could build than to focus intensely upon one component of the framework. The

limitations of the study mainly relate to the use of the BLS data set from the ABS. The BLS data set enabled the testing of the conceptual framework but in parts it was not as rich as the researcher would have liked.

The first limitation of the study was its cross-sectional research design (powell 1995; Bowen and Wiersema 1999, pp. 625-626). Whilst the BLS surveyed businesses over four years, many of the variables used in this study were only measured at one point in time which necessitated converting the longitudinal data set into a cross-sectional one. The period that the data was collected, from 1994 to 1998, coincided with the emergence of KM into popular management activities. Although a relationship was found between knowledge transfer and knowledge creation, as well as between knowledge creation and organisational performance, association rather than causation can be inferred. The use of a cross-sectional design only allows the researcher to infer association and not causation (Powell and Dent-Micallef 1997). High performance may cause knowledge creation, and knowledge creation may cause knowledge transfer. However, it is unlikely that the direction of the relationship would behave in this manner because the framework and model were developed by integrating theoretical foundations from several different perspectives. In order to support causal inference, a longitudinal design which included pre and post measures of the dependent variables (knowledge creation and organisational performance) would be required (Powell 1995).

Another limitation of the study was survivor bias (Powell 1995). Only businesses that participated in all four surveys that constituted the BLS were included in the data set that was analysed. Those businesses that dropped out of the data set because of failure or other reasons were not studied. This was because the critical outcome variables measuring knowledge creation and organisational performance were sourced from 1998. Whilst many reasons are possible, businesses may have dropped out of the BLS before 1998 due to their failure to employ KM initiatives. If this was the case, then the knowledge transfer and knowledge creation, and knowledge creation and organisational performance relationships have been understated in the results because failed businesses have been excluded from the analysis. This view is inconsistent with the argument that survival is dependent on certain critical intangible resources rather than a particular management initiative such as TQM or KM (Powell 1995).

A further limitation of the study is the potential for overpower due to the use of a large sample size. As the development of an integrated framework was ambitious, this study was more interested in the relative effect sizes of the components than significance values. Not only were the relative size differences between effects more important but also the direction of effects were more important than significance which large statistical power also allows. A large sample size was used at the risk of being overpowered in order to make these comparisons of the elements of the framework. For example, the final organisational change model that was developed and reflected in Figure 4.6 demonstrates the large difference in effect between R&D and other KM initiatives in fostering knowledge transfer conducive to innovation and knowledge creation. In addition, the KM initiatives that loaded into the final organisational change model represented all three types of the change framework (Whittington, Pettigrew et al. 1999). By emphasising relative risk and odds ratios in the analysis of relationships, significance values whilst important only made up a part of the picture. Whilst it can be argued that the analysis was overpowered, the large sample size also allowed for many between group analyses that otherwise may not have been possible.

The study is also limited by the applicability of results to the types of organisations not represented in the sample data set. Owing to confidentiality constraints imposed by the ABS, only businesses of 200 employees or less were available in the data set. In addition, only Australian businesses were included in the data set. The applicability of results to businesses that are large or non-Australian is not determined. In addition, the applicability of results for non-commercial organisations is also not determined. The empirical analysis included in this study was conducted primarily to examine the conceptual framework developed. The results of this analysis confirmed the parameters and elements of this conceptual framework. Nevertheless, the analysis in relation to small to medium Australian businesses has value in its own right.

The study was limited because not all elements of three types in the change framework such as organisational integration were examined empirically in this thesis (Whittington, Pettigrew et al. 1999). These elements were however consistent with the theoretical foundations with which they were being integrated, providing some validation. Several new elements were added that were specific to the KM literature. Not all KM initiatives that foster knowledge transfer were included in the study, for

example mentoring and story telling (Swap, Leonard et al. 2001). KM initiatives were left out to constrain the scope of the study. The KM initiatives considered were sufficient to empirically validate the conceptual framework.

Another limitation of the study is that uni-dimensional measures were used to measure some multi-dimensional constructs. A common weakness in strategy studies is the use of uni-dimensional measurement items to measure multi-dimensional constructs (Boyd and Reuning-Elliott 1998, p. 182). The multi-dimensional nature of the three types in the change framework was reflected by the different KM initiatives that were included in each (Whittington, Pettigrew et al. 1999). However, some of the individual KM initiatives were multi-dimensional and were only measured with a single uni-dimensional question. There is a much richer understanding of the concepts that needs to be teased out.

A further limitation of the study specifically relates to the question of downscoping and focus. Often organisations that downsize are usually large because these are the ones that are perceived as being too big. Small to medium organisations have less scope for downsizing. Downscoping whilst applicable for small to medium organisations is more relevant for large organisations.

The final limitation of the study relates to demonstrating the long-term sustainability of competitive advantages discussed in the model. As the data used in the analysis was from 1994 to 1998, nothing can be postulated about the long term survivability of organisations that engage in KM practices. The short term gain in innovation or profit was considered but the long term implications were not reflected.

5.7 Further Research

The theoretical and conceptual frameworks developed in this study were ambitious and broad. It has been argued that replication and extension research is possible and highly desirable in the social sciences even though it is uncommon (Hubbard, Vetter et al. 1998; Tsang and Kwan 1999). The work conducted in this study provides many opportunities for extension and replication. In particular, future studies should consider employing richer operationalisations of key constructs which reflect their multi-

dimensional nature. Constructs used in this study that would benefit from richer operationalisation include organisational performance and innovation. Consideration for internal process innovation is equally as important as new product and service innovation (Salaman and Storey 2002, p. 159). Future studies could also develop the theoretical and conceptual frameworks even further. There is a need for the relationship between knowledge transfer and creation and distinctive capabilities to be further developed.

This study found support for the notion that changing an organisation's structure is conducive to knowledge transfer and creation. However, it did not consider whether particular types of organisational structures were more conducive than others. It was assumed that teams-based structures were more conducive to knowledge transfer and creation than traditional hierarchical structures but this was not explored empirically. This needs to be considered in future research. Consideration for the type of organisational structure also leads on to other opportunities for future research. Teams-based structures are more common in new organisational forms such as network and virtual organisations. Future research should consider whether particular types of organisational forms are more conducive to knowledge transfer and creation than others. This study also found support for the notion that a formal strategic planning process and strategic plan influences knowledge transfer and creation. However, it did not consider specifically whether the formulation of a knowledge strategy was included in that process. In particular, it did not consider whether knowledge was considered during the strategy formulation process and whether knowledge sharing was encouraged. Another area for future research involves consideration of how the specific inclusion of knowledge in the strategy formulation process and the explicit creation of a knowledge strategy ultimately impacts upon knowledge transfer and creation.

In a study of TQM, it was determined that although such programs can improve organisational performance, they were not suited to all organisations (Powell 1995). Not every organisation has the necessary capabilities to take advantage of new management programs and as a result implementation can potentially lead to decreased performance. It has even been suggested that organisational survival and success is independent of new management ideas such as TQM and KM as long as the necessary distinctive and dynamic capabilities are in place (Powell 1995). Future research could

consider whether the use of KM initiatives can lead to falls in performance in organisations lacking certain capabilities. Similarly future research could also consider whether organisational success is independent of the utilisation of KM initiatives.

This study used a number of analyses to generate hypotheses rather than test them. The generation of hypotheses from empirical research is an established approach (Kusunoki, Nonaka et al. 1998). Several analyses were conducted on aspects of some of the constructs used in the theoretical framework. These analyses involved the type of business comparison, EDI and I&CT as well as the type and content of training. Of these only the type and content of training had an effect on innovation. Organisations that trained their computer specialists and managers were slightly more innovative than those that trained their employees in professional skills and health and safety. Organisations that used organisation-specific or specialised training providers such as equipment manufacturers, on the job training or structured internal courses were more innovative than those that used generic training providers such as industry and professional associations, training consultants, TAPE and universities.

A study of training in organisations was unable to explain why individuals who received organisation-specific training were more likely to leave after receiving training than employees who received general training (Gattiker 1995). The issue of trained employee migration is important because trained workers who migrate to competing firms provide benefit such as increased productivity to the new employer without necessarily incurring all the training cost (Glance, Hogg et al. 1997). Research on training suggests that a combination of organisation-specific (on-the-job) and general (off-the-job) training best equip employees with the concepts and skills to undertake their work (Gattiker 1995). Training in general tends to improve the retention rates of employees overall even if it does make them more attractive to other employers (Glance, Hogg et al. 1997).

Future research could consider the relationship between general and organisation specific training from the perspective of explicit and tacit knowledge. General training providers supply general training which is dominated by explicit knowledge. Organisation-specific training providers supply training which may be dominated more by tacit knowledge. The interplay between training provider, content and types of

knowledge could potential explain the difference in performance effects. This interplay and dimensions of knowledge are reflected in Figure 5.1.

	General	Organisation Specific
Explicit	Formal Training from University or TAFE	Structured Internal Course
Tacit	Training on Use of Equipment by Manufacturer	On-the-Job

Table 5.1: Knowledge Dimensions of Training

One of the major issues raised in the training literature is the transfer to the job problem (Baldwin and Ford 1988). Training consumes resources, involves costs and can be frustrating for those involved if those efforts are wasted (Castaneda 2001). The transfer to the job problem refers to the failure of many training initiatives in transferring what is learned to the trainee's specific job as well as difficulty in maintaining transferred knowledge over time. This perspective is grounded in the functional-performance perspective and posits that transfer of training to the job is affected by the design of training, characteristics of the trainee and work environment factors. From a KM perspective, future research could exam whether the type of knowledge transferred impacts on training success, particularly along the tacit / explicit and organisation specific / general dimensions.

5.8 Conclusion

The contributions of research works can be critiqued and evaluated using a framework that considers the questions of novelty, importance, timeliness and audience (Whetten 1989). This framework is particularly suited to research with an emphasis on theoretical or conceptual issues. The novelty of this study involves the development of a conceptual framework for KM that draws on a number of overlapping theoretical and practitioner discourses. This novelty continues with an empirical testing of the conceptual framework using a large existing data set. The study is important because conceptual frameworks are valuable academic devices that provide structure to a literature or section of literature attempting to understand phenomena. Conceptual

frameworks also provide a perspective within which different theories and concepts can be arranged. From the resulting order, the different theories and concepts can be related to each other in an arena that has been defined. The study is timely because the KM literature can be considered relatively immature. The development of this conceptual framework now provides a mechanism for relating KM concepts that are currently disconnected. It also provides structure on which new KM theories and concepts can be positioned. The audience of this study are both academics and practitioners alike. Amongst an academic audience, it will be of interest to those working in the RBV, KBV, KM, OL and innovation, particularly those searching for a conceptual framework on which to frame a research study. Amongst a practitioner audience, this study will be of interest to those who are considering various KM initiatives but are unsure what the potential effects may be. It will also be of interest to practitioners who need assistance in framing new KM initiatives or in evaluating the function of initiatives already developed.



Appendices

Appendix 1 - Definitions of Conceptual Terms

Organisational Routines and Processes

“When finn-specific assets are assembled in integrated clusters spanning individuals and groups so that they enable distinctive activities to be performed, these activities constitute organizational routines and processes. Examples include quality, miniaturization, and systems integration. Such competences are typically viable across multiple product lines, and may extend outside the firm to embrace alliance partners.”
(Teece, Pisano et al. 1997, p. 516)

Organisation Size

This study will use the definitions of organisation size defined by the ABS. Micro businesses are defined as "those businesses employing less than 5 people" (ABS 1999). Other small businesses are defined as "those businesses employing 5 or more but less than 20 people" (ABS 1999). Medium businesses are defined as "those businesses employing 20 or more people but less than 200" (ABS 1999). Large businesses are defined as "those businesses employing 200 or more people" (ABS 1999).

Substantive, Theoretical and Methodological Contribution

A PhD in management should make a substantive, theoretical or methodological contribution to the discipline (Easterby-Smith, Thorpe et al. 2002, p. 153). A substantive contribution refers to "new knowledge about the world of management, a theoretical contribution refers to "new theories and ideas" and a methodological contribution refers to "new methods of investigation" (Easterby-Smith, Thorpe et al. 2002, p. 153).

Appendix 2 - Definitions of Methodological Terms

Paradigm

"A paradigm is a systematic set of ideas and values, methods and problem fields, as well as standard solutions, that explain the world and inform action." (Clarke and Clegg 2000, p. 46)

Ontology, Epistemology, Methodology and Methods

Ontology refers to the fundamental assumptions a researcher makes about the nature of reality such as organisational phenomena (Gioia and Pitre 1990, p. 585, Easterby-Smith, 2002 #236)

Epistemology refers to the fundamental assumptions a researcher makes about the nature of knowledge about reality and associated phenomena (Gioia and Pitre 1990, p. 585; Johnson and Duberley 2000, pp. 2-3). It includes assumptions made about the best ways of inquiring into the nature reality and the criteria by which warranted knowledge can be known (Johnson and Duberley 2000, pp. 2-3; Easterby-Smith, Thorpe et al. 2002).

There exists a distinction between methodology and methods which is sometimes overlooked in theses (Easterby-Smith, Thorpe et al. 2002). Methodology refers to fundamental assumptions about the nature of ways of studying phenomena whereas methods refer to individual techniques for data collection and analysis (Gioia and Pitre 1990, p. 585).

Substantive and Construct Validation Research

"Research has two basic components: substantive research and construct validation research... Most research is substantive in that it focuses on the investigation of relationships between theoretical constructs that are measured by independent and dependent variables. Construct validation research involves the relationship between measures that were designed to assess a specific concept or construct."
(Boyd and Reuning-Elliott 1998, pp. 188-189)

Reliability and Validity

"The reliability of a measure is defined as the extent to which it is free from random error components. In turn, validity is the extent to which a measure reflects only the desired construct without contamination from other systematically varying constructs. Note that validity requires reliability as a prerequisite. " (Judd, Smith et al. 1991, p. 51)

Content, Criterion-related, Construct and Internal Consistency Validity

"Content validity refers to the adequacy with which a measure assesses the domain of interest. Criterion-related validity pertains to the relationship between a measure and another independent measure. Construct validity is concerned with the relationship of the measure to the underlying attributes it is attempting to assess. Internal consistency refers to the homogeneity of the items in the measure or the extent to which item responses correlate with the total test score. " (Hinkin 1995, p. 968)

Predictive and Concurrent Criterion-related Validity

"Criterion-related validity concerns the relationship of the survey instrument with other variables the instrument is expected to correlate with. Additionally, criterion-related validity can take two forms: predictive validity, where the instrument is related to a variable or event in the future; and concurrent validity, where the instrument is related to a contemporaneous variable or event." (Boyd and Reuning-Elliott 1998, p. 188)

Appendix 3 - Definitions of Statistical Terms

Odds Ratio

"Firstly they provide and estimate (with confidence interval) for the relationship between two binary ("yes or no") variables. Secondly, they enable us to examine the effects of other variables on that relationship, using logistic regression." (Bland and Altman 2000, p. 1468)

Chi-Square Analysis

"In exploring the relationship between two variables, scholars often display their data in cross-tabulation and use the chi-square test statistic to determine whether an observed set of frequencies is significantly different from an expected set of outcomes. Most commonly, expected outcomes are computed by multiplying marginal totals and then dividing by the total number of observations." (Denham 2002, pp. 162-163)

Logistic Regression

"Logistical regression is a statistical test that can examine the predictive power of both categorical and continuous variables on nominal and ordinal dependent measures." (Denham 2002, p. 169)

Appendix 4 - Legislative Authority

LEGISLATIVE AUTHORITY

Subsection 13(1) of the Census and **Statistics** Act 1905 (**the Act**) provides for the Minister administering the Act to make determinations allowing, with the approval in writing of the Australian Statistician (**the Statistician**), the disclosure of a specified class of information.

On 16 **February** 1983, the Minister of **State** for Veterans' Affairs, acting for and on behalf of the Treasurer (the latter being the Minister at **that** time administering the Act), made such a determination ('the Determination'), being No. 19 of the Statutory Rules 1983.

The relevant parts of the Act and the Determination **are** reproduced below.

SUBSECTIONS 13(1), 13(2) AND 13(3), CENSUS AND STATISTICS ACT 1905

Release of Information

13(1) **Notwithstanding** anything in this Act (other than this section), the Minister may, by instrument in **writing**, make determinations providing for and in relation to the disclosure, with the approval in **writing** of the Statistician, of information included in a specified class of information furnished in pursuance of this Act.

13(2) Without limiting the generality of subsection (1), determinations may make provision-

- (a) as to the person to whom the information may be disclosed;
- (b) as to the persons, being the persons from whom the information has been obtained, whose consent is required for the disclosure of the **information**; and
- (c) specifying terms and conditions subject to which the information may be disclosed, including, but without limiting the generality of the foregoing, terms and conditions as to the requiring of a person to whom the information is, or is to be, disclosed to give an undertaking, in writing with respect to the disclosure of the information by that person, including an undertaking not to disclose any of the information to any person.

13(3) Information of a personal or domestic nature relating to a person shall not be disclosed in accordance with a determination in a manner that is likely to enable the identification of that person.

SUBSECTIONS 19(1) AND 19(2), CENSUS AND STATISTICS ACT 1905

19(1) A person who is, Or has been, the Statistician or an officer shall not, **except-**

- (a) in accordance with a determination; or
- (b) for the purposes of this Act,

either directly or indirectly, divulge or communicate any **information** furnished in pursuance of this Act to any person (other than the person from whom the information was obtained).

SUBSECTIONS 19(1) AND 19(2), CENSUS AND STATISTICS ACT 1905 - *continued*

19(2) A person who contravenes subsection (1) or **fails** to comply with an undertaking of the kind referred to in paragraph 13(2)(c) given by the person in relation to information disclosed to the person in accordance with a determination is **guilty** of an indictable offence punishable on conviction by a fine not **exceeding** \$5,000 or imprisonment for a period not exceeding 2 years, or both.

CLAUSE 7 OF THE STATISTICS DETERMINATION (STATUTORY RULES 1983, NO. 19)

7(1) Information in the form of individual **statistical** records may, with the approval in writing of the Statistician, be disclosed **where-**

- (a) **aU** identifying information such as name and address has been removed;
- (b) the information is disclosed in a manner that is not likely to enable the identification of the particular person or organisation to which it relates; and
- (c) the Statistician has been given a relevant undertaking for (he purposes of this clause.

7(2) A reference in **paragraph** (1)(c) to a relevant undertaking sha**U** be read as a reference to an undertaking in writing **by-**

- (a) in the case of information to be disclosed to a person, being an individual - that person;
- (b) in the case of information to be disclosed to an official body — the responsible Minister in relation to, or a responsible officer of, that official body; or
- (c) in the case of information to be disclosed to an organisation other than an official body — a responsible officer of that organisation,

that use of the information will be subject to the follOWing terms and conditions:

- (d) no attempt will be made to identify particular persons or organisations;
- (e) the information will be used only for statistical purposes;
- (f) the information will not be disclosed to any other person or organisation;
- (g) if the Statistician considers it necessary in a particular case — either or both of the following
 - (i) that the information, and all copies (if any) of the information, wi**U** be returned to the **Statistician** as soon as the statistical purposes for which it was disclosed has been achieved;
 - (ii) that access by officers to information, documents or premises will be given as may be necessary for the purpose of conducting a compliance audit concerning observance of the terms and conditions under which the information is disclosed; and
- (h) any other condition that, in the opinion of the Statistician, is reasonably necessary in a particular case.

Appendix 5 - Business Growth and Performance Survey 1995-1996, 1996-1997, 1997-1998



GAPS1N

Business Growth and Performance Survey 1995/96

▼ In correspondence, please quote this number

Please complete this form
for the Australian
activities of the business
named on this label.

Purpose of Collection

The Business Growth and Performance Survey will be used in the development of government policy to assist and support Australian business, particularly small and medium businesses.

Receipt Number

Collection Authority

The information asked for is collected under the authority of the Census and Statistics Act. Your co-operation is sought in completing and returning this form by the due date. The Act provides me with the power, if needed, to direct you to provide the information sought.

Confidentiality

Your completed form remains confidential to the Australian Bureau of Statistics.

Due Date

Please complete this form and return it in the reply paid envelope to the Australian Bureau of Statistics by

Help Available

If you have problems in completing this form, or feel that you may have difficulties meeting the due date, please contact Small Business Statistics by:

Telephone
1800 633 667

Facsimile
(06) 252 7004

Mail
PO Box 10
Belconnen 2616

W. McLennan
Australian Statistician

Person we should contact if any queries arise regarding this form

Name		Telephone Number	()
Signature		Facsimile Number	()
		Date	/ /

© Commonwealth of Australia

Please read this first

- **Important:** This form will be read using electronic equipment.
- Use **pencil or black pen** when completing this form.
- Keep each number or tick **within** the boxes provided, for example

or ☒

- Leave boxes **blank** where there is no response, for example

- Information reported on this form should comply with Australian accounting standards.
- If exact figures are not available, please provide careful estimates.
- Only the Australian activities (including imports and exports) of the business shown on the label should be included on the form. Include details of this business' participation in any unincorporated joint ventures.
- Please report all monetary values in thousands of dollars (\$,000). Where the value of your accounts is not expressed in thousands of dollars, round the value up or down to the nearest thousand dollars.
- Please note: The items listed under **Include** and **Exclude** are examples and should not be taken as a complete list of items to be included or excluded.

Part 1 – General information

1 Period covered by this form

Note

- This form is for the financial year ended **30 June 1996**.
- If this business has a different financial year, please report for a **12 month period** which ends between 1 October 1995 and 30 September 1996 (e.g. a financial year ending 31 December 1995).

Please indicate the period covered by this form:

From / / 19 To / / 19

If the period covered by this form is not 12 months, please explain why

Part 2 – Business location and activity

2 Number of locations operated by this business as at 30 June 1996

Exclude

- Leased warehouse space
- Outlets operated by agents on behalf of this business

Locations

3 During the financial year reported in Question 1, did this business:

Open any new locations?

No ☐

Yes ☒ Number of locations

Close any existing locations?

No ☐

Yes ☒ Number of locations

4 Please describe the activity from which this business derives its **main** income (e.g. furniture manufacture, road freight transport, advertising service, legal service)

Office use only

5 What is the legal status of this business?

Tick one box

- Public company ☒ Go to 7
- Other incorporated company (e.g. Pty Ltd) ☐
- Sole proprietorship ☐
- Partnership ☐
- Trust ☒ Go to 7
- Co-operative ☐
- Incorporated association ☐
- Other (Please specify) ☐

6 How many years has this business been owned/controlled by the present owners?

Tick one box

- Less than 1 year ☐
- 1 year to less than 2 years ☐
- 2 years to less than 5 years ☐
- 5 years to less than 10 years ☐
- 10 years to less than 20 years ☐
- 20 years or more ☐
- Go to 8

7 How many years has this public company/trust been in operation?

Tick one box

- Less than 1 year ☐
- 1 year to less than 2 years ☐
- 2 years to less than 5 years ☐
- 5 years to less than 10 years ☐
- 10 years to less than 20 years ☐
- 20 years or more ☐

8 What was the estimated percentage of foreign ownership (of company equity) of this business?

Note

- Report as at 30 June 1996.

- None ☐
- Up to 10% ☐
- 11% - 49% ☐
- 50% - 100% ☐

Franchising

Note

- A franchise is a contract between a franchisor and a franchisee. The franchisee obtains the right to use a name, trademark, product, service or business system in return for the payment of a fee and/or royalty to the franchisor. Usually the franchisee gets a package of the above rights including a business system and management advice.

Exclude

- Buying groups
- Agencies

9 Does this business:

Operate as a franchisee?

- No ☐
- Yes ☐

Control a franchise system?

- No ☐
- Yes ☐

Part 3 – Employment

10 Number of persons working for this business during the last pay period ending in June 1996

Note

- Casual employees should be included and classified as full-time or part-time according to the hours worked in the reference pay period.

Working proprietors, working partners or working directors operate their own business in a profession or trade. They can hire one or more employees, and may receive a salary, drawings from profits or work for no monetary return.

Managerial employees are managerial, executive or senior professionals who are in charge of a significant number of employees or who have significant responsibilities in the conduct or operations of the organisation. They may not receive payment for overtime. This includes professionally qualified staff who primarily perform managerial tasks in conjunction with utilising their professional skills.

Full-time employees are those (permanent, temporary or casual) who:

- normally work the agreed or award hours for a full-time employee in their occupation, or
- if agreed or award hours do not apply, would ordinarily work 35 hours or more a week.

Part-time employees are those (permanent, temporary or casual) who are not full-time as defined.

Include

- Full-time and part-time employees
- Permanent, temporary and casual employees
- Managerial and executive employees
- Employees absent on paid or pre-paid leave
- Working proprietors and partners
- Employees on workers' compensation who continue to be paid through the payroll

Exclude

- Unpaid directors
- Self-employed persons such as consultants, contractors and persons paid solely by commission without a retainer
- Volunteers

	Males	Females	Total
Working proprietors, working partners of working directors (full-time and part-time)	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other full-time managerial employees	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other full-time employees	<input type="text"/>	<input type="text"/>	<input type="text"/>
Part-time employees (including managerial employees)	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total	<input type="text"/>	<input type="text"/>	<input type="text"/>

11 From the total number of persons employed in Question 10, please provide the number of casual employees

Note

- Casual employees are those (full-time or part-time) generally required on an as needed basis and who are not usually entitled to paid holidays or sick leave.

Labour turnover

- 12** How many persons were newly employed by this business during the financial year reported in Question 1?

Exclude

- Casual employees

- 13** How many persons ceased to be employed by this business during the financial year reported in Question 1?

Include

- Resignations
- Redundancies
- Dismissals
- Retirements
- Invalidity retirements

Exclude

- Casual employees

Family business

- 14** Do you consider this business to be a family business?

No ☐ Go to 18

Yes ☐

- 15** Why do you consider this to be a family business?

Tick appropriate box(es)

Family members are:

– working directors or proprietors ... ☐

– employed in the business ... ☐

– not working in business although contribute to decisions ... ☐

This business was acquired from parents ... ☐

There is a close working relationship between management and staff ... ☐

Other (Please specify) ... ☐

- 16** Including the current operators, how many generations of this family have been either working directors, partners or proprietors of this business?

- 17** If this business has more than one working proprietor, working partner or working director, how many are from the same family?

Note

- If there is more than one family involved in the business report for the family with the largest number represented.

- 18** Does this business have a person, such as a managing director, who takes responsibility for the major decisions on the operations of this business?

No ☐ Go to 21

Yes ☐

- 19** Please provide the following information about this person

Sex

Male ... ☐

Female ... ☐

Number of years experience as a business proprietor or director ...

Highest completed education level

School ... ☐ Go to 21

Trade ... ☐ Go to 21

Tertiary ... ☐

- 20** Are this person's tertiary qualifications in business management, commerce or administration?

No ☐

Yes ☐

Industrial relations

21 Please estimate the percentage of persons working for this business that were union members as at 30 June 1996

Tick one box

- None ... ☐ Go to 23
- Up to 10% ... ☐
- 11% - 25% ... ☐
- 26% - 50% ... ☐
- 51% - 75% ... ☐
- 76% - 100% ... ☐

22 How many unions represented the employees of this business as at 30 June 1996?

23 Please estimate the number of employees of this business working under each of the following arrangements as at 30 June 1996:

Conditions based on Federal/State awards

Note

- An award is a legally enforceable document covering aspects of wages and conditions that has been handed down by an industrial tribunal.

Include

- People with arrangements based on award specifications
- People on above award payments

Number

Individual formal contract or agreement of employment

Note

- An individual contract or agreement of employment (which can include a letter of appointment) is an agreement covering aspects of wages and conditions between an individual employee and the business.

Number

Unregistered enterprise agreement

Note

- An unregistered enterprise agreement is a written or verbal agreement that covers aspects of wages and conditions between employees and the business.

Number

Registered enterprise agreement

Note

- A registered enterprise agreement is a written agreement that covers aspects of wages and conditions that has been registered by an industrial tribunal.

Number

Year registered enterprise agreement first introduced

19

Part 4 – Business operations

Note

- Report for the financial year reported in Question 1, unless otherwise specified.

24 On average, how many days per week did your plant operate?

Days per week ...

25 On average, how many hours per day did your plant operate?

Hours per day ...

26 Did this business have any of the following business improvement programs in place?

Tick one box per row

	No/ Not applicable	Informally in place	Formal program developed in-house	Externally assisted program
Total Quality Management ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality Assurance ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Just-in-Time Management ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process Engineering ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27 Did this business use any of the following business practices?

	No	Yes	Not applicable
Documented formal strategic plan ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A formal business plan ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Budget forecasting ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regular income/expenditure reports (more than once a year) ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formal networking with other businesses ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic commerce (exclude banking) ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comparison of performance with other businesses ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Export market planning ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Business Links

Note

Business links refer to special business arrangements, relationships or partnerships other than normal supplier-customer relationships, that this business may have with other businesses.

28 Has this business had any links with other businesses during the financial year reported in Question 1?

Include

- Special relationships formed with other (unrelated) businesses to increase your business capabilities or performance
- Business partnership agreements
- Special arrangements with another business to achieve a joint tender

Exclude

- Normal transactions with customers, clients or suppliers
- Arms length dealings
- Franchise agreements
- Arrangements with other divisions of this business
- Sub-contracting arrangements

No ☐ Go to 31

Yes ☐

29 Did the final form of this link(s) result in:

Tick appropriate box(es)

– the formation of a new business ... ☐

– a formal agreement without creating a new business ... ☐

– an informal understanding ... ☐

Other (Please specify) ... ☐

30 Was the purpose of this link to increase the capability of this business in:

Tick appropriate box(es)

Production ... ☐

Purchasing ... ☐

Marketing ... ☐

Distribution ... ☐

Research & development ... ☐

Training ... ☐

Other (Please specify) ... ☐

31 How frequently did this business seek business information or advice from the sources below?

Never 1-3 times More than 3 times

External accountants ... ☐ ☐ ☐

Banks ... ☐ ☐ ☐

Solicitors ... ☐ ☐ ☐

Business consultants ... ☐ ☐ ☐

Family or friends ... ☐ ☐ ☐

Others in your industry ... ☐ ☐ ☐

Local businesses ... ☐ ☐ ☐

Industry Association/
Chamber of Commerce ... ☐ ☐ ☐

The Australian Taxation
Office ... ☐ ☐ ☐

Government small
business agencies ... ☐ ☐ ☐

Business Change

Note

- Report for the financial year reported in Question 1, unless otherwise specified.

32 Please indicate if there have been any major changes in this business:

Tick one box per row

	Not applicable to this business	No major change	Increased	Decreased
Range of products or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advertising	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Markets targeted				
Domestic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Export	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accounting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other administrative computer systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Production technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On-the-job training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other major changes

	Not applicable to this business	No major change	Changed
Contracting out activities previously done by employees of this business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other changes (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

33 Did this business:

- develop any new products, or
- introduce any substantially changed products, or
- develop or introduce any new or substantially changed processes

No ☐
Yes ☐

34 Did this business participate in any of the following Government programs, or services during the financial year reported in Question 1?

Tick appropriate box(es)

	No	Yes
AusIndustry/NIES	<input type="checkbox"/>	<input type="checkbox"/>
Research and development tax concession	<input type="checkbox"/>	<input type="checkbox"/>
Grants for research and development	<input type="checkbox"/>	<input type="checkbox"/>
New Enterprise Incentive Scheme	<input type="checkbox"/>	<input type="checkbox"/>
Export Access	<input type="checkbox"/>	<input type="checkbox"/>
Export Finance and Insurance Corporation facilities ...	<input type="checkbox"/>	<input type="checkbox"/>
Austrade		
Export Market Development Grants	<input type="checkbox"/>	<input type="checkbox"/>
International Trade Enhancement Scheme	<input type="checkbox"/>	<input type="checkbox"/>
Other Austrade services	<input type="checkbox"/>	<input type="checkbox"/>
Commonwealth, State or Local Government employment programs	<input type="checkbox"/>	<input type="checkbox"/>
Other Commonwealth and State Government industry programs (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>

35 If this business *did not* make use of any particular Government program or service, please indicate the reason

Tick appropriate box(es)

Not applicable to this industry	<input type="checkbox"/>
Poorly designed	<input type="checkbox"/>
Only suitable for bigger businesses	<input type="checkbox"/>
No reason to seek assistance	<input type="checkbox"/>
No knowledge of these programs	<input type="checkbox"/>
Did not know how to get in touch	<input type="checkbox"/>
Too much paperwork to get the assistance	<input type="checkbox"/>
Other (Please specify)	<input type="checkbox"/>

36 During the next three (3) years (i.e. 1997-1999) does this business intend to do any of the following:

Tick appropriate box(es)

Significantly increase production	<input type="checkbox"/>
Maintain existing production	<input type="checkbox"/>
Significantly decrease production	<input type="checkbox"/>
Open new locations	<input type="checkbox"/>
Close locations	<input type="checkbox"/>
Maintain or commence exporting	<input type="checkbox"/>
Introduce new goods or services	<input type="checkbox"/>
Sell the whole business	<input type="checkbox"/>
Open the same business elsewhere	<input type="checkbox"/>
Sell equity in the business	<input type="checkbox"/>
Close the business	<input type="checkbox"/>

Part 5 – Income items

Note

- Report for the financial year reported in Question 1, unless otherwise specified

Include

- Income from abnormal items under the relevant headings below

Exclude

- Extraordinary items

37 Income from sales of goods and services

Note

- Report net of discounts given

Include

- Rent, leasing and hiring income
- Repair and service income and fees
- Contract, sub-contract and commission income
- Sales or transfers to related businesses, including overseas branches of this business
- Management fees/charges from related and unrelated businesses
- Export sales
- Subscription and membership fees
- Delivery charges not separately invoiced to customers
- Royalties income - under licensing arrangements

Exclude

- Sales of fixed tangible assets
- Export freight charges
- Interest income (include in Question 38)
- Royalties from mineral leases (include in Question 38)
- Income from finance leases
- Payments received under hire purchase arrangements

\$,000

38 Other income

Include

- Interest income
- Government subsidies
- Funding from Federal, State and/or Local Government
- Donations
- Dividend income
- Royalties from mineral leases
- Capital grants
- Net profit (loss) on sales of fixed tangible assets
- Net profit (loss) on foreign loans as a result of variations in foreign exchange rates/transactions
- Net profit (loss) on share trading

Exclude

- Capital payments received
- Extraordinary profit (loss) i.e. not associated with the normal operations of this business and of a non-recurring nature

\$,000

39 Total income

(Sum of Questions 37 to 38)

\$,000

40 Estimate the total income for this business for the year following the financial year reported in Question 1

Note

- Report in either \$,000 **OR** as a percentage increase/decrease of the total income reported above in Question 39.

\$,000

OR

Percentage increase %

Percentage decrease %

Export income

41 Did this business receive income from the export of goods and/or services during the financial year reported in Question 1?

Include

- Goods or services that were exported directly by this business, or by this business' agent.

Exclude

- Income received from overseas visitors

Goods

No ☐

Yes ☐

Services

No ☐

Yes ☐

Note

- If "No" to both categories, go to Question 43

42 Value of exports of *both* goods and services reported in Question 41

Include

- Inter-company transfers overseas

\$,000

Part 6 – Expense items

Note

- Report for the financial year reported in Question 1, unless otherwise specified.

Include

- Expenses from abnormal items under the relevant headings below

Exclude

- Extraordinary items

43 Wages and salaries

Note

- Refers to gross earnings before taxation and other deductions.

Include

- Severance, termination and redundancy payments
- Wages or salaries paid to all full-time and part-time employees
- Salaries and fees of directors and executives
- Overtime earnings, penalty payments and shift allowances
- Retainers and commissions of persons who received a retainer
- Payments made under incentive or profit sharing schemes
- Amounts paid through the payroll to employees on workers' compensation
- Provisions for long service, sick and annual leave, leave bonus, severance, termination and redundancy payment

Exclude

- Drawings from profits
- Payments to self-employed persons such as consultants, contractors and persons paid solely by commission without a retainer (include in Question 52)
- Payments to proprietors/partners of unincorporated businesses
- Reimbursements or allowances to employees for travel, entertainment, etc. (include in Question 52)
- Payroll tax (include in Question 46)
- Fringe benefits tax (include in Question 52)
- Provisions for employer contributions to superannuation funds (include in Question 44)
- Provisions for workers' compensation costs (include in Question 45)

\$,000

44 Employer contributions to superannuation funds

Include

- All employer contributions to superannuation funds (including employer productivity contribution)
- Provisions for employer contributions to superannuation funds

Exclude

- Employee contributions

\$,000

45 Workers' compensation costs

Include

- Workers' compensation insurance premiums/levies
- Non-payroll costs (e.g. medical costs) not reimbursed
- Provisions for workers' compensation costs

\$,000

46 Payroll tax

Exclude

- PAYE income tax deducted from employees' wages and salaries

\$,000

47 Interest expenses

Include

- Interest on bank loans
- Interest on loans made to this business from related as well as unrelated businesses
- Interest in respect of finance leases
- Interest paid on loans from partners
- Interest equivalents, such as hedging costs
- Expenses associated with discounted bills

Exclude

- Bank charges other than interest (include in Question 52)
- Capital repayments

\$,000

48 Depreciation and amortisation*Note*

- Report depreciation and amortisation as recorded in this business' financial or management accounts.

Include (for lessees only)

- Depreciation/amortisation expenses in respect of assets acquired under finance leases

Exclude (for lessors only)

- Depreciation/amortisation expenses in respect of assets on finance leases

\$,00049 Bad debts... ,000**50 Purchases***Include*

- Purchases of materials, components, containers and packaging materials
- Purchases of electricity, fuels and water where the purchase contributed to the production and/or sale of the goods and services
- Purchase of goods for resale
- Fuels for off-road vehicles e.g. forklifts, mobile plant and quarry dump trucks

Exclude

- Contract, sub-contract and commission expenses (include in Question 52)
- Purchases of parts and fuels for motor vehicles (include in Question 52)

\$,000**51 Rent, leasing and hiring expenses***Include*

- Operating lease payments

Exclude

- Finance lease payments (interest component should be included in Question 47)

\$,000**52 Other operating expenses***Exclude*

- Extraordinary losses
- Sales tax and excise duty payable to the Government
- Dividends
- Income and other direct tax
- Costs associated with the transfer of real estate
- Capital repayments including those associated with finance leases
- Goodwill write down (include in Question 48)
- Amortisation (include in Question 48)
- Provisions for doubtful debts
- Export freight charges

\$,000**53 Total expenses**
(Sum of Questions 43 to 52)\$,000**Part 7 – Trading stocks***Include*

- Raw materials, fuels, containers, etc.
- Work-in-progress
- Finished goods
- Stocks for re-sale

54 Opening trading stocks*Note*

- Report the total book value of trading stocks as at the beginning of the financial year reported in Question 1.
- Valuation should be on the same basis as you use in this business' accounts.

\$,000**55 Closing trading stocks***Note*

- Report the total book value of trading stock as at the end of the financial year reported in Question 1.
- Valuation should be on the same basis as you use in this business' accounts.

\$,000

Part 8 – Profit or loss

56 Reported operating profit or loss (surplus or deficit) before tax and extraordinary items

Note

- Show the actual profit or loss (surplus or deficit) figure as in the profit and loss statement of this business for the financial year reported in Question 1.
- Report the result before taking into account previous years' losses, if any.

Profit (Surplus) ... \$,000
or
Loss (Deficit) ... \$,000

57 Derived profit or loss (surplus or deficit) before tax and extraordinary items

Total income
(Question 39) ... \$,000

Minus

Total expenses
(Question 53) ... \$,000

Minus

Opening stocks
(Question 54) \$,000

Plus

Closing stocks
(Question 55) \$,000

Equals

Profit (Surplus) ... \$,000

Or

Loss (Deficit) \$,000

If this figure is different from the figure for profit or loss (surplus or deficit) reported in Question 56, please indicate the reason below

[illegible]

Part 9 – Assets and liabilities

Note

- Report the total book value of assets and liabilities as at the end of the financial year reported in Question 1.
- The distinction between current and non-current can best be summarised by applying the “12 month rule”.
- If an asset or liability is current, it will generally cease to exist, or have been used up within 12 months. For example, cash in an interest bearing deposit is a current asset, while money owed on a 60 day credit account is a current liability.
- Conversely, if an asset or liability is non-current, it will generally be an item on your books for longer than 12 months. For example, tangible assets such as a building or piece of machinery are non-current assets, while a bank loan taken out over a number of years is a non-current liability.

58 Current assets including trading stocks

Note

- Report net of provisions for doubtful debts.

\$,000

59 Non-current assets – property

Include

- Property needed for normal operations

\$,000

60 Non-current assets -- plant and machinery

Include

- Plant and machinery needed for normal operations

\$ _____,000

61 Non-current assets – other

Include

- Capitalised interest
- Goodwill
- Brand names

\$ _____,000

62 Current liabilities ... \$,000

63 Non-current liabilities*Exclude*

- Owners' equity (shareholders' equity)

\$,000

64 Owners' equity*Note*

- Report as in this business' balance sheet

\$,000

65 In the last 3 years has this business obtained any equity finance?

No ☐ Go to 68

Yes ☐

66 Where did the business obtain this equity finance?

Tick appropriate box(es)

Family ☐

Acquaintances or business colleagues ☐

People you did not previously know ☐

Unrelated businesses ☐

Related businesses ☐

Banks or other financial institutions ☐

Existing shareholders ☐

67 What was the approximate value of this equity investment?

Up to \$20,000 ☐

\$20,001 to \$50,000 ☐

\$50,001 to \$100,000 ☐

\$100,001 to \$500,000 ☐

\$500,001 to \$1,000,000 ☐

Over \$1,000,000 ☐

68 Please estimate the percentage breakdown of this business' equity or ownership*Note*

- In this question owners are defined as directors, proprietors or partners.

Working owners %

Non-working owners - family %

Non-working owners - non-family %

Parent company %

Other unrelated businesses %

Other (including shareholders) %

Total 1 0 0 %

69 Please indicate an approximate breakdown of this business' liabilities (both current and non-current)

Trade and other creditors %

Loans from:

- banks and other financial institutions %

- parent company %

- individuals involved in the business or their families %

- other individuals %

- unrelated businesses %

Provisions %

Other (Please specify) %

Total 1 0 0 %

Part 10 – Capital expenditure and disposal of assets

Include

- All costs capitalised in your books (include legal fees, real estate transfer costs and assets acquired under finance leases)
- Progress payments made to contractors for capital work done by them

Exclude

- Interest paid (include in Question 47)

70 Capital expenditure on selected assets, including capital work done by own employees

Plant, machinery and equipment \$,000

Land \$,000

Dwellings, other buildings and structures (include roads, warehouses, offices, bridges, etc.)
\$,000

Intangible assets (include patents, licences, computer software and goodwill)
\$,000

71 Total disposal of plant, machinery, equipment, land, dwellings, other buildings and structures and intangible assets

Note

- Report the proceeds from sales of assets.

\$,000

Part 11 – Research and Development

72 Did this business perform, or pay other businesses to perform, research and development (R & D) activity during the financial year reported in Question 1?

Note

- R & D is generally investigative work which is of actual or potential use in the development of new or enhanced materials, products, devices, processes or services.

No ☐ Go to 74

Yes ☐

73 Value of expenditure on research & development

\$,000

Part 12 – Comments

74 Please provide an estimate of the time taken to complete this form

Include

- The time actually spent reading the instructions, working on the questions and obtaining the information
- The time spent by all employees in collecting and providing this information

hrs mins

75 Please provide comments

- On any of the information you have supplied on the form
- On any questions which caused problems
- If you would like to suggest improvements to this form

76 Please comment on the usefulness of the Industry Performance Statistics included with this form

Tick appropriate box

Very useful ☐
Useful ☐
No use ☐

If you are interested in finding out about business assistance programs call the AusIndustry Hotline

Telephone: 13 2846



GAPS1N

Business Growth and Performance Survey 1996/97

▼ In correspondence, please quote this number

--

Please complete this form
for the Australian-based
activities of the business
named on this label.

Purpose of Collection

The Business Growth and Performance Survey will be used in the development of government policy to assist and support Australian business, particularly small and medium businesses.

Collection Authority

The information asked for is collected under the authority of the *Census and Statistics Act, 1905*. Your co-operation is sought in completing and returning this form by the due date. The Act provides me with the power, if needed, to direct you to provide the information sought.

Confidentiality

Your completed form remains confidential to the Australian Bureau of Statistics.

Due Date

Please complete this form and return it in the reply paid envelope to the Australian Bureau of Statistics by **24 February 1998**.

Help Available

If you have problems in completing this form, or feel that you may have difficulties meeting the due date, please contact Small Business Statistics by:

Telephone
1800 633 667

Facsimile
(02) 6252 7004

Mail
PO Box 10
Belconnen ACT 2616

W. McLennan
Australian Statistician

Office use only	
Markin	
DACC	
Attach.	

Person we should contact if any queries arise regarding this form

Name		Telephone Number	()
Signature		Facsimile Number	()
		Date	

© Commonwealth of Australia

Please read this first

- **Important:** This form will be read using electronic equipment.
- Use **pencil** or **black pen** when completing this form.
- Keep each number or tick **within** the boxes provided, for example

or ☒

- Information reported on this form should comply with Australian accounting standards.
- If exact figures are not available, please provide careful estimates.
- Only the Australian-based activities (including exports) of the business shown on the label should be included on the form. Include details of this business's participation in any unincorporated joint ventures.
- Please report all monetary values in **thousands of dollars (\$,000)**. Where the value in your accounts is not expressed in thousands of dollars, round the value up or down to the nearest thousand dollars.
- **Please note:** The items listed under **Include** and **Exclude** are examples and should not be taken as a complete list of items to be included or excluded.

Part 1 – General information

1 Period covered by this form

Note

- This form is for the financial year ended **30 June 1997**.
- If this business has a different financial year, please report for a 12 month period which ends between 1 October 1996 and 30 September 1997 (e.g. a financial year ending 31 December 1996).

Please indicate the period covered by this form:

Tick appropriate box

1 July 1996 - 30 June 1997 ... ☐

1 January 1996 - 31 December 1996 ... ☐

Other (Please specify) ... ☐

From / / 19 To / / 19

If the period covered by this form is not 12 months, please explain why

Part 2 – Business location and activity

2 Number of locations operated by this business as at 30 June 1997

Exclude

- Leased warehouse space
- Outlets operated by agents on behalf of this business

Locations

3 During the financial year reported in Question 1, did this business:

Open any new locations?

No ☐

Yes ☐ Number of locations opened

Close any existing locations?

No ☐

Yes ☐ Number of locations closed

4 Please describe the activity from which this business derives its **main income** (e.g. furniture manufacture, road freight transport, advertising service, legal service)

Office use only

5 What is the legal status of this business?

Tick one box

Public company ☐ Go to 7

Other incorporated company (e.g. Pty Ltd) ☐

Sole proprietorship ☐

Partnership ☐

Trust ☐ Go to 7

Unincorporated co-operative ... ☐

Incorporated association ☐

Other (Please specify) ☐

6 How many years has this business been owned/controlled by the present owners?

Go to 8

7 How many years has this public company/trust been in operation?

Foreign ownership

8 What was the estimated percentage of foreign ownership (of company equity) of this business?

Note

• Report as at 30 June 1997.

None ☐

Up to 10% ☐

11% - 49% ☐

50% - 100% ☐

Franchising

Note

• A franchise is a contract between a franchisor and a franchisee. The franchisee obtains the right to use a name, trademark, product, service or business system in return for the payment of a fee and/or royalty to the franchisor. Usually the franchisee gets a package of the above rights including a business system and management advice.

Exclude

- Buying groups
- Agencies

9 Does this business:

Operate as a franchisee?

No ☐

Yes ☐

Control a franchise system?

No ☐

Yes ☐

Major decision maker

- 10 Does this business have a person, such as a managing director, who takes responsibility for the major decisions on the operations of this business?

No ☐ Go to 13
Yes ☐

- 11 Please provide the following information about this person

Sex

Male ☐

Female ☐

Number of years experience as a business proprietor or director

Highest completed education level

School ☐ Go to 13

Trade ☐ Go to 13

Tertiary ☐

- 12 Are this person's tertiary qualifications in business management, commerce or administration?

No ☐
Yes ☐

Family business

- 13 Do you consider this business to be a family business?

No ☐ Go to 17
Yes ☐

- 14 Why do you consider this to be a family business?

Tick appropriate box(es)

Family members are:

- working directors or proprietors ☐
- employed in the business ☐
- not working in business although contribute to decisions ☐

This business was acquired from parents ☐

There is a close working relationship between management and staff ☐

Other (Please specify) ☐

- 15 Including the current operators, how many generations of this family have been either working directors, partners or proprietors of this business?

- 16 If this business has more than one working proprietor, working partner or working director, how many are from the same family?

Note

- If there is more than one family involved in the business report for the family with the largest number represented.

Part 3 – Employment

17 Number of persons working for this business during the last pay period ending in June 1997

Note

- Full-time persons are those working 35 hours or more a week.
- **Working proprietors, working partners or working directors** operate their own business in a profession or trade. They can hire one or more employees, and may receive a salary or drawings from profits.
- **Managerial employees** are managerial, executive or senior professionals who are in charge of a significant number of employees or who have significant responsibilities in the conduct or operations of this business. They may not receive payment for overtime. This includes professionally qualified staff who primarily perform managerial tasks in conjunction with utilising their professional skills.
- **Other employees** are all wage and salary earners who received pay during the last pay period ending in June 1997 excluding casuals and managerial employees.
- **Casual employees** are those generally required on an as needed basis and who are not usually entitled to paid holidays or sick leave.

Include

- Full-time and part-time employees
- Permanent, temporary and casual employees
- Managerial and executive employees
- Employees absent on paid or prepaid leave
- Working proprietors and partners
- Employees on workers' compensation who continue to be paid through the payroll

Exclude

- Non-salaried directors
- Self employed persons such as consultants, contractors and persons paid solely by commission without a retainer
- Volunteers

	Full-time		Part-time	
	Males	Females	Males	Females
Working proprietors, working partners or working directors	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Managerial employees	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other employees	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Casuals	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Labour turnover

- 18** How many persons were newly employed by this business during the financial year reported in Question 1?

Include

- Replacement employees
- Additional employees

Exclude

- Casual employees

- 19** How many persons ceased to be employed by this business during the financial year reported in Question 1?

Include

- Resignations
- Redundancies
- Dismissals
- Retirements
- Invalidity retirements

Exclude

- Casual employees

- 20** Excluding casuals, did total employment in this business decrease over the financial year reported in Question 1?

No ☐ Go to 22

Yes ☐

- 21** What was the major reason(s) for the decrease?

Tick appropriate box(es)

- Decrease in demand for goods or services ☐
- Contracted out tasks ☐
- Improvements in business efficiency ☐
- Replaced permanent employees with casuals ☐
- Reduced range of activities ☐
- Temporary decrease in employment levels ☐
- Other ☐

Out-sourcing

- 22** During the financial year reported in Question 1, did this business contract out any activities that were previously performed by this business's employees?

Exclude

- Contracting out solely to handle peaks in workload

No ☐ Go to 24

Yes ☐

- 23** Approximately how many employees were replaced by the contracting out of these activities?

Industrial relations

- 24** Please estimate the percentage of persons working for this business who were union members as at 30 June 1997

Tick one box

None ☐ Go to 26

Up to 10% ☐

11% - 25% ☐

26% - 50% ☐

51% - 75% ☐

76% - 100% ☐

- 25** How many unions represented the employees of this business as at 30 June 1997?

26 Please estimate the number of employees of this business working under the following arrangements as at 30 June 1997:

(a) Registered enterprise agreement

Note

- A registered enterprise agreement is a written agreement negotiated for this business that covers aspects of wages and conditions that has been registered with an industrial commission or tribunal.

Persons

Year registered enterprise agreement first introduced

1 9

(b) Unregistered enterprise agreement

Note

- An unregistered enterprise agreement is a verbal or written agreement negotiated between a group of employees and this business that covers aspects of wages and conditions.

Persons

(c) Individual contract or agreement of employment

Note

- An individual contract or agreement of employment (which can include a letter of appointment) is an agreement covering aspects of wages and conditions between an individual employee and the business.

Exclude

- Persons covered by any enterprise agreement

Persons

(d) Covered by an award only

Include

- Persons with arrangements based on award specifications
- Persons on above award payment

Exclude

- Persons covered by any enterprise agreement

Persons

Part 4 – Business operations

Note

- Report for the financial year reported in Question 1.

27 On average, how many days per week did this plant operate?

Days per week

28 On average, how many hours per day did this plant operate?

Hours per day

Business practices

29 Did this business use any of the following business practices?

Tick one box per row

	No/Not applicable	Yes
Documented formal strategic plan	<input type="checkbox"/>	<input type="checkbox"/>
A formal business plan	<input type="checkbox"/>	<input type="checkbox"/>
Budget forecasting	<input type="checkbox"/>	<input type="checkbox"/>
Regular income/expenditure reports (more than once a year)	<input type="checkbox"/>	<input type="checkbox"/>
Formal networking with other businesses	<input type="checkbox"/>	<input type="checkbox"/>
Electronic commerce (excluding banking)	<input type="checkbox"/>	<input type="checkbox"/>
Comparison of performance with other businesses	<input type="checkbox"/>	<input type="checkbox"/>
Export market planning	<input type="checkbox"/>	<input type="checkbox"/>

Government programs

30 Did this business apply for any of the following Government programs administered by AusIndustry during the financial year reported in Question 1?

Note

- If application was successful, please provide all details requested.
- If unsuccessful, provide application costs only.

	Applied		Labour (person days)	Other direct costs	Application successful		Value of grant or loan
	No	Yes			No	Yes	
Grants for Research and Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	\$ <input type="text"/> ,000	<input type="checkbox"/>	<input type="checkbox"/>	\$ <input type="text"/> ,000
AusIndustry concessional loans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	\$ <input type="text"/> ,000	<input type="checkbox"/>	<input type="checkbox"/>	\$ <input type="text"/> ,000
Enterprise improvement/development programs ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	\$ <input type="text"/> ,000	<input type="checkbox"/>	<input type="checkbox"/>	\$ <input type="text"/> ,000

	Applied		Labour (person days)	Other direct costs	Application successful		Value of Research & Development claim
	No	Yes			No	Yes	
Research and Development tax concession	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	\$ <input type="text"/> ,000	<input type="checkbox"/>	<input type="checkbox"/>	\$ <input type="text"/> ,000

31 Did this business participate in any of the following Government programs during the financial year reported in Question 1?

Tick one box per row

	No	Yes
Export Finance and Insurance Corporation (EFIC) facilities	<input type="checkbox"/>	<input type="checkbox"/>
Austrade programs		
Export Market Development Grants	<input type="checkbox"/>	<input type="checkbox"/>
International Trade Enhancement Scheme	<input type="checkbox"/>	<input type="checkbox"/>
Export Access	<input type="checkbox"/>	<input type="checkbox"/>
Other Austrade services	<input type="checkbox"/>	<input type="checkbox"/>
Commonwealth, State or Local Government employment programs	<input type="checkbox"/>	<input type="checkbox"/>
Other Commonwealth and State Government industry programs (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>

Business change

Note

- Report for the financial year reported in Question 1.

32 Please indicate if there have been any major changes in this business's:

Tick one box per row

	Not applicable to this business	No major change	Increased	Decreased
Range of products or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advertising	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Markets targeted - Domestic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Markets targeted - Export	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accounting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other administrative computer systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Production technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Management training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On-the-job training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other major changes

	Not applicable to this business	No major change	Changed
Business structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other changes (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Use of computers

33 Does this business use computers in its business operations?

No ☐ Go to 42
Yes ☐

34 How long has this business used computers?

Tick one box

Less than 2 years ☐
2 years to less than 5 years ☐
5 years or more ☐

35 Are most of the computers in this business:

Tick one box

Networked within the business ☐
Stand-alone ☐

36 Does this business have any of the following electronic links with another business?

Tick one box per row

	No	Yes
Dial-up modem link other than via the Internet	<input type="checkbox"/>	<input type="checkbox"/>
Dedicated line	<input type="checkbox"/>	<input type="checkbox"/>

37 Are any of the following facilities used by this business?

Tick one box per row

	No	Yes
Electronic stock monitoring	<input type="checkbox"/>	<input type="checkbox"/>
Electronic ordering/purchasing using modem or dedicated links with another business	<input type="checkbox"/>	<input type="checkbox"/>
Electronic financial transactions eg banking, eftpos	<input type="checkbox"/>	<input type="checkbox"/>

38 How many employees of this business are required to use a computer at least once a week?

39 Does this business have access to the Internet?

No ☐ Go to 42
Yes ☐

40 What does this business use the Internet for?

Tick appropriate box(es)

Purchasing ☐
Selling ☐
Marketing or advertising ☐
Gathering information ☐
Voice/video communication ☐
Email ☐
Data transfer ☐
Other (Please specify) ☐

41 Does this business have a web-site/home page?

No ☐
Yes ☐

Business intentions

42 Please indicate if this business intends to do any of the following during the next 3 years (i.e. 1998-2000):

Tick appropriate box(es)

- Significantly increase production ... ☐
- Maintain existing production ... ☐
- Significantly decrease production ... ☐
- Open new locations ... ☐
- Close locations ... ☐
- Commence exporting ... ☐
- Maintain exporting ... ☐
- Increase exporting ... ☐
- Establish a partnership or office overseas ... ☐
- Introduce new goods or services ... ☐
- Sell the whole business ... ☐
- Open the same business elsewhere ... ☐
- Sell equity in the business ... ☐
- Close the business ... ☐

Business innovation

Note

- Report for the financial year reported in Question 1.

43 Did this business:

- develop any new products, or
- introduce any substantially changed products, or
- develop or introduce any new or substantially changed processes

No ☐ Go to **Part 5**

Yes ☐

44 What was the estimated expenditure on the development of the new products or processes for:

Research and Development (R &D) ... \$, ,000

Acquisition of technology developed by others (e.g. patents, trademarks and licences) ... \$, ,000

Training and further education expenditure related to the introduction of new products or processes ... \$, ,000

Expenditure for tooling-up, industrial engineering and start-up ... \$, ,000

Marketing of new or improved products ... \$, ,000

Other (Please specify) \$, ,000

Total expenditure ... \$, ,000

Part 5 – Income items**Note**

- Report for the financial year reported in Question 1.

Include

- Income from abnormal items under the relevant headings below

Exclude

- Extraordinary items

45 Income from sales of goods and services**Note**

- Report net of discounts given.

Include

- Income from rent and hiring
- Income from operating leases
- Repair and service income and fees
- Contract, sub-contract and commission income
- Sales or transfers to related businesses or to overseas branches of this business
- Management fees/charges from related and unrelated businesses
- Export sales
- Subscription and membership fees
- Delivery charges not separately invoiced to customers

Exclude

- Sales tax, excise and duties received (on behalf of the Government)
- Sales of fixed tangible assets (include in Question 76)
- Export freight charges
- Interest income (include in Question 46)
- Income from finance leases
- Payments received under hire purchase arrangements
- Royalties income (include in Question 46)

\$, , ,000

46 Other income**Include**

- Interest income
- Funding from Federal, State and/or Local Government
- Donations
- Dividend income
- Royalties income
- Capital grants
- Net profit (loss) on the sale of fixed tangible assets
- Net profit (loss) on foreign loans as a result of variations in foreign exchange rates/transactions
- Net profit (loss) on share trading

Exclude

- Capital payments received
- Extraordinary profit (loss), i.e. not associated with the normal operations of this business and of a non-recurring nature

\$, , ,000

47 Total income

(Sum of Questions 45 to 46)

\$, , ,000

48 Please estimate the expected change in total income for the year following the financial year reported in Question 1**Note**

- Report either as an expected percentage increase or decrease over the total income reported in Question 47 above **OR** tick no change if total income is expected to be about the same as this financial year.

Percentage increase %

OR

Percentage decrease %

ORNo change expected ☐**Export income****Note**

- If both goods and services are exported, and the value cannot be split, report total value of exports in the predominant category.

Include

- Goods or services that were exported directly by this business, or by this business's agent
- Inter-company transfers from overseas

Exclude

- Income received from overseas visitors

49 Value of goods exported by this business

\$, , ,000

50 Value of services exported by this business

\$, , ,000

Part 6 – Expense items

Include

- Expenses from abnormal items under the relevant headings below

Exclude

- Extraordinary items

51 Wages and salaries including provision expenses for employee entitlements

Note

- Refers to gross earnings before taxation and other deductions.
- Report wages and salaries as recorded in this business's profit and loss statement, including provision expenses for employee entitlements.

Include

- Severance, termination and redundancy payments
- Wages or salaries of all full-time and part-time employees
- Wages or salaries of all permanent, temporary and casual employees
- Salaries and fees of directors and executives
- Overtime earnings, penalty payments and shift allowances
- Retainers and commissions of persons who received a retainer
- Payments made under incentive or profit sharing schemes
- Amounts paid through the payroll to employees on workers' compensation
- Bonuses

Exclude

- Amounts paid from provisions accounts
- Drawings from profits
- Payments to self-employed persons such as consultants, contractors and persons paid solely by commission without a retainer (include in Question 59)
- Payments to proprietors/partners of unincorporated businesses
- Reimbursements or allowances to employees for travel, entertainment, etc. (include in Question 59)
- Fringe benefits tax and payroll tax (include in Question 59)
- Capitalised wages and salaries (include in Question 75)
- Provisions for employer contributions to superannuation funds (include in Question 52)
- Provisions for workers' compensation costs (include in Question 53)

\$, , ,000

52 Employer contributions to superannuation funds

Include

- All employer contributions to superannuation funds (including the employer productivity contribution)
- Provisions for employer contributions to superannuation funds

Exclude

- Employee contributions

\$, , ,000

53 Workers' compensation costs

Include

- Workers' compensation insurance premiums/levies
- Non-payroll costs (e.g. medical costs) not reimbursed
- Provisions for workers' compensation costs

\$, , ,000

54 Interest expenses

Include

- Interest on bank loans
- Interest on loans made to this business from related as well as unrelated businesses
- Interest in respect of finance leases
- Interest paid on loans from partners
- Interest equivalents, such as hedging costs
- Expenses associated with discounted bills

Exclude

- Bank charges other than interest (include in Question 59)
- Capital repayments

\$, , ,000

55 Depreciation and amortisation*Note*

- Report depreciation and amortisation as recorded in this business's financial or management accounts.

Include (for lessees only)

- Depreciation/amortisation expenses in respect of assets acquired under finance leases

Exclude (for lessors only)

- Depreciation/amortisation expenses in respect of assets on finance leases

\$, , ,000

56 Bad and doubtful debts*Note*

- Report the expense item as recorded in this business's profit and loss statement as bad debts, doubtful debts, and/or provision for bad and doubtful debts.
- Report net of bad debts recovered.

\$, , ,000

57 Purchases*Include*

- Purchases of materials, components, containers and packaging materials
- Purchase of electricity, fuels and water where the purchase contributed to the production and/or sale of the goods and services
- Purchase of goods for resale
- Fuels for off-road vehicles e.g. forklifts, mobile plant and quarry dump trucks

Exclude

- Contract, sub-contract and commission expenses (include in Question 59)
- Purchases of parts and fuels for motor vehicles (include in Question 59)
- Capitalised purchases of materials (include in Question 75)
- Change in stocks

\$, , ,000

58 Rent, leasing and hiring expenses*Include*

- Operating lease payments

Exclude

- Finance lease payments (interest component should be included in Question 54)

\$, , ,000

59 Other operating expenses*Include*

- All other operating expenses not included as a separate expense item on this form

Exclude

- Extraordinary losses
- Sales tax and excise duty payable to the Government
- Dividends
- Income and other direct tax
- Costs associated with the transfer of real estate
- Capital repayments including those associated with finance leases
- Goodwill writedown (include in Question 55)
- Export freight charges
- Provisions for doubtful debts (include in Question 56)
- Amortisation (include in Question 55)

\$, , ,000

60 Total expenses

(Sum of Questions 51 to 59)

\$, , ,000

Part 7 – Trading stocks*Include*

- Raw materials, fuels, containers, etc.
- Work-in-progress
- Finished goods
- Stocks for resale

61 Opening trading stocks*Note*

- Report the total book value of trading stocks as at the beginning of the financial year reported in Question 1.
- Valuation should be on the same basis as used in this business's balance sheet.

\$ _____,000

62 Closing trading stocks*Note*

- Report the total book value of trading stocks as at the end of the financial year reported in Question 1.
- Valuation should be on the same basis as used in this business's balance sheet.

\$ _____,000

Part 8 – Profit or loss before tax and extraordinary items**63 Reported operating profit or loss (surplus or deficit) before tax and extraordinary items***Note*

- Show the actual profit or loss figure as in the profit and loss statement of this business for the financial year reported in Question 1.
- Report the result before taking into account previous years' losses, if any.

Profit (Surplus) ... \$ _____,000
or
Loss (Deficit) ... \$ _____,000

64 Derived profit or loss (surplus or deficit) before tax and extraordinary items

Total income
(Question 47) ... \$ _____,000

Minus

Total expenses
(Question 60) ... \$ _____,000

Minus

Opening trading stocks
(Question 61) ... \$ _____,000

Plus

Closing trading stocks
(Question 62) ... \$ _____,000

Equals

Profit (Surplus) ... \$ _____,000

Or

Loss (Deficit) ... \$ _____,000

If this figure is different from the figure for profit or loss (surplus or deficit) reported in Question 63, please indicate the reason below

Part 9 – Assets and liabilities

Note

- Report the total book value of assets and liabilities as at the end of the financial year reported in Question 1.
- The distinction between current and non-current assets and liabilities can best be summarised by applying the “12 month rule”.
- If an asset or liability is current, it will generally cease to exist or have been used up within a period of 12 months. For example, cash at bank is a current asset, while money owed on a 60 day credit account is a current liability.
- Conversely, if an asset or liability is non-current, it will generally be an item on this business's books for a period longer than 12 months. For example, tangible assets such as a building or a piece of machinery are non-current assets, while a bank loan taken out over a number of years is a non-current liability.

67 Current liabilities

Include

- Bank overdraft
- Accounts payable
- Short term loans
- Provision for employee entitlements

\$ _____,000

68 Non-current liabilities

Include

- Long term loans
- Provision for employee entitlements

Exclude

- Owners' equity (shareholders' equity)

65 Current assets (including trading stocks)

Note

- Report net of provisions for doubtful debts.

Include

- Cash
- Accounts receivable

\$ _____,000

69 Owners' equity

Note

- Owners' equity equals total assets minus total liabilities and should be reported as in this business's balance sheet.

\$ _____,000

66 Non-current assets

Plant, machinery and equipment

Include

- Plant, machinery and equipment needed for normal operations
- Motor vehicles needed for normal operations

\$ _____,000

Other

Include

- Property (land and buildings) needed for normal operations
- Capitalised interest
- Goodwill

\$ _____,000

Total non-current
assets

\$ _____,000

70 Please estimate the percentage breakdown of this business's equity or ownership

Note

- Report for the financial year reported in Question 1.
- In this question owners are defined as directors, proprietors or partners.

Working owners	<input type="text"/>	%
Non-working owners - family	<input type="text"/>	%
Non-working owners - non-family	<input type="text"/>	%
Parent company	<input type="text"/>	%
Venture or development capitalists	<input type="text"/>	%
Other unrelated businesses	<input type="text"/>	%
Employees (excluding directors) ...	<input type="text"/>	%
Other (including shareholders) ...	<input type="text"/>	%
Total	<input type="text" value="100"/>	%

71 Please indicate an approximate breakdown of this business's liabilities (both current and non-current)

Trade and other creditors	<input type="text"/>	%
Overdrafts	<input type="text"/>	%
Bank bills and other short term facilities	<input type="text"/>	%
Loans from:		
- banks and other financial institutions	<input type="text"/>	%
- parent company	<input type="text"/>	%
- individuals involved in the business (or their families) ...	<input type="text"/>	%
- other individuals	<input type="text"/>	%
- unrelated businesses	<input type="text"/>	%
Provisions (eg long service leave) ...	<input type="text"/>	%
Other	<input type="text"/>	%
Total	<input type="text" value="100"/>	%

72 Did this business obtain any equity finance during the financial year reported in Question 1?

Note

- Equity finance is where another business or individual invests money in the business in return for equity in that business, ie a share in the business. Equity finance is not a loan as the equity provider does not expect the money to be repaid.

No ☐ Go to 75
Yes ☐

73 Where did the business obtain this equity finance?

Tick appropriate box(es)

Family	<input type="checkbox"/>
Acquaintances or business colleagues	<input type="checkbox"/>
People you did not previously know	<input type="checkbox"/>
Unrelated businesses	<input type="checkbox"/>
Parent Company	<input type="checkbox"/>
Other related businesses	<input type="checkbox"/>
Employees	<input type="checkbox"/>
Banks	<input type="checkbox"/>
Other financial institutions	<input type="checkbox"/>
Venture or development capitalists	<input type="checkbox"/>
Existing shareholders	<input type="checkbox"/>

74 What was the approximate total value of this equity investment(s)?

Tick one box

Up to \$20,000	<input type="checkbox"/>
\$20,001 to \$50,000	<input type="checkbox"/>
\$50,001 to \$100,000	<input type="checkbox"/>
\$100,001 to \$500,000	<input type="checkbox"/>
\$500,001 to \$1,000,000	<input type="checkbox"/>
Over \$1,000,000	<input type="checkbox"/>

Part 10 – Capital expenditure and disposal of assets for the financial year reported in Question 1

Note

- Capital expenditure is the sum of outlays for the purchase of fixed tangible and/or intangible assets. These are shown as non-current assets on the Balance Sheet.

75 Capital expenditure on selected assets including capital work done by own employees

Include

- All costs capitalised in this business's books (include legal fees, real estate transfer costs and assets acquired under finance leases)
- Progress payments made to contractors for capital work done by them

Exclude

- Interest paid (include in Question 54)

Plant, machinery and equipment ... \$, , ,000

Land ... , , ,000

Dwellings, other buildings and structures (include roads, warehouses, offices, bridges, etc.) \$, , ,000

Intangible assets (include patents, licences, computer software and goodwill) \$, , ,000

76 Total disposal of plant, machinery, equipment, land, dwellings, other buildings and structures and intangible assets

Note

- Report the proceeds from sales of assets.

\$, , ,000

Part 11 – Comments

77 Please provide an estimate of the time taken to complete this form

Include

- The time actually spent reading the instructions, working on the questions and obtaining the information
- The time spent by all employees in collecting and providing this information

hrs mins

78 Please provide comments

- On any of the information you have supplied on this form
- On any questions which caused problems
- If you would like to suggest improvements to this form

Thank you for completing this form

If you are interested in finding out about business assistance programs call the AusIndustry Hotline

Telephone: ... 13 2846



GAPS1N

Business Growth and Performance Survey 1997/98

▼ In correspondence, please quote this number

--

Please complete this form
for the Australian-based
activities of the business
named on this label.

Purpose of Collection

The Business Growth and Performance Survey will be used in the development of government policy to assist and support Australian business, particularly small and medium businesses.

Office use only	
Marking	
DACC	
Attach	

Collection Authority

The information asked for is collected under the authority of the *Census and Statistics Act 1905*. Your co-operation is sought in completing and returning this form by the due date. The Act provides me with the power, if needed, to direct you to provide the information sought.

Confidentiality

Your completed form remains confidential to the Australian Bureau of Statistics.

Due Date

Please complete this form and return it in the reply paid envelope to the Australian Bureau of Statistics by

Help Available

If you have problems in completing this form, or feel that you may have difficulties meeting the due date, please contact Small Business Statistics by:

Telephone
1800 633 667

Facsimile
(02) 6252 7004

Mail
PO Box 10
Belconnen ACT 2616

W. McLennan
Australian Statistician

Person we should contact if any queries arise regarding this form

Name		Telephone Number	{ }
Signature		Facsimile Number	{ }
		Date	/ /

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Commonwealth Government Statistical Clearing House Approval Number: 00046-01



Please read this first

- **Important:** This form will be read using electronic equipment.
- Use pencil or black pen when completing this form.
- Keep each number or tick within the boxes provided, for example

2 8 5

 or ☒
- Information reported on this form should comply with Australian accounting standards.
- If exact figures are not available, please provide careful estimates.
- Only the Australian-based activities (including exports) of the business shown on the label should be included on the form. Include details of this business' participation in any unincorporated joint ventures.
- Please report all monetary values in *thousands of dollars (\$,000)*. Where the value in your accounts is not expressed in thousands of dollars, round the value up or down to the nearest thousand dollars.
- Please note: The items listed under *Include* and *Exclude* are examples and should not be taken as a complete list of items to be included or excluded.

Part 1 - General information

1 Period covered by this form

Note

- This form is for the financial year ended 30 June 1998.
- If this business has a different financial year, please report for a 12 month period which ends between 1 October 1997 and 30 September 1998 (e.g. a financial year ending 31 December 1997).

Please indicate the period covered by this form:

Tick appropriate box

1 July 1997- 30 June 1998 ☐

1 January 1997 - 31 December 1997 ☐

Other (Please specify) ☐

From / / 19 To / / 19

If the period covered by this form is not 12 months, please explain why

Part 2 - Business location and activity

2 Number of locations operated by this business as at 30 June 1998

Exclude

- Leased warehouse space
- Outlets operated by agents on behalf of this business

Locations

3 During the financial year reported in Question 1, did this business:

Open any new locations?

No ☐

Yes ☒ Number of locations opened

Close any existing locations?

No ☐

Yes ☒ Number of locations closed

4 Please describe the activity from which this business derives its main income (eg. furniture manufacture, road freight transport, advertising service, legal service)

Of office use only

Public company Go to 7

Other incorporated
company (e.g. Pty Ltd) ☐

Sole proprietorship	
---------------------	-----	-----	-----	-----	--

Partnership ☐

Inst Go to 7

Unincorporated co-operative ...	
---------------------------------	--

Incorporated association ... ☐Other (Please specify) ☐

6 How many years has this business been owned/controlled by the present owners?

 Go to 8

7 How many years has this public company/trust been in operation?

11

8 What was the estimated percentage of foreign ownership (of company equity) of this business?

* Report as at 30 June 1998.

None ☐

Up to 10%

11% - 49%
-----------	-----	-----	-----	-----	-----	-----	-----

50% - 100% *** *** *** *** *** ***

- A franchisee is a contract between a franchisor and a franchisee. The franchisee obtains the right to use a name, trademark, product, service or business system in return for the payment of a fee and/or royalty to the franchisor. Usually the franchisee gets a package of the above rights including a business system and management advice.

- Buying groups
- Agencies

9 Does this business:

Operate as a franchisee?

No ☐Yes ☐

Control a franchise system?

No ☐ $\forall \epsilon$ ☐ |

Major decision maker

- 10** Does this business have a person, such as a managing director, who takes responsibility for the major decisions on the operations of this business?

No ☐ Go to 13
Yes ☐

- 11** Please provide the following information about this person

Sex

Male ... ☐

Female ... ☐

Number of years experience as a business proprietor or director ...

Highest completed education level

School ... ☐ Go to 13

Trade ... ☐ Go to 13

Tertiary ... ☐

- 12** Are this person's tertiary qualifications in business management, commerce or administration?

No ☐
Yes ☐

Family business

- 13** Do you consider this business to be a family business?

No ☐ Go to 17
Yes ☐

- 14** Why do you consider this to be a family business?

Tick appropriate box(es)

Family members are:

- working directors or proprietors ... ☐

- employed in the business ... ☐

- not working in business although contribute to decisions ... ☐

This business was acquired from parents ... ☐

There is a close working relationship between management and staff ... ☐

Other (Please specify) ... ☐

- 15** Including the current operators, how many generations of this family have been either working directors, partners or proprietors of this business?

- 16** If this business has more than one working proprietor, working partner or working director, how many are from the same family?

Note

- If there is more than one family involved in the business report for the family with the largest number represented.



Part 3 - Employment

17 Number of persons working for this business during the last pay period ending in June 1998

Note

- Full-time persons are those working 35 hours or more a week.
- Working proprietors, working partners or working directors own and/or operate their own business.
- Managerial employees are those who are in charge of a significant number of employees or who have significant responsibilities in the conduct or operations of this business.
- Other employees are all wage and salary earners who received pay during the last pay period ending in June 1998 excluding casuals and managerial employees.
- Casual employees are those generally required on an as needed basis and who are not usually entitled to paid holidays or sick leave. (Report only those who received pay during the last pay period ending in June 1998).

Include

- Full-time and part-time employees
- Permanent, temporary and casual employees
- Managerial and executive employees
- Employees absent on paid or prepaid leave
- Working proprietors and partners
- Employees on workers' compensation who continue to be paid through the payroll

Exclude

- Non-salaried directors
- Self-employed persons such as consultants, contractors and persons paid solely by commission without a retainer
- Volunteers

	Full-time		Part-time	
	Males	Females	Males	Females
Working proprietors, working partners or working directors	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Managerial employees	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other employees	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Casuals	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

18 How many persons were newly employed by this business during the financial year reported in Question 1?

Include

- Replacement and additional employees

Exclude

- Casual employees

19 How many persons ceased to be employed by this business during the financial year reported in Question 1?

Include

- Resignations
- Redundancies
- Dismissals
- Retirements and invalidity retirements

Exclude

- Casual employees

20 Please estimate the number of employees of this business working under the following arrangements as at 30 June 1998:

(a) Registered enterprise agreement

Note

- A registered enterprise agreement is a written agreement negotiated for this business that covers aspects of wages and conditions that has been registered with an industrial commission or tribunal.

Persons

Year registered enterprise agreement first introduced

(b) Unregistered enterprise agreement

Note

- An unregistered enterprise agreement is a verbal or written agreement negotiated between a group of employees and this business that covers aspects of wages and conditions.

Persons

(c) Individual contract or agreement of employment

Note

- An individual contract or agreement of employment (which can include a letter of appointment) is an agreement covering aspects of wages and conditions between an individual employee and the business.

Exclude

- Persons covered by any enterprise agreement

Persons

(d) Covered by an award only

Include

- Persons with arrangements based on award specifications
- Persons on above award payment

Exclude

- Persons covered by any enterprise agreement

Persons

21 Please estimate the percentage of persons working for this business who were union members as at 30 June 1998

Tick one box

None ... ☐ Go to 23

Up to 10% ... ☐

11% - 25% ... ☐

26% - 50% ... ☐

51% - 75% ... ☐

76% - 100% ... ☐

22 How many unions represented the employees of this business as at 30 June 1998?

Part 4 - Business practices

Note

- Report for the financial year reported in Question 1.

23 Did this business use any of the following business practices?

Tick one box per row

	No/Not applicable	Yes
A formal strategic or business plan ...	<input type="checkbox"/>	<input type="checkbox"/>
Budget forecasting ...	<input type="checkbox"/>	<input type="checkbox"/>
Regular income/expenditure reports (more than once a year)	<input type="checkbox"/>	<input type="checkbox"/>
Formal networking with other businesses ...	<input type="checkbox"/>	<input type="checkbox"/>
Comparison of performance with other businesses ...	<input type="checkbox"/>	<input type="checkbox"/>
Export market planning ...	<input type="checkbox"/>	<input type="checkbox"/>

Business disputes

Note

- Report for the financial year reported in Question 1.

- 24 Was this business involved in a dispute where a third party was used in attempts to resolve it?

Note

- For the purpose of this question a **dispute** includes a disagreement (resolved or unresolved) with an employee(s), with a client, supplier, unrelated business or with government.
- The **third party** might include independent advisors, external legal services, Small Claims Court, mediators, industry associations etc.

No ☐ Go to 28
Yes ☐

- 25 Did this business hire the services of a lawyer in resolving or attempting to resolve a dispute?

No ☐
Yes ☐ Go to 28

- 26 What was the main reason for not employing the services of a lawyer?

Tick one box per row

	No	Yes
Cost	<input type="checkbox"/>	<input type="checkbox"/>
Concern about your time involved if legal services used	<input type="checkbox"/>	<input type="checkbox"/>
Concern about potential delay in resolving the issue	<input type="checkbox"/>	<input type="checkbox"/>
Dislike of lawyers	<input type="checkbox"/>	<input type="checkbox"/>
Loss of control over resolution	<input type="checkbox"/>	<input type="checkbox"/>
Third party hired legal services	<input type="checkbox"/>	<input type="checkbox"/>
Not necessary	<input type="checkbox"/>	<input type="checkbox"/>
Other (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>

- 27 Did this business use the services of any of the following in the process of resolving a dispute?

Tick one box per row

	No	Yes
Government agency	<input type="checkbox"/>	<input type="checkbox"/>
Industry association	<input type="checkbox"/>	<input type="checkbox"/>
Private advisor (e.g. accountant)	<input type="checkbox"/>	<input type="checkbox"/>
Small Claims Court	<input type="checkbox"/>	<input type="checkbox"/>
Insurance company	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)	<input type="checkbox"/>	<input type="checkbox"/>

Health and safety

- 28 Does this business have any of the following processes in place to manage health and safety?

Tick one box per row

	No/Not applicable	Yes
A written statement of management commitment to health and safety	<input type="checkbox"/>	<input type="checkbox"/>
A program of consultation with employees	<input type="checkbox"/>	<input type="checkbox"/>
An Occupational Health and Safety training program	<input type="checkbox"/>	<input type="checkbox"/>
Provision of information for employees (e.g. visible safety signs, labelling etc)	<input type="checkbox"/>	<input type="checkbox"/>
Regular workplace inspections	<input type="checkbox"/>	<input type="checkbox"/>
Guidelines for identifying and controlling hazards in the workplace	<input type="checkbox"/>	<input type="checkbox"/>

Training

- 29 Comparing the financial year reported in Question 1 with the previous 12 months, please show how the number of people being trained by this business has changed:

Include

- On-the-job training, training courses, seminars, workshops, conferences etc and job rotation

Please specify main reason

Tick one box

Increased

☐

Decreased

☐

Stayed the same

☐

No training provided

☐

Go to 33

- 30 Please estimate the percentage of persons employed in this business that participated in the following training methods during the financial year reported in Question 1:

Include

- Training provided directly as well as funded
- Working proprietors, working partners or working directors

Tick one box per row

Structured training courses

Note

- Structured training courses are planned periods of training conducted either internally or externally by teacher/tutor/specialist for a time set in advance by those organising the course.

	Up to 25%	26% to 50%	51% to 75%	76% to 100%
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

On-the-job training

Note

- On-the-job training is informal training usually given one to one at the workplace.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Seminars, workshops, conferences etc

Note

- Include only when purpose of attendance was to extend or update knowledge of workers.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Job rotation, exchanges etc

Note

- Include only when planned in advance to develop the knowledge and skills of workers concerned.

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

31. Please estimate the percentage of persons employed in this business that were trained in the following fields during the financial year reported in Question 1:

Include

- Training provided directly as well as funded by this business
- Working proprietors, working partners or working directors

Tick one box per row

Exclude

- On-the-job training

	Up to 25%	26% to 50%	51% to 75%	76% to 100%
None				

(a) Management training

Exclude

- Basic supervision training (report in item f below)

. ☐ . ☐ . ☐ . ☐ . ☐

(b) Professional training

Include

- Further professional training for those persons whose occupation requires at least a three year degree/diploma
- Funding for persons completing a three year (or more) degree/diploma

Exclude

- Computer and management training

. ☐ . ☐ . ☐ . ☐ . ☐

(c) Training for computer specialists

Exclude

- Basic computer training for non-computer specialists e.g. software package training (report in item f below)

. ☐ . ☐ . ☐ . ☐ . ☐

(d) Trade and Apprenticeship training and traineeships

☐ . ☐ . ☐ . ☐ . ☐

(e) Health and safety training

Note

- Legal/administrative training (HS laws etc), hazard related training, management or supervision responsibilities, first aid training, workers compensation training.

. ☐ . ☐ . ☐ . ☐ . ☐

(f) Other training

Include

- All other training not included separately in items above
- Computer training for non-computer specialists

. ☐ . ☐ . ☐ . ☐ . ☐



- 32 Did this business use any of the following training providers to train its employees during the financial year reported in Question 1?

Tick one box per row

No/Not applicable Yes

Employees or owners of this business providing on-the-job training ... ☐ . ☐

Employees or owners of this business providing structured training ... ☐ . ☐

Professional associations ... ☐ . ☐

Industry associations ... ☐ . ☐

Equipment manufacturer/supplier ☐ . ☐

Private training consultant ... ☐ . ☐

TAFE ... ☐ . ☐

University ... ☐ . ☐

Other (Please specify) ... ☐ . ☐

- 33 Does this business belong to an industry or business association?

No ☐ Go to 34

Yes ☐

Please specify the association most used

Internet

- 34 Did this business have access to the Internet at 30 June 1998?

No ☐ Go to 36

Yes ☐

- 35 Did this business use the Internet for any of the following during 1997/98?

Tick one box per row

Purchase of Goods and Services

No Yes

Making payments ... ☐ . ☐

Placing purchase orders ... ☐ . ☐

Receiving invoices ... ☐ . ☐

Sales of Goods and Services

Web site/home page ... ☐ . ☐

Other Marketing/promotional activities ... ☐ . ☐

Receiving payments ... ☐ . ☐

Sending invoices ... ☐ . ☐

Receiving sales orders ... ☐ . ☐

Co-ordinating delivery arrangements ... ☐ . ☐

Other Uses

E-mail ... ☐ . ☐

Interactive lodging of forms/tenders ... ☐ . ☐

Business to business data transfer ... ☐ . ☐

Gathering information ... ☐ . ☐

Business networking ... ☐ . ☐

Intranet ... ☐ . ☐

Other (Please specify) ... ☐ . ☐

Business change

Note

- Report for the financial year reported in Question 1.

36 Please indicate if there have been any major changes in this business':

Tick one box per row

	Not applicable to this business	No major change	Increased	Decreased
Range of products or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advertising	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distribution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Markets targeted - Domestic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Markets targeted - Export	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accounting software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other administrative computer systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Production technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of personal computers (PCs)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Number of staff using computers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic stock monitoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic ordering/purchasing via internet or otherwise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electronic banking or funds transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other major changes

	Not applicable to this business	No major change	Changed
Business structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other changes (Please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Business intentions

37 Please indicate if this business intends to do any of the following during the next 3 years (i.e. 1999-2000):

Tick appropriate box(es)

Significantly increase production	<input type="checkbox"/>
Maintain existing production	<input type="checkbox"/>
Significantly decrease production	<input type="checkbox"/>
Open new locations	<input type="checkbox"/>
Close locations	<input type="checkbox"/>
Commence exporting	<input type="checkbox"/>
Maintain exporting	<input type="checkbox"/>
Increase exporting	<input type="checkbox"/>
Establish a partnership or of fice overseas	<input type="checkbox"/>
Introduce new goods or services	<input type="checkbox"/>
Sell the whole business	<input type="checkbox"/>
Open the same business elsewhere	<input type="checkbox"/>
Sell equity in the business	<input type="checkbox"/>
Close the business	<input type="checkbox"/>

Business innovation

Note

- Report for the financial year reported in Question 1.

38 Did this business:

- develop any new products, or
- introduce any substantially changed products, or
- develop or introduce any new or substantially changed processes

No ☐ Go to Part 5

Yes ☐

39 What was the estimated expenditure on the development of the new products or processes for:

Research and Development (R & D) \$,000

Acquisition of technology developed by others (e.g. patents, trademarks and licences) \$,000

Training and further education expenditure related to the introduction of new products or processes ... \$,000

Expenditure for tooling-up, industrial engineering and start-up \$,000

Marketing of new or improved products ... \$,000

Other (Please specify) \$,000

Total expenditure \$,000

Part 5 – Income items**Note**

- Report for the financial year reported in Question 1.

Include

- Income from abnormal items under the relevant headings below

Exclude

- Extraordinary items

40 Income from sales of goods and services**Note**

- Report net of discounts given.

Include

- Income from rent and hiring
- Income from operating leases
- Income from consulting services
- For long term contracts include progress payments billed
- Repair and service income and fees
- Contract, sub-contract and commission income
- Sales or transfers to related businesses or to overseas branches of this business
- Management fees/charges from related and unrelated businesses
- Export sales (f.o.b.)
- Subscription and membership fees
- Delivery charges not separately invoiced to customers

Exclude

- Sales tax, excise and duties received (on behalf of the Government)
- Sales of fixed tangible assets (include in Question 71)
- Export freight charges
- Interest income (include in Question 41)
- Income from finance leases
- Payments received under hire purchase arrangements
- Royalties income (include in Question 41)

41 Other income

\$ _____,000

Include

- Interest income
- Funding from Federal, State and/or Local Government
- Donations
- Dividend income
- Royalties income
- Capital grants
- Net profit (loss) on the sale of non-current assets
- Net profit (loss) on foreign loans as a result of variations in foreign exchange rates/transactions
- Net profit (loss) on share trading

Exclude

- Capital payments received
- Extraordinary profit (loss), i.e. not associated with the normal operations of this business and of a non-recurring nature

\$ _____,000

42 Total income

(Sum of Questions 40 to 41)

\$ _____,000

43 Please estimate the expected change in total income for the year following the financial year reported in Question 1**Note**

- Report either as an expected percentage increase or decrease over the total income reported in Question 42 above OR tick no change if total income is expected to be about the same as this financial year.

Percentage increase %**OR**Percentage decrease %**OR**No change expected ☐**Export income****Note**

- If both goods and services are exported, and the value cannot be split, report total value of exports in the predominant category.

Include

- Goods or services that were exported directly by this business, or by this business' agent
- Inter-company transfers from overseas

Exclude

- Income received from overseas visitors

44 Value of goods exported by this business

\$ _____,000

45 Value of services exported by this business

\$ _____,000

Part 6 - Expense items

Include

- Expenses from abnormal items under the relevant headings below

Exclude

- Extraordinary items

46 Wages and salaries including provision expenses for employee entitlements

Note

- Refers to gross earnings before taxation and other deductions.
- Report wages and salaries as recorded in this business' profit and loss statement, including provision expenses for employee entitlements.

Include

- Severance, termination and redundancy payments
- Wages or salaries of all full-time and part-time employees
- Wages or salaries of all permanent, temporary and casual employees
- Salaries and fees of directors and executives
- Overtime earnings, penalty payments and shift allowances
- Retainers and commissions of persons who received a retainer
- Payments made under incentive or profit sharing schemes
- Amounts paid through the payroll to employees on workers' compensation
- Bonuses

Exclude

- Amounts paid from provisions accounts
- Drawings from profits
- Payments to self-employed persons such as consultants, contractors and persons paid solely by commission without a retainer (include in Question 54)
- Payments to proprietors/partners of unincorporated businesses
- Reimbursements or allowances to employees for travel, entertainment, etc. (include in Question 54)
- Fringe benefits tax and payroll tax (include in Question 54)
- Capitalised wages and salaries (include in Question 70)
- Provisions for employer contributions to superannuation funds (include in Question 47)
- Provisions for workers' compensation costs (include in Question 48)

\$ _____,000

47 Employer contributions to superannuation funds

Include

- All employer contributions to superannuation funds (including the employer productivity contribution)
- Provisions for employer contributions to superannuation funds

Exclude

- Employee contributions

\$ _____,000

48 Workers' compensation costs

Include

- Workers' compensation insurance premiums/levies
- Non-payroll costs (e.g. medical costs) not reimbursed
- Provisions for workers' compensation costs

\$ _____,000

49 Interest expenses

Include

- Interest on bank loans
- Interest on loans made to this business from related as well as unrelated businesses
- Interest in respect of finance leases
- Interest paid on loans from partners
- Interest equivalents, such as hedging costs
- Expenses associated with discounted bills

Exclude

- Bank charges other than interest (include in Question 54)
- Capital repayments

\$ _____,000

50 Rent, leasing and hiring expenses

Include

- Operating lease payments

Exclude

- Finance lease payments (interest component should be included in Question 49)

\$ _____,000

51 Depreciation and amortisation**Note**

- Report depreciation and amortisation as recorded in this business' financial or management accounts.

Include (for lessees only)

- Depreciation/amortisation expenses in respect of assets acquired under finance leases

Exclude (for lessees only)

- Depreciation/amortisation expenses in respect of assets on finance leases

\$ _____,000

52 Bad and doubtful debts**Note**

- Report the expense item as recorded in this business' profit and loss statement as bad debts, doubtful debts, and/or provision for bad and doubtful debts.
- Report net of bad debts recovered.

\$ _____,000

53 Purchases**Include**

- Purchases of materials, components, containers and packaging materials
- Purchase of electricity, fuels and water where the purchase contributed to the production and/or sale of the goods and services
- Purchase of goods for resale
- Purchases of fuels for off-road vehicles (e.g. forklifts, mobile plant and quarry dump trucks)

Exclude

- Contract, sub-contract and commission expenses (include in Question 54)
- Purchases of parts and fuels for motor vehicles (include in Question 54)
- Capitalised purchases of materials (include in Question 70)
- Change in stocks

\$ _____,000

54 Other operating expenses**Include**

- All other operating expenses not included as a separate expense item on this form, other than the accompanying exclusions to this question

Exclude

- Extraordinary losses
- Sales tax and excise duty payable to the Government
- Dividends
- Income and other direct tax
- Costs associated with the transfer of real estate
- Capital repayments including those associated with finance leases
- Export freight charges
- Unrealised gains/losses from revaluation of assets
- Losses on sales of assets (include in Question 41)
- Foreign exchange losses (include in Question 41)
- Change in stocks
- Donations made to related and unrelated organisations/individuals

\$ _____,000

55 Total expenses

(Sum of Questions 46 to 54)

\$ _____,000

Part 7- Trading stocks**Include**

- Raw materials, fuels, containers, etc.
- Work-in-progress
- Finished goods
- Stocks for resale

56 Opening trading stocks**Note**

- Report the total book value of trading stocks as at the beginning of the reporting period.
- Valuation should be on the same basis as used in this business' balance sheet.

\$ _____,000

57 Closing trading stocks**Note**

- Report the total book value of trading stocks as at the end of the reporting period.
- Valuation should be on the same basis as used in this business' balance sheet.

\$ _____,000

62 Current liabilities**Include**

- Accounts payable
- Provision for employee entitlements

\$,000**63 Non-current liabilities****Include**

- Provision for employee entitlements

Exclude

- Owners' equity (shareholders' equity)

\$,000**64 Owners' equity****Note**

- Owners' equity equals total assets minus total liabilities and should be reported as in this business' balance sheet.

\$,000**65 Please indicate an approximate breakdown of this business' liabilities (both current and non-current)**

Trade and other creditors	<input type="text"/> %
Overdrafts	<input type="text"/> %
Bank bills and other short term facilities	<input type="text"/> %
Loans from:	
- banks and other financial institutions	<input type="text"/> %
- parent company	<input type="text"/> %
- individuals involved in the business (or their families)	<input type="text"/> %
- other individuals	<input type="text"/> %
- unrelated businesses	<input type="text"/> %
Provisions (eg long service leave)	<input type="text"/> %
Other	<input type="text"/> %
Total	<input type="text"/> 1 0 0 %

Part 10 - Equity**66 Did this business obtain any equity finance during the financial year reported in Question 1?****Note**

- Equity finance is where another business or individual invests money in the business in return for equity in that business, ie a share in the business. Equity finance is not a loan as the equity provider does not expect the money to be repaid.

No ☐ Go to 69Yes ☐**67 Where did the business obtain this equity finance?**

Tick appropriate box(es)

Family	<input type="checkbox"/>
Acquaintances or business colleagues	<input type="checkbox"/>
People you did not previously know	<input type="checkbox"/>
Unrelated businesses	<input type="checkbox"/>
Parent company or related businesses	<input type="checkbox"/>
Employees	<input type="checkbox"/>
Banks or other financial institutions	<input type="checkbox"/>
Venture or development capitalists	<input type="checkbox"/>
Existing shareholders	<input type="checkbox"/>

68 What was the approximate total value of this equity investment(s)?

Tick one box

Up to \$20,000	<input type="checkbox"/>
\$20,001 to \$50,000	<input type="checkbox"/>
\$50,001 to \$100,000	<input type="checkbox"/>
\$100,001 to \$500,000	<input type="checkbox"/>
\$500,001 to \$1,000,000	<input type="checkbox"/>
Over \$1,000,000	<input type="checkbox"/>

69 Please estimate the percentage breakdown of this business' equity or ownership

Note

- Report for the financial year reported in Question 1.
- In this question owners are defined as directors, proprietors or partners.

Working owners	<input type="text"/>	%
Non-working owners - family	<input type="text"/>	%
Non-working owners - non-family	<input type="text"/>	%
Parent company	<input type="text"/>	%
Venture or development capitalists	<input type="text"/>	%
Other unrelated businesses	<input type="text"/>	%
Employees (excluding directors)	<input type="text"/>	%
Other (including shareholders)	<input type="text"/>	%
Total	<input type="text" value="100"/>	%

Part 11 - Capital expenditure and disposal of assets

70 Capital expenditure on selected assets including capital work done by own employees

Include

- All costs capitalised in this business' books (include legal fees, real estate transfer costs and assets acquired under finance leases)
- Progress payments made to contractors for capital work done by them

Exclude

- Interest paid (include in Question 49)

Plant, machinery and equipment ... \$,000

Land \$,000

Dwellings, other buildings and structures (include roads, warehouses, of fires, bridges, etc.)

\$,000

Intangible assets (include patents, licences, computer software and goodwill)

\$,000

71 Total disposal of plant, machinery, equipment, land, dwellings, other buildings and structures and intangible assets

Note

- Report the proceeds from sales of assets.

\$,000

Part 12 - Comments

72 Please provide an estimate of the time taken to complete this form

Include

- The time actually spent reading the instructions, working on the questions and obtaining the information
- The time spent by all employees in collecting and providing this information

hrs mins

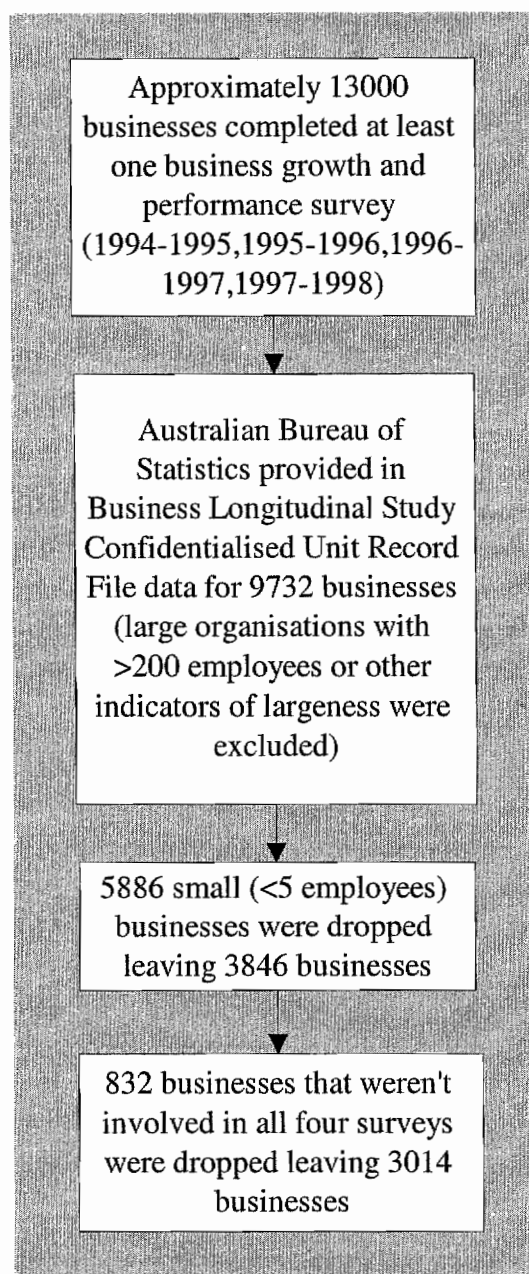
73 Please provide comments

- On any of the information you have supplied on this form
- On any questions which caused problems
- If you would like to suggest improvements to this form

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Thank you for completing this form

Appendix 6 - Generation of Sample



Appendix 7 - Relative Standard Errors for Business Growth and Performance Survey 1996-1997

Industry	Number of Businesses (Percent)	Employment (Percent)	Total Income (Percent)
Mining	30.4	29.7	34.5
Manufacturing	5.9	5.9	8.0
Construction	14.2	12.8	19.6
Wholesale Trade	7.8	7.5	17.2
Retail Trade	6.9	6.8	11.2
Accommodation, Cafes and Restaurants	10.5	10.4	11.3
Transport and Storage	15.5	14.5	30.0
Finance and Insurance	26.1	19.8	86.8
Property and Business	7.9	8.7	9.4
Cultural and Recreational	23.2	19.3	56.7
Personal and Other	19.4	16.0	17.9
Total all Industries	3.3	3.2	9.7

Table A7.1 Select Relative Standard Errors for Other Small Businesses

Industry	Number of Businesses (Percent)	Employment (Percent)	Total Income (Percent)
Mining	15.3	17.3	35.0
Manufacturing	5.0	4.0	6.2
Construction	16.8	14.8	19.7
Wholesale Trade	8.9	7.3	13.4
Retail Trade	9.6	7.6	9.8
Accommodation, Cafes and Restaurants	14.5	12.9	16.6
Transport and Storage	15.8	12.5	15.8
Finance and Insurance	17.9	16.3	34.7
Property and Business	9.9	9.7	12.2
Cultural and Recreational	40.9	40.4	31.0
Personal and Other	30.6	21.6	21.9
Total all Industries	4.5	3.9	6.1

Table A7.2: Select Relative Standard Errors for Medium Businesses



Appendix 8 - Advice from Ethics Officer Regarding Need for Ethics Approval

From: Susanna Davis [Susanna.Davis@uts.edu.au]
Sent: Friday, 7 June 2002 5:55 PM
To: Glen Duncan
Cc: Thekla.Rura.Polley@uts.edu.au; Thomas.Clarke@uts.edu.au; Kylie Strain; Jane Stein-Parbury
Subject: Re: Ethics application

Dear Glen

Thank-you for letting me know. If you are no longer conducting interviews or doing observational studies, and are only using publicly available de-identified information, then you will not require any ethics approval. I will withdraw your ethics application.

In the meantime, I wish you all the best with your research in the future.

Regards

Susanna

Ms. Susanna Davis
Research Ethics Officer
Research and Development Office
Level 7, Tower Building
Broadway Campus
University of Technology, Sydney
Ph: 9514 1279
Fax: 9514 1244
E-mail: susanna.davis@uts.edu.au

Appendix 9 - Conditions of Release

CONDITIONS OF RELEASE

The Business Longitudinal Survey (BLS) CURF is released under strict Conditions of Sale (see pp. 64 - 66) — these should be read carefully before placing an order for the file. In addition, the Australian Statistician's approval is required for each release.

The BLS CURF is released in accordance with a Ministerial Determination (Clause 7, Statutory Rules 1983, No. 19) (see pp. 67 - 68) made in pursuance of Section 13 of the Census and Statistics Act 1905. As required by the Determination, the CURF has been designed so that the information on the file is not likely to enable the identification of the particular persons to whom it relates.

In pursuance of Clause 7, the Determination requires the purchaser of the file to undertake that, in using the information in the form of individual statistical records, the purchaser will:

- ♦ not attempt to identify particular persons or organisations;
- ♦ not attempt to match the information with administrative lists of persons or organisations;
- ♦ use the information only for statistical purposes; and
- ♦ not disclose the information to any other person or organisation.

The GAPS CURF can only be used for statistical purposes. Examples of statistical purposes are:

- ♦ the manipulation of the data to produce means, correlations or other descriptive or summary measures;
- ♦ the estimation of population characteristics from sample data;
- ♦ the use of data as input to mathematical models or for other types of analysis (e.g. factor analysis); and
- ♦ to provide graphical or pictorial representations of the characteristics of the population or subsets of the population.

Use of the data for unauthorised purposes may render the user liable to severe penalties (see p. 68). Advice about the propriety of any particular intended use of the data is available from the Assistant Director, Small Business Section, telephone Canberra 02 6252 6726.

Under no circumstances can data in the form of unit records be made available to persons or organisations other than those covered by the Undertaking, without the written authority of the Australian Statistician.

While the utmost care is taken in preparing and handling each CURF, deterioration may occur between the time of copying and receipt of the file. Accordingly, if the file is unreadable on receipt and this is reported to the ABS within 30 days of receipt, it will be replaced free of charge. As an added precaution, a security copy (backup) of the file should be made on receipt.

Appendix 10 - Conditions of Sale

CONDITIONS OF SALE

BUSINESS LONGITUDINAL SURVEY, 1994-95 TO 1996-97 — CONFIDENTIALISED UNIT RECORD FILE

Interpretation

- ♦ 'ABS' means the Australian Bureau of Statistics;
- ♦ 'Information' means Business Longitudinal Survey 1994-95 to 1996-97 Confidentialised Unit Record File (CURF);
- ♦ 'Commercialise', in respect of the Information or a product derived from the Information, means to manufacture, sell, distribute, hire or otherwise exploit a product or process, or to provide a service, incorporating the Information or any other product or service derived from the Information, or to license a third party to do any of the above;
- ♦ 'Purchaser' means any individual or organisation granted access to the CURF;
- ♦ 'License Fee' means \$7,500;
- ♦ 'Statistical Purposes' means use by the Purchaser to produce Information of a statistical nature. Examples of such uses are:
 - ♦ the manipulation of the Information to produce means, correlations or other descriptive or summary measures;
 - ♦ the estimation of population characteristics from the Information;
 - ♦ the use of the Information as input to mathematical models and for other types of analyses (e.g. factor analysis); and
 - ♦ to provide graphical or pictorial representations of characteristics of the population or subsets of the population.

Permitted uses

- ♦ The ABS grants the Purchaser a non-transferable, non-exclusive licence to use the Information on the terms and conditions set out in the associated Undertaking.
- ♦ The Purchaser is permitted to:
 - ♦ use the Information within, and for the purposes of, their organisation only;
 - ♦ use the Information for Statistical Purposes only;
 - ♦ make a back-up copy of the Information to be labelled with the same copyright notice as the Information and to be used by their organisation only; and
 - ♦ produce hard copies and computer files from the Information for use within their organisation.
- ♦ The Purchaser must treat the Information as private and confidential to the ABS and must take all reasonable measures to protect the Information from unauthorised use, replication, distribution or publication.

Uses not permitted

- ♦ The Purchaser may not make copies of, or use, the Information, except as permitted by these Conditions of Sale.
- ♦ The Purchaser may not alter, decompile, disassemble or otherwise dispose of the Information.
- ♦ The Purchaser may not rent, lease, sub-license, lend, sell, assign or transfer the Information to a third party.

Legislative restraints

- ♦ The release of this Information to the Purchaser is subject to a Ministerial Determination made under the Census and Statistics Act 1905. The ABS requires the Purchaser to undertake that in using the Information the Purchaser will:
 - ♦ not attempt to identify particular persons or organisations;
 - ♦ not attempt to match the Information with administrative lists of persons or organisations;
 - ♦ use the Information only for statistical purposes; and
 - ♦ not disclose either directly or indirectly the Information to any other person or organisation.
- ♦ In accordance with the Undertaking, the Purchaser may not commercialise the Information or any product or service incorporating that Information (whether or not amounting to a reproduction within the meaning of the Copyright Act 1968). The Commercialisation of products or services derived from the Information may only be carried out with the prior written agreement of the ABS. Any queries should be directed to the Manager, Secondary Distribution, on Canberra 02 6252 6998.

Breaches of these conditions

- ♦ In our sole opinion, if the Purchaser has failed to comply with any of the Conditions of Sale, the ABS by notice in writing will demand return, from the Purchaser, of all copies of the Information in their possession, power or control. The ABS may request that the Purchaser certify that they have done so. The Purchaser may also be guilty of an indictable offence punishable on conviction by a fine not exceeding \$5,000 or imprisonment for a period not exceeding two years, or both (see Legislative Authority, below).

Delivery

- ♦ If the request to purchase meets the approval of the Australian Statistician the Purchaser will be sent an invoice for payment for the CURF. The ABS will despatch the CURF to the Purchaser, at the address nominated, within seven working days of receipt of payment.

Intellectual property right

- ♦ The Purchaser acknowledges that the intellectual property right, including copyright, in the Information is owned by the Commonwealth of Australia, represented by the ABS.
- ♦ Copyright notices appearing on the CURF, or on material displayed or printed from the file, shall not be removed.

Limitation of liability

- ♦ The ABS gives no warranty, other than a warranty that may be implied by law, that the file is free from errors, is complete, has any particular quality, is suitable for any purpose or otherwise.
- ♦ Subject to any warranty which may be implied by law, our liability to the Purchaser for any loss, damage or injury howsoever caused by the ABS, whether due to negligence or otherwise, in relation to the Information shall be limited to providing a replacement copy of the Information.
- ♦ The Purchaser agrees to indemnify the ABS (and our servants and agents) in respect of all liability for loss (including all legal costs), or liability from any claim, suit, demand, action or proceeding brought by any third person in connection with this Condition of Sale or from their use of the Information.
- ♦ These limitations of liability provisions shall survive the expiration or earlier termination of any agreement with the Purchaser.

Appendix 11 - Tables of Results

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Links to Other Businesses	3014	21.9	35.3	34.941	1	0.000	1.948 (1.557, 2.437)	1.613 (1.389, 1.876)
Networking (Formal)	3014	19.1	36.4	97.158	1	0.000	2.425 (2.028, 2.900)	1.905 (1.681, 2.160)
Networking (Internet)	3014	20.1	41.8	109.677	1	0.000	2.865 (2.340, 3.508)	2.083 (1.832, 2.375)
Decrease Employment 1996-1997	3014	23.5	24.3	0.167	1	0.683	1.042 (0.856, 1.269)	1.032 (0.888, 1.198)
Contract Out 1994-1995	3014	23.3	27.8	2.742	1	0.098	1.267 (0.957, 1.677)	1.193 (0.973, 1.462)
Contract Out 1996-1997	3014	23.2	32.6	7.936	1	0.005	1.602 (1.151, 2.230)	1.406 (1.122, 1.761)

Table A11.1: Changing Boundaries

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Australian Taxation Office	3014	21.1	26.7	12.788	1	0.000	1.359 (1.148, 1.608)	1.263 (1.111, 1.437)
Banks	3014	20.0	25.3	9.927	1	0.002	1.357 (1.122, 1.642)	1.267 (1.091, 1.473)
Business Consultants	3014	21.8	27.4	11.955	1	0.001	1.357 (1.141, 1.614)	1.259 (1.106, 1.433)
Customers	3014	19.3	24.5	5.911	1	0.015	1.359 (1.061, 1.742)	1.271 (1.042, 1.550)
Family or Friends	3014	23.4	24.2	0.262	1	0.609	1.047 (0.879, 1.247)	1.035 (0.907, 1.183)
Government Small Business Agencies	3014	21.9	31.3	23.003	1	0.000	1.628 (1.332, 1.989)	1.431 (1.242, 1.650)
Industry Associations or Chambers of Commerce	3014	20.0	27.0	20.351	1	0.000	1.478 (1.247, 1.753)	1.350 (1.183, 1.538)
Local Business	3014	23.3	24.5	0.495	1	0.482	1.068 (0.890, 1.281)	1.052 (0.915, 1.208)
Others in Industry	3014	19.5	26.4	18.779	1	0.000	1.478 (1.238, 1.764)	1.351 (1.176, 1.553)
Solicitors	3014	17.5	26.7	31.724	1	0.000	1.726 (1.426, 2.090)	1.531 (1.314, 1.786)

Table A11.2: Partners for Alliances

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Decrease Demand	3014	23.8	22.3	0.326	1	0.568	0.919 (0.688, 1.228)	0.937 (0.749, 1.174)
Improvements Business Efficiency	3014	23.2	30.2	5.227	1	0.022	1.434 (1.051, 1.957)	1.304 (1.047, 1.621)
Reduced Range of Activities	3014	23.6	25.8	0.157	1	0.692	1.123 (0.632, 1.996)	1.092 (0.712, 1.672)
Replaced Permanents with Casuals	3014	23.7	23.4	0.004	1	0.948	0.982 (0.576, 1.677)	0.986 (0.655, 1.486)
Temporary Decrease Employment Levels	3014	23.8	22.4	0.131	1	0.717	0.926 (0.611, 1.403)	0.943 (0.683, 1.300)

Table A11.3: Reasons for Downscoping and Focus

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Compare Performance	3014	20.2	33.1	55.633	1	0.000	1.963 (1.641, 2.347)	1.645 (1.447, 1.869)
Business to Business Data Transfer	3014	19.6	35.1	77.228	1	0.000	2.212 (1.849, 2.647)	1.786 (1.575, 2.028)
Seminars, Workshops or Conferences	2510	18.3	34.4	77.545	1	0.000	2.343 (1.933, 2.840)	1.880 (1.621, 2.183)
Job Rotation or Exchanges	2511	21.3	35.6	63.920	1	0.000	2.048 (1.716, 2.446)	1.675 (1.473, 1.905)
Access Internet	3014	15.6	30.8	95.451	1	0.000	2.403 (2.010, 2.873)	1.972 (1.709, 2.273)
Research and Development	3014	15.9	75.0	663.961	1	0.000	15.835 (12.327, 20.340)	4.717 (4.237, 5.236)
Training	2557	12.5	29.9	40.069	1	0.000	2.975 (2.093, 4.229)	2.387 (1.761, 3.236)

Table A11.4: Changing Processes

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Cost Product or Service	3014	22.5	27.2	7.214	1	0.007	1.292 (1.071, 1.557)	1.212 (1.055, 1.393)
Marketing or Advertising	3014	21.9	29.8	18.167	1	0.000	1.511 (1.249, 1.828)	1.359 (1.183, 1.560)
Price Product or Service	3014	21.9	27.9	12.683	1	0.000	1.382 (1.156, 1.652)	1.276 (1.117, 1.456)
Quality Client Service	3014	21.8	29.2	17.875	1	0.000	1.486 (1.236, 1.786)	1.344 (1.175, 1.536)
Quality Product or Service	3014	21.8	28.6	15.527	1	0.000	1.436 (1.199, 1.720)	1.311 (1.148, 1.497)
Range Product or Service	3014	22.0	28.4	13.748	1	0.000	1.412 (1.176, 1.696)	1.295 (1.133, 1.481)

Table A11.5: Areas of Benchmarking

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Co-ordinate Delivery (Internet)	3014	22.3	44.7	48.873	1	0.000	2.815 (2.084, 3.804)	2.004 (1.686, 2.381)
Electronic Banking or Funds Transfer	2310	20.2	37.2	78.400	1	0.000	2.335 (1.931, 2.824)	1.838 (1.608, 2.105)
Electronic Ordering (Internet)	1623	24.6	49.5	54.082	1	0.000	3.010 (2.222, 4.078)	2.016 (1.704, 2.381)
Electronic Stock Monitoring	1548	26.6	46.5	38.377	1	0.000	2.393 (1.806, 3.170)	1.745 (1.484, 2.053)
Lodge Forms or Tenders	3014	21.2	47.5	98.624	1	0.000	3.366 (2.621, 4.323)	2.242 (1.946, 2.584)
Make Payments (Internet)	3014	22.4	46.9	51.080	1	0.000	3.067 (2.225, 4.227)	2.096 (1.757, 2.506)
Marketing or Promotional Activities (Internet)	3014	19.6	41.3	119.402	1	0.000	2.880 (2.370, 3.499)	2.105 (1.852, 2.387)
Place Orders (Internet)	3014	21.7	46.0	75.063	1	0.000	3.079 (2.363, 4.012)	2.123 (1.825, 2.469)
Receive Invoices (Internet)	3014	22.5	45.5	42.528	1	0.000	2.867 (2.063, 3.985)	2.020 (1.675, 2.433)
Receive Orders (Internet)	3014	21.5	47.0	86.746	1	0.000	3.243 (2.505, 4.198)	2.188 (1.890, 2.538)
Receive Payments (Internet)	3014	22.9	44.1	26.673	1	0.000	2.660 (1.811, 3.907)	1.927 (1.548, 2.398)
Send Invoices (Internet)	3014	23.2	43.4	16.792	1	0.000	2.543 (1.603, 4.036)	1.873 (1.437, 2.439)
Web Site or Home Page (Sales)	3014	18.9	40.8	137.412	1	0.000	2.959 (2.457, 3.564)	2.160 (1.908, 2.445)

Table A11.6: Types of Electronic Data Interchange

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Accounting Software	2327	25.5	38.7	39.681	1	0.000	1.848 (1.525, 2.240)	1.520 (1.339, 1.724)
E-mail	3014	16.3	31.5	96.752	1	0.000	2.369 (1.990, 2.820)	1.938 (1.692, 2.222)
Intranet	3014	21.3	45.4	87.223	1	0.000	3.072 (2.406, 3.923)	2.132 (1.848, 2.463)
Production Technology	2174	23.9	44.6	87.473	1	0.000	2.561 (2.096, 3.129)	1.866 (1.645, 2.114)
Number Personal Computers	2850	16.5	38.7	174.283	1	0.000	3.184 (2.670, 3.797)	2.336 (2.058, 2.660)
Number Staff Using Computers	2849	17.6	38.1	145.407	1	0.000	2.889 (2.423, 3.445)	2.169 (1.912, 2.463)

Table A11.7: Information and Communication Technology Strategies

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Health and safety training	2504	24.4	32.1	18.710	1	0.000	1.471 (1.234, 1.753)	1.319 (1.163, 1.497)
Management Training	2505	22.3	36.7	61.193	1	0.000	2.017 (1.690, 2.408)	1.645 (1.451, 1.862)
Professional Training	2506	24.6	35.3	30.815	1	0.000	1.674 (1.394, 2.010)	1.437 (1.266, 1.629)
Trade and Apprenticeships Training and Traineeships	2503	27.4	29.4	1.073	1	0.300	1.106 (0.914, 1.337)	1.074 (0.939, 1.230)
Training for Computer Specialists	2506	22.3	37.0	63.371	1	0.000	2.045 (1.712, 2.442)	1.658 (1.464, 1.876)

Table A11.8: Content of Training

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Equipment Manufacturer or Supplier	3014	17.2	37.1	146.211	1	0.000	2.850 (2.396, 3.389)	2.165 (1.908, 2.451)
Industry Associations	3014	18.5	34.7	95.092	1	0.000	2.340 (1.968, 2.783)	1.876 (1.653, 2.128)
On the Job Training (Internal)	3014	11.1	30.7	147.759	1	0.000	3.553 (2.871, 4.396)	2.770 (2.309, 3.322)
Private Training Consultants	3014	20.3	36.5	72.661	1	0.000	2.258 (1.867, 2.731)	1.799 (1.580, 2.049)
Professional Associations	3014	18.9	35.1	90.746	1	0.000	2.318 (1.945, 2.762)	1.855 (1.637, 2.105)
Structured Training (Internal)	3014	18.3	37.6	126.286	1	0.000	2.702 (2.264, 3.224)	2.062 (1.821, 2.336)
TAFE	3014	20.8	31.7	38.629	1	0.000	1.769 (1.476, 2.121)	1.524 (1.339, 1.736)
Universities	3014	22.2	36.5	30.944	1	0.000	2.008 (1.565, 2.577)	1.639 (1.393, 1.931)

Table A11.9: Provider of Training

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Change Business Structure	2283	27.2	51.1	46.469	1	0.000	2.800 (2.062, 3.803)	1.880 (1.605, 2.203)
Formal Strategic Plan	3014	15.5	37.3	186.478	1	0.000	3.250 (2.732, 3.865)	2.410 (2.119, 2.740)

Table A11.10: Changing Structures

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Age	3014	24.2	23.4	0.229	1	0.632	0.957 (0.798, 1.147)	0.967 (0.842, 1.110)
Industry Type	3014	22.8	24.3	0.936	1	0.333	1.088 (0.917, 1.291)	1.066 (0.935, 1.215)
Legal Type	3013	21.1	24.7	4.154	1	0.042	1.224 (1.008, 1.486)	1.168 (1.004, 1.359)
Number of Locations	3014	21.4	28.6	18.544	1	0.000	1.468 (1.232, 1.749)	1.333 (1.172, 1.520)
Size	3014	19.0	27.4	28.911	1	0.000	1.606 (1.350, 1.910)	1.439 (1.258, 1.647)

Table A11.11: Organisational Demographics

Variable	B	Standard Error	Wald Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval
Research and Development	2.781	0.156	319.074	1	0.000	16.132 (11.890, 21.887)
Change Business Structure	0.761	0.183	17.279	1	0.000	2.139 (1.495, 3.062)
Training	0.560	0.210	7.117	1	0.008	1.751 (1.160, 2.644)
Formal Strategic Plan	0.475	0.111	18.269	1	0.000	1.607 (1.293, 1.998)
Networking (Internet)	0.308	0.130	5.632	1	0.018	1.361 (1.055, 1.756)

Table A11.12: Organisational Change Model

Variable	n	First %	Second %	Chi-Square Statistic	Degrees of Freedom	P Value	Odds Ratio and 95% Confidence Interval	Relative Risk and 95% C.I.
Innovation	3014	73.0	77.0	4.692	1	0.030	1.243 (1.021, 1.514)	1.056 (1.007, 1.107)

Table A11.13: Relationship Between Innovation and Profit

Variable	N	Chi-Square Statistic	Degrees of Freedom	P Value
Australian Taxation Office	3014	11.947	1	0.001
Banks	3014	11.375	1	0.001
Business Consultants	3014	9.682	1	0.002
Customers	3014	6.315	1	0.012
Family or Friends	3014	0.384	1	0.536
Government Small Business Agencies	3014	19.290	1	0.000
Industry Associations or Chambers of Commerce	3014	20.944	1	0.000
Local Business	3014	0.969	1	0.325
Others in Industry	3014	17.256	1	0.000
Solicitors	3014	29.890	1	0.000

Table A11.14: Partners for Alliances Linear-by-Linear Association Chi-Square Trend Analysis

Variable	N	Chi-Square Statistic	Degrees of Freedom	P Value
Health and safety training	2504	14.017	1	0.000
Management Training	2505	31.951	1	0.000
Professional Training	2506	20.403	1	0.000
Trade and Apprenticeships Training and Traineeships	2503	0.107	1	0.743
Training for Computer Specialists	2506	46.707	1	0.000

Table A11.15: Content of Training Linear-by-Linear Association Chi-Square Trend Analysis

Variable	n	Chi-Square Statistic	Degrees of Freedom	P Value
Seminars, Workshops or Conferences	2510	54.320	1	0.000
Job Rotation or Exchanges	2511	42.108	1	0.000
Training	2557	95.251	1	0.000

Table A11.16: Partial Changing Processes Linear-by-Linear Association Chi-Square Trend Analysis

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