



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

**Research Commons**

<http://waikato.researchgateway.ac.nz/>

## **Research Commons at the University of Waikato**

### **Copyright Statement:**

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

The thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- Any use you make of these documents or images must be for research or private study purposes only, and you may not make them available to any other person.
- Authors control the copyright of their thesis. You will recognise the author's right to be identified as the author of the thesis, and due acknowledgement will be made to the author where appropriate.
- You will obtain the author's permission before publishing any material from the thesis.

**COMBINING CAPABILITIES: A RESOURCE BASED  
MODEL OF ICT ADVANTAGE**

A thesis  
submitted in partial fulfilment  
of the requirements for the Degree  
of  
Doctor of Philosophy  
at  
The University of Waikato

**KARYN CHRISTINE RASTRICK**

The University of Waikato  
2008



## ABSTRACT

---

Significant levels of interest and organisational spending on information and communication technologies (ICT's) have triggered debate as to whether these investments are worthwhile. While there has been some acknowledgement that investments result in positive returns, little is known about how ICT's may lead to competitive advantage. This thesis starts to inform this gap, by investigating how ICT's are combined with other organisational resources in the context of an exemplar organisation. The resource based view (RBV) is used as a framework to guide this study. The RBV is an appropriate lens to guide this research due to its focus on resources and capabilities as sources of advantage. This research employs an interpretive case study design based in an organisation with a long history of innovation and success with regard to ICT's.

A grounded *integrated model of advantage* is presented based on two distinct groupings of integrated capabilities: *lifecycle* and *embedded foundational capabilities*. The *integrated model of advantage*, along with key actions outlined to support such capabilities, provides researchers and practitioners with a new way of understanding ICT based advantages. In essence, this research demonstrates how the total ownership of ICT's, within the case studied, presents a potential advantage. The advantage is realised through the combination of capabilities and the inclusive approach to ICT development employed in the case organisation. The research finds support from propositions of the RBV, in that the model demonstrates sources of advantage are based on organisational capabilities which are valuable, firm specific, and socially complex. As such, the integration of capabilities evident in the *integrated model of advantage* is a likely source of sustained competitive advantage. This means advantages gained from the integration of capabilities are not easily imitated or competed away. Furthermore, advantages have an even greater potential to be a source of sustained advantage than any single resource or capability. The research has important implications for theory and practice. While many individual sources of advantage have been empirically examined, this research provides one of the first in-depth case studies which identify integrated capabilities. Understanding such sources of advantage will help practitioners better understand and protect key organisational capabilities to sustain or extend competitive advantages.

## ACKNOWLEDGEMENTS

---

I owe thanks to many people who have provided academic and emotional support in my journey. I am grateful to all who have contributed in some way to this research.

My sincere thanks go to Jim Corner, my chief supervisor, whose knowledge, assistance and direction was greatly valued. I am also grateful to Delwyn Clark who provided early supervision support, and then to Steve Bowden for the support and expert knowledge he provided as second supervisor.

The free access to many of the team at ASB was also fundamental in this research. I would particularly like to acknowledge the support, assistance and enthusiasm from Clayton Wakefield and many of his information technology team.

Thanks also go to Jim Corner in his role as the Department Chair in the Department of Management Systems, at the University of Waikato Management School, which gave me a base and employment as a contract lecturer. I would also like to acknowledge the support provided to me by many of my colleagues and fellow doctoral students in the Department of Management Systems. In particular I would like to acknowledge the personal encouragement and academic advice from Stuart Dillon.

The journey would not have been achievable without the financial support I received from the University of Waikato Doctorial Scholarship, as well as the generous support received from the Waikato Management School.

There are many family and friends who have encouraged me along the way and I am truly thankful for your support. I would like to thank my father, John Long, brother, Mark Long, and friends, Stuart Dillon and Kerry Brown for their help in proofreading this document.

Finally, I would like to acknowledge my husband Brian for the many sacrifices he has made for me to pursue this research. I look forward to realising our future vision together. I also express my gratitude to both Brian and my father, John for their unwavering support and encouragement.

## TABLE OF CONTENTS

---

<b>Abstract</b> .....	<b>ii</b>
<b>Acknowledgements</b> .....	<b>iii</b>
<b>Table of Contents</b> .....	<b>iv</b>
<b>List of Tables</b> .....	<b>vii</b>
<b>List of Figures</b> .....	<b>viii</b>
<b>Chapter One - Introduction</b> .....	<b>1</b>
1.1 Background.....	1
1.2 Research Questions .....	3
1.3 Overview of the Research Methodology.....	3
1.4 Thesis Outline.....	5
<b>Chapter Two – Information and Communication Technologies</b> .....	<b>6</b>
2.1 ICT’s in Organisations.....	6
2.2 Information Systems and Competitive Advantage.....	8
2.3 Empirical Investigations .....	10
2.3.1 ICT’s Operationalised .....	11
2.3.2 Level of Analysis .....	14
2.3.3 Measuring Performance .....	16
2.4 Chapter Summary .....	18
<b>Chapter Three – Theoretical Framework – The Resource Based View</b> .....	<b>20</b>
3.1 Introduction.....	20
3.2 Origins of the RBV.....	25
3.3 Empirical Applications .....	28
3.4 Limitations or Criticisms of the RBV.....	38
3.5 New Streams of Resource Based Research .....	40
3.5.1 Dynamic Capabilities.....	40
3.5.2 Knowledge Based View .....	42
3.6 Chapter Summary .....	44
<b>Chapter Four – Gap and Research Questions</b> .....	<b>46</b>
4.1 ICT’s Gaps in Current Research .....	46
4.2 The RBV – Gaps and Lessons for ICT Research.....	48
4.3 Gap and Research Questions .....	50

---

<b>Chapter Five – Research Design .....</b>	<b>53</b>
5.1    Introduction.....	53
5.2    Research Methodology and Underlying Assumptions – Interpretive Research ..	54
5.3    Selected Research Method - Case Study Research .....	55
5.3.1    Case Selection.....	60
5.3.2    Unit Of Analysis.....	61
5.4    Data Collection.....	62
5.4.1    Interviews .....	62
5.4.2    Observations .....	64
5.4.3    Documents.....	65
5.5    Data Analysis Strategy .....	66
5.5.1    Introduction to Grounded Theory .....	67
5.5.2    Grounded Theory Process .....	70
5.6    Ensuring Rigour.....	79
5.7    Delimitations and Limitations .....	80
5.8    Chapter Summary .....	81
<b>Chapter Six – ASB.....</b>	<b>82</b>
6.1    Retail Banking in New Zealand.....	82
6.2    Information Technology and Banking .....	86
6.3    ASB – An Introduction .....	88
6.4    Information Systems at ASB .....	90
6.4.1    Strategy and Systems at ASB.....	90
6.4.2    Innovation and Systems Development at ASB .....	95
6.5    Chapter Summary .....	101
<b>Chapter Seven – Sources of Advantage at ASB .....</b>	<b>102</b>
7.1    Introduction.....	102
7.2    ICT Resources .....	104
7.2.1    Initiation Factors .....	104
7.2.2    Enabling Factors .....	115
7.2.3    Procedural Factors .....	125
7.2.4    Output Factors.....	136
7.2.5    History.....	144
7.3    Human Resources.....	145
7.3.1    Culture.....	146

---

7.3.2	Staff Development .....	153
7.3.3	Change Management.....	156
7.4	Strategic Resources .....	158
7.4.1	Group Strategy .....	159
7.4.2	Divisional Strategy .....	164
7.5	Other Resources .....	167
7.6	Chapter Summary .....	167
<b>Chapter Eight – Integrated Capabilities as a Source of Advantage at ASB .....</b>		<b>168</b>
8.1	Introduction.....	168
8.2	Lifecycle Capabilities .....	169
8.3	Embedded Foundational Capabilities .....	176
8.4	<i>Integrated Model of Advantage at ASB</i> .....	182
8.5	Linkages among Capabilities .....	183
8.6	The Story of ASB.....	192
8.7	Chapter Summary .....	197
<b>Chapter Nine - Discussion of <i>Integrated Model of Advantage at ASB</i> .....</b>		<b>198</b>
9.1	Comparisons with the Literature - examining Interconnected Resources or Capabilities .....	198
9.2	Analysing the Integrated Model in Light of the RBV .....	208
9.3	Chapter Summary .....	212
<b>Chapter Ten – Conclusions, Limitations, and Directions for Future Research.....</b>		<b>213</b>
10.1	Introduction.....	213
10.2	Implications for Theory.....	214
10.3	Implications for Practice.....	217
<b>References.....</b>		<b>219</b>
<b>Appendix A – Methodological Assumptions .....</b>		<b>257</b>
<b>Appendix B – Empirical Base .....</b>		<b>261</b>
<b>Appendix C – Information Sheets given to each Participant .....</b>		<b>265</b>
<b>Appendix D – Sample Interview Questions .....</b>		<b>267</b>
<b>Appendix E – Example of Grounded Theory Data Analysis.....</b>		<b>270</b>
<b>Appendix F – Phenomena Table.....</b>		<b>274</b>
<b>Appendix G – Lifecycle and Embedded Foundational Capabilities – Cross Referenced .....</b>		<b>277</b>
<b>Appendix H – Recent Empirical Research Examining Dynamic Capabilities.....</b>		<b>279</b>

## LIST OF TABLES

---

Table 2-1 – Major findings of research examining the influence of IT on organisations.....	10
Table 2-2 – Interconnected information technology resources .....	13
Table 3-1- Key early works of the RBV .....	27
Table 3-2 -Empirical work examining sources of advantage utilising the RBV.....	31
Table 3-3 - Empirical work examining sources of ICT advantage utilising the RBV.....	35
Table 5-1 - Strategies used in ensuring rigour .....	80
Table 6-1 - Key statistics of the major New Zealand banks 2006.....	82
Table 6-2 - Major New Zealand banks 2005 growth measures.....	84
Table 6-3 - Major New Zealand banks 2006 growth measures.....	84
Table 6-4 - Major New Zealand banks proportion of satisfied and very satisfied customers’ %.....	85
Table 6-5 – Major New Zealand banks key information technology statistics 2004/2005 ...	86
Table 6-6 - Major New Zealand banks 2006 employee numbers .....	87
Table 6-7 – Vision and values of ASB.....	89
Table 6-8 – Key CRM or CRM related information systems at ASB .....	93
Table 7-1 - Summary of resources which relate to each grouping.....	103
Table 7-2 - Representative quotes examining the culture of ASB.....	146
Table 8-1 – Key actions that support <i>lifecycle capabilities</i> .....	174
Table 8-2 – Support for individual elements of <i>lifecycle capabilities</i> in literature .....	175
Table 8-3 – Key actions that support <i>embedded foundational capabilities</i> .....	180
Table 8-4 - Support for <i>embedded foundational capabilities</i> in literature.....	181
Table 9-1 - Capability ‘constructs’ compared to the <i>integrated model of advantage</i> .....	203
Table 9-2 – Integrated or dynamic models of research compared to the <i>integrated model of advantage</i> .....	207
Table 9-3 - Analysing integrated sources of advantage using RBV logic.....	210

## LIST OF FIGURES

---

Figure 3-1 – A resource based model of competitive advantage .....	21
Figure 4-1 - Relationship between resources, capabilities, and competitive advantage .....	51
Figure 5-1 - Open coding hierarchy .....	71
Figure 6-1 - Major New Zealand banks: Net profit after tax 2001 to 2006 .....	83
Figure 6-2 - Major New Zealand banks proportion of satisfied and very satisfied customers’ % .....	85
Figure 7-1 - Sources of advantage at ASB – An overview .....	103
Figure 7-2 – ICT resources .....	104
Figure 7-3 – ASB’s technology leadership and vision .....	105
Figure 7-4 – ASB’s innovation cycle.....	110
Figure 7-5 – Relationships at ASB.....	116
Figure 7-6 –Shared understanding at ASB .....	119
Figure 7-7 – Knowledge at ASB.....	122
Figure 7-8 – Development astute at ASB.....	126
Figure 7-9 –ASB’s implementation advantage.....	128
Figure 7-10 – ASB’s positive public perception .....	139
Figure 7-11 – ASB’s cycle of success.....	141
Figure 7-12 - Human resources .....	146
Figure 7-13 – ASB’s culture.....	147
Figure 7-14 – ASB’s staff development.....	153
Figure 7-15 – Change management at ASB.....	157
Figure 7-16 – Strategic resources.....	159
Figure 7-17 – ASB’s group strategy .....	159
Figure 7-18 – ASB’s divisional strategy .....	164
Figure 8-1 - <i>Lifecycle capabilities</i> at ASB.....	170
Figure 8-2 – <i>Embedded foundational capabilities</i> at ASB .....	177
Figure 8-3 – <i>Integrated model of advantage</i> at ASB.....	183
Figure 8-4 – Linkages within the <i>integrated model</i> of advantage .....	184
Figure 8-5 - The story of ASB .....	194

## CHAPTER ONE - INTRODUCTION

---

### 1.1 BACKGROUND

Organisations are faced with making significant changes to their business practices due to the emergence and widespread use of information and communication technologies (ICT's) over the last two decades. In this time period, organisations have invested large amounts of time and money into the adoption of new ICT's. In the early 2000s businesses around the world were spending well over \$2 trillion on information technologies per annum (Carr, 2003). With such large investment comes a responsibility to understand the performance effects of these investments, yet, many questions remain unanswered. One could question: Are investments in ICT's worthwhile? What are the main sources of advantage? How are these advantages created and sustained within organisations? Questions about advantages gained from such investments have been the subject of many articles from academics and practitioners alike (e.g., Barua & Lee, 1997; Carr, 2003; Ray, Barney, & Muhanna, 2004; Lin & Shao, 2006). While some progress has been made in this area, significant gaps in our understanding still remain (Ray et al., 2004).

Despite this level of investment, there are mixed results in current research on the impact of ICT spending. While some researchers show positive returns from investments (e.g., Weill, 1992; Brynjolfsson & Yang, 1997; Menon, Lee, & Eldenburg, 2000; Melville, Kraemer, & Gurbaxani, 2004; Lin & Lin, 2006), others show nil or negative impact (e.g., Banker & Kauffman, 1988; Floyd & Wooldridge, 1990; Powell & Dent-Micallef, 1997; Lin & Shao, 2006). In part, these mixed results can be attributed to the differences in the designs of current research. Empirical research investigating ICT's and performance effects has been undertaken with significant differences including: how ICT's are operationalised, the level of the study, and measurements of performance effects.

Conflicting research designs and results seen in current studies mean many questions still remain regarding ICT's and how they can provide organisations with competitive advantages. Given the rise in use and spending on these ICT's, there is a strong need to understand the effects of these investments on an organisation's competitive

advantage (if any). Beyond knowing if an investment in ICT's is valuable, organisations need to understand how valuable ICT's combine with other organisational resources and capabilities. While prior research has tended to focus on individual ICT's (such as capital requirement or proprietary technology (Mata, Fuerst, & Barney, 1995)), there is an emerging stream of research which recognises that ICT's have limited value when used in isolation. As such, value is significantly enhanced when resources are combined with other organisational resources and capabilities (Clemons, 1986; Walton, 1989; Clemons, 1991; Clemons & Row, 1991; Keen, 1993; Mata et al., 1995; Powell & Dent-Micallef, 1997; Ray, Mauhannan, & Barney, 2002; Melville et al., 2004; Ray et al., 2004). This research recognises the tight coupling of ICT and other organisational resources required to analyse ICT's in organisations.

Acknowledging the systemic approach required to study ICT's, scholars of information systems have recognised the need for better ways to examine the relationship between ICT's and their performance effects (Soh & Markus, 1992; Mooney, Gurbaxani, & Kraemer, 1995; Ray et al., 2002; Ray et al., 2004). Other information system scholar's state knowledge in this area is sparse. Moreover, there have been calls for further review and testing of ICT impacts utilising frameworks from other literatures, like the resource based view (RBV) from the strategic management literature (Mata et al., 1995; Powell & Dent-Micallef, 1997; Jarvenpaa & Leidner, 1998; Bharadwaj, 2000; Ray et al., 2004). The RBV is an appropriate framework to guide this study due to its focus on the value of resources and capabilities. The RBV argues that a firm's source of competitive advantage lies with the resources and capabilities it owns and controls (Penrose, 1959; Wernerfelt, 1984; Barney, 1991a; Grant, 1991). Value, in the RBV, may lead to a competitive advantage or higher performance when a firm has a resource or capability which is rare. A sustained competitive advantage is dependent on the source of the advantage being both inimitable and non-substitutable. Given the RBV's focus on value and identifying sources of competitive advantage, it provides a useful framework to examine ICT's in organisations.

The RBV has been utilised in conceptual research on ICT impacts on performance, and now early empirical work is also emerging (e.g., Bharadwaj, 2000; Bharadwaj,

Sambamurthy, & Zmud, 2000; Ray et al., 2004). Despite calls for more qualitative research methods to be employed when using the RBV (Rouse & Daellenbach, 1999), current research investigating ICT impacts and performance have been of a quantitative nature. Given ICT's are acknowledged to be complex and embedded within organisations, a qualitative approach where the researcher may examine the phenomenon in context is the most appropriate way forward. This is supported by Rouse and Daellenbach who state that sustained competitive advantages are "organisational in origin, tacit, highly inimitable, socially complex, probably synergistic, embedded in process, and often driven by culture" (1999, p 489).

## **1.2 RESEARCH QUESTIONS**

While there is currently an understanding of how single resources may lead to a competitive advantage in a given context, gaps remain in our knowledge about how more complex resources like ICT's may or may not lead to a competitive advantage. ICT's are more unique because by their nature they do not function in isolation. While this has been acknowledged in the literature, there exists a need to understand how these more complex, dynamic, systemic resources might lead to a competitive advantage. Some work has been done (e.g., Ray et al.'s (2005) research on competitive advantages gained from information technology in the customer service process), however, research in this area is still in its infancy. This thesis contributes to research in the area of ICT's and their performance effects by examining ICT's in their environment. The following research questions are considered:

*What are sources of ICT advantage?*

*How are ICT's combined with other resources to create valuable resources and capabilities?*

## **1.3 OVERVIEW OF THE RESEARCH METHODOLOGY**

This research addresses the above questions, utilising an interpretive case study approach to examine ICT's in their natural setting, i.e., organisations. Understanding ICT's in their natural setting or in the context of the organisation is deemed very important in this research. This is due to the perceived embedded and

systemic nature of ICT's and the contention that sustained competitive advantages are organisational in origin and likely to be found only in fieldwork where the researcher is in the organisation (as apposed to other research methods such as surveys or experiments) (Rouse & Daellenbach, 1999). Moreover, this research examines a single business process which is consistent with a growing stream of ICT research which suggests that the effects of ICT investment are best measured at the level of the business process within an organisation (Barua, Kriebel, & Mukhopadhyay, 1995; Mukhopadhyay, Surendra, & Srinivasan, 1997; Ray et al., 2005). Narrowing the study to a single process has allowed the researcher to gain richer information in the more defined context.

The business process examined in this research is the customer service process within a large organisation in the New Zealand financial services industry, ASB. ASB was chosen for their unique situation in reference to performance and ICT's, in particular for the consistent records of above average performance and the unique way in which ICT's are developed and used in the organisation. A single case was considered appropriate because competitive advantages are observed in organisations that possess and utilise resources which are *unique*. Yin (2003) suggest uniqueness is a strong rationale for a single case design. The industry and customer service processes were chosen for several reasons. First, the industry was deemed appropriate because of the digital nature of its products and services and hence their reliance on ICT's. Second, in highly competitive service based industries, customer service is seen as a key differentiator of organisations (Ray et al., 2005). Third, within this industry there are reported performance differences within customer service functions, which suggests some firms outperform others and enjoy competitive advantages, while others do not. Fourth, ICT's are recognised as critical tools for empowering staff with the information they need to deliver quality customer service (Ray et al., 2005).

Multiple data collection methods are used in this research. The primary data collection method employed is in-depth personal interviews; however, observation and documents are also used. The interviewees are selected from two areas of the organisation, the customer service and information technology divisions. The data analysis technique used in this research is an adaptation of grounded theory. While

acknowledging grounded theory may be used as a complete research method the researcher chose to use an adapted grounded theory approach as a data analysis strategy. This was achieved by entering the case organisation with meta questions and utilising the coding procedures outlined in grounded theory research. While the approach used in this research most closely follows that of Strauss and Corbin (1998) it is also consistent with other grounded theory researchers such as Glazer and Strauss (1967), and Glazer (1992).

#### **1.4 THESIS OUTLINE**

The remainder of this thesis is organised as follows. Chapter Two reviews relevant research from ICT literature. The chapter outlines the significant impact ICT's have had on organisations. Next, ICT's and their links to competitive advantage are discussed, along with a review of empirical investigations in the area. In Chapter Three the theoretical framework, the RBV, is outlined. This chapter examines the history of the theory, discusses current empirical applications of RBV research, and considers new directions which could be utilised in this research. Chapter Four outlines the intersection of ICT research and the RBV. The relevance of the RBV for ICT research is examined and a significant gap in current literature is presented. Following this, the research questions for this thesis are outlined. Chapter Five presents the research design used in this thesis. This chapter examines the theoretical perspective, and the methodology, including the data collection approach and analysis strategies. Chapter Six, provides an introduction to the case at the focus of this research, ASB. The chapter discusses ASB in relation to their performance and distinct points of difference. Chapter Seven presents and discusses the results of the research as individual sources of advantage. The results are then presented and discussed in a more aggregate way in Chapter Eight. The major finding, an *integrated model of advantage*, is outlined in this chapter. The *integrated model of advantage* is then compared to other literature examining interconnected resources or capabilities and analysed in light of the RBV in Chapter Nine. Lastly, Chapter Ten finishes by presenting the conclusions of this thesis. Following this, a discussion of the theoretical and practical implications from the findings of this research, and provides some directions for future research.

## CHAPTER TWO – INFORMATION AND COMMUNICATION TECHNOLOGIES

---

*This chapter presents a review of ICT's and their impact on organisations. The review incorporates a discussion on the large amount of organisational spending on ICT's and the continued questions about the effects of such investments. The chapter then examines ICT's and the concept of competitive advantage. A discussion of the current state of play of the empirical research involving ICT's and competitive advantage is then provided. Lastly, the limitations or criticisms of current research are summarised.*

### 2.1 ICT'S IN ORGANISATIONS

While many different forces and factors have influenced the way businesses operate today, one of the biggest factors is certainly the impact of technology<sup>1</sup> (Evans, 1999; Keen, 2000; Lin & Shao, 2006). For several decades, technological developments have seen major changes in the business environment. The invention of the microprocessor in the late 1960's "spurred a series of technological breakthroughs – desktop computers, local and wide area networks, enterprise software, and the Internet" which has transformed the business world (Carr, 2003, p 41). Another example of this is Electronic Data Interchange (EDI), introduced in the late 1980s (Fraser, Fraser, & McDonald, 2000; Mozaffar, 2001). Today, rapid acceleration in computing and telecommunications are transforming businesses and creating an ever changing environment. New electronic business technologies are reshaping how managers think about many facets of their business: how they deliver value to their customers, how they interact with their suppliers, and how they manage their employees (Tapscott, Lowy, & Ticoll, 1998; Donath, 1999). As a result, there are potentially many opportunities for new sources of competitive advantage to be developed when considering ICT investments. Mata et al. (1995) and Powell & Dent-Micallef (1997) suggest that ICT's have been used in a wide range of business applications with significant strategic implications. ICT's are also important to businesses because they present opportunities to provide "dramatic reductions in the cost of obtaining, processing, and transmitting information (which) are changing the

---

<sup>1</sup> The terms 'technology', 'information technology', and 'information communication technology' are used interchangeably in this research as is the case in much of the literature.

way we do business” (Porter & Millar, 1998, p 75). These vast changes in ICT’s make technology undisputedly the core backbone of commerce (Brynjolfsson & Hitt, 1996; Carr, 2003). Technology “underpins the operations of individual companies, ties together far-flung supply chains, and, increasingly, links businesses to the customers they serve” (Carr, 2003, p 41).

With information technologies underpinning the way businesses operate it is not surprising that business spending on these ICT’s continues to grow. The US Department of Commerce’s Bureau of Economic Analysis recorded 1965 figures of American companies expenditure on information technology at less than 5% (Carr, 2003). By the end of the 1990’s this figure rose to near 50% of expenditure (Carr, 2003). Even with an acknowledged downturn in spending on information technology in the early 2000’s “businesses around the world continue to spend well over \$2 trillion” per annum on ICT’s (Carr, 2003, p 41). Prastacos et al. (2002) and Bettis and Hitt (1995) also posit that technology changes are occurring at increasing rates. This spending, coupled with the wide application of these technological developments, has catalysed interest among information systems scholars and practitioners to understand the value derived from such innovations. In fact, as spending on information technology continues to rise so have the number of studies which have examined the value of such investments (e.g., Mukhopadhyay, Kekre, & Kalathur, 1995; Brynjolfsson & Hitt, 1996; Devan & Min, 1997; Francalanci & Galal, 1998; Bharadwaj, Bharadwaj, & Konsynski, 1999; Devaraj & Kohli, 2000; Sohal, Moss, & Ng, 2000; Bhatt & Grover, 2005; Lin & Lin, 2006; Skerlavaj & Dimovski, 2006).

Researchers and practitioners have increasingly shown an interest in the role and effects of ICT investments (e.g., Powell & Dent-Micallef, 1997; Carr, 2003; Devaraj & Kohli, 2003; Pavlou & El Sawy, 2006). Amongst this interest is an ongoing debate as to whether ICT’s have an impact on firm performance. Such debate is often referred to as the “productivity paradox” of information technology (Brynjolfsson, 1993; Due, 1994; Hildebrand, 1994; Brynjolfsson & Hitt, 1998; Dewan & Kraemer, 2000; Mahmood & Mann, 2000; Martinsons & Martinsons, 2002; Carr, 2003; among others). In his book, “The Business Value of Computers”, Strassmann (1990) concludes there is no relation between spending on information technology, profits

and productivity. More than a decade later the debate as to the value of information technology still soars. For instance, a recent Harvard Business Review article entitled “IT doesn’t matter” (Carr, 2003) prompted numerous letters to the editor with strong opposing views. As a consequence a great deal of discussion on the paradox of information technology is still had today (e.g., Brynjolfsson & Hitt, 1998; Dewan & Kraemer, 1998; Mahmood & Mann, 2000; Martinsons & Martinsons, 2002; Carr, 2003; Lin & Lin, 2006; Lin & Shao, 2006; Sarkis & Erik, 2006; Kevin, Gregory, & Stephen, 2007).

Empirical research in the area also helped fuel the perception that IT investments failed to live up to expectations (Kettinger, Grover, Guha, & Segars, 1994; Brynjolfsson & Yang, 1996). Yet, in contrast, other researches have demonstrated that ICT’s are valuable (e.g., Alpar & Kim, 1991; Harris & Katz, 1991; Barua & Lee, 1997; Devaraj & Kohli, 2000; Menon et al., 2000; Lin & Lin, 2006). The conflicting results suggest that researchers have large gaps in knowledge about the impact information technology has on most firms (Clemons, 1986). Wilson (1995) concludes the general understanding of how information technology effects productivity is still extremely limited. Other researchers in the area also suggest knowledge is sparse (e.g., Brynjolfsson & Yang, 1996; Devaraj & Kohli, 2000) and there has been a call for further review and testing of ICT impacts, utilising frameworks from other fields such as the resource based view from strategy management field (Mata et al., 1995; Powell & Dent-Micallef, 1997; Jarvenpaa & Leidner, 1998; Bharadwaj, 2000; Barney, Wright, & Ketchen, 2001). Furthermore, if an investment in information systems is made, little is known about what the source or sources of any such advantage may be (if any).

## **2.2 INFORMATION SYSTEMS AND COMPETITIVE ADVANTAGE**

As described in Section 2.1, information systems professionals have long tried to understand how to gain a competitive advantage from information systems (Devaraj & Kohli, 2003; Pavlou & El Sawy, 2006). The search for understanding has gained momentum over time due to new environmental forces such as turbulent marketplaces (Santhanam & Hartono, 2003). Literature in the area has examined investments in information technology capital and labour in order to understand the effects on organisational performance. Yet the results of such efforts have unveiled

contradictory results. Mata et al. (1995) suggest that a relationship between ICT's and competitive advantage is provocative. While some scholars claim that information systems are not a source of competitive advantage, others suggest they are mere table stakes or requirements to be in the game (business or industry). Still others find information systems to be a source of competitive advantage. Each of these positions is briefly explored below.

It is likely that under certain conditions pursuing new ICT's may lead to a position of disadvantage. For instance, if a newly implemented ICT (at a cost to an organisation) does not reduce costs or increase revenue (or contribute in another way such as providing necessities or creating essential learning for future strategies) the effort will produce a negative return. However, in general, there is little doubt that ICT's can provide value, but as highlighted by Mata et al. (1995) value alone does not produce competitive advantages. For instance, ICT's may be used to lower costs and therefore increase revenues, but if rivals already have or soon capture the same lower costs, the resulting position of competitive advantage will be non-existent or short-lived at best. Such a position is known as competitive parity (Mata et al., 1995). That is, when a firm implements the same or similar valuable strategy as others in the industry, a competitive parity is gained. Other terminology used in this situation describes such strategies or resources as table stakes (Powell & Dent-Micallef, 1997). While such a position does not give the firm a competitive advantage, it does not leave them in a position of disadvantage. Therefore the strategy only enabled the firm to keep abreast of the industry. A similar agreement is seen in the much cited work of Carr (2003). Carr suggests that ICT's today, albeit more advanced and complex than those of yesteryear, are merely a commodity like infrastructural technology. Whether ICT's are mere table stakes or whether they do in fact help build competitive advantage becomes a moot point when it comes to the decisions an organisation makes about organisational spending on ICT's. Both of the situations outlined (ICT's as table stakes or competitive advantage) suggest organisations should spend on ICT's. However, naturally investments which lead to positions of competitive advantage suggest opportunities for higher returns.

## 2.3 EMPIRICAL INVESTIGATIONS

The conflicting conceptual positions taken by practitioners and researchers on the organisational value of information systems is also evident in the results of empirical research. While some studies have supported those that posit information systems have worthwhile and valuable effects on organisations (e.g., Weill, 1992; Brynjolfsson & Yang, 1997; Menon et al., 2000), others find little or no support for such investments (e.g., Strassmann, 1990; Kettinger et al., 1994; Powell & Dent-Micallef, 1997). Table 2-1 presents a summary of the major findings of research examining the influence of information systems on organisations. As can be seen, over time there is a move towards findings which suggest that information technology has a positive influence on organisational value.

**Table 2-1 – Major findings of research examining the influence of IT on organisations**

<b>Negative influence</b>	<b>Neutral influence</b>	<b>Positive influence</b>
Turner & Lucas (1985)	Lucas (1975b)	Lucas (1975a)
Strassmann (1985)	Corn & Sobol (1983)	Parsons (1983)
Franke (1987)	Bender (1986)	Benjamin, Rockart, Scott
Roach (1988)	Banker & Kauffman (1988)	Morton, & Wyman (1984)
Floyd & Wooldridge (1990)		Harris & Katz (1988)
Strassmann (1990)		Banker, Kauffman, & Morey (1990)
Kettinger et al. (1994)		Alpar & Kim (1991)
Lin & Shao (2006)		Harris & Katz (1991)
		Weil (1992)
		Diewert & Smith (1994)
		Brynjolfsson & Yang (1996)
		Powell & Dent-Micallef (1997)
		Brynjolfsson & Yang (1997)
		Porter & Millar (1998)
		Menon et al. (2000)
		Dimovski & Skerlavaj (2003)
		Santhanam & Hartono (2003)
		Melville et al. (2004)
		Skerlavaj & Dimovski (2006)
		Lin & Lin (2006)

Weill's conclusion (in 1992) from the empirical work on ICT value is "a clear picture of the relationship between ICT investment and firm performance has not emerged from previous studies" (1992, p 309). Similar statements are still made today. For instance, Lin and Shao (2006) suggest that results of studies addressing the business value of information technology are inconclusive and conflicting. However, the contradictory findings can be somewhat attributed to differences in current studies. Many other researchers support such a notion suggesting that research designs of current studies have had a large impact on the results and therefore researchers ability to understand value derived from information technology (Loveman, 1994; Rao, Pegels, Salam, Hwang, & Seth, 1995; Mukhopadhyay et al., 1997; Lee & Barua, 1999; Papp, 1999; Melville et al., 2004). Hitt and Brynjolfsson suggest that "in some cases, seemingly contradictory results are not contradictory at all because different questions are being asked" (1996, p 121). To date, empirical studies examining the effects of information technologies on organisational performance have addressed many different aspects of information systems and been measured in a variety of ways, therefore, it is not surprising that such studies have found mixed results. Differences in empirical approaches include variables such as: definitions of ICT, the level of an organisation at which the ICT is used, and measures of ICT value or performance effect. Research designs have also varied greatly from a snapshot in time to longitudinal studies. The next sections discuss each of these issues raised.

### **2.3.1 ICT'S OPERATIONALISED**

Perhaps the most important difference in terms of its effect on the research design is the way in which ICT's are operationalised in empirical research. Devaraj and Kohli (2003) support this notion suggesting that only a small number of empirical studies capture the actual usage of ICT's in organisations. The researchers deem this issue as a significant challenge to the discipline. It is clear that, ICT's have been employed in organisations in many different ways (as outlined in Section 2.1). Therefore, it is only natural that some differences in the way ICT's are operationalised in empirical research exist. For instance, ICT's have been employed in organisations for different purposes - operational (e.g., accounting, logistics scheduling) and strategic (e.g., changing competitive positioning or providing totally new services) - and these differing purposes effect the makeup of current empirical research (Computer Science and Telecommunications Board, 1994). Further difficulties are introduced

due to the different nature of these ICT's. While some are narrow in application (e.g., ATM's in Banker & Kauffman's (1988) study of retail banking) others are organisational wide (e.g., enterprise wide systems in Banker, Kauffman & Morey's (1990) study of the fast food industry). This means that while studies are compared as like studies, in some cases this is not accurate, due to the differing purposes and nature of the ICT's involved.

Another significant challenge to researchers making sense of empirical research in this area is the fact that sometimes ICT's themselves are not acknowledged in studies of the performance effects<sup>2</sup>. For example, sometimes a measure of ICT expenditure is used as a measure of ICT's in an organisation. An example of this approach can be seen in a service sector study where performance is compared with ICT investment (Strassmann, 1985). While this approach is often seen in the literature (e.g., Lucas, 1975a, 1975b; Strassmann, 1985; Turner, 1985; Bender, 1986; Harris & Katz, 1988; Roach, 1988) it receives some criticism. Weill found evidence that "a single measure of IT investment is too broad and should be broken down" (1992, p 329). Since each study uses a different definition of ICT, comparisons are difficult to make (Weill & Olson, 1989). Not all ICT investments are alike; therefore they are likely to be related to an organisation's performance in different ways. Therefore, a single measure of information technology investment may not signal anything to do with the effectiveness of information technology in organisations. As Section 2.2 suggested, theoretically, some spending may lead to competitive advantages, while other spending may not. Therefore, big broad measures such as ICT spending are likely to mean nothing. This means a different approach to examining ICT's is required. The differences in usage may also vary substantially across industries, organisations, or even processes which creates further concern for such a simplistic operationisation of ICT's in organisations (Devaraj & Kohli, 2003).

All of the above forms of operationalising ICT's assume ICT's are not linked to other organisational resources. This lack of linkage, or ability to detach ICT's from other organisational resources, is not always the case. In fact, some studies found that the relationship between information technologies and firm performance was complex and dependent on other issues (Weill, 1992; Mata et al., 1995). For instance, many

---

<sup>2</sup> Devaraj and Kohli's (2003) paper 'Performance impacts of information technology: is actual usage the missing link' widely discusses this point.

researchers suggest that linkages with, and investments in, complementary assets (such as managerial skills and end user training), are critical to understanding value or competitive advantage from ICT's (Milgrom & Roberts, 1990; Barua, Lee, & Whinston, 1996; Brynjolfsson & Yang, 1997; Melville et al., 2004). This conflicts with the framework of existing studies which have tended to look at individual IT resources and capabilities in relative isolation (Ray et al., 2002; Wade & Hulland, 2004). A growing pool of research acknowledges the more interconnectedness of IT resources in organisations<sup>3</sup>. Gunnarsson et al. (2001) surmise that too much attention has been paid to the *technology* in information technology when researchers should be examining information technology and human capital. A similar argument is seen in the work of Griliches (1969), Bresnahan et al. (1999) and others (e.g., Brynjolfsson, 1993; Lucas, 1999). In fact, calls have been made by practitioners and academics to develop more inclusive and comprehensive approaches to examining the potential of information technology to contribute to organisational advantage (Brynjolfsson, 1993; Lucas, 1999). Extending this argument, Wade and Hulland conclude that information systems “exert their influence on the firm through complementary relationships with other firm assets and capabilities” (2004, p 109). That is, information systems do not lead to a competitive advantage in themselves but by forming part of a complex chain of resources and capabilities which in turn may lead to a sustained competitive advantage. Recent work has begun to examine such interconnections, for example, Mata et al. (1995) examines access to capital, proprietary technology, technical IT skills, and managerial IT skills. Tippins and Sohi (2003) examines IT objects, IT knowledge and IT operations. These and other examples of interconnected information technology resources can be seen in Table 2-2.

---

<sup>3</sup> Pavlou and El Sawy (2006) call this body of research “IT capability literature”.

**Table 2-2 – Interconnected information technology resources**

<b>Study</b>	<b>IT-related resources that combine</b>	<b>Contribution</b>	<b>Finding</b>
Developing long term competitiveness through IT assets (Ross, Beath, & Goodhue, 1996)	Reusable technology base (technology asset), IT-business partnering relationship (relationship asset), IT human resources (human asset)	Empirical	Quality of these resources dictates quality of IT planning, delivery, and support processes which in turn influence a firms ability to deploy IT to meet strategic objectives
Information technology as competitive advantage: The role of human, business, and technology resources (Powell & Dent-Micallef, 1997)	Technology (IT) resources, complementary IT human resources, complimentary business resources	Empirical	Advantages are gained by using IT to leverage intangible complementary human and business resources such as flexible culture, strategic planning, IT integration, and supplier relationships
A resource-based perspective on information technology capability and firm performance: an empirical investigation (Bharadwaj, 2000)	IT infrastructure, human IT resources, IT-enabled intangibles	Empirical	Firms with each of the IT resources tend to outperform those without
Information orientation, people, technology and the bottom line (Marchand, Kettinger, & Rollins, 2000)	IT practices, IT management practices, information values and behaviours	Empirical	Firms that ranked highly in all three elements had superior performance compared to firms that did not
Shaping agility through digital options: reconceptualising the role of IT in contemporary firms (Sambamurthy, Bharadwaj, & Grover, 2003)	IT investments and IT capabilities (agility, digital options and alertness)	Conceptual	Interactions among these capabilities are likely to have performance benefits
IT competency and firm performance: Is organisational learning a missing link (Tippins & Sohi, 2003)	IT objects, IT knowledge, IT operations	Empirical	Organisational learning plays a significant role in mediating the effects of IT competency on firm performance
Study of the mutual connections among information communication technologies, organisational learning and business performance (Skerlavaj & Dimovski, 2006)	ICT's and organisational learning	Empirical	Demonstrated that there was a statistically significant and positive influence of ICT on financial and non financial performance. The research also demonstrated a relationship between ICT's and organisational learning.

### **2.3.2 LEVEL OF ANALYSIS**

Levels of analysis refer to the level of the organisation or industry that is analysed in the information technology value study. Again, empirical work to date has had significant differences in regard to the organisational level at the base of the research design. The four main levels of analysis seen in current research, in descending order of scope, are industry, firm, process, and routine.

Results of industry level investigations have shown mixed results. Some studies have documented a positive relationship between information technology and performance (e.g., Siegel & Griliches, 1992; Kelley, 1994). Others have shown no advantage or impact on performance (e.g., Berndt & Morrison, 1995; Koski, 1999). Examining firm level analysis provides a similar array of diverse results. Researchers such as Hitt and Brynjolfsson (1996), and Dewan and Min (1997) find a positive relationship between information technology and performance, yet, others such as Strassman (1990) and Barua et al. (1995) did not.

Research examining the relationship between information technology and performance (or competitive advantage) at the lower levels such as in processes or routines<sup>4</sup> are growing in popularity (e.g., Soh & Markus, 1992; Barua et al., 1995; Mooney et al., 1995; Barua & Lee, 1997; Mukhopadhyay et al., 1997; Tallon, Kraemer, & Gurbaxani, 2000; Kohli & Sherer, 2002; Ray et al., 2005; Pavlou & El Sawy, 2006). In fact, many researchers have recommended the use of process-oriented models of value (Bakos, 1987; Barua et al., 1995; Mooney et al., 1995; Mukhopadhyay et al., 1997; Ray et al., 2002; Devaraj & Kohli, 2003). The process view outlines how the impact of ICT investments should be measured at the source of the value, and therefore should be measured at their intermediate (i.e., process) level contributions. Business processes are defined as activities that change one or more inputs (resources) and create outputs of value to the customer (Hammer & Champy, 1993). Examples of such business processes include “new product development, manufacturing, customer service, and so forth” (Ray et al., 2002, p 7).

The move towards a process model is due to the belief that, when examined as an industry “any benefits gained by individual firms wash out for the industry as a

---

<sup>4</sup> ‘Strategic business unit’ is another term seen in the literature for this approach (Barua & Lee, 1997).

whole” (Weill & Olson, 1989, p 327). Kelley (1994) supports this notion suggesting that the elusive results can be attributed in part to the aggregated unit of analysis at the level of the organisation. Such aggregation makes it very difficult to isolate the impact of information technology. Devaraj and Kohli suggest “the more detailed the level of analysis, the better the chance to detect the impact, if any, of a given technology” (2003, p 275).

Ray et al. (2002) outline several reasons why a process view is the most appropriate approach for valuing anticipated benefits of ICT’s. First, a process view allows researchers to examine how ICT influences performances. Second, by examining process level effects of ICT, the direct effects of the ICT may be examined. For example, when a higher level firm analysis is used, ICT based advantages may be cancelled out by disadvantages from other processes. This process approach is consistent with several other authors who argue that the impacts of ICT investments should be measured at the process level where first order effects are expected to materialise (Barua et al., 1995; Mooney et al., 1995).

Notwithstanding the above mentioned positive effects of a process level study, difficulties exist in each type of study. While industry and firm level studies may provide a bigger picture of sources of ICT based advantage, they may be too broad to acknowledge specific advantages; while some ICT resources may lead to advantages, some may not. When examined as a whole, advantages may be lost in the broadness of the study. Henderson and Cockburn (1994) found a significant difference between results when they examined sources of advantage at the aggregate firm level, compared with an examination at a more specific process level. Therefore, the researchers suggested firm level results should be viewed with caution, and that a more specific level was more appropriate.

### **2.3.3 MEASURING PERFORMANCE**

The determination of value or performance in this type of work is highly problematic (Weill & Olson, 1989). The question of how to measure benefits or performance effects (or links to competitive advantage) from business spending on ICT’s has been raised by many scholars and practitioners (e.g., Hawawini, Subramanian, & Verdin, 2003). The primary reason for the problem is the variety of social and economic

measures which can be applied to value ICT's, or in fact, measuring the performance of any organisational asset (Zammuto, 1982). The varying methods of measuring performance or advantage reflects a significant challenge to the area of ICT research. Weill and Olson suggest many different combinations of measures have been used, often with “more regard to convenience than appropriateness” (1989, p 6). Measures of ICT value range from a single global measurement (e.g., Bender, 1986) to a group of measurements (e.g., Corn & Sobol, 1983). Bender (1986) used the ratio of expenses over premium income as a single measure of ICT value. Financial analysis techniques such as DCF (discounted cash flows) and NPV (net present value analysis) have also been used in studies of ICT value; however, these estimation tools often suffer from severe limitations (Dos Santos, 1991). In other studies, productivity, consumer value, and business profitability have been used as a measure of value, either individually or as a group of factors (Hitt & Brynjolfsson, 1996). While these three factors are related, they are ultimately separate and may provide differing results (Hitt & Brynjolfsson, 1996). “Accordingly, the empirical results on IT value depend heavily on which question is being addressed and what data are being used” (Hitt & Brynjolfsson, 1996, p 121).

Some researchers believe one measure of performance will not capture all factors that contribute to value (Zammuto, 1982; Turner, 1985). Consistent with this more complex view of ICT value (one measure will not capture all factors), Corn & Sobol (1983) use four measures of IT value: pre-tax profits; return on assets, return on net worth, five-year growth rates. In a move from financial measures of ICT value Ray et al. (2002) measures performance as a function of customer service. Ray et al. achieved this by using several measures of performance such as: a widely used scale, measurement of retention of clients, and a self confessed measure of customer service. Weill (1992) questions ICT value measurement further by asking whether current tools researchers have used to measure ICT value are sufficiently sensitive enough to separate the effects of ICT investments from other factors affecting performance.

The conflicting methods for measuring performance effects of ICT investments are further hindered by the timeframe differences in current studies. While ICT resources are recognised to be complex and often path dependant (constrained by

the resource's history), current studies are largely snapshots in time (e.g., Prattipati & Mensah, 1997). While Corn & Sobol (1983) examine five year growth rates other studies are simply undertaken at a point in time (Weill, 1992). Consistent with a more evolutionary view of performance measures some researchers call for a historical or longitudinal study to cope with the circular nature of ICT investments and firm performance (Weill, 1992). It is widely anticipated that investments in ICT's may not show a positive payoff for several years (Brynjolfsson & Yang, 1996). This accords with an econometric study by Brynjolfsson et al. (1993) which found lags of two to four years before the strongest organisational impacts of information technology were felt. Similar lag effects were also seen by Loveman (1994).

It is clear to see that any one of these differences (operation of ICT's, units of analysis, measurements of ICT value, and timeframes) let alone a combination could lead to inconsistent findings in an ICT value study so it is little wonder that such variation exists. Despite such empirical differences there is a common chorus suggesting that the value of information systems is with its relationship with other organisational assets (e.g., Walton, 1989; Keen, 1993; Powell & Dent-Micallef, 1997; Ray et al., 2005). Keen (1993) argues the key to ICT success lies in the capacity of organisations to combine ICT with existing organisational advantages. Walton (1989) supports this by commenting that ICT success depends on the integration of resources. Powell & Dent-Micallef (1997) build on existing work of this nature and investigate human and business resources that may combine with information technologies to produce competitive advantage through the integration of resources. Ray (2000, p ii) also concurs with this, commenting that ICT resources are used in a "process, individually and in interaction with non – IT resources, explain process performance".

## **2.4 CHAPTER SUMMARY**

The widespread use of information technologies, and inconsistent findings of empirical work in the area of valuing the use of these technologies, has driven speculation regarding the potential of technology to create competitive advantages in organisations (e.g., Clemons, 1986; Mata et al., 1995; Powell & Dent-Micallef, 1997). However in more recent times the results of research examining value derived from ICT's has shown them in a more positive light. Mata et al. outline the ways

information technologies can add value to a firm suggesting that there is little doubt that, “in a wide variety of circumstances, information technology can add value to a firm” (1995, p 488). It has also become clear that ICT’s are unique resources which are often part of more complex systems of resources (e.g., Walton, 1989; Keen, 1993; Powell & Dent-Micallef, 1997; Ray et al., 2005). When examining the value of ICT’s in organisations, there is growing support for lower levels of analysis such as utilising processes or routines (Bakos, 1987; Barua et al., 1995; Mooney et al., 1995; Mukhopadhyay et al., 1997; Ray et al., 2002; Devaraj & Kohli, 2003). Several researchers suggest borrowing theories from other fields as a useful way for research in this area to move forward. The next chapter outlines a potential theoretical framework; the resource based view.

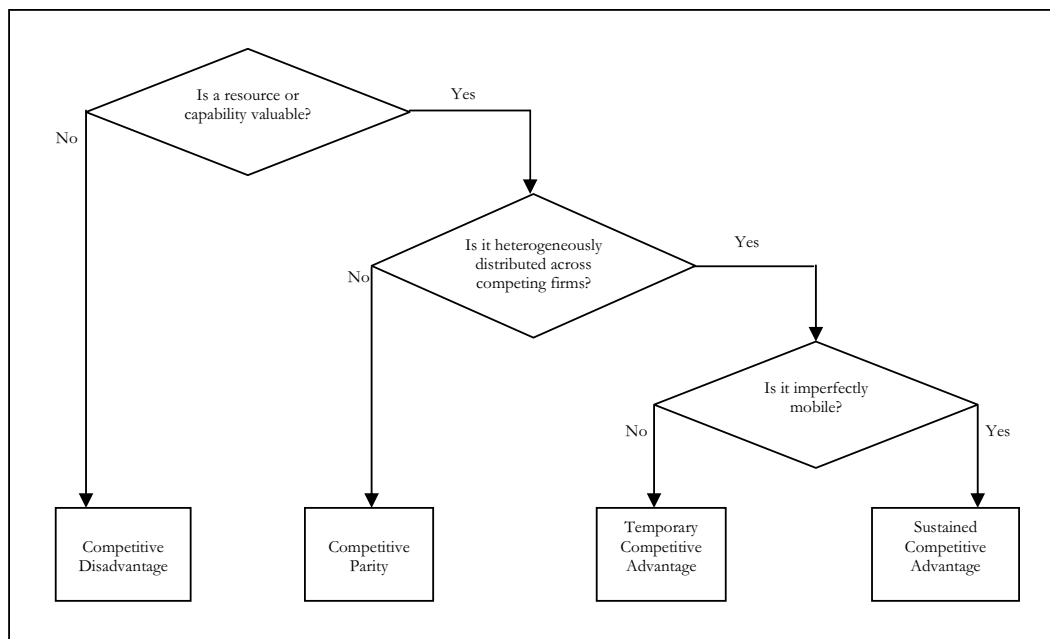
## CHAPTER THREE – THEORETICAL FRAMEWORK – THE RESOURCE BASED VIEW

---

*This chapter introduces the resource based view (RBV) as a theoretical framework. The chapter begins with a discussion of the key aspects and underlying assumptions of the RBV. Then the origins of the theory are outlined. Next, empirical research employing a resource based approach is presented. A discussion of criticisms of the RBV is then presented. Two new streams of RBV are then outlined; dynamic capabilities and the knowledge based view. Lastly, a summary of the chapter is provided.*

### 3.1 INTRODUCTION

The RBV has been useful in articulating the basis by which the resources and capabilities of a firm serve as sources of sustained competitive advantage (e.g., Wernerfelt, 1984; Barney, 1991a; Peteraf, 1993). As such, resources and capabilities are fundamental underpinnings of any source of advantage (Rumelt, Schendel, & Teece, 1991). Valuable resources are termed strategic assets (Barney, 1991a; Amit & Schoemaker, 1993). According to the RBV, business strategy is concerned principally with achieving superior returns from strategic assets in order to explain “why some firms outperform others” (e.g., Grant 1991; Conner and Prahalad 1996). The RBV asserts that ownership and control of strategic assets determines which organisations will earn superior profits and enjoy a position of competitive advantage over others. Three major questions are asked of resources to identify the impact they have – 1. Is the resource or capability valuable? 2. Is it heterogeneously distributed across competing firms? 3. Is it imperfectly mobile? As shown in Figure 3-1, it is only when the three questions are confirmed that a sustained competitive advantage is likely to be gained.

**Figure 3-1 – A resource based model of competitive advantage**

(Adapted from Mata et al., 1995)

The question of a resource's value is generally confirmed in two ways. First, if a resource is used to reduce a firm's cost it can be seen as valuable. Second, if a resource is used to increase a firm's revenue it can be seen as valuable. As such, valuable resources may be used to implement new strategies to improve efficiency and effectiveness (Barney, 1991a), improve customer satisfaction (Bogner & Thomas, 1994; Verdin & Williamson, 1994), or reduce cost (in relation to competitors) (Barney, 1986b; Peteraf, 1993). Black and Boal (1994) suggest that value has to do with strategic fit. That is, if a resource has good fit within the organisation (in terms of the firm's strategy and competitive context) it may be seen as valuable. In essence, a resource is valuable if it helps an organisation to improve its performance relative to their competitors. If the resource meets these conditions the second question is examined. If not, and the resource is exploited, at worst, a competitive disadvantage may be gained – this is because the resource is not valuable to the organisation.

The second question regarding the distribution of a resource examines whether the given valuable resource is freely available. If the resource is freely available, then a competitive parity may be gained, allowing the firm to have the same resources as its competitors. However, if it is not freely available (heterogeneously distributed), then

the resource may be a source of competitive advantage (given the third question). Therefore, if a large number of firms possess a resource, the ability of the resource to be a strategic asset and accrue superior rents diminishes (Michalisin, Smith, & Kline, 1997). Rarity therefore, concerns the resource's availability in factor markets, to be rare a resource must have a limited nature in relation to demand (Hoppes, Madsen, & Walker, 2003). Resource heterogeneity, is often long lived due to 'isolating mechanisms' (Rumelt, 1984) such as time compression diseconomies, historical uniqueness (first mover advantages), embeddedness, and causal ambiguity<sup>5</sup> (Dierickx & Cool, 1989a; Barney, 1991a; Peteraf, 1993; Lieberman & Montgomery, 1998).

The third and final question measures the degree of competitive advantage which may be gained from the given resource. This is achieved by questioning the mobility or inimitability of a resource. If the resource is perfectly mobile then the resource is likely to be only a source of temporary competitive advantage, at best (Mata et al., 1995). This temporary nature is attributed to the advantage because the resource could, due to its mobile nature, change hands. On the other hand, if the resource is not perfectly mobile (i.e., the resource is not free to move between firms, or if a firm without a resource faces a cost in developing, acquiring or using it, that a firm already using it does not), then the resource is likely to be a source of sustained competitive advantage. Inimitability and substitution concerns the availability of substitutes (such as margarine is for butter). If a resource is imitated or substituted then any advantages gained may be short lived. In short, the more mobile a resource is, the less sustained the advantage gained from that resource will be.

Barney (1991a) defines *sustained* competitive advantage as a non-duplicatable advantage. This follows from Lippman and Rumelt's (1982) and Rumelt's (1984) definitions that outline a sustained competitive advantage as an advantage that continues to hold after efforts of others to duplicate the advantage have ceased (Barney, 1991a). Barney's (1991a) definition of sustained competitive advantage does not mean it will last forever. Rather, it suggests that it will not be competed away or

---

<sup>5</sup> "Time compression diseconomies refers to the time needed to acquire the resource through learning, experience, firm-specific knowledge, or trained proficiency in a skill, historical uniqueness refers to advantages that accrue due to unique resources such as distinctive locations or due to first mover advantages such as reputation, brand loyalty, etc.; embeddedness of resources refers to the value of a resource being inexplicably linked to the presence of another complementary or co-specialized resource; causal ambiguity refers to the ambiguity surrounding the connection between a firm's resource portfolio and its performance" (Bharadwaj, 2000, p 171).

easily duplicated by the efforts of others (Barney, 1991a). Barney states that sustained advantages may be challenged when unanticipated changes in the economic structure of an industry occur. Such unanticipated changes therefore, can make what was a source of sustained advantage no longer a source of advantage. Schumpeter (1934), Rumelt & Wensley (1981), and Barney (1997) call these unanticipated changes ‘Schumpeterian Shocks’. Therefore, a firm enjoying a sustained competitive advantage when faced with a Schumpeterian Shock may experience a major shift in the nature of competition and any sources of sustained competitive advantage may be nullified. To combine concepts this far, a sustained competitive advantage may only be made when resources are strategic (valuable), are heterogeneously distributed and imperfectly mobile, and firms should expect to sustain the advantage notwithstanding periods of Schumpeterian Shock.

Critical to the RBV are three assumptions. First, it is assumed that there is an asymmetrical distribution of resources and capabilities across firms within an industry (Barney, 1991a). Therefore, while some firms may enjoy resource based advantages (due to their resource base) others will be in a position of resource based disadvantage (Michalisin et al., 1997). Put another way, the resource heterogeneity implies that firms have varying capabilities. Therefore, firms with marginal resources can expect to breakeven, while firms with superior resources should expect to earn rents (Peteraf, 1993). The differences in firm resource endowments can be attributed to several factors: the time the firm enters the marketplace, different sets of knowledge, products and systems of learning, as well as decision made over time (Helfat, 2000). Second, the RBV assumes relative immobility of resource and capabilities (Michalisin et al., 1997). Resources can be seen as imperfectly mobile if they are not able to be traded<sup>6</sup> (Peteraf, 1993). Michalisin et al. (1997) states that since a firm’s advantage is based on a firm having strategic assets that are superior to one’s competitors, therefore, the ability to sustain the advantage is a function of the heterogeneity of such resources. Third, not all resources will be strategic resources and hence sources of competitive advantage. While some resources such as an office and furniture are required, these resources are not in themselves strategic assets.

---

<sup>6</sup> There are many different ways a firm’s resources can be seen to be imperfectly mobile. For example, resources may; not have well defined property rights, be specialised to firm-specific needs (Williamson, 1985), or be co-specialised (Teece, 1986). See Peteraf (1993) for a discussion of many more factors within an organisation which may lead to imperfect mobility of resources.

Instead, such resources and capabilities may be known as table stakes, that is, required to be in the game rather than a source of advantage themselves.

Examined within the context of the RBV, resources can be broadly defined to include assets, organisational processes, firm attributes, information, or knowledge controlled by the firm which can be used to conceive of and implement their strategies (Learned, Christensen, Andrews, & Guth, 1969; Daft, 1983; Barney, 1991a; Mata et al., 1995). Other researchers also include capabilities and competencies<sup>7</sup> which refer to the ability to deploy groups of resources to perform a function or activity (Amit & Schoemaker, 1993; Danneels, 2002) in their definition of resources because they see capabilities and competencies as merely groups of resources (Barney, 1986a; Barney, 1991a; Peteraf, 1993). Michalisin et al. further explains capabilities as resources by stating “it takes resources to deploy resources” (1997, p 361). Grant (1991) describes capabilities as working towards something using teams of resources. In a similar way Danneels define competencies as the “ability to accomplish something by using a set of material (e.g., equipment, machinery, mail list) and immaterial resources (e.g., manufacturing know-how, understanding of customer needs)” (2002, p 1102). Examples of resources are brand names, technological abilities, efficient procedures, among others (Wernerfelt, 1984; Olavarrieta & Ellinger, 1997; Spanos & Lioukas, 2001).

When examining resources, several researchers have grouped specific types of resources into classifications that may enable firms to conceive and implement value-creating business strategies (e.g., Hitt & Ireland, 1985; Barney, 1991a; Grant, 1991; Amit & Schoemaker, 1993; Black & Boal, 1994; Bogaert, Maertens, & Van Cauwenbergh, 1994; Brumagim, 1994; Wade & Hulland, 2004). Barney (1991) categorises three types of resources: physical capital resources (physical, technological, plant and equipment), human capital resources (training, experience, insights) and organisational capital resources (formal structure). Brumagim (1994) presents a hierarchy of resources with four different levels of corporate resources; production/maintenance resources (considered the most basic or lowest level), administrative resources, organisational learning resources, and strategic vision resources (considered the most advanced or the highest level). Other researchers

---

<sup>7</sup> It is generally accepted that capabilities and competencies are the same thing and make be used interchangeable. These terms will be used interchangeably in this research hereafter.

have classified different resources as tangible and intangible (Itami & Roehl, 1987; Hall, 1992; Hall, 1993). In the tangible/intangible classification, tangible resources have been seen as having the same physical properties as those previously classified as physical capital resources (Michalisin et al., 1997). In the same way, intangible resources include much of what could have been included as human capital resources and organisational capital resources (Michalisin et al., 1997).

In the context of information systems, Wade and Hulland (2004) present a meta study and group many of the classifications used in current research into eight categories: external relationship management, market responsiveness, information systems-business partnerships, information systems planning and change management, information system infrastructure, information systems technical skills, information systems development, and cost effective information systems operations. The eight categories are then grouped into a typology of information systems resources presented by Day (1994) which outlined the higher level categories, outside in, spanning, and inside out. This means research examining information systems utilising a resource based approach has been examined focusing on resources which have come from external stakeholders, outside organisational boundaries, spread across organisational boundaries and flow from inside organisational boundaries.

### **3.2 ORIGINS OF THE RBV**

The focus of models of strategic management, or more particularly theories of competitive advantage, have changed over time. In the 1960's and 1970's the focus was on top managers or leaders and what they should do to make good decisions in their organisations (Cockburn, Henderson, & Stern, 2000). The next shift in focus attributed performance differences in organisations to the structural nature of the industry and strategic positioning within that structure as the foundations of competitive advantage (Porter, 1980; Mehra, 1996). Consequently, this shift in focus meant new models of competitive advantage were outwardly focused<sup>8</sup>. The impact of outward focused models of competitive advantage were substantial. Porter's

---

<sup>8</sup> While models of competitive advantage from this era are widely referred to as outwardly focused, it must be acknowledged that models such as Porters five forces acknowledges the impact that managers can have in understanding structural implications and put in place mechanisms to help the position of their firm/industry.

(1980) contribution yielded a model of competitive advantage which remains popular today; the five forces model<sup>9</sup>. However, outwardly focused models of competitive advantage largely failed to address the role of management and the question of performance differences within an industry. Therefore, several authors suggested performance differences were not well explained by industry factors and looked to build a firm level debate (Schmalensee, 1985; Mueller, 1986; Wernerfelt & Montgomery, 1988; Hansen & Wernerfelt, 1989; Grant, 1991; Rumelt, 1991; Lado, Boyd, & Wright, 1992).

The industrial organisation model, contingency theories and most recently the RBV provide major contributions to the firm debate; that is, the view helps to explain differences in firm performance that cannot be attributed to industry conditions (Rouse & Daellenbach, 1999). Several authors suggest this is an important contribution and indicated that these firm level effects may be substantial (Mueller, 1986; Hansen & Wernerfelt, 1989; Rumelt, 1991; McGahan & Porter, 1997; McGahan, 1999). In fact, Rumelt (1991), McGahan and Porter (1997), and McGahan (1999) demonstrate that firm effects are approximately twice as important as effects from industry. While more internally focused models clearly have a different focus than industry models of competitive advantage it must be acknowledged that the two different approaches are not mutually exclusive. In fact, Cockburn et al. (2000) posits that this is the case and that both bodies of work offer similar theory in regard to the process of strategic choice. The RBV has been a leading contributor to the firm level debate. In fact, some researchers suggest that the RBV is one of the most influential works in the field of strategic management (e.g., Barney et al., 2001).

There is some discussion regarding the theoretical roots of the RBV (e.g., Cockburn et al., 2000). Early roots of the RBV have been linked to the work of Ricardo (1817) who discussed how rents could be earned due to the ownership of valuable resources that are scarce. The work of Penrose (1959) is also widely acknowledged to be one of the canonical works that contributed to the RBV (e.g., Peteraf, 1993; Schendel, 1994). Others that have been seen to contribute to early discussion include;

---

<sup>9</sup> Outwardly focused or structural analysis models of competitive advantage are still widely researched today. This research does not attempt to address all aspects of these models or provide an up to date account of the field. For recent accounts see Brandenberger and Nalebuff (1998) and Besanko, Branove, and Shanley (2000).

Stinchcombe (1965), Andrews (1971), Teece (1980; 1982), Nelson and Winter (1982), Lippman and Rumelt (1982), and Wernerfelt (1984). Wernerfelt's (1984) description of firms as bundles of resources served as one of the first theoretical statements, within the field of strategic management, of the RBV.

Penrose's (1959) canonical work, *The Theory of the Growth of the Firm*, introduced many concepts which have been linked with resource based thinking. Penrose tied the growth of the firm to the efficient management and coordination of "productive resources". Wernerfelt's (1984) work emphasised the internal workings of a firm and explained performance and growth by the different resources bases of organisations. In 1991 Barney (1991b) posited a theoretical view of the RBV in a special issue of the *Journal of Management* which has since prompted an extensive dialogue on the theory. Today numerous special issues and edited volumes have discussed and extended the RBV (e.g., Barney & Zajac, 1994; Teece & Pisano, 1994; Montgomery, 1995; Spender & Grant, 1996; Foss, 1997; Henderson & Mitchell, 1997; Foss & Robertson, 2000; Helfat, 2000; Barney et al., 2001; Lockett & Thompson, 2001; Hoopes, Madsen, & Walker, 2003; Wade & Hulland, 2004). Significant early contributions to the conversation on RBV are summarised in Table 3-1.

**Table 3-1- Key early works of the RBV**

<b>Authors (year)</b>	<b>Major Contribution</b>
Penrose (1959)	Emphasises the internal resources of a firm. A firm's growth is based on a firm's resources and limited by managerial resources
Andrews (1971)	Emphasises management of internal resources
Lippman and Rumelt (1982)	Sustained competitive advantage results from rich connections between uniqueness and causal ambiguity
Wernerfelt (1984)	Firms as bundles of resources
Rumelt (1984)	Strategic theory of the firm based on the idea of firms as resource bundles
Barney (1986b)	Characteristics of the factors market determine possibilities for a firm to earn rents
Rumelt (1987)	Firms as rent-seekers. The importance of isolating mechanisms to earn rents
Rumelt (1987), Dierickx and Cool (1989a)	Summary article on imitability barriers (e.g., causal ambiguity and isolating mechanisms like asset interconnectedness, asset stock efficiencies, etc.) that impede (or make very costly) imitation from other competitors

Day and Wensley (1988), Aaker (1989), Grant (1991), Wernerfelt (1989)	Strategic formulation models that have firm resources as the central concept and as the sources of sustainable competitive advantage
Prahalad and Hamel (1990)	Core-competencies as the drivers of corporate strategy and diversification. Business should exploit and leverage core competencies. Corporations should diversify in related businesses which can make use and enhance the core competences of the organisation
Hansen and Wernerfelt (1989), Rumelt (1991)	Empirical studies that support the hypothesis that firm-specific resources or organisational factors are more important than industry variables for explaining firm superior performance
Barney (1991a)	Key strategic resources can be sources of strategic competitive advantage if they are scarce, difficult to imitate, non-substitutable, and valuable
Conner (1991)	Comparison of the resource based theory of the firm with other strategic approaches derived from economics. Clarification of assumptions of the resource based theory and its implication for rent earning strategies
Peteraf (1993)	An integrative resource based framework for strategic competitive advantage. Proposes that firms obtain superior performance, by earning rents from scarce and efficient resources and/or form market power in the product markets
Day (1994)	Capabilities framework of strategic competitive advantage. Distinguishes between outside-in, spanning and inside-out capabilities
Collis and Montgomery (1995)	Managerially-oriented review of the RBV
Collis and Montgomery (1995)	Edited book examining the linkages between resource based theory of the firm and evolutionary approaches
Grant (1996b)	Knowledge based view develops considering knowledge as the key or strategic asset of firms
Teece, Pisano, and Shuen (1997)	Dynamic capabilities as sources of competitive advantage

(Adapted from Olavarrieta & Ellinger, 1997; Mahoney, 2004)

### 3.3 EMPIRICAL APPLICATIONS

Advancing the theoretical development of the RBV, to provide valuable academic and practitioner outcomes, requires empirical analysis of strategic assets. Yet, despite continued interest in resource based streams of research, there was until recently limited empirical work examining firm specific resources and their performance linkages (Miller & Shamsie, 1996; Michalisin et al., 1997; Olavarrieta & Ellinger,

1997; Yeoh & Roth, 1999). However, more recently work employing the RBV has been vibrant (Ahuja & Katila, 2004). More specifically, Rouse and Daellenbach (2002) states that over 100 RBV papers are now published per year, many of which are empirically based. In their summary of empirical work of the RBV, Barney and Arian (2001) describe six different focuses in current research. Focuses include; firm versus industry effects, the impact of different resources and capabilities, corporate strategies, international strategies, strategic alliances, and rules for riches. While each of these areas have growing bodies of empirical research in their own right, this section will outline the impact of different resources and capabilities because of its direct application to this research. Barney and Arian also signal that research examining resources and firm performance is the most significant of the distinct bodies of researching which utilise the RBV.

Research which explores the impact of different resources and capabilities is primarily concerned with identifying strategic assets, that is, identifying specific resources which, when analysed utilising resource based logic are valuable, rare, and imperfectly mobile. In pursuing this research, studies have aimed to address specific issues in different contexts. For instance, Prahalad and Hamel's (1990) use of the RBV to study diversification, Hart's (1995) use of the RBV in environmental management, and Christensen's (1995) study of innovation based firm resources. Studies have also been applied to a number of diverse fields such as human resource management (Wright, Dunford, & Snell, 2001), entrepreneurship (Alvarez & Busenitz, 2001), and information technology (Ray et al., 2005); and examined several different industries such as pharmaceuticals (Henderson & Cockburn, 1994) and retail (Powell & Dent-Micallef, 1997). Several specific types of resources have also been examined for their effect on performance. Resources examined include; an organisation's culture (e.g., Moingeon, Ramanantsoa, Metais, & Orton, 1998), employee know-how (e.g., Hall, 1992; Hall, 1993; Glunk & Wilderom, 1998), information communication technologies (e.g., Powell & Dent-Micallef, 1997), and entrepreneurial skills (e.g., Hoskisson, Eden, Lau, & Wright, 2000), and many more.

Measurement of resources and capabilities in empirical work of the RBV varies extensively in current research (Hoopes et al., 2003). This is not surprising since identifying and measuring resources can be problematic. A significant problem with

identifying resources is understanding where to look. Grant (1991) discusses two potential sources which may be used to identify resources and capabilities; management information systems and financial balance sheets. However, the researcher suggests that each of these potential sources is limited. Management information systems “provide only a fragmented and incomplete picture of a firm’s resource base” and financial balance sheets are “notoriously inadequate” and fail to take into account intangible resources and capabilities and human resources (Grant, 1991, p 119). Other measures, of resources and capabilities, used in current research include: archival proxies (Miller & Shamsie, 1996), structural equation modelling (Hult & Ketchen, 2001; Hult, Ketchen, & Nichols, 2002), asking research participants (Hall, 1992), and by way of the researchers own observations (Hall, 1993). The following paragraphs provide a review of empirical RBV research, outlining significant contributions.

One of the early pieces of empirical work examining the impact of different resources and capabilities was Aaker’s (1989) study of Chief Executive Officers in northern California. The Chief Executive Officer’s were asked to identify their sources of sustained competitive advantage. The top three sources of advantage identified were quality reputation, customer orientation, and profile or recognition.

Hall (1992; 1993) has undertaken two empirical studies which examine strategic resources as sources of competitive advantage. In his 1992 study Hall surveyed chief executive officers in the United Kingdom asking the executives to rank thirteen different resources in order of importance as they see to their firm’s success. Hall found employee know-how and reputation are perceived as the resources that make the most important contribution to firm success. It must be noted that most of the resources that the executives used to rank could be considered intangible. The main exception is the resource termed specialist physical resources.

In the 1993 study Hall undertook six case studies which examined the role of intangible resources in business strategy. Based in England the case studies involved structured interviews with key personal such as the Managing Director or Personnel Director. The results of this research had strong similarities to his 1992 work with the following intangible resources seen as most important to a firm’s success:

company reputation, product reputation, employee know-how, perception of quality standards (which was presented as an attribute of culture in the earlier study), and ability to manage change (also presented as an attribute of culture). While the 1992 study identified culture as one of the resources to rank, the 1993 study differed in the approach by further breaking culture down into six attributes (or subsets): perception of quality, perception of customer service, ability to manage change, ability to innovate, team working ability, and participative management.

Schroeder, Bates & Suntilla (2000) built on previous studies of manufacturing performance in examining sources of advantage. Performance is measured as an index of several manufacturing performance variables: cost as percentage of sales, conformance quality, percentage of on-time deliveries, days from receipt of raw materials to customer receipt (cycle time), and the length of the fixed production schedule (flexibility). The results showed that proprietary process and equipment which in turn, is driven by external and internal learning is the source of competitive advantage in manufacturing plants.

Hatch and Dyer (2004) tested propositions of the RBV in the semiconductor industry relating to the impact of firm-specific investments in human capital on learning by doing performance. The researchers found firms that are superior at acquiring, developing, and deploying human capital experience sustained advantages. The advantages relate to learning and ultimately relate to cost savings. Table 3-2 outlines a sample of RBV empirical investigations which identify valuable resources and capabilities.

**Table 3-2 -Empirical work examining sources of advantage utilising the RBV**

<b>Source/Title</b>	<b>Method</b>	<b>Findings</b>
Managing assets and skills: The key to a sustainable competitive advantage (Aaker, 1989)	Survey	Quality reputation, name recognition, and customer service/process support were named as value adding resources.
The strategic analysis of intangible resources (Hall, 1992)	Survey	Employee know-how and reputation are perceived as the resources that make the most important contribution to firm success.
A framework linking intangible resources and capabilities to	Case Study	The top five strategic resources identified by executives were: company reputation, product

sustainable competitive advantage (Hall, 1993)		reputation, employee know-how, organisational culture.
Defining and developing a competence: A strategic process paradigm (McGrath, MacMillan, & Venkataraman, 1995)	Fieldwork	Comprehension of the management team and deftness of task execution are sources of value.
Knowledge and the speed of transfer and imitation of organisational capabilities: An empirical test (Zander & Kogut, 1995)	Survey	Ease of codifying and communicating a manufacturing capability effect time to transfer and time to imitation of new product development.
Innovation history and competitive advantage: A resource-based analysis of manufacturing technology innovations (Bates & Flynn, 1995)	Survey	Building resources through innovation capability rest on accumulated expertise and skills which may serve as sources of advantage.
Innovation, competitive advantage and rent: A model and test (McGrath, Tsui, Venkataraman, & MacMillan, 1996)	Survey	Causal understanding, innovative proficiency, emergence and mobilisation of new competencies lead to rent generating innovations and hence competitive advantage.
The resource-based view of the firm in two environments: The Hollywood Film Studios from 1936 to 1965 (Miller & Shamsie, 1996)	Survey	Property-based and knowledge based resources increase performance.
The impact of stocks and flows of organisational knowledge on firm performance: An empirical investigation of the biotechnology industry (DeCarolis & Deeds, 1999)	Survey	Knowledge generation, accumulation, and application may be the source of superior performance. In addition, location, products in the pipeline and firm citations are significant predictors of firm performance in the biotechnology industry.
The leveraging of inter-firm relationships as a distinctive organisational capability: A longitudinal study (Lorenzoni & Lipparini, 1999)	Case study	A firm's knowledge access and transfer is accelerated by a firm relational capability (the ability to interact with other companies). Knowledge transfer affects company growth and innovativeness (and hence advantage).
Untangling the origins of competitive advantage (Cockburn et al., 2000)	Archival data	Sources of advantage lie in the ability to identify and respond to environmental cues.
Does market orientation matter?	Archival	Positional advantages arising from the influence

A test of the relationship between positional advantage and performance (Hult & Ketchen, 2001)	data	of marketing orientation, entrepreneurship, innovativeness and organisational learning have a positive effect on multinational corporation's performance.
High- and low-performance firms: do they have different profits of perceived core intangible resources and business environment? (Carmeli, 2001)	Survey	Organisational strategy is perceived as the most valuable intangible resource, know-how is perceived as the rarest intangible resource, the ability to manage change is the rated as the most inimitable and non-substitutable resources among high performing firms.
The resource-based view as a developmental growth process: Evidence from the deregulated trucking industry (Pettus, 2001)	Archival data	Firms that follow a specific hypothesised resource development pattern generated higher growth than those following other development patterns.
A resource-based view of manufacturing strategy and the relationship to manufacturing performance (Schroeder, Bates, & Junttila, 2002)	Survey	Proprietary process and equipment which in turn, is driven by external and internal learning is the source of competitive advantage in manufacturing plants.
Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses (Wiklund & Shepherd, 2003)	Longitudinal Survey	Knowledge based resources (applicable to discovery and exploitation of opportunities) are positive associated with firm performance, and entrepreneurial orientation enhances this relationship.
Human capital and learning as a source of sustained competitive advantage (Hatch & Dyer, 2004)	Survey and interviews	Human capital selection (education requirements and screening), development thought training, and deployment significantly improve learning by doing, which in turn improves performance.
Managing human resource capabilities for sustainable competitive advantage: An empirical analysis from Indian global organisations (Khandekar & Sharma, 2005)	Survey	Human resource capabilities are positively correlated to organisational performance. Furthermore, human resource capability was found to be a significant predictor of sustainable competitive advantage.
Information system innovations and supply chain management: channel relationships and firm performance (Kim, Cavusgil, & Calantone, 2006)	Survey	The effect of applied technological supply chain communication system (SCCS) innovations on channel capabilities is mediated by inter-firm systems integration. In contrast, administrative SCCS innovations enhance information exchange and coordination activities directly.

Strategic analysis of large local construction firms in China (Cheah, Kang, & Chew, 2007)	Case study	Two strategies – differentiation and market/product diversification, and three important resources and competencies – technological innovative capabilities, financial capabilities and guaxi (relationship), directly affect firm performance.
Management support and the performance of entrepreneurial start-ups – An empirical analysis of newly founded companies in Germany (Stubner, Wulf, & Hungenberg, 2007)	Survey	Quality of management support offered by venture capital firms has an impact on start-up performance.

Of note to this research, several RBV studies have focused specifically on ICT's. In their review of the field, Wade and Hulland (2004) stated that research which examines ICT's utilising a resource based approach started in the mid 1990's. Current empirical work has examined ICT related aspects such as: business strategies, specific technologies, IT infrastructure, online social structures, and the broad effects of ICT's. For instance, Christianse and Venkatraman (2002) used the RBV to examine whether locking in customers and suppliers with information technology was an effective strategy. Similarly, Wade and Gravill (2003) examined IT firms which were diversifying internationally. He (2004) utilised the RBV and developed a three tier model of ERP challenges. Broadbent et al. (1999) examined the extent of IT infrastructure and its effect on the organisation. Butler (2001) uses resource based logic to examine online social structures. Bharadwaj's (2000) research used a broad measure of IT and linked that to performance.

More importantly to this research, studies which examine specific ICT resources as sources of advantage are also emerging. For example, Ray (2001) found that the key IT resource which has the most effect on firm performance is managerial IT knowledge. Similarly, Ray et al. (2004) found that intangible and socially complex capabilities, such as service climate and managerial IT knowledge, are positively related to customer service performance. Many others have suggested linkages among ICT resources and suggested that the coupled resources lead to a competitive advantage (but do not test the link between the group and performance or sustained

competitive advantage). For instance, Bharadwaj et al. (1998) outlines an IT capability construct made up of six elements (IT business partnership, external IT linkages, business IT strategic thinking, IT business process integration, IT management, and IT infrastructure). Armstrong and Sambamurthy (1999) examine the influences of senior leadership, sophistication of IT infrastructures and organisational size on IT assimilation. Table 3-3 provides a summary of these and other empirical works which utilise the RBV in examining ICT based advantages.

**Table 3-3 - Empirical work examining sources of ICT advantage utilising the RBV**

Source/Title	Method	Findings
Catching the wave: Alertness, responsiveness, and market influence in global electronic markets (Zaheer & Zaheer, 1997)	Archival data	Uses an RBV framework to show that alertness and responsiveness lead to market influence in the global finance industry.
IT capabilities: Theoretical perspectives and empirical operationalization (Bharadwaj et al., 1998)	Case study	Describes the formation of an IT capability construct with six elements: IT business partnerships, external IT linkages, business IT strategic thinking, IT business process integration, IT management, and IT infrastructure.
Information technology assimilation in forms: The influence of senior leadership and IT infrastructure (Armstrong & Sambamurthy, 1999)	Survey	Looks at the influence of quality of senior leadership, sophistication of IT infrastructure and organisational size on IT assimilation. Suggests that there is a strong effect of CIO's business and IT knowledge on IT assimilation.
Strategic context and patterns of IT infrastructure capability (Broadbent, Weill, & Neo, 1999)	Survey	More extensive IT infrastructure capability found in firms where products changed quickly and the implementation of long-term strategies was tracked over time.
Success in high-technology markets: Is marketing capability critical? (Dutta, Naasimhan, & Rajiv, 1999)	Archival data	Highlights the importance of marketing research and development coordination as important determinants of new product development in a high technology context.
A resource-based perspective on information technology capability and firm technology capability and firm performance: An empirical investigation	Archival data	Performance of firms which are rated to have superior IT capability in magazine survey compared to firms which do not. Performance of superior IT capability firms found to be higher.

(Bharadwaj, 2000)		
Capabilities, business processes, and competitive advantage: The impact of information technology on customer satisfaction in the North American Insurance Industry (Ray, Barney et al., 2001)	Survey	Study finds that managerial IT knowledge and service climate positively affect customer service performance.
Information technology and competitive advantage: A process oriented assessment (Ray, Muhanna, & Barney, 2001)	Survey	Study finds that managerial IT knowledge leads to enhanced customer service performance but flexibility of IT infrastructure, IT technical skills, and IT applications do not.
An exploratory analysis of new competencies: A resource based view perspective (Coates & McDermott, 2002)	Longitudinal Case Study	Identified three new competencies that were created in the new product development (when developing an emerging technology): technology, market, and integration.
Impact of information systems resources and capabilities on firm performance: A resource-based perspective (Ravichandran & Lertwongsatien, 2002)	Survey	Examines complementarily from a resources-based perspective. Finds preliminary support for the relationship between IT and non-IT firm capabilities in achieving superior firm performance.
A process model of capability development: Lessons from the electronic commerce strategy at Bolsa de Valores de Guayaquil (Montealegre, 2002)	Longitudinal Case Study	Formulates a four dimensional model to help practitioners (in an electronic commerce setting) develop valuable organisational capabilities comprising of capabilities to; strategise, be flexible, integrate, and engender trust.
Issues in linking information technology capability to firm performance (Santhanam & Hartono, 2003)	Archival data (same as Bharadwaj, 2000)	Extends and confirms Bharadwaj (2000). Finds that firms with superior IT capability also exhibit superior firm performance.
Leveraging IT resources and capabilities at the housing and development board (Teo & Ranganathan, 2003)	Case Study	Demonstrates how the case leverages on its IT resources and capabilities together with complementary business and human resources to manage IT effectively.
Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view (Ray et al., 2004)	Survey	Intangible and socially complex capabilities – service climate and managerial IT knowledge – are positively related to customer service performance.
Information technology and the	Survey	Tacit, socially complex, firm-specific resources

performance of the customer service process: A resource based analysis (Ray et al., 2005)		explain variation in process performance across firms. Particularly shared information technology knowledge between IT and customer service units is an important driver of how IT is implemented.
An empirical study of relationship between IT investment and firm performance: A resource-based perspective (Huang, Ou, Chen, & Lin, 2006)	Experiment	Firms with high levels of IT infrastructure and human-IT resources have strong positive relationship with IT-enabled intangibles, but not with firm performance. Additionally, IT-enabled intangibles are strongly positively correlated with firm performance.
Information system innovations and supply chain management: channel relationships and firm performance (Kim et al., 2006)	Survey	The effect of applied technological supply chain communication system (SCCS) innovations on channel capabilities is mediated by inter-firm systems integration. In contrast, administrative SCCS innovations enhance information exchange and coordination activities directly.
Antecedents and consequences of Internet use in procurement: An empirical investigation of US Manufacturing firms (Mishra, Konana, & Barua, 2007)	Survey	Some resources, such as procurement-process digitisation, influence internet use in both the procurement stages, while other resources, such as the diversity of organisational procurement knowledge, impact internet use in only one stage.

Some of the empirical work alludes to advantages being based on interlinked resources and capabilities. For instance, Hult & Ketchen (2001) suggest collections of resources may collectively contribute to competitive advantage. The researchers suggested market orientation, entrepreneurship, innovation and organisational learning collectively contribute to the creation of unique resources (which in turn enhance organisational success). This was tested in a large scale survey of 1,000 multinational corporations. Although each element is adequate to offer strengths individually, together they can help a firm be uniquely competitive (Hult & Ketchen, 2001). Other empirical research by Ray (2000) supports this notion, showing resources are valuable, not in isolation, but by their ability to leverage other firm specific resources to shape processes. Others such as Black and Boal (1994) and Powell and Dent-Micallef (1997) have also suggested the interaction of resources and capabilities are where sources of advantages lie.

Conceptual work also builds on the interconnection of organisational resources, for instance, Helfat and Raubitschek (2000) develop a conceptual model which helps to explain how organisations successfully utilise their ICT resources and capabilities over time to obtain competitive advantage. The researchers provide a framework, which enables firms to track the evolution (or stages in the evolution) of their resource base across time and markets. While this sounds like a significant breakthrough the model and framework are still at an infant stage. The very essence of their framework is routines or sequences of products supported by core resources or capabilities such as systems of knowledge and systems of learning. Systems of knowledge are made up of two types of knowledge, core and integrative. Two subgroups also make up systems of learning in the model, these are incremental and step learning. Helfat and Raubitschek use the framework to analyse several technology rich anecdotal case studies.

### **3.4 LIMITATIONS OR CRITICISMS OF THE RBV**

Several scholars have noted the limited challenges of the RBV over the years (e.g., Williamson, 1999; Priem & Butler, 2001; Foss & Knudsen, 2003), however, the view has not gone unchallenged. Criticisms of the RBV can be broken down to issues concerning three main areas; the vagueness of terminology associated with the RBV, the tautological nature of some of the views underlying assumptions, and methodological issues. Each of these areas will be discussed in the following paragraphs.

The lack of commonality of terms with RBV research has received a lot of criticism in the literature (e.g., Foss, 1998; Williamson, 1999; Fahy, 2000; Priem & Butler, 2001; Montealegre, 2002; Rugman & Verbeke, 2002; Foss & Knudsen, 2003; Hoopes et al., 2003; Wade & Hulland, 2004). Collis (1994) and others (e.g., Coates & McDermott, 2002; Ray et al., 2004) describe the number of definitions as vast. The use of different terminology to explain results of RBV studies makes it very difficult to compare the results of studies. For example, while some researchers outline distinct meanings for the core terms; resources, competencies, and capabilities (e.g., Helfat & Peteraf, 2003), other researchers use the terms interchangeably (e.g., Ray et al., 2004). Nanda (1996) suggests that the lack of commonality of terms limits the usefulness of results of RBV research to strategic thinking. Corner comments that

since everything in a firm may be seen as a resource “resources lose (their) explanatory power” (1991, p 145). Similarly, Hax and Wilde (2001) suggest a significant limitation of RBV research is the vagueness of the theory. In contrast, Foss (1998) suggests that there may be little value in developing a common definition of terms.

Another significant critique of the RBV is that the view is essentially a tautology (Porter, 1991; Foss, Knudsen, & Montgomery, 1995; Mosakowski & McKelvey, 1997; Priem & Butler, 2001; Bromiley & Fleming, 2002). Porter claims that “at its worst, the resource based view is circular” (1991, p 108). Hoopes et al. (2003) and Mosakowski and McKelvey (1997) also raises this concern stating that the RBV is hard to disconfirm. The researchers also challenge the premise of the RBV suggesting that the view “seems to assume what it seeks to explain” (Hoopes et al., 2003, p 891). Furthermore, the researchers posit that the lack of clarity about core aspects of the RBV impede the development of theory and fruitful debate.

Each of the studies of resources and firm performance vary substantially in terms of the methodology employed and the way the research is designed. Methodologies used include large scale surveys, case studies, and studies of archival data. However, despite numerous calls for more qualitative contributions (e.g., Powell & Dent-Micallef, 1997; Rouse & Daellenbach, 1999; Chan, 2000), a significant proportion of current research has employed large scale surveys or employed other quantitative methods (Rai, Patnayakuni, & Patnayakuni, 1997; Dewan & Kraemer, 1998). Rouse and Daellenbach (1999) question the strong bias towards quantitative research methods suggesting that such a methodology is not appropriate for RBV research in general. The researchers suggest that the nature of advantages in organisations should be organisationally based and complex and, as such, field based methodologies are much appropriate. Chan (2000) supports this position suggesting that the field of research may not be fully understood until more qualitative contributions are added to the conversation.

Differences in the design of RBV research makes aggregation across studies difficult due to the many variables involved (Rouse & Daellenbach, 1999). Effects of strategy, industry, environment, or time may interact with the complexity of

organisational factors (Lawless, Bergh, & Wilsted, 1989; Powell, 1992a, 1992b) and create significant differences in the design (and results) of current research. In their review article, Hoopes et al. (2003) extend this notion commenting that the RBV has not evolved in a similar accretive way. The researcher also suggests that the difference in the operationalisation of resources leads to disjointed results.

Another significant methodological limitation is the simplification of some of the complex variables in current research. Many researchers may be critiqued due to the overly simplified view of resources and capabilities in their research. This represents a strong mismatch between the realities of organisations and some of the current research. Foss (1998) stresses this view outlining the strong coupling of resources within organisations. The researchers suggest competitive advantages are built on “the way resources are clustered and how they interact” (Foss, 1998, p 143). Other researchers also support this view (e.g., Black & Boal, 1994; Grant, 1996a) and some have attempted to build more coupled models of reality (e.g., Dierickx & Cool, 1989b; Amit & Schoemaker, 1993; Mathews, 2002).

A considerable issue when designing research in this area is developing a research design which measures resources accurately. This has in the past been problematic due to difficulties involved with measuring entities that are largely intangible (Godfrey & Hill, 1995; Yeoh & Roth, 1999; Powell, 2001). Intangibility, invisibility, and general unobservability of resource based constructs creates complications in proposing empirical studies of the RBV (Powell, 2001). Hatch and Dyer also suggest that a concern is the “same isolating mechanisms that protect resources from expropriation also hinder our efforts to identify, measure, and estimate the relationship between resources and competitive advantage” (2004, p 1156).

### **3.5 NEW STREAMS OF RESOURCE BASED RESEARCH**

Significant new developments in RBV research have explored dynamic and knowledge based approaches to competitive advantage. Each of these approaches is outlined in turn.

### **3.5.1 DYNAMIC CAPABILITIES**

The first new stream of RBV research, the dynamic capabilities approach, examines competitive advantage in periods of rapid change or environments with high reliance on ICT's<sup>10</sup>. The approach suggests in such marketplaces, where the competitive environment is rapidly changing, managers need to develop capabilities embedded in the firm which are based on sequences of path dependant learning in order to achieve periods of competitive advantage (Teece et al., 1997; Eisenhardt & Martin, 2000; Miller, 2003). Examined within this context dynamic capabilities are “strategic and organisational processes like product development, alliancing, and strategic decision making that create value for firms within dynamic markets by manipulating resources into new value-creating strategies” (Eisenhardt & Martin, 2000, p 1106). This definition is consistent to others interpretations, such as Winter (2003) who views dynamic capabilities role as extending, modifying, or creating new capabilities. The key differential between ordinary capabilities and those that are dynamic is that dynamic capabilities are linked with change and more particularly, changing the resource base of a firm (Collis, 1994; Winter, 2003).

The dynamic capabilities approach is especially relevant today when global competitive battles in high-technology industries such as information services and software development exist. In this environment ways of achieving advantage are changing. While valuable, rare, and inimitable resources are still sort after, firms achieving superior returns face other pressures. As such, firms in this marketplace need to have timely strategies, flexible infrastructures, and an ability to utilise resources and capabilities in coupled and innovate ways (Teece et al., 1997). Therefore, in contrast to traditional RBV assumptions competitive advantages gained in the dynamic marketplace may be based on capabilities, which have greater homogeneity and substitutability across firms (Eisenhardt & Martin, 2000). This is due to commonalities seen in dynamic capabilities such as best practices. Eisenhardt & Martin (2000) liken this to playing golf, suggesting that just as there are better and worse ways to hit a golf ball, there are more effective and less effective ways to utilise a dynamic capability. Although these commonalities exist, dynamic capabilities can

---

<sup>10</sup> It must be noted that innovation, change and technology have previously been discussed in relation to strategic thought. In the 1930's and 1940's Schumpeter (1934, 1942) outlined ideas of technological innovation and creative destruction. However, Nelson and Winter (1982) suggested that economic theory of the period did not offer much to the relationship between strategic thought and technological change.

vary in specific detail (Eisenhardt & Martin, 2000). Competitive advantages achieved through dynamic capabilities are therefore based on the ability to change the resource base of the firm. This means dynamic capabilities alter resource bases by creating, integrating, recombining, and releasing resources (Eisenhardt & Martin, 2000).

Despite these key differences in underlying assumptions, advantages gained using the dynamic capabilities approach shares some commonalities with that of the core RBV. In fact, some argue that dynamic capabilities offer little that differs from the original intentions of the RBV. Barney, Wright and Ketchen state “changing the words with which the theory is developed does not change the underlying theory” (2001, p 630). The researchers continue by suggesting that dynamic capabilities are simply “capabilities that are dynamic” (Barney et al., 2001, p 630).

Dynamic capabilities have been tightly coupled with a dynamic or rapidly changing environment (Teece et al., 1997; Sher & Lee, 2004). However, Zahra et al. (2006) also discuss the applicability of such capabilities in non dynamic marketplaces. The researchers suggest that while organisations which operate in more dynamic marketplaces would gain greater value from dynamic capabilities; it does not exclude organisations in slower to change marketplaces from gaining value from dynamic capabilities.

In summary, dynamic capabilities suggest that the ability to alter an organisation’s resource base is a source of a competitive advantage (Barney et al., 2001). Therefore, if an organisation is able to change quicker and be more alert to changes in the competitive market, then they are more likely to gain a position of competitive advantage.

### **3.5.2 KNOWLEDGE BASED VIEW**

Another perspective, the knowledge based view (KBV), gained support in the mid 1990’s (e.g., Grant & Baden-Fuller, 1995; Conner & Prahalad, 1996; Grant, 1996b; Liebeskind, 1996; Spender, 1996a, 1996b; Wright et al., 2001). Central to a KBV are mechanisms for the creation, protection and transfer of knowledge (Henderson & Cockburn, 1994; Kogut & Zander, 1996; Liebeskind, 1996; Argote & Ingram, 2000; Droge, Claycomb, & Germain, 2003). Kogut and Zander highlight this perspective,

stating “that a firm (should) be understood as a social community specialising in the speed and efficiency in the creation and transfer of knowledge (1996, p 503). Choo builds on this notion describing how firms now compete on knowledge, as information and knowledge allow an organisation to “manoeuvre with intelligence, creativity, and occasionally, cunning” (1998, p xi).

Therefore, the KBV posits that organisational knowledge or know-how is the basis of competitive advantages in today’s marketplace (Grant, 1996b; Nahapiet & Ghoshal, 1998). That is, the KBV does not posit a substantial shift in thinking (from the RBV) about what is the source of competitive advantages. The source of competitive advantage is still seen as an organisational *resource*, however, in the KBV *knowledge* is the *resource* which explains performance differences within firms (Williams, 1992). Hence, competitive advantages are based on organisational resources (or capabilities) for “creating and sharing knowledge that give them (organisations) their distinctive advantage over other institutional arrangements, such as markets” (Nahapiet & Ghoshal, 1998, p 242).

Like the RBV, competitive advantages within the KBV are based on resource heterogeneity (DeCarolis & Deeds, 1999). That is, knowledge resources are heterogeneously distributed within organisations and difficult to imitate (Teece, 1998). The resource heterogeneity can be partly attributed to the “stickiness” and inimitability of knowledge resources (Droge et al., 2003). The stickiness of knowledge resources is attributed to three factors (DeCarolis & Deeds, 1999; Droge et al., 2003): (1) the complex and lengthy process involved in the creation and application of knowledge (Dierickx & Cool, 1989a); (2) the unavailability of knowledge assets in factor markets and difficulty in imitating such assets (Teece, 2000); (3) the likelihood that even if knowledge assets were available on the factor markets, that the price would incorporate the future rent potential of the asset (Barney, 1986b).

Droge et al. (2003) suggests resource heterogeneity of knowledge assets may be long lived because few knowledge assets are able to be standalone assets, rather they are part of routines or processes and understanding the interconnections may be difficult. The interconnectedness means should an organisation successfully imitate

one part of the knowledge asset, the associated performance gains may not be forthcoming. This follows from Barney's (1991a) discussion of causal ambiguity, in that, when a resource (such as organisational knowledge) is complex, tacit, or obscurely interconnected, it is very difficult to imitate. When resources have causal ambiguity the organisation which owns the firm may find the resource very difficult to replicate in other parts of the organisation, let alone another organisation imitating such resources.

Droge et al. (2003) and others (e.g., March, 1991; Nonaka, 1991; Spender, 1994; Grant, 1996b; Demarest, 1997) stress the importance of both the *creation* and *application* of knowledge in the KBV. Focusing on only the application of knowledge “overlooks the importance of the search, experimentation, discovery, and innovation needed to create and build knowledge resources” (Droge et al., 2003, p 543). In the same vein, focusing only on knowledge creation overlooks the application and usage of knowledge in the organisation. Since knowledge is created to fulfil organisational purposes, this is also an important part of knowledge in organisations. Consequently, when either of these stages of organisational knowledge is overlooked, a fundamental part of the KBV is missed. Therefore, knowledge may be a source of competitive advantage when organisations are “consistently creating new knowledge, disseminating it widely through a firm, and quickly embodying it in new technologies, goods, or services” (Droge et al., 2003, p 543).

In summary, the KBV suggests that today more than ever, sources of advantage are likely to be knowledge based resources and capabilities. Therefore, creation and application of organisational knowledge is critical to organisational success. As such the source of knowledge advantage is heterogeneous and inimitable organisational knowledge resources. This highlights the importance of knowledge creation and application within organisations and suggests that firms that can achieve this at a lower cost or in a more successful way (i.e., a more timely way) will gain a competitive advantage over their competitors.

### **3.6 CHAPTER SUMMARY**

While resource based research continues to grow, it is timely to take note of the limitations of current research and lessons from the emerging streams of RBV

research. In the context of this research, the growing understanding of the complex and interlinked nature of ICT's highlights the type of research required. Adding to this conversation would be significant because a number of researchers suggest that the simplified view of resources in organisations is a significant limitation of current research (Powell & Dent-Micallef, 1997; Santhanam & Hartono, 2003; Carmeli & Tishler, 2004; Ray et al., 2004; Wade & Hulland, 2004).

In addition, the new streams of resource based research outlined (dynamic capabilities and the KBV) along with emerging conceptual models (for instance, Helfat and Raubitschek's (2000) model of resources and capabilities changing over time) provide a starting point for new investigations in the area. The new streams of RBV research give researchers new places to look for sources of advantage in organisations. In summary, while some limitations of current RBV research have been outlined the body of research offers significant insights which may help this research. Particular insights of note include the complex and intertwined nature of ICT's, as well as the importance knowledge and integration of resources and capabilities. The next chapter combines concepts to date and outlines the research questions for this research.

## CHAPTER FOUR – GAP AND RESEARCH QUESTIONS

---

*Chapter Two presented a review of various impacts ICT's have had on organisations and examined the potential of ICT's to contribute to organisational advantages. Empirical research undertaken in this area was also reviewed. Chapter Three reviewed a framework which could be applied to organisations to identify sources of value, the RBV. The history of the RBV was examined along with a critical review of empirical applications of the theory. Current research which made particular reference to ICT's was also presented. The current chapter reviews the intersection of these two areas; ICT's and the RBV, and further highlights the gaps in current literature. This leads to the presentation of the research questions based on the gap identified.*

### 4.1 ICT'S GAPS IN CURRENT RESEARCH

Chapter Two outlined the significant contributions that ICT's have made to organisations over the last few decades. The chapter outlined the way organisations operate today has been fundamentally changed by the widespread use of ICT's. Coupled with this change, the chapter acknowledged the way businesses continue to invest large amounts of capital (both human and financial) into ICT's. Given the changes ICT's have made to organisations, and the continued spending from organisations on ICT's, it is clear that understanding these resources in more detail is valuable.

The number of studies which examine ICT's and their performance effects can be described as plentiful. Despite such a quantity of studies, most of the research examining the influence of ICT's on organisations has been criticised for the overly simple way in which ICT's are examined. For instance, Gunnarsson et al. (2001) and others (e.g., Griliches, 1969; Brynjolfsson, 1993; Bresnahan et al., 1999; Lucas, 1999) surmise that too much attention has been paid to the *technology* in information technology when researchers should be examining information technology and human capital. In fact, calls have been made by practitioners and academics to develop more inclusive and comprehensive approaches to examining the potential of information technology to contribute to organisational advantage (Brynjolfsson, 1993; Lucas, 1999). Extending this argument, Wade and Hulland conclude that information systems “exert their influence on the firm through complementary

relationships with other firm assets and capabilities” (2004, p 109). That is, information systems do not lead to a competitive advantage in themselves but by forming part of a complex chain of resources and capabilities which in turn may lead to a sustained competitive advantage. Therefore the simplistic approach to much of the research to date provides a significant gap for researchers to explore.

Chapter Two also outlined the varied research designs of empirical research to date. The level in which research is undertaken is one of the key aspects which varies substantially in current research. The rise in popularity of a process oriented approach (Soh & Markus, 1992; Barua et al., 1995; Mooney et al., 1995; Barua & Lee, 1997; Mukhopadhyay et al., 1997; Tallon et al., 2000; Kohli & Sherer, 2002; Ray et al., 2005) suggests where researchers should focus their attention in seeking to understand ICT’s. Research which undertakes a process oriented approach is appropriate since the impact of ICT’s are seen only where they make their immediate contributions (i.e., the process) (Barua et al., 1995; Mooney et al., 1995; Mukhopadhyay et al., 1997; Ray et al., 2005). Furthermore, the process level is also appropriate since business processes are the way in which firms exploit their resources and capabilities to implement their strategies (Porter, 1991; Stalk, Evans, & Shulman, 1992). As such, many researchers have found effects of information technology at this level (Crowston & Treacy, 1986; Kauffman & Kriebel, 1988; Mukhopadhyay & Cooper, 1992, 1993; Barua et al., 1995).

In summary, ICT’s are thought to be valuable in combination with other organisational resources and capabilities (Walton, 1989; Milgrom & Roberts, 1990; Barua et al., 1996; Brynjolfsson & Yang, 1997; Powell & Dent-Micallef, 1997; Kearns & Lederer, 2003; Melville et al., 2004; Ray et al., 2005), which means big broad measures and high level studies of ICT’s are not appropriate. Therefore, developing more inclusive and comprehensive models of ICT’s in organisations at the level of the business process would make a significant contribution to ICT research. A significant opportunity, outlined in Chapter Two, is to utilise frameworks from other fields such as the RBV from the strategic management field (Mata et al., 1995; Powell & Dent-Micallef, 1997; Jarvenpaa & Leidner, 1998; Bharadwaj, 2000; Barney et al., 2001). The gap in current research and the contribution the RBV could make to this area is outlined in the next section.

## 4.2 THE RBV – GAPS AND LESSONS FOR ICT RESEARCH

Chapter Three outlined a promising new development in researching sources of ICT's value, the use of the RBV from the strategic management literature. The RBV provides a useful framework to study ICT's because of its focus on the value of resources and capabilities. The RBV states that advantages are gained in organisations that utilise resources and capabilities which are unique, inimitable and unevenly distributed (Barney, 1991a). Thus the RBV "offers a significant opportunity to explore these theoretical complementarities in examining the relationship between information technology resources and firm performance" (Bharadwaj, 2000, p 170) or competitive advantage. Other researchers also suggest knowledge at the intersection of these bodies of literature is sparse and there has been a call for further research examining ICT impacts utilising the RBV as a lens (Mata et al., 1995; Powell & Dent-Micallef, 1997; Jarvenpaa & Leidner, 1998; Bharadwaj, 2000).

Not unlike the research problems in the ICT field, a significant challenge with the majority of RBV research examining ICT's is the simple view of resources in organisations (and more importantly information systems in organisations) (Grant, 1991; Powell & Dent-Micallef, 1997; Montealegre, 2002; Santhanam & Hartono, 2003; Carmeli & Tishler, 2004; Ray et al., 2004; Wade & Hulland, 2004). Much of this work has examined single ICT resources in isolation from other ICT resources and other potential complementary resources and capabilities (Wade & Hulland, 2004). Yet, researchers such as Powell and Dent-Micallef (1997) find that information technologies alone cannot produce a strategic competitive advantage. Recent empirical work by Ray et al. (2002) supports this notion, showing resources are valuable not in isolation, but by their ability to leverage other firm specific resources to shape processes. Santhanam and Hartono (2003) extend this position by calling for more multidimensional measures of information technology capability.

Therefore, while many individual sources of advantage have been examined and found to be a source of competitive advantage, few researchers have examined the complex interrelationships between resources and capabilities which lead to a competitive advantage. However, recent conceptual and empirical RBV research developments start to shed light on *how* valuable resources are combined with other

organisational resources to create competitive advantages. For example, some researchers have examined organisational resources or capabilities (e.g., communication or trustworthiness), as well as technical or innovative capacity in search of competitive advantage (Barney & Hansen, 1994; Henderson & Cockburn, 1994; Coff, 1997). In the same manner, Hult and Ketchen (2001) posit that it is the combination of resources that collectively contribute to competitive advantage. The researchers suggest market orientation, entrepreneurship, innovation and organisational learning collectively contribute to the creation of unique resources. Similarly, Jones and George (1998) have examined cooperation, teamwork, and trust by viewing these resources or capabilities in a coupled way. Chapter Three also outlined two new streams of RBV research: dynamic capabilities and the KBV which suggest new places to look for sources of advantage in organisations. More specifically, dynamic capabilities research suggests that value is gained when resources are utilised in coupled and innovative ways (Teece et al., 1997; Eisenhardt & Martin, 2000; Miller, 2003). The KBV also adds to this suggesting that knowledge resources are a critical part of interconnected routines (Grant & Baden-Fuller, 1995; Conner & Prahalad, 1996; Grant, 1996b; Liebeskind, 1996; Spender, 1996a, 1996b; Wright et al., 2001).

Another significant gap in the literature relates to methodologies employed in current research. A striking feature of existing research is the lack of qualitative contributions. Most of the empirical studies undertaken have been large scale surveys or employed other quantitative methods (e.g., Rai et al., 1997; Dewan & Kraemer, 1998). This methodological gap appears despite many calls for more diversity in methods (Powell & Dent-Micallef, 1997; Rouse & Daellenbach, 1999; Chan, 2000). For instance, Powell and Dent-Micallef (1997) comment that the field would benefit from the use of alternative methodologies. Rouse and Daellenbach (1999) more specifically state that large scale, multi-industry studies are not appropriate for this type of research, or in fact, RBV research in general. This is due to the nature of resource based advantages, which by definition, implies advantages are organisational in origin and complex. Perhaps the large number of quantitative research methods employed is a reason why some of the current problems exist. If resources we seek to examine are so embedded in organisations, how can we hope to analyse them if not by being in organisations? Indeed, researchers recommend more

fieldwork based methods be employed which would help provide “in-depth knowledge and understanding of the organisation and its processes” (Rouse & Daellenbach, 1999, p 489). In her review of the field Chan (2000) also recognised that the field may not be fully understood without more qualitative contributions to the conversation.

In summary, RBV research to date faces challenges about the simplistic way in which resources are examined. However new research and new streams of the RBV outline new places to search for sources of advantage. Employing a qualitative research design would also contribute to another significant gap in current literature. The next section outlines the gap in which this research will contribute to and presents the research questions.

### **4.3 GAP AND RESEARCH QUESTIONS**

While early research employing the RBV to examine potential sources of ICT advantage has been undertaken (e.g., Powell & Dent-Micallef, 1997; Ray et al., 2005), this area of research is at a critical stage. Lessons from early conceptual and empirical work can be drawn together to develop a new way to utilise the RBV in ICT research. Of significance to this area, there have been a few attempts to review each of these areas and provide guidelines for future research (e.g., Brynjolfsson & Yang, 1996; Barney, 2001; Wade & Hulland, 2004). Wade and Hulland (2004) conclude by suggesting extensions to make the RBV more useful for empirical information systems research. They do this by outlining a typology of key information systems resources, emphasising the need for examining resource complementarily, or understanding inter-linkages between ICT’s and other resources.

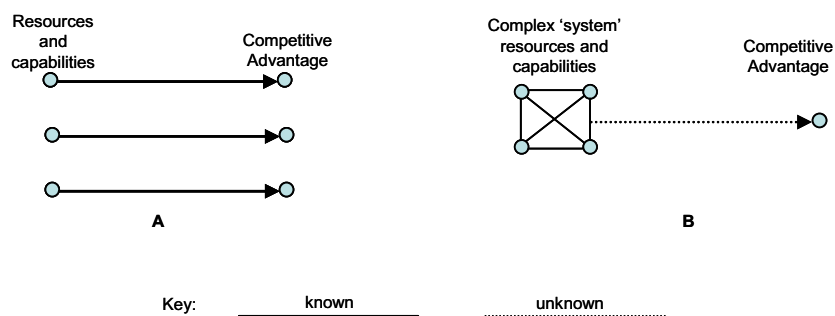
The literature clearly shows that there is growing support for the positive relationship between ICT’s and competitive advantages (e.g., Porter & Millar, 1998; Menon et al., 2000; Santhanam & Hartono, 2003). Also, researchers in both fields have attempted to identify sources of advantage and, more importantly, sources of ICT based advantage (e.g., Mata et al., 1995; Ray et al., 2005). ICT and RBV research have suffered severe limitations due to the simplistic way in which organisational resources such as ICT’s are examined. Therefore, to extend this area of research, it is

important to take a lead from the calls for examination of the sources of ICT based advantage employing more complex models of ICT's in organisations.

ICT research suggests that research should be undertaken at the level of the business process. RBV research then outlines new places to look for interconnections among resources and capabilities. The RBV research area also suggests the way forward is to take heed of the numerous calls for more qualitative research methods. More specifically, what is needed is the use of in-depth fieldwork *in* organisations such as a case study approach. Such a methodology would allow examination of more complex embedded resources and capabilities such as ICT's.

To combine concepts to date, researchers currently have an understanding of how single resources may lead to a competitive advantage. However, many resources and capabilities do not function in isolation. As outlined, several ICT and RBV researchers acknowledge there is a need to understand *how* these more complex, systemic resources (traits particularly relevant in the ICT context) might lead to competitive advantage. While some progress has been made, work in this area is still in its infancy. This research aims to examine these complex, embedded, system resources and discuss how they might lead to a competitive advantage in the ICT context. Figure 4-1(A) demonstrates how researchers currently have some understanding of how single resources and capabilities may contribute to competitive advantage, while Figure 4-1(B) highlights a general limited understanding of complex system resources and capabilities and any link they might have with competitive advantage.

**Figure 4-1 - Relationship between resources, capabilities, and competitive advantage**



Examining ICT's utilising recent advances in RBV research would provide a fruitful approach to understanding the relationship between these resources and competitive advantage. Therefore, this research aims to utilise the RBV to address the following research questions:

*What are sources of ICT advantage?*

*How are ICT resources combined with other resources to create valuable resources and capabilities?*

The next chapter outlines the research design which will be used to investigate these questions.

## CHAPTER FIVE – RESEARCH DESIGN

---

*This chapter presents the research design employed in this research. The design builds on existing research (outlined in Chapters Two, Three, and Four) some of which calls for more interpretive research examining ICT's while also employing the resource based view. The chapter begins by describing the research paradigm that the research fits within. This includes examining the paradigm's underlying assumptions. Next, the case study method employed in this research is described. The methods of data collection are outlined along with the data analysis strategy. Strategies used in this research to ensure rigour are presented along with limitations of the research design. Lastly, a summary of the chapter is provided.*

### 5.1 INTRODUCTION

There are two major research paradigms<sup>11</sup> a researcher may choose when proceeding with any research – positivistic and phenomenological paradigms<sup>12</sup> (Collis & Hussey, 2003). That is not to say that only these extremes exist but instead that these two paradigms are at opposite ends of a continuum. While a research design may employ either a positivistic or phenomenological approach, an equally valid approach is to use a mixed paradigm approach, that is, a research design that incorporates both positivistic and phenomenological elements. Positivistic research is often considered the more traditional research paradigm (Creswell, 1994). Rudestam and Newton (2001) suggest that the epistemological foundation for most social science research in the 20<sup>th</sup> century was positivism. Other labels for positivistic research include *quantitative* or *functionalist* research (e.g., Collis & Hussey, 2003). Phenomenological research on the other hand is often termed *qualitative*, *interpretive*, *constructive* or *naturalistic* (Lincoln & Guba, 1985). While in some cases the terminology for the different paradigms is used interchangeably, some authors have attributed different

---

<sup>11</sup> While the boundaries around the words 'paradigm', 'methodology', and 'method' are often blurred or confused this researcher attempts to follow the definitions of Collis and Hussey (2003). A 'paradigm' therefore relates to the philosophies and assumptions about the world and the nature of research, a 'methodology' relates to the approach to the entire process of research, and a 'method' relates to techniques within a methodology to collect or analyse data. Apologies in advance for my own mixed usage of these words in this thesis.

<sup>12</sup> It must be noted that there are many different interpretations of the major paradigms of research (as discussed later in the first paragraph of this chapter). This research follows the breakdown prescribed by Collis and Hussey (2003). Others interpret the boundaries of the paradigms in different ways and employ different labels. For example, alternative labels for the main research paradigms include quantitative and qualitative paradigms.

meanings to the different terms wishing to differentiate an alternative approach (Collis & Hussey, 2003). The positivistic/phenomenological differentiation is a popular representation of research paradigms (e.g., Creswell, 1994; Collis & Hussey, 2003). However, it must be acknowledged that much work has been done differentiating research paradigms in alternative ways. For instance, Burrell & Morgan (1979) present four paradigms to which any piece of research may belong. These paradigms are *functionalist*, *interpretivist*, *radical humanist*, and *radical structuralist* and each of these paradigms has a unique set of underlying assumptions about reality (see Burrell and Morgan (1979) for more detail). Chua (1986) outline two different classifications, interpretive and critical.

This research takes the positivistic/phenomenological approach to labelling but assumes these are two main paradigms at opposite ends of a continuum. This researcher positions herself at the phenomenological end of the scale. This positioning is due to two factors. First, a phenomenological approach is consistent with the way the researcher sees the world. Second, a phenomenological approach is important due to the gaps in current research, which call for more phenomenological approaches examining ICT's in organisations. More details of this research's paradigm and underlying assumptions are provided in the next section, as well as in Appendix A.

## **5.2 RESEARCH METHODOLOGY AND UNDERLYING ASSUMPTIONS – INTERPRETIVE RESEARCH**

Interpretive research involves ideographic research methods to look inside a phenomenon. While undertaking interpretive research a researcher creates their own subjective meanings as they interact with the world. Therefore interpretive research attempts to understand phenomena through assessing the meanings that participants assign to them (Doolin, 1994). In other words, reality in interpretive research, as well as our knowledge of reality, is a social product and therefore not independent of social actors (including researchers) that “construct and make sense of reality” (Orlikowski & Baroudi, 1991, p 13). Many researchers use interpretive methods, like *case study* or *action research*, to study peoples thoughts (e.g., Benbasat, Goldstein, & Mead, 1987; Eisenhardt, 1989; Checkland, 1991; Elden & Chisholm, 1993; Doolin, 1994). Interpretive research has increased in popularity in social science research

(Orlikowski & Baroudi, 1991) and more importantly has become an important approach to information systems research (Walsham, 1995a).

Walsham suggest that an interpretive approach to information systems research is useful when “the researcher seeks to an understanding of the context of information systems and the process whereby the information system influences and is influenced by the context” (Walsham, 1993, pp 4-5). Since this research aims to address the research questions: *What are sources of ICT advantage?* and *How are ICT resources combined to create valuable resources and capabilities?* the context of the information system and influence are deemed central to this research. Therefore, an interpretative approach is seen as the most appropriate way forward.

An interpretive methodology assumes the nature of society is subjective, as opposed to objective. The second assumption postulated by this methodology is that society exists in a state of order, as opposed to a state of conflict (Burrell & Morgan, 1979). Finally, the subset of assumptions underlying an interpretive methodology is consistent with the subjective dimension. That is, an interpretive methodology holds nominalism ontological assumptions, anti-positivism epistemological assumptions, voluntarism human nature assumptions, and ideographic methodology assumptions (See Appendix A for more detail on the underlying assumptions of this research).

### **5.3 SELECTED RESEARCH METHOD - CASE STUDY RESEARCH**

This research adopts a phenomenological paradigm employing an interpretive case study method. As a research strategy, case studies have been used for a variety of endeavours. Examples of case study research include Allison’s (1971) research of the Cuban missile crisis and Pettigrew’s (1973) study of decision making at a British retailer. Regardless of the endeavour, case studies address the desire of researchers to understand complex social phenomena (Yin, 2003). As such, Collis and Hussey describe a case study as an “extensive examination of a single instance of a phenomenon of interest” (2003, p 68). The approach may be used to peruse various aims such as providing description, testing theory, or generating theory. When using a case study design, data is collected using a range of methods such as participant observation and in-depth interviews, in either single or multiple organisations.

Evidence collected may be qualitative (e.g., words) or quantitative (e.g., numbers) or a combination of both (Eisenhardt, 1989).

The case study method is appropriate in this research for a number of reasons. First, it is consistent with the research questions, which are based around “understanding” sources of advantage in organisations. More specifically, the research questions for this research are: *What are sources of ICT advantage?* and *How are ICT resources combined with other resources to create valuable resources and capabilities?* While *in* organisations was not specifically outlined in the research questions the RBV informed this research suggesting organisations should be the focus. Therefore, the *in* organisations, aspect of the research is fundamental to the choice of a case study approach since one strong rationale for using such an approach is when a *natural setting* or focus on contemporary events is needed (Benbasat et al., 1987). A case study approach “examines a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or a few entities” (Benbasat et al., 1987, p 370). That is, the case study approach involves communicating with various subjects and encouraging them to express their opinions.

Second, due to the complexity of ICT’s in organisations, an inductive case study approach is an appropriate method (e.g., Eisenhardt, 1989; Zahra & Pearce, 1990) for this research. The very nature of resource based advantages (valuable, firm-specific resources and capabilities which are inimitable and non-substitutable) suggests that other methods, such as large scale, multi-industry studies, are not appropriate when identifying sources of advantage. A resourced based advantage by definition implies advantages are organisational in origin and complex (Rouse & Daellenbach, 1999). A case study approach is advised in such circumstances when the phenomenon examined is complex and therefore difficult to separate from its organisational context (Pettigrew, 1992; Langley, 1999; Yin, 2003). Therefore, in-depth fieldwork, such as case studies, are the most appropriate way of identifying such advantages when the researcher does not wish to separate contextual conditions at the outset in case these are pertinent to the study (Yin, 2003). Fieldwork takes the researcher into the organisation which is vital in gaining an “in-depth knowledge and understanding of the organisation and its processes” (Rouse & Daellenbach, 1999, p 489). Hence,

to gain a deeper understanding of the sources of competitive advantage in these organisations, this study uses the case study approach.

It is also possible to develop a new framework or theory using the case study method (e.g., Benbasat et al., 1987; Eisenhardt, 1989; Yin, 1994), which is consistent with the desired outcome of this research which is based around understanding sources of advantage. Lastly, a case study method is appropriate when integrating multiple sources which was considered important in this research (Eisenhardt, 1989; McCutcheon & Merideth, 1993).

There are two main disadvantages of using the case study method. First, this method can be *time consuming* because it involves eliciting a lot of detail from the case or cases (Collis & Hussey, 2003). The time consuming nature of this method may also hinder participant's willingness to participate. Obtaining exhaustive detail may also result in a theory that is overly complex and lacks the simplicity of an overall perspective (Eisenhardt, 1989). Deciding on delimitations or boundaries of a study may overcome this problem however; this process in itself may be difficult. Participants without doubt will have interaction outside the boundaries that are in place. Also, it may not be possible to develop a generalisable theory based on one or a few cases. For example, the theory may be too narrow or *idiosyncratic* to be applicable to all situations in which information systems are implemented (e.g., Eisenhardt, 1989).

An early decision to be made when undertaking case study research is the decision to include one or several cases. While most researchers employ a multiple case design there are several instances when a single case design is most appropriate. Yin (2003) outlines five circumstances where a single case design can be used. These circumstances are in cases which are:

1. critical
2. extreme or unique
3. representative or typical
4. revelatory
5. longitudinal

A *critical* case may be used when a single case meets all of the researcher's criteria to confirm, challenge or extend a theory. *Extreme* or *unique* cases may be used in rare cases when a single case is noteworthy. *Representative* or *typical* cases capture events of everyday or commonplace situations. *Revelatory* cases are used when a situation presents that has previously been inaccessible. The last rationale, a *longitudinal* case is when the same case is examined at two or more points in time. A single case design may be chosen when one or more of these circumstances exist. Likewise, a single case design is also deemed appropriate in situations where the aim of the research is theory generation (Benbasat et al., 1987; Yin, 2003). From the literature presented on the RBV it was noted that competitive advantages can be observed in organisations that possess and utilise assets and capabilities which are *unique*, inimitable and unevenly distributed. Therefore, in search of sources of ICT based advantage within the context of an organisation a unique single case design is an appropriate way forward. As such, the chosen case needed to be sufficiently *unique* (see Section 5.3.1 for more details on the case selection) and the desired end result is theory building. Furthermore, a single case design provides an opportunity to gain greater insights into this *unique* context by asking penetrating questions and capturing the richness of an organisation in a narrow setting.

There are two variants of a single case design each with inherent advantages and disadvantages (Yin, 2003). The variants differ based on the unit of analysis. A holistic design has a single unit of analysis (e.g., examining a department's research program in a global way), whereas an embedded design has multiple units of analysis (or sub-units) (e.g., the case may be a department's research program and the sub-units might be a number of different funded projects within the department). A holistic design is advantageous when there are no obvious logical sub-units to be found within the case (i.e., when an embedded design is not possible). A second rationale for a holistic design is when the relevant underlying theory is itself holistic. A problem researchers may be faced with when undertaking a holistic design is a loss of focus in the research design itself. The whole design may become too abstract resulting in little value or contribution to the field studied.

On the other hand, an embedded design provides a much more focused approach, thus avoiding problems associated with the flexibility of a holistic approach. Such a

design however, is not without its own problems, such as finding the right balance between flexibility and focus can be problematic. Too much flexibility can result in an abstract study, while too much focus can result in a failure to see the big picture. If a researcher only focused on the sub-unit and failed to return to the original case, the design of the case study would change in a substantial nature which could result in a shift from an embedded single case design to a multiple case design.

This research uses a holistic single case design. This was deemed the most appropriate style due to the holistic approach called for in examining information systems in organisations (as outlined in Chapters Two, Three and Four). It was felt that an embedded design would have been overly narrow and failed to capture the total picture of information systems in organisations. Yin claimed that a holistic approach is appropriate when the “relevant theory underlying the case study is in itself of a holistic nature” (2003, p 45). The underlying literature in this field is noted as rather fragmented and simplistic. Therefore, this research employs a holistic design for the opposite reason. While breaking the single case into sub-units would have provided more specific directions for the researcher, it would have taken away much of what the researcher was trying to achieve. Feasible sub-units of an embedded single case design might have been individuals, information systems development projects, or divisions of the organisation. However, the value of any of the potential sub-units to finding answers to the research questions would have been minimal because of the broad picture sought. Furthermore, using the potential sub-units would have changed the nature of the research questions.

A potential problem that may create difficulties in a holistic single case design relates to the flexibility such a design offers. While a case study design acclaims much greater flexibility than other approaches such as an experiment, a risk is that the nature of the case changes or shifts so much so that the initial research questions are no longer aligned with the data collected. This shift may occur or become a more significant problem because of the lack of structure or sub-units in a holistic design. Keeping the research questions in mind while undertaking all aspects of this research helped to avoid this undesirable shift.

### 5.3.1 CASE SELECTION

The case selection in this research is an important aspect of the overall design. The reasons a single case design was deemed the most appropriate also greatly restricted the case selection. For that reason it was not necessary to select a representative case (as statistical generalisations were not sought). Rather, case selection was based on a critical case which encompassed unique issues the researcher was most interested in. Therefore, the chosen case needed to fit several criteria, including:

1. *Be experiencing a unique position of advantage*

The case needs to demonstrate sustained, above-average industry performances. Due to the difficulties associated with the measurement of competitive advantages, they are commonly identified by sustained periods of above-average performance (Rouse & Daellenbach, 1999). “It is to firms with performance that is consistently above the industry average that strategists and scholars must look for the sources of sustainable competitive advantage” (Rouse & Daellenbach, 1999, p 488). Therefore, instead of focusing on the relationship between information technology and firm performance, this thesis assumes high performance (by selection). Focusing on high performing firms also rules out any large scale study which would indiscriminately include low and average performing firms along with the desired high performing firms.

2. *Have significant ICT usage and a positive view of ICT's in the organisation*

Since ICT's are the foci of this research it is critical that the case chosen will have a reliance on digital products and/or services. This means the chosen case will need to have a significant technology based process and would likely be a high investor in terms of ICT's. It is also important that the ICT usage is seen in a positive manner (relating to point 1 above) and be somewhat unique. ICT uniqueness may be in terms of how ICT's are developed, used, or maintained in the organisation.

3. *Access to extensive data*

Access to extensive data will be critical to the success of the study. Primarily this success will be related to the access to the right people in the organisation. Yin (1994) suggests that convenient access and geographic proximity is also an important

criteria for selecting a case. This will allow for a less structured and more prolonged relationship to develop between the interviewee and the researcher (Yin, 1994).

These case study selection criteria severely restricted the choice of cases. However, this is what was required for the researcher to isolate the sources of sustainable advantage that are theoretically predicted by the RBV (Rouse & Daellenbach, 1999). With the selection criteria in mind an obvious choice for the focus of this research was ASB. The bank has an unparalleled performance record in the area of customer service and has historically been a high investor in ICT's. A description of the case is presented in detail in Chapter Six.

### **5.3.2 UNIT OF ANALYSIS**

The unit of analysis in case study research is the focus point to which the phenomena of interest (and therefore the research questions) refer to (Collis & Hussey, 2003). As such, the unit of analysis is the area or level in which the data is collected and analysed. Potential choices for the unit of analysis are a company, group of employees, event, processes, or individuals (Benbasat et al., 1987; Collis & Hussey, 2003).

The unit of analysis used in this research is clear cut as it was widely discussed in Chapters Two, Three, and Four. The unit of analysis is the business process. Therefore, this research seeks to examine the sources of value in the area of the business process. This is consistent with a growing body of researchers who deem this process as the most important in understanding sources of advantage (e.g., Soh & Markus, 1992; Mooney et al., 1995; Mukhopadhyay et al., 1997; Ray et al., 2005). A business process can be defined as a set of activities that draw on inputs (resources and capabilities) to create outputs that are of value to customers (internal or external to the firm) (Hammer & Champy, 1993). Examples of such business processes include product development, manufacturing, customer service, and so forth.

The particular process of interest to this research is the customer service process. This was deemed most appropriate because customer service is seen as a key differentiator of organisations. Furthermore, within the customer service process,

ICT's are recognised as critical tools for empowering staff with the information they need to deliver quality customer service.

## **5.4 DATA COLLECTION**

Data in this research was collected using multiple sources. Using multiple sources is consistent with what is common practice in research which aims to build theory (Benbasat et al., 1987; Eisenhardt, 1989; Yin, 2003). The use of multiple data sources also helps to increase the reliability of the research results (see Section 5.6 - Ensuring Rigour, for an in-depth discussion of methods used to increase the reliability of the results). Yin (2003) describes six sources of evidence most commonly used in case study research: documentation, archival records, interviews, direct observations, participant observation, and physical artefacts. Yin also highlights the fact that no single source of evidence is ultimately better than the others. Rather, the multiple sources of evidence are complementary and a “good” case study will use many sources of evidence (Yin, 2003). The primary data collection method in this research was interviews; however, observation and document review were also utilised. Each of these data collection methods is described in the following sub-sections.

Data collection commenced in September 2003 and continued over an eight month period. The time period of the data collection allowed an examination of the activities and decisions that occurred during the three phased Customer Relationship Management (CRM) system development, implementation, and use.

### **5.4.1 INTERVIEWS**

Interviewing is seen as one of the most important sources of evidence in case study research (Walsham, 1995b; Yin, 2003). When undertaking an interpretive case study Walsham (1995b) posits that the primary data collection method should be interviews. Walsham argues that through this method the researcher can “best access the interpretations that participants have regarding the actions and events which have or are taking place, and the views and aspirations of themselves and other participants” (Walsham, 1995b, p 78). As such, this research used semi-structured interviews as the primary data collection method.

The use of a semi-structured interview, as opposed to one that is structured or unstructured, allowed the use of probing questions which was deemed important for this type of research. Using semi-structured interviews was considered an important element of the data collection process. It allowed interviewees to share their thoughts and insights on what they saw as critical sources of advantage. If the researcher had used structured interviews, which direct all of the interviewee's responses, some of the richness of the interviewee's interpretation would have been lost (Walsham, 1995b). At the other extreme, if the researcher had been too passive, useful data may not have been captured (Walsham, 1995b).

The interviews were conducted face-to-face to allow for non-verbal clues to be recorded by the researcher. There are several advantages to this approach to information gathering, including: allowing the participants to provide historical information; building rapport and trust between the researcher and participant; and allowing the researcher to “control” the line of questioning (Creswell, 2003). Controlling the line of questioning means the researcher may ask additional questions to gain understanding of key points as the need arises (Gay & Diehl, 1992). Limitations of this type of information gathering include: it provides ‘indirect’ information filtered through the views of the interviewees; it provides information in a ‘place’ rather than in what is a daily work environment (for example, due to shared office spaces many interviews took place in a meeting room); and interviewees are not equally articulate and perceptive (Creswell, 2003).

The interviews were conducted on site and tape recorded. The advantage of tape recording the interviewees is that “it provides a full description of what was said, whereas note-taking is necessarily partial” (Walsham, 1995b, p 78). The interview recordings were transcribed in full. The transcripts were also supported by post interview notes which were written up as soon as practically possible post interview.

Semi-structured interviews were conducted with interviewees with a detailed knowledge of the development, implementation, and use of technologies used in the customer service process of ASB Bank. Interviews were undertaken with ten individuals with key interviewees being interviewed at least twice. The total number of interviewees was fifteen. The interviews included senior managers (for instance,

the Group General Manager of Technology and Operations, and the Chief Manager of Personal Banking), project managers, individual team members and end users of the systems. Interviews ranged in length but the average interview was one hour duration. Further details of the interviewees are contained in Appendix B.

Some primary participants in the interview process were interviewed multiple times and used to confirm data collected from other sources (documents and other interviewees). This process helped ensure the reliability of the interview data (see Section 5.6 for a full discussion on ensuring rigour) (Eisenhardt, 1989; Yin, 1994). Such an approach is considered appropriate because it helps reduce the bias one individual may have on the results and provides richer data (Eisenhardt, 1989; Yin, 1994; Coates & McDermott, 2002).

While there was some commonality in the types of questions asked of each interviewee, the interviews were tailored to each person, focusing on their role in the development, implementation, and use of the new system. Questioning focused on what they saw as important in the process, how things happened and changed throughout the process. Interview questions also addressed the interviewee's history in and outside the organisation and their perception of the process. At the beginning of the data collection process, the interviewees were questioned about other individuals they felt were important in the process of the development, implementation, and use of the new system, in search of other potential participants.

The literature review was used as a guide in developing seed interview questions. For example, sources of advantage posed or identified from other studies (e.g., Yeoh and Roth's (1999) resource based study of critically important resources) were used as discussion points in the interview process. Secondary literature such as company reports and industry publications were also used to help guide the initial question development. The information sheet given to each participant along with sample interview questions can be seen in Appendices C and D.

#### **5.4.2 OBSERVATIONS**

Observation can take many different forms ranging from very informal to very formal (Marshall & Rossman, 1995). Either way the goal of observation is generally

for the researcher to fit in within the organisation without playing a particular role (Marshall & Rossman, 1995). There are, however, four modes of observation: complete participant (where the researcher conceals his/her role); observer as participant (when the role of the researcher is known); participant as observer (where the researcher's role is secondary to the participant role); and complete observer (when the researcher observes without participating) (Creswell, 2003).

Observation was used as a tool in this research in several situations, however in all situations the researcher's role was that of a complete observer. This was deemed important so the researcher could observe what was said in the interviews and identify any biases the interviewees may have had. The situations which presented themselves for this researcher to collect data via observation included: several site visits to natural working environments; a training session prior to a new ICT based product launch; and in development, user group and steering group meetings. Appendix B provides further details of observations undertaken in the process of this research. In all situations notes were taken as soon as practical after the observation occurred (in some cases this was during the observation). The raw data collected was then treated in the same way as the data that stemmed from the interviews (in the data analysis stage).

The main advantages of using this approach to gathering information include: the researcher has a first hand experience with subjects and an opportunity to notice unusual aspects which may have been missed otherwise (Creswell, 2003). Limitations of this method of information gathering include: the data collected is only as good as the researcher's observation skills; private information may be observed that may not be reported; and the researcher may be seen as intrusive or worse so the participants may change their behaviour because of the observation process (Creswell, 2003).

### **5.4.3 DOCUMENTS**

There are many sources of documents which may be used for information gathering, such as public documents (e.g., newspaper articles, trade magazines, industry reports and relevant internet publications) and private documents (e.g., annual reports, organisational charts, strategic planning documents, company archival documents, meeting minutes, internal correspondence, and memos) (Creswell, 2003). Both types

of documents were used in this research. Public documents reviewed included newspaper reports, the company's annual reports, and other industry publications. Private documents reviewed included meeting minutes, project scoping reports, monthly communication videos, as well as, the company's intranet. Further details of the documents reviewed in this research process are outlined in Appendix B. Raw data gathered from document review was treated a little differently than that gathered from interviews or observations. While all data gathered from these other sources was transcribed and put through coding procedures outlined in Section 5.5.2, data gathered from documents was instead used to provide support for the primary sources, when and where appropriate.

Advantages of using this method of data collection include: enabling the researcher to obtain the language and words of the participants; an unobtrusive form of data collection; and it may represent data that is meaningful, and participants have given time and attention in compiling (Creswell, 2003). Limitations of this method include: materials may be incomplete, or inaccurate; and some information may be protected and unavailable to the researcher (Creswell, 2003).

## **5.5 DATA ANALYSIS STRATEGY**

Data analysis is an important step which allows the researcher to understand the results of the research. Two main approaches to analysing qualitative data as outlined in the literature are quantifying methods and non-quantifying methods (Collis & Hussey, 2003). A researcher who chooses the quantifying approach would either formally or informally attempt to turn their data into more quantitative data by way of counts and numbers. However, this is seen as a more positivistic approach which some may feel is inconsistent with the data type used in this research. Alternatively a researcher who chooses a non-quantifying approach would employ one of many non-quantifying approaches which are outlined in the literature such as cognitive mapping, pattern matching, grounded theory and quasi-judicial methods (Strauss & Corbin, 1998; Collis & Hussey, 2003; Yin, 2003).

One important consideration in choosing the most appropriate data analysis strategy is to ensure the strategy is consistent with the research questions. When choosing a data analysis strategy, consideration may also be given to data analysis strategies

currently employed in empirical research in the field. Current research strategies used in information systems research, utilising the RBV, strongly guided the choice of data collection and analysis strategies in this research. This is due to a gap in current literature in regard to the limited amount of qualitative research to which this research aims to contribute to. While most of the methodologies currently employed in the area are of a quantitative nature (as outlined in Chapter Three), this research is able to add to the conversation with a qualitative approach, more precisely, the usage of a qualitative data analysis strategy. Therefore, the data analysis strategy used in this research is an adaptation of grounded theory approach.

### **5.5.1 INTRODUCTION TO GROUNDED THEORY**

Grounded theory is a general methodology for developing theory that is grounded in data systematically gathered and analysed (Creswell, 1994). The methodology was originally developed by two sociologists, Barney G Glaser and Anselm L Strauss (Glaser & Strauss, 1967). Glaser and Strauss' (1967) book "The Discovery of Grounded Theory" was released at a critical point in the history of social science research. Denzin and Lincoln went so far as to say grounded theory served at the forefront of the "qualitative revolution" (1994, p ix). While the empirical origins of grounded theory are in the medical field, the technique has now been widely used in many other fields such as business research (Collis & Hussey, 2003).

Theory building in grounded research evolves during the research by using multiple stages of data collection and the refinement of interrelationships of categories of information (Creswell, 1994). The theory is 'grounded' because it emerges out of, or is related to and grounded on, empirical data (Sarantakos, 1998). The grounded theory method involves generating theory and doing social research as two parts of the same process (Creswell, 1994). While the ideal starting point in grounded theory is no hypothesis or preconceptions of what might emerge from the data, this can be impractical. Unless the field of research is truly novel, then a field of literature will exist and this will be hard and somewhat irresponsible to ignore. If existing (grounded) theories seem appropriate to the area of research then these may be explored, elaborated upon, and modified as incoming data are meticulously played against them (Creswell, 1994).

Exploring current research prior to and during data collection can help guide the formation of the meta questions and ensure the general direction of the research is valuable to the field. While the literature will help to form the meta questions it is very important to recognise that there should be no hypothesis to test or no theory under construction (Eisenhardt, 1989). As outlined in Chapter Four, prior research was reviewed and meta questions developed to guide this research. Eisenhardt (1989) suggests researchers should formulate the research problem and use the literature as a starting point but close examination of the theory (in this case developing categories of resources and capabilities) should be avoided. In this research the literature was reviewed to identify potentially relevant resources and capabilities, to enable prompts for the semi-structured interviews (as outlined in Appendix D).

Elaborating and exploring current research means the existing literature may be used while developing grounded theory. While, primarily, the raw data collected will shape the emerging theory, existing literature may be used as another source of data as the theory starts to form. In such a process, the emerging theory would be compared to concepts already present in the literature to help identify concepts and categories of the structure of resultant theory. However, the use of current literature in developing grounded theory requires some caution. There is a fine balance between having a working knowledge of the field to help guide the research, and becoming so immersed in the literature that theorising becomes based on the literature rather than the raw data. Literature was drawn on in this research after the model developed from the raw data was already well formed.

Grounded theory is different from other research methods because the research questions are open, and more general, rather than formed as specific research questions, sub-questions or hypotheses (Creswell, 1994). However, grounded theory does have some similarities with other research methodologies. For example, the same qualitative data sources (e.g., interviews, field observations, and documents) may also be used in action research, case studies, and ethnography (Creswell, 1994). Grounded theory also uses similar quantitative techniques to other methods; for example, Creswell (1994) suggests, like other qualitative researchers, grounded

theorists can utilise quantitative data or combine qualitative and quantitative techniques of analysis.

There are two significant advantages for using grounded theory in this research. First, grounded theory is not as structured as some positivistic approaches which could have been used, allowing inductive generation of theory through qualitative analysis of qualitative and or quantitative data (Glaser, 1992). Inductive research is theory built from observation (Collis & Hussey, 2003) which is appropriate to this research. Second, it is more interactive, allowing complex human problems to be examined. If the researchers do not know how they are going to go about the research, then they may develop their research protocol as they go. This allows the relevant social organisation and social psychological organisation of people to be discovered, or to emerge, in their own perspectives (Glaser, 1992). Conversely, there are a number of disadvantages associated with using the grounded theory method. The investigator does not enter the research area with no knowledge because they have already developed a research proposal that reviewed the literature, which makes the resulting theory somewhat biased. The research may also be biased because of their own internal beliefs and worldview. Strauss and Corbin further comment saying “it is our analytic eyes that lead us to see, imperfect as that might be” (1998, p 55). The researcher may also get overloaded with the considerable amount of data that is collected during the course of the research, which may cause the researcher to overlook some important aspect of the study (Hussey & Hussey, 1997). Lastly, the findings from grounded theory, like other qualitative approaches, have limited generalisability because they are stand alone findings and may not be applicable to all situations (Hussey & Hussey, 1997).

The data analysis technique used in this study was an adaptation of the analysis techniques found in grounded theory (Strauss & Corbin, 1998). To strictly follow grounded theory, the whole research design, including methodology and analysis technique, needs to follow a grounded approach. However, as previously outlined, this is a little hard to do in practice. In this case, the researcher already has some knowledge of the parent literatures and developed meta research questions as part of the same process. Therefore, a strict approach was not deemed suitable for this research. Consequently, this research uses an adaptation of grounded theory. This

variation on a truly grounded process is acknowledged in the literature, for example, Walsham (1995b) outlines how it is possible to start the research by reviewing current literature without hampering attempts to be grounded in the approach. Walsham states that some knowledge of the current literature does not need to make any resulting theory ungrounded, as the researcher need not hold the view that the current literature represents the final truth. Similarly, a more relaxed approach to grounded theory is also seen in other empirical research such as Dillon's (2002) study of executive decision making. While the complete research design does not fully reflect grounded theory approach, efforts were made to follow as closely as practical. In particular, the nature of the research questions and the data analysis strategy follows as close as practical to that prescribed by Strauss and Corbin (1998).

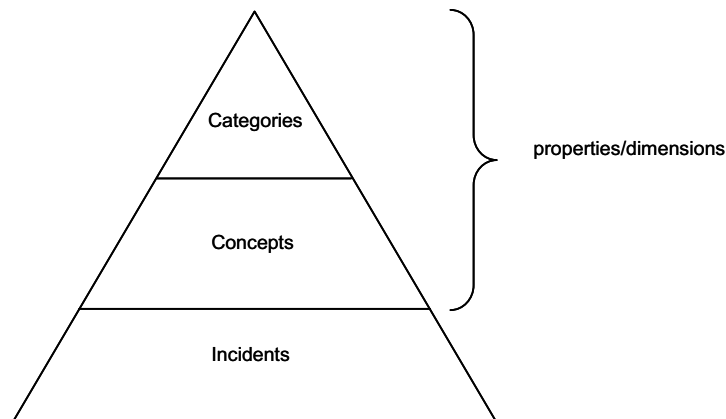
### **5.5.2 GROUNDED THEORY PROCESS**

The process followed in this research involved three stages: *open coding* (i.e., the analytical process used to apply concepts to the data); *axial coding* (i.e., reassembling data into categories and subcategories); and *selective coding* (i.e., the process of refining the categories and refining theory) (Strauss & Corbin, 1998). An overview of each of these stages of analysis is given below. Although grounded theory is presented here as three distinct stages, in practice, the stages are much more fluid and may be carried out simultaneously (Collis & Hussey, 2003).

#### **OPEN CODING**

Open coding is the initial analysis stage to discover categories as they emerge from the raw data. This is named after the process the researcher must go through to open up the text and uncover, name, and develop ideas to “expose the thoughts, ideas, and meanings contained therein” (Strauss & Corbin, 1998, p 102). The “text” in this research means the interview transcripts, documents and researcher’s notes gathered and taken during the time in the case organisation. The very nature of grounded theory means the analyst starts open coding with a clean slate, meaning, no concepts (Glaser, 1992). The process of undertaking open coding involves a number of stages. During this process the analyst breaks the data down into *phenomena* (some times termed *incidents*), *concepts*, and finally *categories*. Figure 5-1 demonstrates the relationship between these processes and the raw data in a piece of research.

Figure 5-1 - Open coding hierarchy



Source: Adapted from Dillon (2002)

*Phenomena* are abstract events, objects, actions or interactions which the researcher singles out as being important to the research (Strauss & Corbin, 1998). Singling out parts of the raw data in this way is called *conceptualising*. The main aim of this sub-stage is to break the complete raw data set down into smaller more manageable “chunks” of data. *Phenomena* are taken from the interview transcripts or any other source of raw data and might be several words, a sentence or an entire paragraph in length.

The next step is to label the *phenomena*; in this stage groups of similar *phenomena* are collectively called *concepts*. *Concepts* are the basic building blocks of theory (Strauss & Corbin, 1998). They are defined as discrete parts of data which are closely examined and compared for similarities, and differences. *Concepts* which are found to be conceptually similar in nature or related in meaning are then termed *categories* (Strauss & Corbin, 1998). *Categories* are abstractions, they represent not one story, but rather the stories of many *concepts* “reduced into, and represented by, several highly conceptual terms” (Strauss & Corbin, 1998, p 145). *Concepts* and *categories* are then given properties and dimensions, further defining the item’s characteristics and variations of the terms. A significant problem researchers may face at this stage of open coding is the sheer quantity of concepts that are developed. A researcher may begin with dozens of concepts but eventually these will need to become refined and grouped under a higher order concept (Strauss & Corbin, 1998).

Glaser (1992) outlines two fundamental procedures researchers can use to guide them through the data to help identify *phenomena*, *concepts* and *categories*. The first step involves making constant comparisons of *phenomena* to *phenomena*, and later as *concepts* emerge, *phenomena* to *concepts* (Glaser, 1992). The second step involves questioning each time a new *concept* arises - what category or property of a category does each *phenomena* indicate (Glaser, 1992). Both procedures were utilised by the researcher while undertaking this research.

Making comparisons is a key part of social science research (Strauss & Corbin, 1998). The use of comparisons in grounded theory has two key roles; firstly, to compare phenomena (which Glaser & Strauss (1967) term incidents) and secondly, to make theoretical comparisons (Strauss & Corbin, 1998). Comparing phenomena allows the researcher to compare every piece of new data (at the property or dimensional level) and place in a category or grouped with other concepts. Theoretical comparisons are made to stimulate thought about the properties and dimensions of concepts and categories. In essence, theoretical comparisons are made when phenomena are compared to a researchers existing knowledge base or relevant literature. While this comparison does not form part of the data it aids in the understanding of the properties and dimensions of phenomena. While the researcher employed the use of constant comparisons it is inevitable that at some level theoretical comparisons are made based on the researchers own bias.

Names for *concepts* and *categories* materialise from a range of places. Names may be used because of “imagery”, or the “meaning they evoke”, or they may be taken from the “words of respondents” (Strauss & Corbin, 1998, p 105). Using words of respondents for a name of a concept or category is called an “in vivo code” (Glaser & Strauss, 1967). These sources of labels are of course founded on and subject to personal prejudices. “Other researchers might use other labels, depending on their foci, training, and interpretations” (Strauss & Corbin, 1998, p 106). Lastly, *concepts* and *categories* may also come from current literature (Creswell, 1994). Labels of *concepts* and *categories* which stem from the current literature may be very useful for extending an existing theory. That is, it is easier to compare extensions to theory which have the same terminology as current literature. However, using terminology from current literature is not without its limitations. “Borrowed” *concepts* may bias

the analyst and prevent the researcher(s) from seeing what is new in the data. A reader's interpretation of the research outcomes may also be biased by prior knowledge and understanding of the labels used in the research (Collis & Hussey, 2003). Based on this, their interpretation may not reflect what the research had originally intended. For example, the researcher may only see issues they already know about rather than all of the issues associated with the research. This makes it very important for *concepts* and *categories* to be fully developed and explained. Above all else, the name for the *concepts* and *categories* should be ones that seem “the most logical descriptor for what is going on” (Strauss & Corbin, 1998, p 114).

There are several ways of doing open coding. In some cases the researcher examines the raw data<sup>13</sup> in a line by line style, reading one line at a time checking for potential *phenomena*, *concepts* and *categories* (Strauss & Corbin, 1998). While this approach generates good results it is very time consuming (Strauss & Corbin, 1998). Other strategies including examining sentences and paragraphs or the entire document in a more holistic manner (Strauss & Corbin, 1998). In practice, a combination of these approaches is often used. In this research, holistic and line by line open coding methods were employed. The transcripts were first revised in a holistic way and notes placed in the margins of the printed pages. Then all transcripts were examined using line by line analysis and these results were put aside. An independent researcher, experienced in using grounded theory and knowledgeable about the research context, then coded a sample of the transcripts. The results from the independent researcher were then compared and contrasted with the researcher's own codes. Similarities and differences were discussed and the researcher independently began the open coding process again, examining the raw data completely several more times. That is not to say that this stage was completed independently of other stages of the grounded theory process. In fact, quite the opposite is true. The stages of open and axial coding were completed concurrently. The codes that resulted from this stage stem from a combination of these efforts. An example of this open coding process (and the other stages of grounded theory) can be seen in Appendix E.

---

<sup>13</sup> Hereafter raw data and transcripts are used interchangeably, but raw data includes data from all data collection sources including interviews, observation, and document review.

**AXIAL CODING**

The purpose of axial coding is to commence the reassembly of data which was broken down in the open coding stage (Strauss & Corbin, 1998). This involves discovering relationships among categories to form a more complete and precise story about the phenomena (Strauss & Corbin, 1998). The central idea of this stage is to choose a central category and build up a “dense texture” of relationships to this central “axis” (Strauss, 1987, p 64). The desired end result is fewer categories with links and relationships among these categories. Once these links and relationships are formed a better picture of the outcomes of the research is gained. Unlike in open coding, where *phenomena*, *concepts* and *categories* emerge descriptively from the text, during axial coding relationships are linked at a much more conceptual level (Strauss & Corbin, 1998). Relationships emerge from clues found in the text along with the conceptual knowledge of the researcher.

During the axial coding process the researcher continually questions the results of the open coding – what, why, when, who, where, and how, questions are asked; in doing so an understanding of relationships among categories begins to form (Strauss & Corbin, 1998). The questioning enables the researcher to contextualise the results and uncover some of the complexities involved. Strauss and Corbin (1998) state that it is at this stage that structure and process become important in painting a complete picture. If only structure is examined then the results will reveal *why* but not *how* concepts and categories occur. If only process is examined then results will demonstrate *how* concepts and categories act/interact but not *why*. “One must study both structure and process to capture the dynamic and evolving nature of events” (Strauss & Corbin, 1998, p 127).

Like the process of open coding, axial coding needs to be a fluid process. While step by step guides (such as presented in Strauss and Corbin) are helpful these should not be used at the expense of capturing the “dynamic flow of events and the complex nature of relationships that, in the end, make explanations of phenomena interesting, plausible, and complete” (Strauss & Corbin, 1998). During the data analysis of this research, axial coding was undertaken concurrently with open coding. This helped maintain momentum of the coding process. It is much harder in practice to separate the stages (and probably less valuable) because researcher’s gain their first understanding and appreciation of how the concepts and categories relate in the

open coding phase. An example of the axial coding stage (and the other stages of grounded theory) can be seen in Appendix E.

### **SELECTIVE CODING**

The final stage of grounded theory data analysis involves further integrating and refining the developing theory. While in open coding categories are generated and in axial coding categories are grouped and linked, in the final stage, selective coding, the major categories are integrated to form “a large theoretical scheme that the research findings take the form of theory” (Strauss & Corbin, 1998, p143). As with the first two stages of grounded theory, selective coding involves integrating categories not in one attempt but through an ongoing process over time. Notwithstanding this process Strauss and Corbin (1998) acknowledge researchers might have sudden ‘insights’.

In axial coding the researcher developed relationships among *categories*, however a theory is not fully developed until the major *categories* are “integrated to form a larger theoretical scheme” (Strauss & Corbin, 1998, p 143). This integration, like the other stages of grounded theory, occurs over time. Often this stage is not complete until the final write up is well underway (Strauss & Corbin, 1998). Strauss and Corbin outline several techniques which can be used to help the researcher complete this integration process. These techniques include the use of telling or writing a story line, diagrams, memos, or specialised computer software. The techniques most used in the analysis of this thesis are diagrams, memos, and writing story lines.

Once the researcher is happy with the core skeleton of *categories* and *sub-categories* which are integrated into a central theme, the output can be reviewed for internal consistency and logic. A complete theoretical scheme should flow in a logical way and have no inconsistencies (Strauss & Corbin, 1998). In the process of finalising the theoretical scheme, if a researcher uncovers gaps in their knowledge he or she may go back through their own memos, notes or raw data. If gaps still exist, then the researcher may need to return to the field to collect more data. This process may continue into the final writing stage. However, a perfect theory is not possible since a theory is only a model or representation of a data set. This means some gaps will always be present. Every effort should be made to see that the theory has no *major* gaps. However, it is common for some gaps to be present. Deciding on when to

finalise the theory and discontinue looking for new data is when *theoretical saturation* is achieved (Strauss & Corbin, 1998). *Theoretical saturation* is the point during data analysis when the researcher finds no new *concepts, categories*, or new variations of *properties* and *dimensions* (Strauss & Corbin, 1998).

Completing the theory and ensuring there are no significant gaps is a difficult task. Some researchers (especially in the case of new researchers) may find themselves in a position of information overload (Strauss & Corbin, 1998). In some circumstances this may mean that some ideas do not fit within the theoretical model. Usually these are extraneous concepts, nice ideas but ones that never were developed (Strauss & Corbin, 1998). This may be due to a limited appearance of the concept in the data. Strauss and Corbin recommend dropping such ideas, suggesting there is no reason to clutter a theory with “concepts that lead to nowhere or contribute little to its understanding” (Strauss & Corbin, 1998, p 159). Concepts and categories that fit into this problem, in this research process, are noted and dismissed.

In the last stages of selective coding, it is important to gain some understanding of how well the developed theory represents the raw data. Strauss and Corbin term this “validating the theoretical scheme” (Strauss & Corbin, 1998, p 159). However, the term “validating” is not used here in the functionalist sense of the word. Rather validating the theory in this sense is achieved by comparing the abstracted model to the raw data and seeing how well it fits (Strauss & Corbin, 1998). Alternatively, the model or story to be told from the research outputs can be presented back to the respondents to see how well they recognise their story. Both of these techniques were used in this research. An example of how the selective coding stage (and the other stages of grounded theory) was applied to this research can be seen in Appendix E.

#### **THEORETICAL SAMPLING AND SATURATION**

As the previous section described deciding on when to stop the grounded theory process is when *theoretical saturation* is reached. *Theoretical saturation* is not a stand alone concept, it is closely intertwined with *theoretical sampling* and *constant comparison*, techniques also employed in the use of grounded theory. More precisely, *theoretical saturation* is reached when *theoretical sampling* provides nothing new to the coding process. That is, *theoretical sampling* is continued until the analysis of the data (which is

undertaken in parallel to the collection of the data) provides nothing new to the theoretical scheme being developed. In the words of Strauss and Corbin, saturation means collecting data until “(a) no new or relevant data seem to emerge regarding a category, (b) the category is well developed in terms of its properties and dimensions demonstrating variation, and (c) the relationship among categories are well established and validated”<sup>14</sup> (1998, p 212). It is also significant to highlight that the use of *theoretical sampling* and *constant comparison* which allow the researcher to reach *theoretical saturation* do not occur at one point in time. Sampling to build an empirical base occurs across a research project. Similarly, as soon as the coding process begins constant comparisons are made to look for new phenomena, concepts and categories or new properties and dimensions of concepts and categories. Theoretical saturation occurred much earlier than the researcher anticipated in this research. At an early stage in the process of undertaking interviews, observations, and reviewing documents it was clear that limited new data was emerging. The researcher proceeded with sampling and analysis while the theory was being developed until it was clear that the new sampling had nothing new to offer. The researcher remained open to undertaking more sampling right into the final write up of the theory, however this was deemed unnecessary.

As indicated above *theoretical sampling* is an important concept in grounded theory. *Theoretical sampling* simply means the gathering of data which is driven by the analysis of data already gathered (Strauss & Corbin, 1998). The basic aim of sampling is to “maximise opportunities to compare events, incidents, or happenings to determine how a category varies in terms of its properties and dimensions” (Strauss & Corbin, 1998, p 202). Sampling procedures evolve throughout the research process (Strauss & Corbin, 1998). Effective sampling techniques require some consistency along with a degree of flexibility (Strauss & Corbin, 1998). Consistency helps to ensure a theory is well developed. On the other hand, building in some flexibility allows for opportunities that arise to be pursued and allows for some creativity.

The type of sampling used in each stage of grounded theory analysis varies. In the early *open coding* phase of analysis ‘open sampling’ (Strauss & Corbin, 1998) is used

---

<sup>14</sup> Note that Strauss and Corbin are not referring to validation in the statistical sense of the word. Rather, the researchers are referring to the process in which analysts constantly compare their work in progress against data collected, then make modifications or additions as required. This validation process continues until the emergent theory is arrived at.

which takes advantage of all opportunities. In this research open sampling began in a systematic manner starting with an interview with a very senior member of the information technology team at ASB. The researcher then sought out senior interviewees to collect data from, from other areas of the business. The researcher also took advantage of fortuitous opportunities as they arose. For instance, the researcher was unexpectedly presented with an opportunity to observe a training session.

During the *axial coding* stage requirements of the sampling process change. During this stage the researcher is concerned with finding significant variations (Strauss & Corbin, 1998). Relations among concepts are also examined (Strauss & Corbin, 1998). Strauss and Corbin call sampling in this stage ‘relational and variational’ (1998, p 210). Relational and variational sampling means potential data sources are purposefully chosen in a deductive way. In the process of this research the researcher looked for extremes of roles of interviewees in search of differences.

In the final *selective coding* stage coding takes a more deliberate form (even more than in relational and variational coding). Strauss and Corbin (1998) term coding in this stage ‘discriminate’. In this time coding can be from new data or the researcher may choose to recode old data. The aim of this stage “is to integrate the categories along the dimensional level to form a theory, validate the statements of relationships among concepts, and fill in any categories in need of further refinement” (Strauss & Corbin, 1998, p 211). The researcher saw sampling in this stage as an extension of relational and variational sampling and sampled some new data as well as existing data.

It is important to note that sensitivity grows over time which helps to inform the researcher as to where to sample (Strauss & Corbin, 1998). In fact, data which is collected at early stages of the research may be re-sampled as the researcher’s sensitivity grows. Re-sampling of data already analysed occurred in the process of this research.

## 5.6 ENSURING RIGOUR

An essential element of any piece of research is ensuring rigour in the actual results. Lincoln and Guba (1985) suggest four checks that can be used to evaluate the quality of qualitative data; *credibility*, *transferability*, *dependability* and *conformability*. This section briefly describes how each of these checks can be used to achieve valid and reliable results. *Credibility* is primarily concerned with demonstrating that the research was conducted and analysed in a correct manner (Collis & Hussey, 2003). Strategies for improving *credibility* include the researcher immersing themselves in the research for a prolonged period of time (Collis & Hussey, 2003). This means persistently observing the case or cases to gain an in-depth understanding over a sufficient time period. Triangulation of data by way of using multiple data sources and collection methods is another valid tool (Collis & Hussey, 2003). Peer critique on a continuous basis may also be used (Collis and Hussey term this ‘peer debrief’).

*Transferability* is concerned with ensuring that the research findings are able to be applied to other situations which are deemed to be sufficiently similar (hence permitting generalisability). Transferability has a less significant role in research which employs a phenomenological approach when generalisability is not sought. *Dependability’s* role in providing a quality design means demonstrating that the research processes are “systematic, rigorous, and well documented” (Collis & Hussey, 2003). Lastly, *conformability* is used to examine if the research process is fully outlined to make it possible to assess that the results stem from the data collected (Collis & Hussey, 2003). This is similar in nature to what others term “auditability”. Lincoln and Guba (1985) claim auditability is enhanced by a “decision trail” meaning the process followed is adequately documented. Yin suggests a researcher should “make as many steps as possible and conduct research as if someone were always looking over your shoulder” (Yin, 2003, p 38). Another way of demonstrating *conformability* is by providing a chain of evidence, linking results to data collected. This is recommended so that another researcher could examine the raw data and conclude with similar findings.

Each of these strategies for ensuring rigour and how they are employed in this research is presented in Table 5-1.

**Table 5-1 - Strategies used in ensuring rigour**

<b>Strategy</b>	<b>Tactic</b>	<b>How tactic was employed</b>
	Prolonged engagement	A number of months spend in the data collection phase
Credibility	Triangulation	Multiple data collection sources and methods employed
	Peer critique	Supervisors and colleagues critique and review results in composition stage
Transferability	Ensuring generalisability of results	Generalisability was not sought in this research as outlined in Section 5.3
Dependability	Ensuring research processes are systematic, rigorous and well documented	Credible guide used in the research design (e.g., Strauss & Corbin, 1998) and design critically reviewed
Conformability	Establishing a chain of evidence	Documenting conclusions sufficiently so that another researcher could come to similar conclusions

## **5.7 DELIMITATIONS AND LIMITATIONS**

Delimitations arise around the scope of this research. The scope of the research is based around the unit of analysis outlined in Section 5.3.2, the customer service functions of ASB. Therefore the results of this research emerged from the analysis of data collection in this area and therefore, may not be generalisable beyond this.

Limitations are introduced because of the research methodology. For instance, research undertaken using an interpretive approach, such as employed in this research, could be subject to other researcher's interpretations. The researcher has however outlined in Section 5.6 how rigour is built into the research process to limit such problems.

Limitations are also introduced due to the firm specificity of this study. The firm specificity of any study means the results have limited generalisability, yet the specificity is required because of the firm focus of any resource based research (Yeoh & Roth, 1999). For example, in the manufacturing sector, Schroeder et al. (2002) show many factors outside the firm “may distort the degree to which resources in manufacturing processes affect financial performance measures, such as sales and profit” (Scandura & Williams, 2000, p 108). The problem of generalisability is heightened in this case due to the single case design (outlined in Section 5.3). However, as previously noted, generalisability was not the objective of this research.

## **5.8 CHAPTER SUMMARY**

This chapter outlined the research paradigm and underlying assumptions. The selected research method, case study research, was also outlined describing how ASB is used in a single case design. The way data was collected using interviews, observations, and documents, is also outlined in this chapter. The chapter then outlined how an adaptation of grounded theory was used for the data analysis strategy. The chapter then discussed the methods employed by this research to ensure rigour and outlined the limitations of this research.

## CHAPTER SIX – ASB

*This chapter provides an introduction to the case studied in this research, ASB Bank. This is achieved by introducing the retail banking sector in New Zealand and outlining how ASB are unique and successful in comparison to other industry players (and therefore, how ASB meets the case criteria set out in Section 5.3.1). Next, the use of information technologies in banking is outlined. A brief history of ASB is then provided. Lastly, ASB's information systems strategy and systems, and innovation and systems development practices are discussed.*

### 6.1 RETAIL BANKING IN NEW ZEALAND

There are four major players in the retail banking sector in New Zealand: ANZ/National<sup>15</sup>, ASB, Bank of New Zealand (BNZ), and Westpac. The total assets of these four banks represent 57% of the total assets of all registered banks operating in New Zealand. With the merger of ANZ and National Bank, the total assets of ANZ National are \$41 billion more than the next biggest bank<sup>16</sup> (Westpac) (as at 30 September 2006). Westpac and BNZ are of a similar size with just over one billion separating them. ASB falls into the fourth biggest place, six billion behind the Bank of New Zealand. Table 6-1 shows a comparison of the key statistics of the major New Zealand banks. All of the banks offer a full range of financial and banking services via their network of branches and electronic commerce initiatives.

**Table 6-1 - Key statistics of the major New Zealand banks 2006**

	<b>Total Assets \$'000</b>	<b>Net Profit after tax</b>	<b>Number of employees ^</b>	<b>Number of branches</b>	<b>Year Founded</b>	<b>Location of Head Office</b>
ANZ/National	92,759,000	859,000	9,396	309	1835/1972	Wellington
ASB	44,568,000	447,000	3,868	123	1847	Auckland
BNZ	50,509,000	623,000	4,614	180	1861	Auckland
Westpac	51,589,000	590,000	5,096	196	1861	Auckland
<b>Sector</b>	<b>59,856,250</b>	<b>629,750</b>	<b>5,744</b>	<b>202</b>	<b>n/a</b>	<b>n/a</b>
<b>Averages</b>						

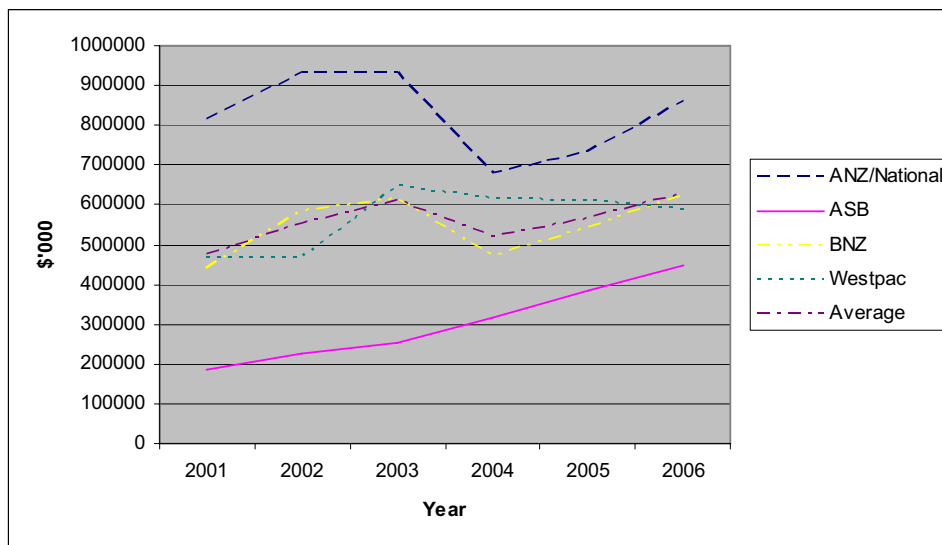
^Employee numbers are calculated on the basis of full time equivalent basis (including casuals and contracting staff).

<sup>15</sup> ANZ Bank was acquired by National Bank in 2003. While the banks have merged at the corporate level they are currently still operating as separate brands.

<sup>16</sup> In terms of total assets.

The industry is one of the world's most deregulated financial sectors (Ng & Hope, 2004). As such, there is significant competition from many non-financial institutions offering credit cards, hire purchases, and independent mortgage brokering. Despite strong competition, there is still good growth in the after tax net profits of the major incorporated banks as shown in Figure 6-1.

**Figure 6-1 - Major New Zealand banks: Net profit after tax 2001 to 2006**



Source: adapted from KPMG FIPS (2001 – 2006)

In fact, most of the major New Zealand Banks have seen an increase in many of the growth measures such as net profit after tax, underlying performance<sup>17</sup>, and total assets, as outlined in Table 6-2 and 6-3. While ASB are the smallest<sup>18</sup> of the major players in the banking sector they have the prestige position of the highest increase in each of the growth measures for the year ending 2005 and above average in most of the growth measures for the year ending 2006 as outlined in Table 6-2 and 6-3.

<sup>17</sup> Underlying performance is calculated as operating income less operating expenses, excluding abnormal items, items impaired asset expense and amortisation of intangible assets.

<sup>18</sup> In terms of total assets, number of employees, and number of branches as outlined in Table 6-1.

**Table 6-2 - Major New Zealand banks 2005 growth measures**

<b>Analysis of Major NZ Banks</b>	<b>Increase in Net Profit After Tax(s) %</b>	<b>Increase in Underlying Performance(s) %</b>	<b>Increase in Total Assets %</b>
ANZ/National	8.09	13.43	16.08
ASB	20.83	18.03	17.40
BNZ	14.86	3.28	11.82
Westpac	-0.97	0.40	6.22
<b>Sector Average</b>	<b>10.70</b>	<b>8.79</b>	<b>12.88</b>

Source: adapted from 2006 KPMG FIPS (Boyce, 2006)

**Table 6-3 - Major New Zealand banks 2006 growth measures**

<b>Analysis of Major NZ Banks</b>	<b>Increase in Net Profit After Tax(s) %</b>	<b>Increase in Underlying Performance(s) %</b>	<b>Increase in Total Assets %</b>
ANZ/National	16.90	7.43	12.79
ASB	16.90	13.76	14.88
BNZ	15.24	25.87	15.02
Westpac	-3.47	7.12	15.18
<b>Sector Average</b>	<b>11.39</b>	<b>13.55</b>	<b>14.47</b>

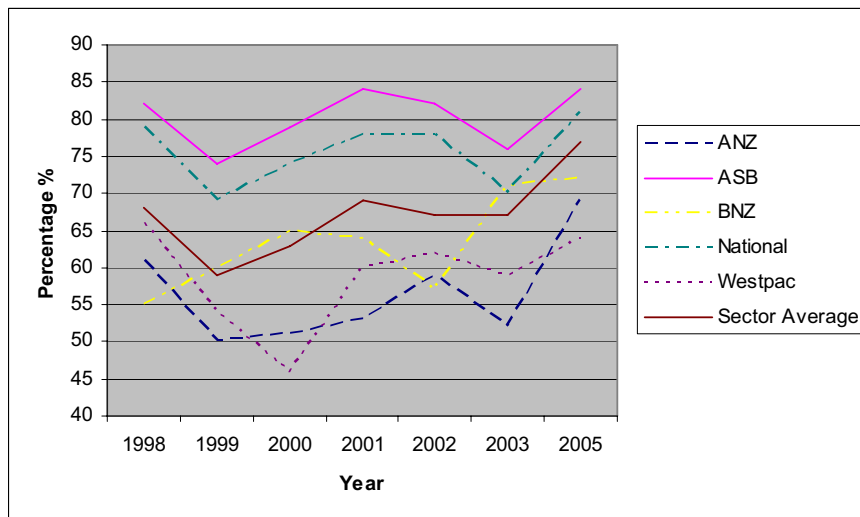
Source: adapted from 2007 KPMG FIPS (KPMG, 2007)

Customer satisfaction levels provide a useful non-financial measure of performance. The University of Auckland Business School Retail Bank Customer Survey is a regular survey which canvasses the views of retail banking customers on their main bank, providing data to compare the major banks with respect to customer satisfaction. Results from the survey, with respect to customer satisfaction levels, are shown in Table 6-4 and Figure 6-2. Since the commencement of the survey in 1998, ASB have held the top spot for the highest proportion of satisfied or very satisfied customers among the major New Zealand banks.

**Table 6-4 - Major New Zealand banks proportion of satisfied and very satisfied customers' %**

	1998	1999	2000	2001	2002	2003	2005
ANZ	61	50	51	53	59	52	69
ASB	82	74	79	84	82	76	84
BNZ	55	60	65	64	57	71	72
National	79	69	74	78	78	70	81
Westpac	66	54	46	60	62	59	64
<b>Sector Average</b>	<b>68</b>	<b>59</b>	<b>63</b>	<b>69</b>	<b>67</b>	<b>67</b>	<b>77</b>

Source: The University of Auckland Business School Retail Bank Customer Survey (Brookes, Chen, Parsons, & Rose, 2005)

**Figure 6-2 - Major New Zealand banks proportion of satisfied and very satisfied customers' %**

In summary, when comparing the major players in the New Zealand banking industry it is clear to see that in terms of performance and levels of customer satisfaction one bank stands out from the rest. For the year ending 2005, ASB have the highest increase in net profit after tax, underlying performance, and total assets. For the year ending 2006, ASB again showed strong performance. The bank has also achieved continuously higher levels of satisfied customers than the other major banks. Therefore, it is clear that ASB is *experiencing a unique position of advantage* which is an important aspect of the overall design of this research (as outlined in the case selection criteria in Section 5.3.1).

## 6.2 INFORMATION TECHNOLOGY AND BANKING

New Zealand has long been a forerunner in the use of technology in retail banking. The 2003 KPMG Financial Institutions Performance Survey (FIPS) suggested that technology now demands a significant amount of a banks capital, and today, still changes the way banks interact with their customers (Dinsdale, 2003). As such, there are many technology based services now entrenched in the banking sector. For instance, EFTPOS, ATMs, Phone Banking, and Internet Banking are now fundamental requirements for any potential start-up in the sector. While investments in some of these technologies, such as ATMs, have reached a critical mass and stabilised, other technologies, such as Internet Banking, continue to grow. A summary of the number of ATMs and Internet Banking customers of the major New Zealand banks can be seen in Table 6-5.

**Table 6-5 – Major New Zealand banks key information technology statistics 2004/2005**

Bank	2004		2005	
	Number of owned ATMs	Number of Internet Banking customers	Number of owned ATMs	Number of Internet Banking customers
ANZ/National	682	667,550	691	787,668
ASB	337	389,631	348	456,306
BNZ	400	219,096	398	269,412
Westpac	473	351,931	465	395,403
<b>Sector average</b>	<b>473</b>	<b>407,052</b>	<b>476</b>	<b>477,197</b>

Source: adapted from 2006 KPMG FIPS (Boyce, 2006)

ASB has been a market leader in the use of new banking technologies. For instance, in 1997 through their subsidiary, Bank Direct, ASB were the first bank to launch Internet Banking. Then in 2001, the bank became the first bank in New Zealand to launch mobile banking. As such, ASB has received a great deal of external acclaim for their technology leadership. For instance, in 2002 the bank won the Telecommunications' Users Association of New Zealand award for their Internet Banking services.

All of the major banks' websites indicate their values or commitment to their customers in some form or another. For example, ANZ and National bank's

websites describe their “values”. BNZ and Westpac similarly describe their “commitment to their customers”. In much the same way, ASB describes their “vision and commitment to their customers”. While each of these statements incorporates similar elements, such as delivering quality customer service, ASB is the only bank to discuss technology. ASB explain their vision “to be New Zealand’s best bank, and financial services provider, excelling in customer service” by outlining how they are continually committed to making their customers lives easier though “the use of user friendly technology” (ASB, 2007b). Furthermore, one of ASB’s five commitments to their customers also directly addresses their desire to be a leader and innovator with technology. More specifically ASB state that they (emphasis added) “*will be innovative and a leader in the effective use of technology* to continuously improve the services and products we provide our customers” (ASB, 2007b).

It is therefore not surprising that ASB have higher than average<sup>19</sup> percentage of information technology staff. The sector average for the percentage of total employees employed in the information technology area is seven percent. Two of the major banks have the sector average percentage of information technology staff (BNZ and Westpac). Whereas, ANZ/National falls much below the sector average with only four percent of all staff employed in the information technology area. ASB, on the other hand, represent the opposite end of the spectrum with double the sector average of total staff employed in the area of information technology (14%). A summary of the major New Zealand Banks’ employee numbers is provided in Table 6-6.

**Table 6-6 - Major New Zealand banks 2006 employee numbers**

<b>Analysis of Major NZ Banks</b>	<b>Total Number of IT Employees*</b>	<b>Total Number of Employees^</b>	<b>Percentage of IT Employees</b>
ANZ/National	400	9534	4%
ASB	495	3596	14%
BNZ	330	4826	7%
Westpac	378	5114	7%
<b>Sector Average</b>	<b>401</b>	<b>5768</b>	<b>7%</b>

\* As identified in the MIS 100 New Zealand’s biggest users of IT (Paredes, 2006)

^ As identified in the 2006 KPMG FIPS (Boyce, 2006)

<sup>19</sup> Of the four big New Zealand Registered Banks (ANZ/National, ASB, BNZ, and Westpac).

The high reliance the sector has on information technology along with ASB's position as market leader make the sector, and ASB, a suitable case for this research. As such, ASB are deemed to have *significant ICT usage and a positive view of ICT's* as set out in the case selection criteria in Section 5.3.1.

### 6.3 ASB – AN INTRODUCTION

Auckland Savings Bank (re-named ASB Bank in 1987, then ASB in 2005) was established in 1847 to meet the banking needs of the developing Auckland region. The bank has grown over the years, and post deregulation of the industry in the mid 1990's the bank undertook a successful, extensive, expansion plan to achieve a national presence. One of the first steps towards a national presence was the opening of the Hamilton branch in 1991. In 1992, branches were then opened in Wellington, Christchurch, Dunedin, Tauranga, Napier, Hastings, and Palmerston North. The pace of the expansion was accelerated in 1994 when ASB amalgamated with its wholly owned subsidiary, Westland Bank. Post amalgamation ASB had 127 branches throughout New Zealand. Today ASB is one of the major players in the New Zealand Banking industry (as outlined in Section 6.1) and part of the ASB group of companies. The ASB group of companies comprises of ASB (bank), Sovereign Insurance, ASB Group Investments, ASB Securities and Bank Direct, all of which are major players in the banking, insurance, and financial services industry.

While ASB was established as a regional savings bank, today a full range of banking services are offered including: personal, business, and rural banking; international, treasury, and corporate banking, along with funds management and share brokering services. Like many other players in the New Zealand banking industry, ASB is Australian owned. In February 1989 the Commonwealth Bank of Australia (CBA) increased their share holding giving them a 75% share of ASB. Then in the year 2000, CBA purchased the remaining 25% shareholding to become the sole owner of ASB. While ASB is Australian owned, it is operated relatively independently of its parent company CBA. In describing this relationship, one senior manager at ASB stated:

“...our relationship with our parent company is reasonably informal and quite arms length, so unlike other financial services organisations where New Zealand is being run as kind of a state of Australia, that hasn't been

the case for us. And I certainly know across the industry that we are much more left to our own devices than our competition.”

ASB have an extensive induction program for new employees. In part, the program aims to introduce new employees to the culture and values of the bank. In particular, employees are made aware of the history of the banks vision and values. As such the vision is well understood by employees of the bank. One senior manager confidently suggested that any employee would be able to describe the vision of the bank. The full vision statement and values of ASB are outlined in Table 6-7. The shared vision is just one of the many things that make ASB stand out from other banking and financial service players. The Bank has excellent records of customer service, financial performance, and a long history of leading through information technology investments.

**Table 6-7 – Vision and values of ASB**

<b>Our Vision</b>
Is to be New Zealand’s best Bank and financial services provider, excelling in customer service
<b>Our Business is</b>
Developing long term financial relationships Providing superior levels of customer satisfaction Achieving superior growth in value for our shareholders
<b>Our Commitment to our Customers</b>
<b>Customer care</b> - We will be friendly, understanding and sincere and take personal responsibility for meeting each customers needs
<b>Integrity</b> - We will conduct all our dealings to the highest ethical standards
<b>Excellence</b> - We will be professional, flexible and efficient and aim to exceed our customers’ expectations
<b>Innovation</b> - We will be innovative and a leader in the effective use of technology to continuously improve the services and products we provide for our customers
<b>Community</b> - We will support the development of the communities in which we operate
<b>Our Commitment to our People</b>
<b>Teamwork</b> - We will encourage mutual respect for each other and work together as one team
<b>Recognition and Rewards</b> - Our rewards and recognition polices will be based on performance
<b>Fairness</b> - Our staff policies will be fair and applied consistently
<b>Personal Growth</b> - We will encourage personal and professional development and promote from within wherever possible
<b>Working Conditions</b> - We will provide a safe, healthy and enjoyable working environment where open communication is encouraged

Source: ASB (2007b)

ASB have repeatedly had strong performance in the Residential and Business Customer Survey conducted by the University of Auckland (Brookes et al., 2005). When this study was last conducted in 2005, the bank topped the customer

satisfaction rates for a seventh consecutive<sup>20</sup> year<sup>21</sup>. Likewise, ASB have had strong performance in the areas of growth, service leadership, and providing value to customers, and this has seen ASB named the New Zealand Bank of the Year<sup>22</sup> for the third consecutive year in the International Banker Magazine (ASB, 2005). The bank's excellent record of financial performance has meant it has increased its after tax operating profit by 16% to \$447 million for the 12 months ending 30 June 2006 (KPMG, 2007). In addition to the success (at a general level) ASB have been recognised as a leader in the use of information technology throughout their history (Barton & Peters, 1992; Dinsdale, 2003; Brookes et al., 2005; Boyce, 2006).

## **6.4 INFORMATION SYSTEMS AT ASB**

ASB has long considered information technology as a core value of their organisation. This section provides an introduction to the banks use of technology. The section provides a brief history of information systems at ASB, describing the bank's strategy and systems. In particular, systems core to the banks CRM system are examined. Innovation and system development practices at ASB are also outlined.

### **6.4.1 STRATEGY AND SYSTEMS AT ASB**

ASB's first step towards a computerised information system was undertaken in the late 1960's. The General Manager of the day, Mr Barrett, undertook a trip to Scotland to explore the progress of savings banks abroad, particularly examining the use of technology in banking (McLauchlan, 1991). After this trip, the bank made what it considered a bold and far sighted decision to install an information system which would link its entire network of branches to a central mainframe computer. The system installed was a real time system. The trip to Scotland was by no means stand alone. In 1962 the Deputy General Manager, Merv Corner, went to the United States to investigate data processing system developments, and today the bank continues to keep up to date or ahead of the field with information systems trends and developments (McLauchlan, 1991). Clayton Wakefield, the Group General

---

<sup>20</sup> The study was not undertaken in 2004.

<sup>21</sup> Among the major New Zealand Banks: ANZ/National, ASB, BNZ, and Westpac.

<sup>22</sup> Of the major banks.

Manager of Technology and Operations (today), suggests that technology plays a pivotal role in the bank's operations, stating:

“Information technology is part of the vive of the organisation, or the culture of the place that the natural instinct is to say invest in it and it delivers benefits.”

The strong drive towards technology leadership is also reflected in many aspects of the bank's operations particularly, strategy, marketing and staffing. In fact, the drive towards the effective development, implementation, and use of information systems has been identified as one of the key factors which has contributed to the success of the bank over the years. Ian Park, the General Manager of Personal Banking, supports this by saying:

“Our systems are outstanding and I can sort of relate to that because in this role I have been to the States three times. During that time we interact with other banks at different conferences, we have actually visited other banks, and quite frankly, even in the States, they've got nothing that comes close to the stuff we are producing now.”

Similarly, another employee stated:

“When we tell other overseas banks what we can do with our systems they are absolutely blown away.”

A new employee with six months service with the bank (and prior service at other major New Zealand banks) also echoes these sentiments suggesting that ASB's technology really makes a difference. The employee stated:

“Wow what a difference – this banks technology really makes a difference – it is leading edge.”

ASB have taken a clear stand in relation to information technology; that is, to be an innovator and leader. Pursuing excellence in terms of information systems is well recognised strategically and operationally throughout the bank. This is evidenced by, among other things, the bank's values, marketing, and senior management commitment to information technology. The values of the bank, seen in Table 6-7 (page 89), outlines the banks commitment to innovation and technology. For

instance, the below extract highlights the bank’s technology intention (emphasis added):

*“We will be an innovator and a leader in the effective use of technology to continuously improve the services and products we provide for our customers”.*

The bank’s simple strat line used in marketing the bank, *“one step ahead”* (ASB, 2007a), further emphasises their desire. The vision and strategy are supported in a top down manner. For instance, the senior management commitment is evidenced by a comment made by Clayton Wakefield, Group General Manager of Technology and Operations who stated:

*“ASB Bank is unique in a number of ways. It has got three main areas: customer service, technology leadership, and community involvement. It is unusual for an organisation to declare its hand around technology and leadership – but that is really important to us.”*

Furthermore, the importance of information systems at ASB is well entrenched in the history of the bank. Of significance to the drive towards technology leadership is the background of the past and present Managing Directors. Each of these senior managers has come to their role from a technology background (as opposed to holding previous roles in accounting or marketing). The grounding they have in technology means that they have a fundamental understanding of information technology and what it can do for organisations. As an example, one senior ASB employee commented:

*“Our managing directors have a fundamental understanding of the power of technology and what it can be utilised for.”*

What this means for ASB is that senior management have a clear view that information technology is valuable. This view is recognised and reflected in the way information technologies are developed and integrated into the organisation. In particular, ASB have chosen to retain ownership of their information systems and have resisted trends to outsource information systems development over the years. While ASB have strong external technology partnerships, they have internally maintained ownership of their systems.

Today ASB has many different application systems serving the bank’s different stakeholders. Information systems relating to the customer relationship management (CRM) functions are of particular interest to this research. Table 6-8 summarises the major information systems currently in use which service the customer service function. These key applications range in age from the 1960s through to today, although, as with most information systems, development is ongoing with all of the applications. Together the Onyx, RSA (Retail Sales Automation), and Teller applications form the basis of ASB’s CRM system which is considered critical to the success of their business. This is summed up by the following comment:

“Our customer relationship management system is fabulous, it is in our call centres, and in the branches, and tells us everything about our customers.”

**Table 6-8 – Key CRM or CRM related information systems at ASB**

<b>System</b>	<b>Description</b>	<b>Organisational Impact<sup>^</sup></b>
Onyx	CRM platform, started as an in-house development, continues to develop with ASB and Onyx Software Corporation. The first Onyx solution went live in 1999.	“Outstanding” “Leading edge” “Fabulous”
RSA	Retail Sales Automation, developed to hinge off Onyx, and later bought by Onyx. Developed as a three phased project encompassing credit, loans, and insurance which begin in 2003.	“Once it is delivered it will be world class” “Brilliant, absolutely brilliant”
Teller	Front line transactional system, developed in-house in the 1960’s.	“Very good – it’s a practical, functional way of doing things”
Oscar	Intranet knowledge and communication base developed in-house, ongoing development.	“Great information channel”
i-Lab	Home-grown innovation management program, launched in 2004.	“Business critical” “It’s fantastic, it got people together”

<sup>^</sup>As described by employees of ASB

The first CRM system, Onyx, was developed in partnership with Onyx Software Corporation, and was commissioned in 1999. While incremental changes were made over time, this was significantly extended in 2003 by the development of the RSA

project. The three phased RSA project began with an aim to extend ASB's existing CRM system, providing an integrated, consolidated view of the customer. The first phase of the project focused on credit cards. The second phase, which encompassed personal credit and home loans, followed in July 2004. The third phase focused on insurance and went live in mid 2006. While the RSA development was driven internally, it was tightly coupled with the Onyx CRM solution.

The Onyx application has had a big impact on the organisation with over 3000 staff using it every day. Users include branch, call centre and other internal staff. The system has also had a big impact on the efficiencies of ASB. ASB's CRM Manager, Patrea Jones, described Onyx stating:

“Onyx has paved the way for delivery of a whole new level of service and efficiency. It has automated many manual and semi-manual processes, reduced approval times and enabled us to manage and update vast amounts of applications and customer data quickly and accurately to increase service levels, productivity and profitability” (Onyx, 2007).

Although they are not core components of ASB's CRM functions, Oscar and i-Lab were deemed worthy of mention because of the supporting role they play. Oscar is ASB's intranet which provides a central knowledge base and communication channel. The application was developed in-house and was undergoing a major upgrade (and due to be renamed) at the time of writing this case. i-Lab is another home grown application. The application was designed to meet the innovation and continuous development needs of the bank. That is, i-Lab is an information gathering and innovation management program that, in its initial stages, works as an open electronic brainstorming session.

While Table 6-8 outlined five of the key information systems currently in use at ASB, there are many more information systems also in use today. For example, the nature of banking means all banks rely on information systems which encompass: transactional banking, switching, treasury, insurance and much more. While all of these systems are important, they have not been discussed here because they are not considered core to consumer banking (the focus of this study as outlined in Chapter Five).

As indicated in Table 6-8, ASB control and internally develop most of their customer relationship related information systems. The division of the organisation responsible for the technical components of a systems development project is called Group Technology Solutions. The Group Technology Solutions division currently employs most of the bank's 495 information technology employees (approximately 425 employees). As ASB has evolved so has the structure and nature of this department. This is summed up by the following comment:

“It (Group Technology Solutions) has evolved from its original roots which were around software acquisition and development and it has evolved into recognising it was more than just development, it was around a whole garment, so going through the software process means delivering the total solution.”

#### **6.4.2 INNOVATION AND SYSTEMS DEVELOPMENT AT ASB**

ASB have been successful in their drive towards technology leadership, and the bank recognises that maintaining a leadership position requires continuous effort and innovation. Therefore, ASB employs a strategy of constant managed change and innovation as the means to this continuous effort. A typical comment about this change and technology at ASB states:

“There is just so much change going on here, and we are quite technology driven, so it is just part of life.”

While it is easy for an organisation to declare its intent around technology and innovation, ASB back up their top level support at an operational level. One example of this is the discretionary time and budget available to unique projects. Typical comments from ASB employees about such freedoms include (emphasis added):

“My boss kind of *cut me loose* to run around and try and get people on board and the more we talked to people about it, do you want to be part of this thing, and we were going to ask everyone till we got our answer.”

“*I had a bit of a free hand*, that is to say *my role was a roaming one* really, so I just created stuff and tried to run with it.”

A major step towards promoting and managing innovation at ASB was launched in March 2004. This involved the introduction of a home grown innovation management program called i-Lab. i-Lab was developed to try and build on some of the more successful innovative projects the bank has undertaken in the past by creating a more structured and ongoing process. As indicated above, i-Lab acts as a big funnel to capture ideas from staff in all areas of the organisation in a transparent manner. The transparency of the process allowed for a brainstorming effect to occur as new ideas are generated. This means participants in the process can see other participants' contributions and feed off these. Steve Jurkovich, Group Manager of ASB Online, one of the principle sponsors of i-Lab, summed up the rationale behind the project stating:

“The heart of i-Lab is the fact that we have been really successful with some of the more innovative things we have taken on like; phone banking, automated teller machines, EFTPOS, internet banking, but when we looked at the history of these they have been reasonably ad hoc... .. so I guess one of the challenges was, could we get more out of it if we were actively managing it, and kind of put the Bunsen burner on it a bit, and really put a focus on it, and so be less ad hoc. So that was one of the gut feelings that were behind it I guess when I started to push for i-Lab.”

The first full cycle utilising i-Lab to encourage and nurture innovation produced hundreds of new ideas for ASB. Many of these related to the bank's information systems since the very essence of their product is built on technology. While all of the ideas generated from the first cycle of i-Lab (in 2004) were acknowledged, many also seeded change in the organisation. Prior to the development of i-Lab, regular and ongoing processes for gathering ideas and managing innovation existed and are today still utilised. What i-Lab has added is an ability to create a short term focused way to engage staff in innovation. After the success of the first full innovation cycle (utilising i-Lab), the bank decided to really put the heat on innovation every two years using i-Lab as a tool to do this. Utilising regular channels of innovation, such as the structured communication and feedback process, as well as i-Lab as a managed innovation process, ASB hope to capture incremental regular change (or ideas for change), as well as seeding major change (or innovation), as a regular course of business.

Like the managed innovation process at ASB (outlined above), a clear three phased process also encompasses the development, implementation, and maintenance of information systems projects at ASB. The three phased process includes: strategic leadership, a methodology for the development, and lastly, an implementation methodology. Each of these phases is discussed in turn.

The first phase of the process for rolling out new technology is closely related to the managed innovation process since it involves the strategic leadership, generation and capture of ideas and projects. The strategic leadership component of this refers to ASB's top down support and drive for information systems success. Beyond such top level support, the generation of new ideas is, naturally, critical to new information technology projects getting off the ground. ASB use their routine and special innovation management strategies to ensure ideas are both generated and captured. Generation and capture of ideas using the innovation management program (i-Lab) is seen as fundamental to ASB's evolution (as outlined above). The bank also see the importance of capturing more routine or day-to-day ideas. Capturing these more routine ideas involves providing a clear process for listening to staff and ensuring staff know where to go with ideas they may have. Both processes require ideas to be encouraged, acknowledged, and providing a supportive environment which is open to communication. The two different channels for idea generation and capture are described by senior bank employees who stated:

“The central theme which carried through i-Lab was that the best way to get ideas is to ask people, and that the best way to get good ideas is to get lots of them, and that if you really believe that people have got smart ways to improve things, then if you ask them, they will tell you, and if you do something about it, they will want to tell you again.”

“Ideas can come from everywhere, shop floor, middle or senior management... ..and the trick is to have nice big open ears to actually hear it, trap it, and turn it into something, otherwise, it becomes oh we would really like one of those and there is no chance of that so we will stop asking, so we have good mechanisms for listening to ideas.”

Regardless of the channel innovation is promoted through, it is clear that ASB see it is fundamental to their success to have open dialogue and interaction between employees in any development project. At a basic level, this means communicating endlessly and constantly between divisions and workgroups who are working on the

same project to ensure everyone is on the same page. For example, a senior manager at ASB described the constant and ongoing dialogue by stating:

“...there’s constantly information flowing as to how well branches are performing, of course there is our intranet, and there’s a plethora of different ways in which there’s a lot of informal coffee-talk or corridor chat, so there are regularly times when people are get up to date with what’s going on and you’re made aware of which direction we’re heading. So, lots of different communication channels.”

Once the direction or strategy is established and projects are initiated, ASB considers the next part of their success as having a clear process for developing information systems. This means, during a development, the process in which the development project will go through is known, and has clear and well defined roles and relationships among stakeholders. A senior technology manager at ASB described the benefits of such a process as robust and suggested:

“Robust processes give you that consistency and predictability about things.”

When undertaking development projects, the roles and relationships between end users, technical staff, and project managers embody the bank’s commitment to developing a shared understanding and team play. For instance, building on multiple development projects, ASB now recognise and protect critical nexus points between key stakeholders in the process. This means key crossover or contact points, which occur when end users, technical staff, and project managers engage, are carefully managed. In particular, the relationship between technical staff and end users of an information system is acknowledged to be very important to the success of a project. As such, several specific tactics are used to protect and manage these key nexus points. The tactics include both high-level and lower-level strategies including: ensuring alignment, managing communication, and promoting awareness.

Confidence in the change process, when implementing information system development projects, has also been built over time as a result of success from previous projects. One ASB technology manager illustrated this when he stated (emphasis added):

“Business *have confidence* in how our in-house *technology group delivers*, so I think we have got, you know, a very good rapport with our business and I suppose we have been able to *demonstrate over time our ability to deliver*.”

Similarly, at an individual level, self confidence and knowledge about how to fulfill their part in the development process, by way of an individual’s role, is developed over time and contributes to the success of a project. Several ASB employees described this learning over time. One such example is illustrated in the quote below (emphasis added):

“The next phase is progressing much faster and much slicker. Now, is that a function of the people who have already done phase one and two, or is it because we’ve changed the methodology? There’s a bit of both in there. You know, it’s that kind of organisational-level thing kicking in, where like at implementation, *you know where the problems are going to be, and how to engage the users*, or business owners.”

Another participant described how quickly and efficiently he was able to set up a training schedule for 600 staff drawing on prior experience and intuition (emphasis added):

“It didn’t take me long because *I had a template from a previous occasion*, that *I’d built on from a previous occasion to that...* ...not having to reinvent the wheel, and just thinking and *knowing what worked the last time*. And a lot of it becomes a bit intuitive, you know how to deal with certain situations, so experience and understanding of the kind of problems that are likely to arise helps you formulate a response.”

As participants in a development process gained more knowledge and understanding of their own roles, it gave them confidence to share more, which promoted closer team work between the clients and technical teams. This relationship was outlined by one employee who stated:

“There was a lot of working together in harmony, between the CRM technology team and the user acceptance testing team, probably because we had gone through a similar cycle three or four times, and now the technology team had confidence that they knew what we were doing was correct.”

ASB also has a specific implementation or change management process for implementing new information systems developments. The process is heavily reliant on strong communication and user involvement. Having strong communication in

the lead up to a systems implementation involves pre-positioning end users for the stage. This involves users being well informed about what is upcoming and what to expect. Such pre-positioning means the business is ready for the implementation at the same time technology is ready to implement it. Therefore, the technology solutions team along with other divisions, such as marketing, put considerable effort into making sure everyone is aware of what is about to happen with an upcoming implementation. This involves communicating progress and benefits of the information systems project to end users of the system. The below statement describes the process used to ensure project awareness involved in a specific project implementation:

“For this project almost this time last year, we had a conference, and at that time, I took a slot in it for an hour, and played a video on Onyx, which we got through marketing, produced slides and gave it a right old rev up to say what was coming along. So, when credit cards came along in October and November, everybody knew what was happening, everybody had kind of been told and pre-positioned, communicating endlessly, so that people know what’s happening, and they know what the benefits are, even though there might be some pain before they get there. That same level of communication wasn’t there for that previous project and even the first Onyx project, the first CRM that we created, we didn’t have the same depth of experience, and breadth of communication.”

Another important aspect of a successful implementation is built into the design of any development project. That is, the system is designed and built to be streamlined with existing systems the end users use in their day to day functions. This means new systems will often have the same look and feel as other systems which end users currently use. Masking complexities of the new system and making it look and feel and behave like the other systems helps to ensure that the implementation phase is undertaken smoothly.

The last stage of implementing a project is ensuring there is an auditable trail. Having an auditable trail helps to ensure there is rigour in the process and allows the quality of the project to be checked by an independent audit group post-implementation. Other post-implementation activities include, ensuring end users of the system have adequate support, and change requests typical of any development project are not lost. Like the methodology for project development, ASB have improved the implementation and post implementation process over time.

## **6.5 CHAPTER SUMMARY**

This chapter built on Chapter Five by introducing the case chosen for this research, ASB. This was achieved by describing the bank in the context of the retail banking industry in New Zealand and more specifically describing the use of information technology in the sector. The introduction highlights ASB's suitability as a case for this research (in terms of the criteria outlined in Section 5.3.1) due to their continued financial and information systems success. A brief history of ASB is also provided, as well as more specific information on ASB's strategy and systems, and innovation and systems development practices. The next chapter outlines the results of this research by describing sources of advantage (in terms of resources) identified at ASB.

## CHAPTER SEVEN – SOURCES OF ADVANTAGE AT ASB

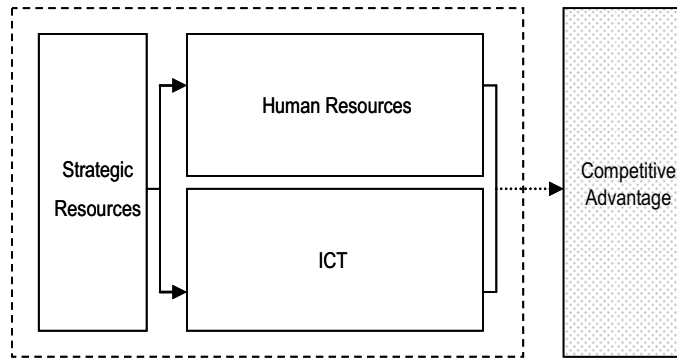
---

*This chapter presents and discusses the first of the three results and discussion chapters. The results are presented in this chapter utilising quotes from the original data sources to support the findings. These results stem primarily from interviews and observations, however, other sources of evidence, including documents, are used when and where appropriate. Results are presented as they emerged from the grounded theory analysis, by way of sources of advantage (in terms of organisational resources).*

### 7.1 INTRODUCTION

Sources of advantage emerged from the grounded theory analysis in two ways. First, sources of advantage were identified by evolving *phenomena* into *concepts*, and those *concepts* in turn into *categories* with the end result being several conceptual models (presented in this chapter). Second, a phenomena table was created to help support the models and make further sense of the data. Therefore, sources of advantage presented in this chapter are supported by the conceptual models, data from the phenomena table, along with direct quotes from the raw data, as and where appropriate. Phenomena tables are representations of counts of the frequency of categories and concepts generated during the process of carrying out grounded theory analysis. The phenomena table created in the process of analysing this research can be seen in Appendix F. Six hundred and fifteen *phenomena* emerged from the interview data; these were broken down into 78 unique *phenomena*, 15 *concepts* and three main *categories*. As indicated, the results emerged in the form of *phenomena*, *concepts* and *categories* (as outlined in Chapter Five) but hereafter are termed resources. The three main groupings of resources are ICT, human resources, and strategic resources. These groupings are related to each other and together are assumed to be related to competitive advantage. The link to advantage is assumed because the resources were identified as sources of value at ASB. Competitive advantage is assumed because ASB are an industry leader (as required by the case selection criteria presented in Section 5.3.1 and outlined in Chapter Six). The relationship between the groups of resources and competitive advantage can be seen in Figure 7-1.

Figure 7-1 - Sources of advantage at ASB – An overview



As outlined above, several resources relate to each of the three groupings and are shown in Table 7-1 (and discussed in the following sections).

Table 7-1 - Summary of resources which relate to each grouping

Group	Resources which related to this Group
Strategic Resources (46)*	Group Strategy Divisional Strategy
Human Resources (105)*	Culture Staff Development Change Management
ICT (464)*	Leadership and Vision Innovation and Continuous Development Relationships Shared Understanding Knowledge Management Development Astute Implementation Advantage Functionality Perception Success History

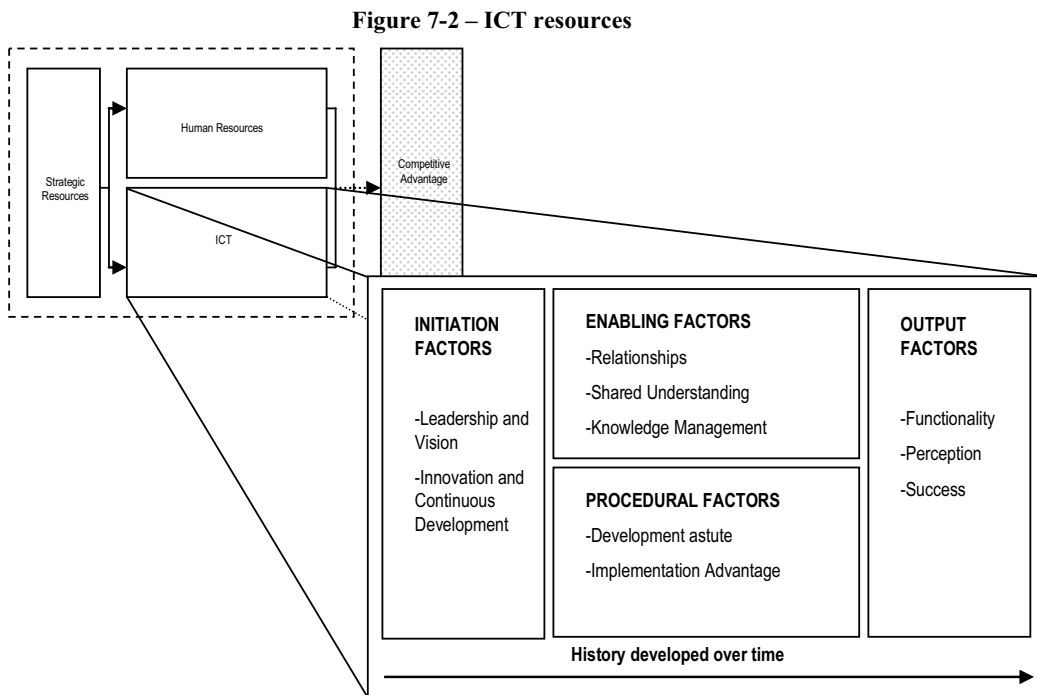
\* The number in brackets beside the group names relates to the number of occurrences of the resource identified in the raw data – as shown in the phenomena table in Appendix F.

While it is clear to see the distribution of resources is asymmetrical among the three groups of resources (strategic resources, human resources and ICT resources), the frequency of a resource within a grouping does not necessarily relate to the strength of the grouping (or the effect the group of resources has on the organisation) (Dillon, 2002). For instance, if a critical resource is only mentioned once it doesn't

make the resource any less critical. Each of the major groups and related resources are now discussed.

## 7.2 ICT RESOURCES

Several resources relate to the grouping *ICT*. These can be further broken down into four lower level groupings: initiation, enabling, procedural, and output resources, and each of these contribute to developing a history over time. The lower level groups of resources relate to the effect or stage of the *ICT* resource. For example, some of the *ICT* resources had an effect at an initiation stage of *ICT* projects, while other resources related to *ICT* procedures. The lower level groups and related resources, as they relate to the overview model (Figure 7-1), is presented in Figure 7-2 and discussed in the following section.



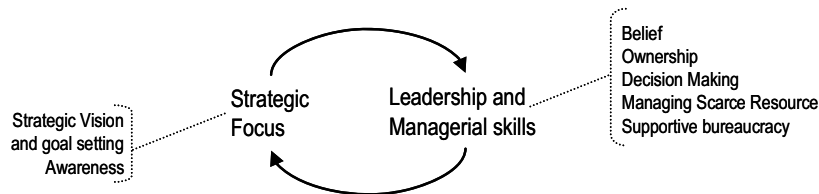
### 7.2.1 INITIATION FACTORS

Two types of resources relate to the first group of *ICT* resources labelled initiation factors: leadership and vision, and innovation and continuous development. Each of these is now discussed sequentially.

**LEADERSHIP AND VISION**

There were many occurrences of the resource *leadership* in the data. The occurrences related to having a strategic focus, as well as core leadership and managerial skills such as decision making and managing scarce resources. This resource is illustrated in Figure 7-3 and discussed below.

**Figure 7-3 – ASB’s technology leadership and vision**



While it is clear there are two types of *leadership* resources (strategic focus, and leadership and managerial skills), boundaries of these two distinctions are rather blurred as each grouping influences the other. For instance, having the right future vision is closely related to a manager’s core managerial skills such as decision making ability. That is, while there may be many directions in which the bank could head, a good leader needs to make choices about the best way forward. The tightly coupled relationship between these types of *leadership* is shown by the arrows connecting the resources in Figure 7-3.

Strategic focus, as it emerged from the data, related to having the right future orientation. While a clear understanding of operational goals and activities is required (as outlined later in this subsection), a clear future vision and plan to get to the desired endpoint is also seen as critical. This means having a clear understanding of a future place you want to be and getting the focus right. ASB see the right future focus as looking to the middle to long term. One interviewee described such future vision and goals as a key differentiator of ASB by stating:

“The difference (between ASB and their competitors) is we take the bull by the horns more than some of our competitors, saying how do we get from here to here, it is a leadership issue, forward thinking, it gives an advantage to actually move forward.”

Two of the attributes of strategic focus were evident at ASB; having a strategic vision and goal setting, and awareness. At ASB, having a strategic vision and goals means

“pushing the envelope” and setting challenging goals to be met. For instance, one interviewee described their division’s goals as challenging which requires change as apposed to continual improvement.

“We are charged with meeting certain financial targets, and we are given a certain amount of resource to do that, and to achieve the targets we get set, you know, you wouldn’t be able to if you just lent on business as usual, with the resource. So we’ve got to essentially challenge everything we do each year.”

The attribute awareness is multifaceted, including elements of internal and external awareness. Internal awareness includes being aware of the business needs, customer needs (having a clear link to the customer), as well as having a strong hold of information technology and what you are trying to achieve. Being aware of the business needs encompasses having an understanding of the vision and goals of the business as a whole, as well as any business groups you are working with. Having an understanding of other business group’s vision and goals was seen to be critical in forming good working relationships with other business groups, (e.g., when the technology group work with personal banking). This means each business group requires a good understanding of what the other business group is trying to achieve. This can be further explained using the relationship between technology and personal banking at ASB, in that, the technology group need to understand that they are an advocate for business and are not creating technology for technology’s sake. This means the technology group must have a good understanding of what personal banking require and furthermore, the technology group should appreciate how this relates to the final customer (internal and external). One information technology based interviewee summed up ASB’s strong leadership awareness by stating:

“Technology has to be seen as an enabler... ..so it is an important senior leadership conversation around how does technology fit into the whole, meeting the organisation’s strategy. So it is not a game in itself... ..we are very clear to connect (what we are doing) with the end customer with the reason we buy a Microsoft server or, a business case for a new product or a new piece of mobile technology must relate to the revenues that we generate.”

The awareness and link to the end receiver of the product or service created works in reverse as well. For example, leaders in the personal banking division of the organisation must also have an understanding of information technology. While it is

clear that the technology group needs to have an understanding of the business groups they are working with (as outlined above), it is just as important for technology leaders to have a strong hold and understanding of their own group or division (i.e., technology). Such an appreciation of technology encompasses understanding what technology is capable of, what the future directions of the industry might be, as well as the current state of play within the organisation in terms of technology. Internally having a strong hold of information technology means having a target architecture or a future place you want to be. As such, having such a target is seen as an important part of ASB's technology attitude.

Such a strategic future picture of technology means a layering effect is avoided. Layering<sup>23</sup> in terms of technology is considered an expensive way to build information systems. This is due, in the main, to the heavy reliance on old technology rather than moving towards the future. While this aspect of technology awareness is future looking, ASB also needs to have a strong hold of previous technology decisions. That is, corporate knowledge of information systems, how they were built, and interact, is required. The importance of corporate knowledge of systems is summed up in the following interview extract:

“Corporate knowledge of the (company's information) systems is important. Everyone has got lots of systems and technology and often how they fit together, how they were built, how they interact, gets lost. And as a result of that you get in the situation where you don't understand what you have got. And if you don't understand what you have got you don't know where you are going.”

External awareness involves being up to date with trends in the field, being aware of the state of the industry, as well as related industries, locally and internationally. ASB have many channels to building such external awareness. For instance, ASB regularly visit overseas banks and participate in industry conferences. Such market awareness allows ASB to be future looking while watching trends and practices which may affect their customer base. This practice was summed up by one interviewee who stated:

---

<sup>23</sup> Continually adding on bits of new technology as apposed to developing a big picture plan and working towards that.

“So we are monitoring what our competition and how customer behaviour is changing.”

Another strategy employed by ASB to build awareness is the use of mystery shoppers. ASB use mystery shoppers to gather information on their own customer’s total experience and they also mystery shop their competitors. The practice allows them to gain valuable information on other industry players and make comparisons with their own performance.

Several attributes relate to leadership and vision, the second facet of ASB’s leadership and managerial skills. Attributes included having a strong belief, ownership, as well as more functional skills such as decision making, managing scarce resources, and providing a supportive bureaucracy. Having belief or confidence in information technology, processes, other bank employees, and an individual’s own ability was often mentioned as an important contributor to successful leadership. Most of the participants in the interview process had a fundamental belief in information technology, believing that information technology would ‘take the organisation places’. The following extracts are representative of typical comments made by interviewees:

“...I don’t think we would have got to where we are today in business without investing (in information technology). I think the benefits have just been huge.”

“I think most of them (senior management from every area of the bank) would say we need it (information technology). It is part of the psyche of the place; it is part of the recipe for success.”

While a strong belief in information technology is present and nurtured at ASB, the bank also acknowledge the belief must not lead to a blind drive towards technology spending and use. The bank see a level of challenge or critique as important in regard to technology. That is, it is important to question key decisions rather than blindly follow a path.

Closely related to belief or confidence in information technology, is a strong sense of ownership and pride in technology demonstrated and identified. In describing technology at ASB, many senior managers used possessive terms such as ‘my’ in reference to technology. For instance one senior manager stated (emphasis added):

“I have probably got 5% of non ASB employees working on *my* technology”.

Ownership was often evidenced by interviewees who had a strong sense that they were part of the organisation and more particularly part of information technology, in the way many employees described the key contribution they make to information technology decisions. Ownership was linked with decision making, in other ways as well. For instance, many interviewees, particularly senior members of the technology group, spoke of strongly standing by their decisions about information technology.

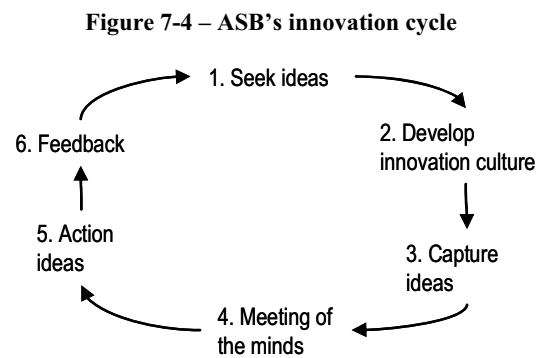
Decision making ability was one of the more functional managerial skills identified as important to ASB. One interviewee described how sometimes ensuring the pace of the development and ability to make good timely decisions is more important than the technology choice itself. This means, at the end of the day, employees involved with making technology decisions need to retain focus on the business problem being solved rather than delaying technology choices for the sake of technology. Clayton Wakefield, head of technology and operations for ASB Group, stated:

“What I think gets difficult is where organisations continually evaluate and make changes. I have worked in organisations where the first two months of a project was spent considering whether we should do Unix and Oracle, or should we do Microsoft and SQL. And it is nothing whatsoever to do with the business problem... ..at the end of the day we want to introduce a customer management system and that stuff just has to work. To a certain extent you just have to choose your course on some of the architecture and go with it.”

Managing scarce resources and balancing the competing needs of project groups was also identified as problematic issues that managers at ASB were required to solve. Balancing conflicting demands for resources was often seen to require making trade offs when allocating scarce resources. For instance, if financial capital was unlimited, spending could also be unlimited, but when it is not, decisions have to be made regarding appropriate spending of the limited resource. The last managerial factor discussed as important to ASB is setting up a supportive bureaucracy. Key elements of providing supportive bureaucracy include enabling and fostering innovation, and supportive relationships. Each of these elements is discussed in the following sections.

**INNOVATION AND CONTINUOUS DEVELOPMENT**

Many interviewees described ASB's strive towards *innovation and continuous development*. Occurrences relating to this resource all related to the process ASB use to strive for and manage innovation. *Innovation and continuous development* were seen to be closely related, with both resources contributing to a continuous innovation cycle. The innovation management cycle at ASB can be seen in Figure 7-4.



The innovation cycle used at ASB to actively manage innovation, is deliberately depicted as a continuous cycle. While the stages in the cycle are numbered, the act of numbering the stages does not intend to depict the cycle as a rigid and formal process of separate stages. Instead the cycle is perceived in a fluid manner, meaning ASB actively undertaking many stages at the same time.

The first stage in the cycle involves *seeking ideas*. This stage relates to the proactive nature of innovation at ASB and in particular, how the bank actively pursue the generation of new ideas. Proactively and continually seeking innovative ideas involves asking for ideas, providing many channels for idea generation, and listening to input from all areas of the organisation.

The second stage of the innovation cycle involves *developing an innovation culture*. This was described by interviewees as involving: having top level support for innovation, creating a supportive culture, and integrating innovation into the everyday culture of the organisation. The combination of these acts is seen to help enforce the notion that innovation matters and is important to the bank. Top level support for innovation was often mentioned by interviewees as an important part of the innovation process. Part of this top level support meant demonstrating that

innovation is important and actively pursuing innovation rather than resting on results of current business processes. One senior manager from the customer service side of the business summed this up by stating:

“We’re not afraid to push the envelope, to challenge the way we do business and not sit back and say, well, we’ve been number one for six years and we’ve done all this stuff... ..we sit back and say, well now that’s not going to be good enough next year, so we’ve got to constantly strive for more”

Similarly, a senior member of the information systems solutions team commented:

“...it is a strength of the organisation to push the envelope”

Having top level support was also described as meaning that top level managers accepted that innovation involves a degree of risk. Creating a supportive culture was described by several interviewees who said that they were given flexibility to break rules, as well as being given discretionary time and money to work on innovative projects. One interviewee’s description of developing such an innovative culture can be seen in the below extract:

“Innovation is part of the culture, to be innovative is a cultural thing, and I think that comes from leadership, we will be innovative, you know, and creating an environment where it allows innovation to foster and not getting too tight on budget, having discretionary money, having discretionary time, saying to people, go out and break a few rules, don’t look at the way the world is at the moment.”

Integrating innovation into the everyday culture of the organisation was described as making innovation expected, and setting the scene for all ideas, decisions, and projects to be questioned and challenged in the spirit of innovation. Making innovation an expected part of ASB means ensuring that there will be change so that it is an anticipated part of normal business. One interviewee described how ASB set the scene for innovation and change stating:

“To me the real essence of ASB as an organisation is about being progressive and so it comes with the territory, I think that progressiveness means that there will be change and that we are wanting to be better tomorrow than we are today, is how I would look at it and that would mean some change. So yeah people have been very upbeat about it...”

Another interviewee echoed these sentiments stating:

“There is also an exception that we will champion the new stuff, kind of an amorphous description...”

In describing how innovation and seeking innovative ideas is integrated into the everyday business of ASB, an interviewee stated:

“We have integrated innovation into the everyday business... ...giving informal feedback is important, encouraging innovative ideas is treated in the same way from all staff, from front line staff, to team leaders, managers, and general managers, whatever we do we really focus on that.”

An example of using questioning and challenging as a technique to promote innovative change can be seen in the extract below where an interviewee describes the process that occurred when ASB changed a lending rule within personal banking:

“We should be the customer advocate, and if we said, oh well, we’re only prepared to lend a certain amount – why is that? Oh well, we always have done it that way. That’s not good enough. Oh it’s policy. Well, we’ll go outside the policy for that particular area that relates to a customer. So we challenge everything in this regard, and change it to reflect today and move it forward rather than what happened 25 years ago. You, know, I lost \$1000 forty years ago. Well, what happened, have we lost anything since? No. Well, what the hell have we still got the policy for? So that type of thing we challenge everything.”

The third step in the innovation cycle involved *capturing ideas*. In examining how ASB capture ideas as part of their innovation cycle, it was evident that three different approaches existed. The first approach the bank use is questioning. That is, asking the right questions throughout the branch visits program, in place, as well as, the use of routine questioning through the hierarchical reporting structure. The second of the approaches, ASB employ to capture ideas, is via their innovation management program, i-Lab. The third approach involves capturing ideas as a by-product of the annual planning and strategy rounds.

In describing how the bank use questioning, via their branch visit and reporting structure, one interviewee outlined the structure of the bank and how each of the branches are visited regularly and monitored by senior members of the bank. Throughout the branch visits program a dialogue is held, questioning processes and

performance in order to understand the needs of each branch and region. Many incremental and major change requests are captured as a direct result of such dialogue. The reporting structure used at ASB is further described in the following interview extract:

“...regional managers are in the branches every month and report through to the chief manager, and that chief manager would visit the branches possibly twice a year, and that chief manager reports to a general manager, and the general manager would visit to every branch in New Zealand once a year.”

In describing the typical dialogue used in branch visits or via the reporting structure one interviewee outlined the types of questioning used:

“How are you going? What can be better? Is there anything we can do to support you to achieve the goal at being the best in customer service delivery? And it’s amazing the little things that come out if you just press that. Some of them are relatively easy to fix, so that’s sort of the informal process that we have for checking on bits and pieces. I have certainly been able to make some reasonable changes because of that.”

While using the reporting structure and branch visit systems is a routine part of business for ASB, their innovation management tool, i-Lab, was created to capture ideas in a less routine manner by really putting the burner on innovation at particular points in time. i-Lab is a custom built computerised innovation management tool. The tool was designed to act as a big funnel to capture ideas from staff in all areas of the organisation. i-Lab, simply put, acts as a computerised brainstorming program where ideas are inputted by staff within the bank. Once ideas are entered into i-Lab, other staff can see the ideas and use these to help create new ideas. In 2003, when i-Lab was first used, it was run as an organisational wide competition in which the bank sort to capture innovative and productive ideas for the future of the bank. While in its first use i-Lab was run as an organisational wide competition, it is envisaged that in the future, the tool will be used to capture innovative ideas in a semi-routine manner either organisationally wide or focusing on particular business units.

The intent of ASB’s planning and strategy rounds is to develop and/or reinforce the strategic direction of the organisation, however, a natural by-product is a discussion

of the organisations short and long term needs. In identifying such needs innovative directions are often captured.

An essential part of capturing ideas is minimising barriers to input. This means making it as easy as possible for ideas to be captured. Steve Jurkovich, a key player in the design of the innovation tool i-Lab reinforced this by stating:

“Key to that (making i-Lab successful) was that the barrier to them (anyone involved in the innovation process) submitting their ideas would be as low as possible. So if you made it hard and they had to write a three page essay, then people just wouldn’t do it”

Regardless of the innovation channel, or how easily ideas are captured, the very step of capturing ideas is another important element in enforcing the fact that ideas matter. However, capturing ideas means little if the ideas are never taken further.

The fourth stage in the innovation cycle involves *meeting of the minds*. This stage acknowledges the cooperative approach required in successful innovation. While an innovative idea may stem from an individual, in search of innovation and continuous improvement ASB value a more coordinated approach. The coordinated approach or meeting of the minds is achieved by way of providing a forum for brainstorming or an open, ongoing dialogue with different stakeholders, who value different things, and who accordingly bring a diverse approach to the table.

*Putting ideas into action* is the fifth stage of the innovation cycle. This further helps enforce to staff in the organisation that their input into the process matters, and gives some ownership of new developments to staff involved. This stage involves consolidating ideas and developing business cases in order for projects to be ranked for order of action. For large or strategically significant projects, ASB involves what they call the ‘Executive Projects Committee’. The Executive Projects Committee is a team of senior stakeholders in the bank, representative of the major divisions within the bank. The Executive Projects Committee’s role involves assessing the merits of business cases for new ideas presented and assigning resources for projects given the go ahead.

The sixth stage in the innovation cycle involves gathering *feedback*. Gathering feedback has two stages. First, gathering feedback from participants in any of the innovation methods about the process used. Feedback is gathered on what worked well and what didn't work well. Gathering and understanding such feedback allows the innovation process to be continually improved. Second, gathering feedback from employees involved in the rollout of the end product of the innovation. Gathering feedback on the implementation of products created from any of ASB innovation processes reinforces that innovation is ongoing. The implementation of any fully developed innovation project may create major change in the organisation; however, such change will also spur smaller incremental changes. Capturing requests for such incremental change is an important stage in gathering feedback.

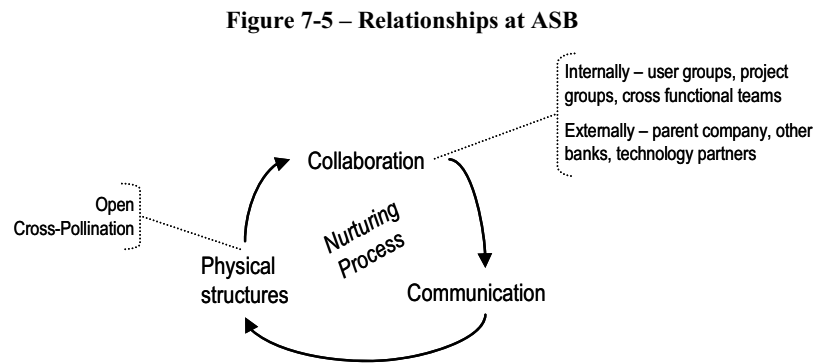
### **7.2.2 ENABLING FACTORS**

There are three resources related to enabling factors (the second group of ICT resources): *relationships*, *shared understanding* and *knowledge management*. Each of these is now discussed.

#### **RELATIONSHIPS**

A significant number of resources were associated with the close working relationship that exists between different stakeholders at ASB. Positive working relationships were also observed by the researcher on all of the site visits. Good working relationships are evident at ASB within: teams; business units, as well as, teams which span divisional and organisational boundaries. Of note to this research, the relationship between technical development staff and end users (those represented on the development team and those that become end users of information systems) is seen as an important one which requires a delicate balancing act to maintain good relations. The two groups of staff (technical and end users) have differing priorities and needs. While both teams desire the project to finish on time, the technical team's main goal is to finish under budget; yet, the end user's main goal is to include as many features and functions into the system under construction as possible. Consequently, the goals of the different groups are conflicting. Adding features and functions does not help to finish on time or within budget. Balancing such differing priorities and needs, requires a close working relationship to be established between the two groups. ASB work towards achieving

a close working relationship by creating a nurturing process in the way that the different groups work together. This nurturing process is depicted in Figure 7-5.



Notably, nurturing this close relationship is particularly important at the managerial level, meaning that a close relationship is required at the highest level in the management of information systems development projects. In striving towards the goal of close working relationships, between information technology and business, the management, of a typical information systems development project at ASB, is shared between the two groups. Sharing the management helps the two groups to balance the differing goals and maintain a good working relationship. This process is summed up by one interviewee in the process who stated:

“We put two leads on it (a project), one a technology lead, and one a business lead, and they had equal rights, if you like, in the project so there was no... it wasn’t dominated by the business and it wasn’t dominated by the technology, it was a partnership between the two, to actually get to the ultimate goal.”

Similarly, another interviewee described this relationship as:

“So here’s the business lead, here’s the technology lead, you two hold hands and skip forward into the brave new world.”

Operationally, the close relationship between managers from business and information technology is supported by a lot of collaboration and communication at all levels of the project team. The levels of collaboration and communication between end users and the technology team has developed and evolved over time (as has the relationship between these stakeholders). While in the past, during

development projects, the technology group made decisions on behalf of the business, a much more collaborative approach is used today. One interviewee commented:

“Ten years ago we wouldn’t have had a head office infrastructure like we have now (where responsibility is shared), and you essentially would have left most of the decisions to the technology team.”

The change over time in the relationship between the technology and business groups is, in part, a function of increasing knowledge and understanding from both partners of the other parties’ role and goals. For instance, the past reliance on the technology group for making corporate information technology decisions can be partly attributed to the lack of general knowledge about how to go through an information technology development. In contrast, today the shared decision making can be attributed to the continuous improvement and innovation strategies employed at ASB, as well as an increased shared understanding between stakeholders. In short, information technology projects are now common place and the different stakeholder groups know what to expect and how to work together, thus, creating positive working relationships. This increased understanding is further explained in the next section (enabling factor – shared understanding).

Typical comments about the collaboration involved in the relationships between the project team and end users are summed up by the following extract (emphasis added):

“...and then a lot of *collaboration* across functional departments, between branches, credit department, technology team, about how to best do this.”

Communication is a fundamental tool in ensuring and protecting good working relationships between stakeholders at ASB. This means communication is constant, allowing the different stakeholders in the process to be aware of where projects are at. The role of communication can be seen in the following extracts (emphasis added):

“Relationships are good, we *communicate all the time, constant communication*, we have regular user group meetings, with other people, other divisions.”

“So people, *communication is very important*, you know, letting people know where we are with things and spreading the success of the organisation so everyone feels a part of it, because everyone is part of it.”

The close working relationship seen between different stakeholders in a development process is also evident within the technical development teams. The same strategies are used within such teams (or workgroups) to ensure a continued positive working environment, that is, using collaboration and communication. However, other strategies are also put in place to help build and protect good working relationships. For example, ASB has spent a considerable amount of time and effort in developing workplaces and organisational structures to be conducive to successful close working relationships incorporating communication and knowledge sharing between employees.

The above describe strategies employed to create, build, and sustain relationships internally, between divisions and work groups, however, it is also important to note that maintaining external relationships is also important to ASB. External relationships exist with ASB’s parent company, the Commonwealth Bank of Australia, other banks, as well as, technology partners, like user groups such as the Onyx user groups. In describing the good working relationship with Onyx one interviewee stated:

“We have a very close association with them (Onyx Corporation) and this is important to us.”

#### **SHARED UNDERSTANDING**

*Shared understanding* is another resource within the grouping enabling factors. While there were only a small number of occurrences of this resource, it was considered an important part of the success of ASB. The concept is closely related to relationships, in that, a good *shared understanding* helps to contribute to positive working relationships. Having a *shared understanding* relates to the different business groups (or stakeholders) within ASB having knowledge and understanding of what the other business group(s) are trying to achieve. Such an understanding relates to the roles of individuals within the business groups, as well as, the tasks and processes involved in carrying out the role. A *shared understanding* between the different stakeholders at ASB has been built over time. While in the early days of the bank a *shared understanding* between different stakeholders was present naturally, occurring due to the small size

of the organisation, nowadays, several specific factors contribute to achieving a good *shared understanding*. In commenting on how the size of the bank has had an effect on the level of *shared understanding*, one interviewee commented:

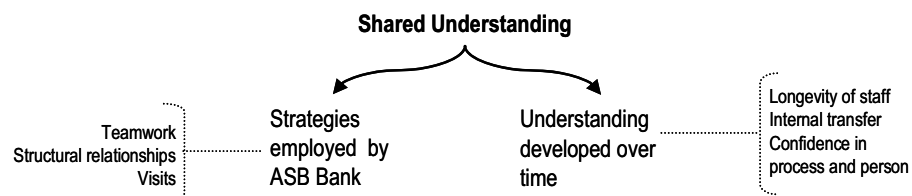
“...as we get bigger and bigger there is less and less they know about what is happening out there. So that is just a fact of size.”

Similarly another interviewee commented on their own personal experience, stating:

“...if I was to turn the clock back, you know, I could be across everything and know most of the things that go on here, but now, it is unrealistic to expect everyone to know everything...”

While some factors which contribute to the good *shared understanding* at ASB are more naturally occurring, due to the course of time (like how the past understanding was achieved due to the small size of the organisation), other factors can be attributed to specific strategies ASB have in place. Each of these factors are presented in Figure 7-6 and discussed below.

**Figure 7-6 –Shared understanding at ASB**



Naturally occurring factors which are seen to contribute to a *shared understanding* include the longevity of staff and the high rates of internal transfer. For instance, one interviewee described how their numerous roles (from a frontline teller to a lending manager) in the bank over the years, have helped them in their current role in information technology. In describing their experience within the bank, the interviewee stated:

“...I worked for three years in information technology, I worked for six years in lending, the rest of my working life I have been a frontline person, I have been (in many roles in the bank) from a teller through to a branch manager, um, I was a regional manager of two regions, one for nine years, and one for three years... ...the time I spent in lending was

an asset because lending is the backbone of the bank, and so to have that knowledge and take that back to the network is excellent. The time I spent in information technology gave me a better insight...”

While the factors outlined above are attributed to more natural progression of time within the organisation, it must be acknowledged that some specific strategies in place at ASB also have a positive impact on each of these more naturally occurring factors. For instance, development of staff friendly workplaces such as C:Drive has seen a reduction in staff turnover. Another example is ASB’s positive attitude to staff development including use of strategies such as staff rotation. Each of these factors is further discussed in 7.3 - Human Resources.

Specific strategies employed by the bank to help develop and extend a good *shared understanding* between different stakeholders include: teamwork and changing structural relationships, as well as, a program of branch and call centre visits. The extensive use of teamwork, which allows the different stakeholders to work interactively, is a strong force in helping to develop and extend the different stakeholders understanding of the rest of the organisation. For example, one interviewee described how business had started to work much more interactively with the technology group helping to produce firstly, a better shared understanding, and secondly, better end results.

“I think progress has been made in achieving a shared understanding, the information technology team endeavour to understand the business and where we are coming from and the way we do our projects, where we’ve got someone from business working alongside of the technology team. I think this works ideally; you get the best of both worlds.”

As alluded to above, the shared understanding between different stakeholders at ASB has evolved over time. As teamwork has become more common place in projects, these structural relationships have become more entrenched. For instance, an interviewee described how they observed the relationship change to better meet the needs of the business.

“Understanding has improved in an evolving sort of way – as accountability changes, and as you’re driving for increases in profitability, and you want me to do it well, I can do it for you, but hang on, that’s not exactly what I want. Well, tell me what you want, well, look I’ll put someone from the business to work alongside you.”

A program of branch and call centre visits has also been established by the technology group so that they may have a better understanding of what the business needs and challenges are. While some members of ASB's technology group have come into their current roles from other areas of the business, others have a very technical focus and can easily get buried in that aspect of the business; narrowly focusing on delivering their technical outputs without a real appreciation of what the business group will do with them. The program of branch and call centre visits is designed with the aim of exposing these technical people to the rest of the organisation in mind. One interviewee's description of the visits program stated:

“Sometimes our technology staff get buried in the technology stuff and they don't get out in the branches and into the call centres. When this happens it can really hinder our understanding of what is really important to them. So one initiative this year is to get them out there... otherwise you just live in the back office all the time, so I think it is an important part of it.”

A similar branch visits program is in place in the business side of the organisation, which allows head office staff to further understand the needs of, and develop a relationship with, branch banking staff. The following extract further describes this relationship:

“(The visit program was implemented) so that they (head office staff) could understand fully what is going on there, not negotiable, we have got to be there, we have got to be seen. It is a good way for us to talk to people as well for people out there to see who we are. And understanding what we do too. So it is a good two way communication process.”

While having a *shared understanding* was often mentioned as an aid to establishing and maintaining good working relationships, there was one occurrence which suggested that having a *shared understanding* becomes less important over time. That is, if confidence is built into the process (or working relationships) then, having a *shared understanding* becomes less critical. Therefore, rather than relying on *shared understanding*, participants in a project may have confidence in their co-participants knowledge and ability to get the job done. In describing this confidence in the process the interviewee stated:

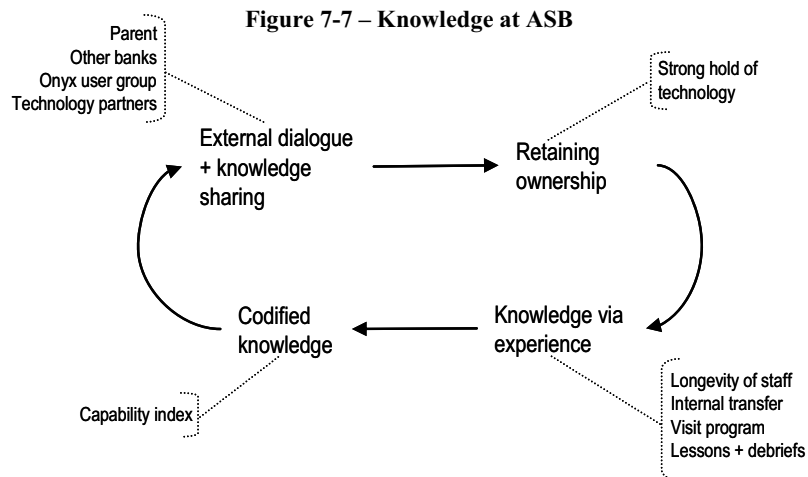
“...do you need to know all the parts of the organisation or the organism or do you rely on it that you know, the heart is going to pump

blood, the liver is going to do its piece, and you just know your place in the world, but you don't necessarily need to know the sum of the value.”

While this may be seen as an exception it could also be argued that this is just another form of *shared understanding*, in that, instead of understanding roles and processes involved in a project, a participant has confidence because of a *shared understanding* of other team member's ability to get the job done.

**KNOWLEDGE MANAGEMENT**

There was a distinct grouping of resources which related to the purposeful management of knowledge at ASB. The resources related to four distinct groupings: retaining ownership, knowledge via experience, codified knowledge, as well as, external dialogue and knowledge sharing. Each of these groupings can be seen in Figure 7-7 and are discussed below.



A key consensus decision ASB have made over the course of its history, is to retain ownership of information technology. That is, ASB have retained in-house knowledge of their information systems including owning how the different systems were developed and fit together. The bank sees retaining ownership of the design and solution of an application as strategically important. The bank feels this is an important part of their institutional knowledge which gives them an advantage over many of their competitors who differ in their approaches in the procurement of information technology. One interviewee summed up ASB's attitude towards institutional knowledge and information technology stating:

“We have chosen to keep (in terms of in-house development) key aspects that we think differentiate us, which is, we own the delivery of it, we have the expertise of the application in-house, and we control the design and solutions.”

Gaining institutional knowledge via experience is another important part of ASB’s knowledge bank. Such knowledge has been built over time because of the longevity of staff, high rates of internal transfer, as well as specific strategies in place like, the visit program, lesson sharing and debriefs. The longevity of staff within the bank was found to positively contribute to institutional knowledge. Several interviewees described how the length of service in the bank made it easier for them to contribute positively to processes and practices. A large number of staff at the bank have over time transferred internally, between departments and divisions, this was observed by the researcher and also highlighted by several interviewees. This amount of internal transfer was described as being added to the value of the institutional knowledge. Staff with experience in other areas of the organisation demonstrated a far better understanding and appreciation for different stakeholders within the organisations roles and responsibilities. Therefore, longevity of staff and high rates of internal transfer help to create and capture institutional knowledge at ASB. Such institutional knowledge creates a positive working environment in circumstances of across divisional projects where stakeholders from the different divisions worked together.

Several specific tactics have also been developed over time by ASB to capture and enhance institutional knowledge: a system of branch visits, lesson sharing and debriefs during and after projects, as well as a more codified source of knowledge (knowledge bank), and a capability index. The technology and operations group have put in place a system of branch visits to ensure that institutional knowledge is gained and strengthened. The system involves staff from technical areas of the organisation regularly visiting branches to gain a better appreciation of branch banking, a business group they work closely with. Another source of institutional knowledge is ASB’s system of lesson sharing and project debriefs, during and post projects. Although lesson sharing and project debriefs is often described as a rather informal process, due to the longevity of staff this does not create significant problems as the tacit institutional knowledge remains with the organisation.

The last specific tactic to capture institutional knowledge in a codified way was created by the technology and operations division. The tactic involved creating a capability index which allows skills and experiences of specialist technology staff to be captured. The index is then used in several ways. First, it may be used at the commencement of a new information technology project, so that the best suited employees (by way of skills and experiences) may be found and matched to a project. This means capability index has allowed ASB to change its behaviour in allocating human resources to a project. While in the past skilled employees were assigned to new projects based on availability, today skilled employees time can be better allocated to a project utilising their skills and experiences via the capability index. Second, such a system also allows ASB to identify skill shortages and gaps in their current capabilities and grow people into those places. An interviewee's description of ASB's capability index stated:

“...we have moved to a system where peoples skills and capabilities are matched, what has happened in the past is when there is a project we look around and see what staff are available, but now we can be assured that when the project requires someone with this capability we can look it up – when our needs are increasing in a particular area we can grow our people into gaps”

Several specific external knowledge relationships were described by interviewees which were seen to considerably contribute to ASB's knowledge base. The external relationships exist within, and external to, the banking and financial services industry. Within the industry ASB has knowledge relationships with its parent, the Commonwealth Bank of Australia, and other major players in the international banking industry. The Commonwealth Bank of Australia and ASB have an ongoing dialogue and share knowledge on an on demand basis. Knowledge sharing with The Commonwealth Bank is a two way process which usually takes the form of site visits to each others banks to observe successful processes and practices.

“...there is a good conversation going on (with our parent company) both formally and informally. We have people on our board from their organisation and informally we send people over and they send people over... ...we share things and leverage off each others pricing and licensing and the like, but we do keep quite independent.”

A similar practice occurs with other international banking players (usual in America) which ASB has built a relationship with over time. While the practice of visiting

international players in the banking and financial services industry has taken place for some time, such cross pollination of banks is today aided by international banking conferences which give ASB a chance to network and gain more valuable contacts.

Outside the industry, ASB has knowledge sharing relationships with the Onyx Corporation, as well as, specific technology partners and trainers. Onyx Corporation regularly seed knowledge sharing opportunities within companies that use their suite of products and services. This takes the form of conferences and site visits within the Onyx family. ASB take advantage of such knowledge sharing opportunities within the Onyx family. Primarily, this takes the form of a lot of dialogue with other members of the Onyx family.

“...we have a lot of dialogue with other Onyx users worldwide, we share best practice ideas and best thoughts and what is working for you, and what is optimum for you and where are you at, um it is pretty rare for you to find another organisation that is as advanced as we are in the Onyx world. Um, and Onyx say that themselves, um, but I don't have any problem in sharing with that and working together because we find snippets which helps us to better refine where we are at as well.”

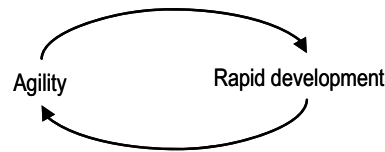
An example of ASB's knowledge sharing with specific technology players can be seen within ASB's online division, many staff within this division being Microsoft certified. Such certification involves ongoing training and learning from Microsoft centres of learning.

### **7.2.3 PROCEDURAL FACTORS**

Two resources related to procedural factors (which was the third group of information technology resources): *development astute* and *implementation advantage*. Both of these are now discussed.

#### **DEVELOPMENT ASTUTE**

Interestingly, occurrences of *development astute* only emerged from interviewees from the information technology division of the business (and not from other business related divisions). Not surprisingly, *development astute* is one of the most technical resources, which relates to the way in which ASB is able to develop information systems to fit within their current information systems infrastructure in a timely manner. The two sub-concepts of *development astute* can be seen in Figure 7-8.

**Figure 7-8 – Development astute at ASB**

As can be seen in the figure having agility effects rapid development, likewise, the same can be said for the relationship in reverse. Being agile is something ASB actively seek and they see this as a factor of information systems leadership. For example, typical comments included:

“...we are trying to inject the agility into the organisation, by, again, leadership, when you say... ..lets see if we can do this, and do it in six weeks.”

“...(we need to be able to) deliver things to market quickly. One of my indicators that I am looking at more and more, realising that I need to focus on is being agile... ..the ability to deliver that (a new product) effectively without too much pain, and in a short period of time is really key.”

While agile technology and practices is a grand plan, the bank acknowledge that, in practice, agility is much harder to achieve. ASB see having agility as being able to add new products or services onto their existing portfolio of products and services, or create new systems, without recreating the whole system to fit the new product, service, or system. For example, if the bank wanted to create a new product within their customer relationship management (CRM) system they want to be able to do this without having to change the rest of the CRM system. This means the new product must fit with the existing product offerings easily.

Closely linked to having agility is the ability to rapidly develop and implement new information systems projects. ASB sees the ability to rapidly develop and implement information systems projects as strategically important. While agility relates to how easily new projects can be implemented into current systems, rapid development relates to how quickly the whole development can be completed from start to finish. Clearly, as mentioned above, having agility makes being able to rapidly develop information systems much easier. However, this is only one of the factors which has an effect on the ability to undertake rapid developments. Another factor which has a

major impact on rapid development of information systems is having proper processes and procedures in place. In describing one information systems development project in place at the time of the interview, one interviewee outlined how they were able to successfully increase the speed of a project. The interviewee stated:

“We have one on the go at the moment (a project which is being developed rapidly) which is kind of um, we are quite pleased because it is showing us our processes are not broken and we can do things fast...  
...we can increase the speed of projects for bursts.”

Several of the enabling factors discussed in the previous section also have a positive effect on the ability to rapidly develop information systems. Such crossovers or interrelationships between the groupings of factors are discussed in Section 8.5 - Linkages among Capabilities.

#### **IMPLEMENTATION ADVANTAGE**

The resource with the highest frequency within the grouping ICT resources is *implementation advantage*<sup>24</sup>. The occurrences of this resource all dealt with procedural issues that the interviewees felt really contributed to the success of information systems at ASB. While several of the occurrences of this concept related to specific actions or processes of the technology group, the key to many of the occurrences was the interrelationships between the technology group and the rest of the organisation. A significant proportion of the occurrences of this concept came from participants based in the technology team; however, several occurrences of the concept also stemmed from participants in a business orientated division, more specifically customer services. In grouping occurrences of this concept together it became clear that ASB have developed a clear system of managing change in relation to information systems development. Change management occurs at a technical and an organisational level, which, as demonstrated by the high occurrence of this resource, staff at ASB feel gives them a clear advantage.

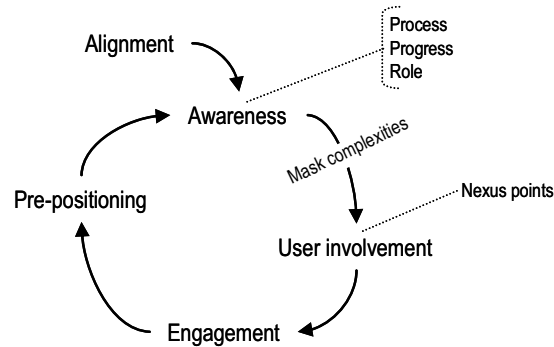
*Implementation advantage* involves all things associated with ensuring new information technology is ready to rollout, as well as, the business group being ready for the change. Attributes of this resource include: alignment, awareness, user involvement,

---

<sup>24</sup> One hundred and forty seven occurrences of this resource were found in the raw data.

engagement, and pre-positioning. These attributes as they relate to each other can be seen in Figure 7-9 below.

**Figure 7-9 –ASB’s implementation advantage**



As depicted in the figure above, the attributes of *implementation advantage* have an effect on each other. At the highest level, alignment leads into a cycle of other factors including: awareness, user involvement, engagement, and pre-positioning. Each of these are now discussed in turn.

Alignment means that each business group or division’s strategic and operational plans, first, reflect the organisational plans and goals, and second, reflect each others plans. In short, ensuring such strategic alignment means that the groups working together are working towards the same thing. For instance, if the technology group are working within another group within the business they should have some common ground in terms of major strategic direction and goals. In the narrower project context, the two different stakeholders should also share common ground in terms of working towards the same outcomes.

Awareness is largely an ongoing dialogue about a specific project’s processes, progress, and roles. Therefore, awareness’ multi-dimensional aspects involve ensuring all stakeholders within a project team have process, progress, and role consciousness and knowledge. For a successful development at ASB, process awareness means stakeholders should have a clear understanding of the process and what to expect at each stage of the development. Such an understanding of the process is built over time. This means if development relationships are allowed to be

established and be ongoing, participants in such processes will be able to contribute more immediately without having to learn the process needed to participate first. One interviewee described how such a shared understanding, creating process understanding, is developed by creating an ongoing dialogue (emphasis added):

“A shared understanding comes with time, if we haven’t worked on a development project with someone before it takes a lot of time and communication for them to *understand what is involved*, you have to communicate with them day in day out until its obvious to them, but we are changing all the time, so these relationships are somewhat already established so people understand because they have experienced this, *they know the process and what to expect.*”

While the process understanding is built over time, as the understanding of the process or processes increases, the process itself is challenged and changed. For example, in describing the understanding of the development process, when the technology and business group work together, one interviewee described how gaining a greater understanding of the process accelerated the development time and improved the process. The pace of the development is aided in circumstances where ongoing relationships are able to be established within a development team. When an ongoing relationship occurs the process may be improved over time because the basic process is already understood. Therefore, instead of participants in the process putting time and effort into understanding the process and getting the job done, they are able to improve the process while getting the job done more efficiently or effectively. Improvements in processes described by one interviewee included more consultation and partnership, and, to a certain extent, once the process rules were understood they were able to be relaxed. In describing the changing relationship one interviewee stated (emphasis added):

“We challenged (and changed) the way in which the business engaged with the technology group, so there was *more consultation, more partnership*, and that was as much a function of, I suppose, the personalities trying to make it happen. And, an element of the technology group becoming more relaxed about allowing users to view the product before they’d completed that version.”

Reflecting on how the process may be changed and improved once some process understanding is held, the same interviewee added (emphasis added):

“In that regard, what had happened in the past was people had viewed the project, seen the defects, and started jumping up and down, whereas, we knew what the process was going to be, so *if you understand what’s happening* over on the technology side, they understand where you’re coming from, by default you’ll manage the process more smoothly.”

As processes are improved and become more robust over time (and as different stakeholders’ knowledge of such process is improved) more consistency and therefore predictability is achieved. Such consistency and predictability of processes allows change to be more controlled and efficient.

While *process awareness* is about participants in a development project understanding what the procedure is, *progress awareness*, involves participants in a development project understanding where the current project is at in terms of this process. More specifically, progress awareness is about ensuring that stakeholders are aware of decisions made and exactly where the project is at. Like process awareness, ensuring and maintaining progress awareness involves a lot of communication between the developers (technical team) and clients (representatives on team and later, the end users of the systems developed). Such a dialogue needs to describe where the project is at, as well as, decisions made along the way to that point. As such, Clayton Wakefield, Group General Manager of Technology and Operations, describes key elements of ensuring progress awareness as he sees it (emphasis added):

“I make sure I *keep everyone informed* of what they are doing... .. so I keep telling them what they are asking for because often they don’t remember. There are a lot of *mechanisms in place to ensure people know where the project is at* and kind of reinforce that that was the decision that they made in the past about the technology.”

Role awareness, on the other hand, means at an individual level, clearly understanding what your responsibilities are and understanding how this fits into the whole process. Without such an understanding it would be very hard to carry out your job in an appropriate manner.

Employing tactics, such as ensuring alignment and the different types of awareness, helps to create confidence in the development process. Confidence is created, in the main, from expectation formulation. That is, alignment and awareness knowledge creates a situation where accurate expectations are established and the process is

predictable. While an increasing awareness is described as a good influence on a development project, several interviewees described how there was a time and place for developing awareness, particularly progress awareness. That is, building confidence in a new development, particularly progress awareness, should be done at the appropriate time so that the expectations built up are accurate and met. In the same way, while participants in the process value process and role awareness, there is a limit to how much awareness participants (particularly from non technical areas of the business) should have.

While ASB successfully seek a position of technology leadership, they recognise the role technology plays at an operational level. This means technology is seen as an enabler which should be very easy to develop and use. That is, during the development and use of technology it should be dead easy for stakeholders to be involved in the development process and more importantly for frontline staff to use. What this means is, even though some staff at ASB may understand the technologies involved with a information systems development project, many will not. While the bank aims to develop and enhance awareness, it does this at a level which masks unnecessary complexities from non-technical staff. Furthermore, most of the frontline staff who are involved in the development and use of information systems do not need to understand the technological complexities of such developments. In short, this means while an awareness should be created at a basic level, there is a need to mask complexities of the development and use of an information system to non-technical staff. A senior business stakeholder involved in a major information systems project described how masking technical complexities of a project simplifies the process for non-technical staff, stating:

“Although some frontline staff have an excellent knowledge of our information technology capabilities, a great number of them will not have such an understanding, they are purely using technology as an enabler, that is ok, our job is to mask complexities and make their job easier.”

Another interviewee described how ASB operate in a constantly changing information systems environment. While the degree of change is high, the interviewee described how the bank attempts to mask the complexities of such change in a way that the end users of information systems don't know the extent of

the change. This further emphasises the way the bank masks technical complexities so that end users are more easily able to change. The interviewee described how sometimes the bank is able to change systems in a way that end users see little difference and business is able to occur as usual. The interviewee stated:

“It’s just a constantly changing environment that we are living in. The best, I suppose, the best change is to take someone from A to B and arrive there without them actually knowing that they have left A.”

More specifically, ASB are able to mask complexities of a new information system implementation by incorporating standard design elements in a new development. For instance, new applications are made to look and feel like old systems or modules of the new system which are already implemented. Tactics to achieve this include the use of standard navigation and colours. The use of tactics such as these allows the implementation process to flow as smooth as possible, minimising the need for end users to re-familiarise themselves with the new system or module. Masking complexities of information systems in such a way has big implications for the training of end users, in that, it allows training to be very efficient and minimised. In describing this process of masking complexities one interviewee stated:

“What has happened over the last couple of years, is we have been driving other technology projects to look like Onyx does, so there are a lot more blues in there, a bit more standard navigation... ..so, over time, the look and feel of the system, of other systems, will be more akin to what Onyx looks like. Which of course, leads to familiarisation (of new information systems), (easier) training, and just (better) general usability, (which) makes the user feel more comfortable (with new developments).”

Masking complexities is achieved in a similar way when implementing systems intended to be used by the bank’s end customers (i.e., retail banking customers using internet banking). For instance, one interviewee commented:

“(With external customer facing systems such as internet banking we make) it is dead easy to use and people like it. We get lots of really good feedback and it is integrated into the rest of the organisation. It looks like a branch of ASB. It has the same colours, it works the same way, its related to those sort of things.”

The next stage in the *implementation advantage* cycle is user involvement. When high levels of alignment and awareness occur, the normal behaviour is for users to be very

involved in a project. The opposite is also true, that is, having user involvement also helps to strengthen awareness alignment. Although high user involvement is considered to add substantial value to the implementation of a development project, the stage of the development project has a huge effect on what the appropriate level of involvement is. For example, while the development is in a technical coding stage the level of user involvement that is appropriate is minimal. In contrast, when the development project is in an early stage such as gathering user requirements for a new information system the appropriate level of user involvement is substantially greater. Similarly, in a later stage of development, such as testing or end user training, the level of user involvement should be high.

Making sure each stage of the development has the appropriate level of user involvement relates to the above comments on masking complexities of a development project for non-technical staff. ASB has developed a development methodology which recognises the differing needs of user involvement and masking technical complexities, when and where appropriate, for the different stages of a development. Importantly, in stages of vast user involvement, the bank has put mechanisms in place to protect or ensure proper procedure occurs. That is, key crossover or nexus points (where interaction occurs between a technical development team, project managers, and end users) are recognised, enforced, and protected. Such nexus points have been developed and built over multiple development projects. For example, in the change management process when end users have a strong involvement in the project they might fill roles such as testing the software and becoming the trainers before the system is implemented. Strong user involvement at this stage is seen as critical to the success of implementing the system. For example, one interviewee commented:

“...it is excellent, I mean they feel as if they’ve (end users) had a real involvement, it adds credibility (to an information systems project) because these people actually use it in the branches, so they know how things function – I think it’s a tremendous development (incorporating more end user involvement), they have done a great job.”

Engagement, the last step in completing the *implementation advantage* cycle, takes alignment and awareness a step further and requires, at a minimum, key stakeholders of a project to be engaged in the development project. The optimum level of

engagement is, logically, all stakeholders (at all levels) to be engaged in the project. Ensuring alignment between the values and goals of different stakeholders involved in the project, as well as, building awareness and having a good level of user involvement, helps to increase engagement in the development project.

A large part of the concept *implementation advantage* that was widely cited is pre-positioning staff so that everyone involved in a project is ready for change at the same time. This means, the organisation as a whole, particularly the business units involved, is ready for the change to occur at the same time the technology team are ready to deliver the change. Such practices are summed up by a technology team member who stated:

“It involves overlaying operations and technology change to get the best out of it. And you know sometimes the technology will arrive before the people are ready to change and other times people are ready to change and the people are dragging behind to deliver the capability that people are after. And I mean it goes really well when they go about together seamlessly.”

Such pre-positioning is really a function of high awareness, user involvement, and engagement, along with an element of selling the new project to end users. Naturally, this closely relates to the expectation formulation which occurs through the different types of awareness. Several specific tactics are used at ASB to ensure that the organisation is ready to change at the same time the technology group is ready to deliver the change (technological readiness).

One key part of achieving such readiness for change involves making the change management process transparent (process and project awareness). Such transparencies allow different stakeholders to know what to expect and when. Several interviewees described how when high levels of shared understanding about the process, project and roles is achieved (all types of awareness), implementations have occurred in a relatively smooth manner. Another aspect of ensuring such a smooth transition is providing ongoing education about what the outcomes of a project are going to be, including what the benefits are for the bank and individual (which relates to strategic alignment). For example, one interviewee described how ASB prepares staff for change using each of these strategies, stating:

“ASB manages change in such a way, or has created a culture where we feel we must manage change in such a way that everybody’s taken along with you, there’s a great deal of consensus gained, gaining a shared understanding. And the shared understanding is what the changes are going to be, and what outcomes are to be expected, and more importantly, what the benefits are, both for the bank, and for you as an individual. So, that aspect of change, we try to constantly manage.”

Another interviewee described the specific strategy used in educating end users in preparation for an upcoming change associated with a technology implementation. The participant outlined how a dialogue is held describing: the background of the project; where the project is currently at; as well as, what the future of the project will look like. Specific references are also made to the alignment of the project to the strategic vision and goals of the organisation.

“I guess we give them the one, two, three, of why we have been doing this, you know, so this is the background, this is where we are, and, so we might say, this is where we have been, this is where we are off to, this is why we think it makes sense, here is the strategic things we are trying to tackle with this, here’s the behaviour we are seeing that makes us think this is going to be successful.”

A final specific tactic used by the bank to enhance the above techniques involves the use of sales and marketing techniques to really sell the dream of the implementation. Such marketing goes beyond pure education about the project. One interviewee described how staff at ASB generally accept and embrace change but commented that acceptance is not really about the change which is occurring, rather, it is about how you sell the change to the different stakeholders. The interviewee described how ASB sell change by the use of stories and marketing, stating:

“You have a small number (of staff) who resist change, but the vast majority embrace change, but it’s not just about change, it is how you sell change. And many people believe that doing something differently tomorrow will be better than today - but how do they know that? Unless you sell stories, sell the dream, and we understand the process.”

Another interviewee described how important the pre-positioning stage is, stating that even the best project in the world would not work well if you didn’t pre-position the different stakeholders for the change. This means the stakeholders need to believe in the project to get maximum buy-in and benefit out of the system. The interviewee stated:

“Then you could have the best project in the world, but if you don’t think it is, and you don’t use it properly, well what a waste of money. But if I come along to you and sell you the dream of the implementation of this project, and how it fits with the banks’ vision and how we can achieve our objectives, well then we get the maximum buy-in from the front line (staff) who are going to use and optimise the revenue generation and cost savings from the project.”

This was supported by another interviewee who commented that if the end users of a system are not passionate about a new implementation, how can they achieve maximum benefits of the project and present the system (or products and services from a system) to the final customer.

“If you get the frontline staff excited about it, and believe in it, honestly believe in it, if you have the passion, if you don’t have your frontline staff aligned and motivated and passionate about what they want to do, how on earth can they present this to the customer?”

#### **7.2.4 OUTPUT FACTORS**

Several resources related to outputs of information systems projects or actual information systems at ASB. While all of the resources were closely related they can be further broken down into internal and external factors. Internally, there was a grouping of resources that related to the *functionality* of information systems at ASB. Externally, the resources could be broken down into factors relating to the *perception* and external *success* of information systems at ASB. Each of these resources will now be discussed in turn.

##### **FUNCTIONALITY**

Information technology is core to ASB’s ability to providing the excellent customer service experience they actively strive to deliver. Giving lip-service to the use of information technology and the customer service experience they provide, one interviewee commented:

“Our competitive advantage is really in the delivery of customer service – this is our differential in the market place.”

Another interviewee extended the discussion of the *functionality* of information systems, describing the enabling foundation technology provides, allowing them to undertake market research and deliver the appropriate customer service.

“Information technology is kind of an enabling foundation for us to offer the functionality for our customers. It is built on and without this (the technology platform) you can’t do your effective market research, you can’t deliver your appropriate customer service, you can’t deliver your scale economy.”

Information technology provides a customer service experience by enabling delivery of a whole suite of products and ways of interacting with the customer. This is very important to ASB since the nature of their industry means their whole product or service is built on technology. The basis for the delivery of a unified customer service experience is ASB’s CRM system. The consolidated view of the customer which this system gives the bank was described by one of the interviews as a real source of technology advantage. The interviewee stated:

“We actually have one customer relationship management system, we reckon is probably one of the best in the world, because it is that way, it is one customer (relationship management system) manages all the customers... ..we have a consolidated view from any of the channels that we run.”

Specific types of market research have been enabled by the banks CRM system including the use of data mining. Data mining allows ASB to understand who their customer is and carry out research into the specific makeup of different customer groups. Once such an understanding is gained, ASB are then able to develop new products to better meet their customers’ needs. For instance, one interviewee described how data mining could be used to understand a specific segment of their customer base:

“...if someone said tell me about our female customers, aged 15-30, who are earning fifty thousand or more and are using an ATM regularly and the internet, and not go to branches. And we can see that. And what that gives us is the ability to say ah maybe we need to create a new product.”

Another participant described how the CRM system enables the delivery of their whole suite of products and services.

“...our CRM gives us a single view of the customer and we have all the products there and it launches directly from a cash flow, a swipe card at the teller line...”

The functionality of information technology at ASB also provides new ways for the customer to interact. For example, technology has provided many new sales channels over the years such as internet banking and more recently, mobile banking.

“...and the internet enables us to deliver new things to customers in different ways with different cost structures and in a different experience.”

While the introduction of new information technology over time has changed the product and service offering, it has also allowed the introduction of new sales channels in which ASB interact with their customer. Such changes in products, services, and sales channels have significantly changed the way in which frontline staff carry out their roles. When part of the retail sales automation program (which formed part of ASB’s CRM system) was rolled out there was a dramatic change in what staff did with their customer’s information. For instance, there was a huge change in behaviour from staff in dealing with customer’s details collected. While in the past staff made a judgment call on whether they thought the customer credit card application should be sent away (and hence processed) now the information system makes it easy for the staff member to enter the customer’s details and the system empowers them to make the decision on the customer’s credit, then and there. One interviewee described the structural changes of this change stating:

“...(our new CRM system has meant) there has been a huge change in (staff) behaviour in the way in which people will process credit cards because it’s now hugely structured.

This change in behaviour in dealing with customer’s credit cards has had huge implications for ASB. Not only does it allow the bank to collect a lot more details about their customers, it allows a clear cut rule to be applied to customer credit which takes away from personal biases. Such a change in process empowers frontline staff to make more decisions about their customers allowing a more direct relationship to be formed. This change in behaviour also provides the bank with more information such as the number of credit applications in each stage of the process. One description of how the process of completing customer credit card applications has changed stated:

“...you process your card, and you collect all the information and you get the card approved. Whereas previously, peoples applications would sit in peoples in trays waiting on additional information, or the application may not be approved because of credit reasons, or a staff member may think that the customer wouldn’t get a credit card. Whereas, now we’ve introduced credit storing and introduced a decision engine, staff just feel more inclined to put their information in and let the system see if it’s prepared to offer the card. Which is pure credit storing.”

### **PERCEPTION**

Public perception of ASB and more particularly, perception of their technology products, services, and channels is a large part of the bank’s success. Specifically, ASB is perceived to be very innovative and driving forward with technology. Several things have contributed to this public perception. First, the bank’s strong drive towards technology leadership and principally, their ability to be first out the door with many new products has had a significant impact on the public perception of the bank. Second, the externalities of the bank’s drive towards technology leadership have meant they have received multiple awards for different aspects of their technology. The external recognition further builds the bank’s credibility and public perception of their leadership position. Third, technology leadership and the resultant success has created a strong platform for ASB to draw on in marketing, selling the bank as a leader. Fourth, the bank has experienced a halo effect from all of the above factors which further reinforces the perception of them as a technology leader. Each of these elements are presented in Figure 7-10 and discussed in turn.

**Figure 7-10 – ASB’s positive public perception**



ASB have actively strived for and been successful in staking a claim as an innovative firm who is a technology leader. In many instances this strategy has meant ASB have been first out the door with many innovative new products, services, or sales

channels. For instance, ASB was the first bank in New Zealand (and in fact one of the first banks in the world) to offer internet banking as a sales channel. Such a leading edge strategy does a lot for the perception of the bank. One interviewee described how leading innovations such as internet banking have increased the public perception of ASB as a technology leader who is innovative and going places.

“We were first out the door on the internet... ..it does this for us, it gives customers a sense that we are not an old fuddy duddy bank, that we are innovative and moving forward, and people are drawn to that.”

Similarly another interviewee described how progressiveness is what people expect from ASB and how they have ranked highly in external research in aspects like ‘bank of the future’, or ‘technology driven’.

“Progressiveness is what people expect from us, certainly the public perception and research shows that we rank highly on capabilities like bank of the future, technology driven, and so innovation is absolutely critical in maintaining that spot.”

ASB has also helped to grow the strong public perception of the bank as a technology enabled leader in the field by strong use of marketing and sales tactics. Such tactics help to sell the vision of ASB as being strong in terms of technology leadership. While the bank is often the leader in the industry, and has received great external success, public relations and marketing campaigns help to reinforce this image of the bank. In describing how the public love the idea that the bank is a leader and how the bank has built on that through marketing, one interviewee stated:

“...there is a segment of the customer base that loves that (that ASB are a leader in technology), they just love the technical aspect of it. Whether it is real or it’s not they just perceive us to be great at, it’s like selling a car, pretty similar, but you sell a different message.”

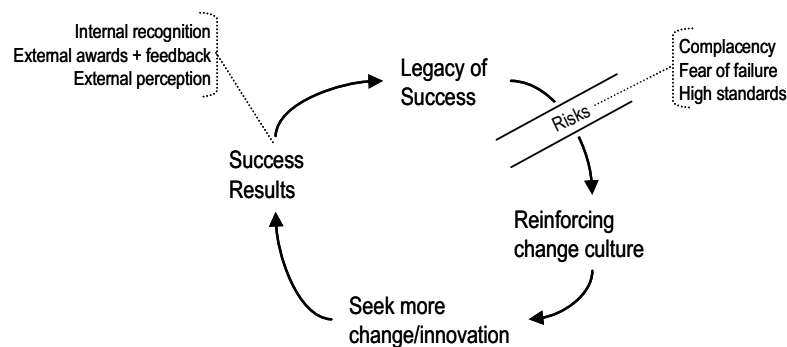
While the bank has done many innovative things in terms of information technology, including staking strong position in the market by leading the field in terms of technology, the public perception of the bank as a technology leader is strengthened by a halo effect by these efforts. That is, there is a positive perspective built because of some of the bank’s efforts and success in the area of technology leadership. In all likelihood ASB will not lead in terms of technology in every aspect of banking. However, because the bank has invested and been successful in key aspects of

technology leadership there is a positive spin off in terms of the public perception regardless of the bank's true position.

### **SUCCESS**

A large number of interviewees cited a cycle of *success* they saw as evident at ASB. Several elements contributed to this cycle of *success* such as: internal and external recognition and feedback which helps to create a legacy of success; the reinforcement of ASB's change culture; and the bank's drive for more change and innovation. Each of these elements are presented in Figure 7-11 and discussed.

**Figure 7-11 – ASB's cycle of success**



Many interviewees described how ASB have had great success in many of their developments, including some of the more innovative information system projects they have undertaken. For example, the manager of ASB Online, Steve Jurkovich, described how their product Fastnet Classic had been the most award winning internet banking platform for the last four years. In describing such external recognition for their success one interviewee outlined how the key to their success is in the delivery of customer service, stating:

“...our competitive advantage is really in the delivery of customer service, and I think that is borne out, not from any internal discussion we might have but external surveys... ..there are a number of external sort of awards that we tend to pick up along the way.”

Such external success is built on internally, via internal recognition of achievements. For example, one interviewee stated:

“The general culture of the organisation, I think is one that is conducive to achievement, we recognise achievement.”

The external success coupled with the external perception of ASB and internal recognition of success has helped over the years to create a legacy of success. Such a legacy of success has a positive effect on the organisation, by way of reinforcing the change culture so that the bank drives for more change and innovation. However the legacy of success also creates some unintended consequences, that is, risks or traps that the bank could fall into.

Three major risks were cited as unintended consequence of such a legacy of success that some of the interviewees were aware of and wanted to avoid. The first such risk was described by an interviewee who worried that the legacy of success would allow complacency to set in. That is, the bank may become satisfied with their current position in the marketplace without actively pursuing new projects and ventures, and hence, driving for more success. The second risk or unintended consequence of the legacy of success was described as a fear of failure. That is, one interviewee described how they were concerned that undertaking more innovative projects (which have helped create ASB’s legacy of success) might be avoided for fear that the project may fail and break the success cycle. For instance, the interviewee stated:

“...if anything there could be, there could be the risk that... ... if you tried something and it didn’t work that the culture of success means that you would be less likely to put your hand up and say why don’t we give this a go if you are unsure of whether or not it would be successful.”

Another interviewee described the third risk which encompasses the high standards which may be built from such a legacy of success. For instance, the interviewee outlined how having such high standards or expectations of success could be negative for the organisation, stating:

“We have got very high standards, so expect that the change will deliver, where I would say we were reasonably tough on, not in a negative way you know, we have been successful and want to continue being that way.”

The major risk associated with a building of standards in hope to reinforce the legacy of success (or avoid failure) is that processes and practices become too rigid and

constrict the very factors which enabled the success to occur in the first place. For example, several factors were outlined as factors which contributed to an innovative culture at ASB, such as having discretionary time and money, as well as, accepting a degree of risk. If such freedoms were to be removed, then the successful results that the bank currently sees may disappear.

Despite such risks, the legacy of success has been positively reinforcing of the change culture at the bank. That is, when the bank has been successful in implementing projects they have a much greater tendency to try and emulate this success by pressuring other change projects. Therefore, success reinforces the change culture by assuring staff that investments and change are worthwhile. For instance, one interviewee stated:

“The heart of... (this is) ...the fact that we have been really successful with some of the more innovative things we have taken on... ...and we really put a focus on it (looking for more success).”

Another interviewee commented:

“...we have been successful in delivering stuff for the customer so they want more...”

In illustrating how the change culture is reinforcing, another interviewee described how success is celebrated at ASB. Such internal recognition allows staff at the bank to thrive on their success, further building on the legacy, and reinforcing the change culture. In describing how staff thrive off the legacy of success one interviewee commented:

“I think people also thrive off good events and awards, if you win a service award or an IT award or whatever it might be you, you go through another million dollar mark within the organisation, it just seems to be a round of pats on the back and you know, wow, that is what we are about.”

The change culture further adds to the cycle of success by creating the drive for more change or innovation. An interviewee described reinvesting in technology as an easy choice based on previous success, stating:

“We grow 20% year on year. We are growing all the time. We can hardly keep up with it. Then why wouldn’t we keep investing in it (information technology) at a greater rate? So it has paid dividends in investing it.”

The last link in the cycle makes the assumption that the outputs of the drive for more change or innovation are acted on, and outputs of such are successful (or at least some of which are). Therefore, after more success, more change to achieve more success is desired.

### **7.2.5 HISTORY**

Several specific events or aspects of ASB’s history have had a bearing on where the bank is today in respect to their information systems development and use. One such aspect of the bank’s history is the bank’s origin as a small regional savings bank. Likewise, the background of the current managing director has an important influence. The current Managing Director of ASB has a background in technology. That is, unlike traditional backgrounds of many Managing Directors, such as accounting or marketing, ASB’s Managing Director came to his current role from a series of positions in technology. One interviewee described how they saw these two parts of the bank’s history have influenced the bank today stating:

“We’ve come from a small, regional savings bank, and the current Managing Director has been right through the process, and he regularly tells us he wants to maintain the small company culture of the spirit, and I think we’ve all taken that on board, and even though we’ve gotten bigger and bigger and bigger, we are all accessible.”

The way in which ASB has grown and evolved has also had a substantial impact on the development of information systems at the bank. Specifically, the growth achieved at the bank has largely stemmed from green fields as opposed to mergers and acquisitions with other financial service providers. While throughout its history the ownership of the bank has changed, its current parent company, the Commonwealth Bank of Australia, has allowed the bank to continue to operate in a relatively stand alone manner. What this means is that the development of information systems has always been forward looking, rather than trying to merge and align disparate information systems. In describing the positive effect of such green field’s growth one interviewee stated:

“Any growth that we have had hasn’t been from acquisitions in the main, it has been by green fields, it has been by allowing the staff and the system to get out there and drive new opportunities, that creates positive-ness, and of course, the staff’s eyes are constantly on doing that, not watching what is going on behind.”

Another interviewee described how they observed the problems other players in the industry face due to takeovers and mergers.

“Others in the industry are faced with a lot of problems associated with takeovers and mergers. So you’re talking to a bank with different information systems and you’re saying, now which one are we going to do, and by the time they make a decision they’ve probably taken another bank over which was on a different system.”

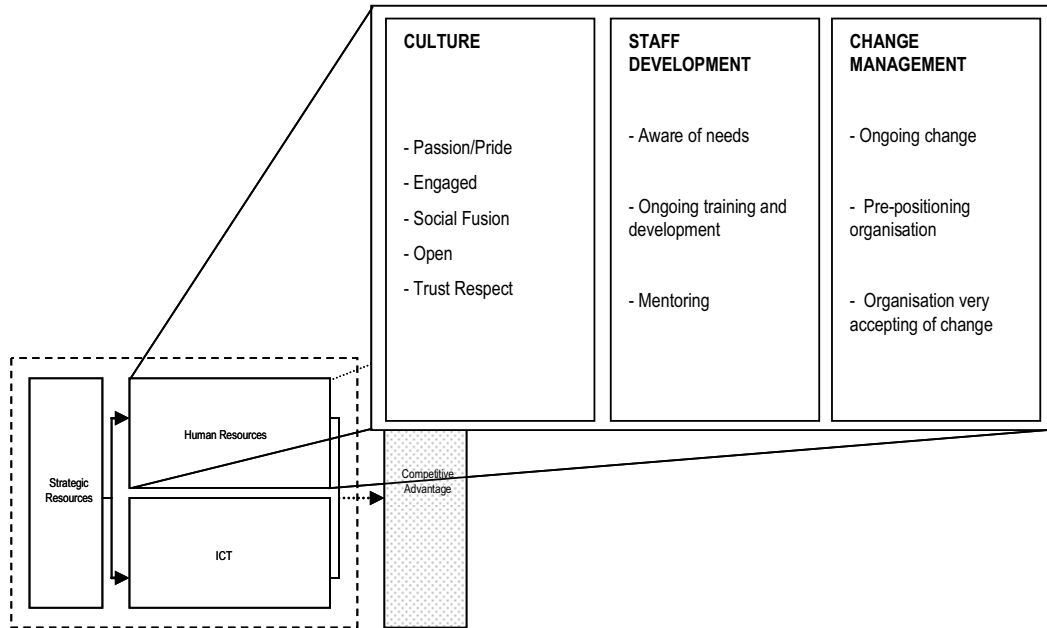
Another major difference ASB feel is an important part of their history is the ongoing growth they have experienced. More specifically, the ongoing growth has meant that ASB have never experienced retrenchment times where staff are faced with redundancies. This was described by an interviewee who stated:

“...we as a company have never experienced retrenchment times, we have never had a situation where the boss or the board has said there are going to be x amount of redundancies...”

### **7.3 HUMAN RESOURCES**

Three resources related to the category *human resources: culture, staff development, and change management*. Each of these resources had several attributes. The resources, as they related to the overview model (Figure 7-1) are presented in Figure 7-12. Each of these is then discussed in the following section.

Figure 7-12 - Human resources



### 7.3.1 CULTURE

Of all the raw data collected, a high number of occurrences were related to *culture*. Although it was noted in Section 7.1 that a frequency of resources does not necessarily show anything about the strength of the resource, *culture* presented an interesting case. Resources which related to *culture* were abundant throughout the raw data. In fact, all participants in the interview process identified *culture* as a source of advantage a minimum of seven times. The total occurrence of cultural resources was 92 and one interviewee mentioned the resource *culture* 32 times. Representative occurrences of the resource *culture* are listed in Table 7-2 below.

Table 7-2 - Representative quotes examining the culture of ASB

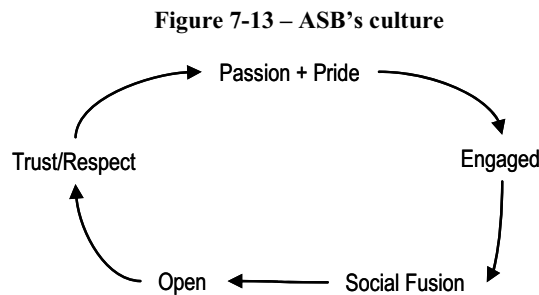
#### Interview Extract

“ASB is a good employer, and you know that this is a good place to work, why would you leave, money isn’t everything in that regard, you might be able to get a few thousand somewhere else but the culture wouldn’t be as good.”

“People are a key enabler. The culture of the people are a key enabler in the organisation.”

“We have engaged people, the staff and the whole people culture that goes with this organisation. This organisation is remarkable in terms of its people culture.”

Five attributes related to the resource *culture*. Each of the attributes has an effect on each other creating a reinforcing cycle. These attributes are presented in Figure 7-13 and discussed.



### **PASSION / PRIDE**

A large number of interviewees talked about aspects of ASB with a sense of *passion* or *pride*. That is, they had a personal enthusiasm and gratification about their role or the company as a whole. In many cases an employees’ personal motivation stemmed from such a strong personal engagement (a passion or pride in the organisation). For instance, when discussing the ideas generated using ASB’s innovation management program, i-lab, an interviewee described how passionately staff within the bank felt about their own ideas.

“People felt really passionate about their ideas.”

In another instance, an interviewee described their personal motivation for perusing a project. The interviewee used terms that described how passionately they felt about the project. For example, the interviewee stated:

“...that is pretty close to my own heart...”

Several occurrences of *pride* related to ASB’s technologically based offerings. Such occurrences were normally referred to in a collective sense. For example, an interviewee discussed how being a leader and an early adopter of technology gave *them* a sense of pride.

“We use technology extensively to enable other things in the organisation. Take our internet offering at the moment. We were the first out the door on the internet. It is a sense of pride in this organisation, being first.”

In a similar way, another interviewee described how the technology at the bank collectively gave the company pride. Representative comments include (emphasis added):

“I guess we *pride* ourselves in delivering a world class online capability...”

“(Our Fastnet Classic personal banking internet offering) has been the most award winning internet banking platform for the last four years, so (we are) pretty *proud* of that spot and plan to hold onto it.”

### **ENGAGED**

An attribute closely related to *passion and pride*, is *engaged*. An important part of the culture at ASB Bank is how engaged employees are in the organisation. Occurrences of this resource related to how in-tune employees of the bank are with the organisation’s strategic direction, and an individual’s motivation for their role and the company as a whole. Engagement is something that has a large impact on the whole culture of the organisation. Therefore, a high level of engagement is something the senior management team at ASB actively strives for. For instance, one senior manager stated:

“Engaged people are important, not just management, I am talking about the whole team. Engaged people, staff, the whole people culture that goes with an organisation. This organisation is remarkable in terms of its people culture.”

In the bank’s pursuit of achieving high levels of engagement, ASB survey their staff each year taking a pulse on the health of the organisation. The results of such a health check have been excellent. One interviewee described the annual survey and great results the bank achieves, stating:

“We survey our people every year about how engaged they are in the organisation, and they love it. World class, world class.”

The researcher observed high levels of engagement when visiting employees on a number of occasions. Employees who demonstrated an engaging approach to their role seemed to have a positive attitude about the bank and their position in it. For example, when one member of staff described their involvement in an innovation management program, they stated:

“I felt very personally about my idea.”

Similarly, a project manager within the business side of the bank spoke of their role in a passionate engaged way stating:

“...I love it, I breathe it, even sleep and eat off it...”

### **SOCIAL FUSION**

ASB has a real sense of *social fusion* in the workplace. This is achieved by a strong commitment to achieving balance in the workplace. That is, the bank embraces a work/life balance philosophy. This means the bank’s senior management team focuses on ensuring staff are well balanced enjoying work and also more fun activities. One interviewee described how the bank’s commitment to such a philosophy really ties into the core values of the organisation.

“...we really concentrate heavily on getting people to enjoy themselves here, which ties into the values and vision of the company.”

The commitment has support at all levels of the organisation. For example, the Managing Director stresses the importance of achieving social fusion. An interviewee described such top level support stating:

“...(work/life balance) is something Hugh (the Managing Director) preaches to us about.... ...he is very very strong on balance.”

Several interviewees outlined ASB as a fun place to work which demonstrated that the bank is successful in their commitment. For example, in describing the bank as a place to work one interviewee depicted it as fun place, stating:

“(ASB is) an organisation that sets very high standards, and an organisation that will set even higher standards next year, and an organisation where you can have a hell of a lot of fun.”

Employees at ASB are encouraged to seek balance within and outside the workplace. Within the workplace social fusion or balance is encouraged by mixing work with social activities. For example, after a major project is delivered a social activity is held so that staff may debrief in a social way. Mixing work and play in this way

allows a distinction to be made between roles and people. By providing opportunities for social engagement people are able to leave challenges to work and enjoy social mixing with their peers. For instance, if someone is questioned or challenged in a working relationship they are able to better attribute this ‘challenge’ to the work and still enjoy social interaction. One interviewee described such debriefing as it occurred after a project and on a more regular basis, stating:

“...after that (working closely together on a project) we have a social event. We meet on a Friday after work, again in a social environment so we try to mould that business and social thing so that we understand when I challenge you about something, it’s not a personal thing – it’s all about improving the service for the customer...”

The social fusion at ASB extends beyond the social dynamics within the organisation to the larger social dynamics of staff and their families interacting. For example, the bank has many social events where both staff and their families mix. One such example is the Auckland around the bays fun run/walk day out. Each year the bank supports a team of staff and families in the event. Mixing family with work is described as important by one senior manager who stated:

“...cause it family day out, I am just trying to incorporate family. I think that it doesn’t happen in organisations enough today, in my humble, more senior, in terms of age position.”

The bank’s commitment to social fusion was also observed by the researcher several additional ways. During a site visit to one of the bank’s campuses the researcher observed several of the different workgroups internal value statements. Each of the statements incorporated an element of work/life balance. For example, one group within the technology team’s internal value statement stated:

“Have fun while you work.”

The commitment to social fusion is also evident in the bank’s physical workplaces. Most notably, the bank’s technology centre, C:Drive, embodies many elements which helps to foster social fusion. The centre was designed and built in 2001, to house a significant proportion of the bank’s technology and software services team. C:Drive challenges existing workplace concepts promoting teamwork, interaction, and social connectivity. The workplace design encourages social fusion via cross pollination of

teams. This is achieved by having social interaction points or “fun spots” which helps employees of ASB “engage in the realm of their workplace” (Bank, 2001). The fun spots are recreational areas which are an integral part of the building design such as a golf course which runs through the centre of the building. Other fun spots which encourage ASB’s social fusion or balance include a badminton court, as well as table tennis and pool tables. Typical comments about the interaction and work experience achieved through the design of C:Drive include:

“(Staff) interact with their environment in functional ways, and in social ways – or in ‘cultural’ ways.”

“...the whole work environment experience is a community – so that activities vital to a varied physical and intellectual environment become the generators of community space.”

In summing up ASB’s social fusion an interviewee stated:

“We work hard, we play hard. We have a lot of fun together, we bounce ideas off each other... ..around the table when we are having a team meeting or around a glass of beer when we are sitting down having a bit of a relax time, (there is a) time and place for everything.”

#### **OPEN**

Several interviewees described relationships within ASB as *open* and trusting. Openness was described in the interpersonal and physical senses of the word. Openness in the interpersonal sense of the word was described in a way that meant interpersonal relationships were open. Several staff described their relationship with their colleagues in an open way. For example, one interviewee described how they saw their own relationships with their peers and manager as open and accessible:

“The culture of this place is pretty open, I have access to my manager and my peers, and I make sure the technology guys are pretty accessible.”

Similarly, another interviewee, who was a senior manager within the bank, discussed how they tried to be as open as they can and believed such openness lead to trust:

“I like to be as open as I can, I believe trust is a true value.”

At a working group level one interviewee described how their group was open and robust, stating:

“We can be pretty open and robust with ourselves.”

Openness in the physical sense helps to reinforce interpersonal openness at ASB. For example, many interviewees described how they work with an open door policy. For instance, one interviewee stated:

“I work with an open door program, other staff do too and we bounce ideas off each other quite often.”

Workstations at the bank have also been designed to help foster physical and interpersonal openness. This is achieved by designing workstations so that it is easy to collaborate in a productive way. For example, one interviewee described how workstations have been designed and are used in a way that workgroups can easily interact.

“...(there are often) three or four people hovering around a PC and they are trying to do something... ..The workstations are designed so people can just swing their chairs around and instantly they are sitting around in a semi circle, having a chat about something...”

In the physical sense of the word, the technology centre C:Drive also helps to foster openness. C:Drive also offers transparency in work, a reduction in traditional hierarchical barriers, as well as, promoting interaction and interplay between employees. Openness and the breakdown of traditional workplace barriers is achieved by enabling transparency in the physical sense of the word, meaning no room in the building is hidden from public view.

#### **TRUST/RESPECT**

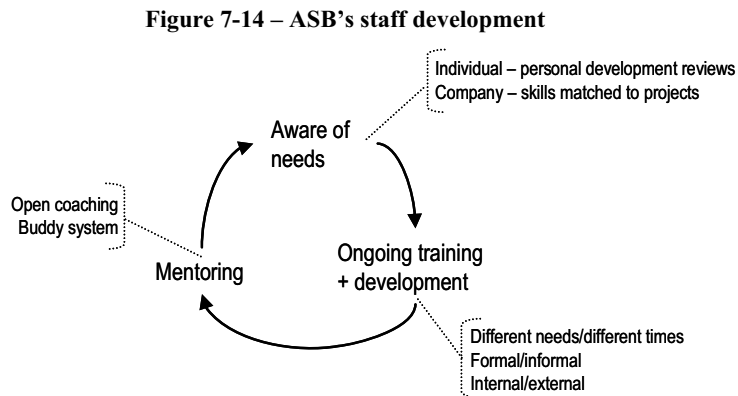
Closely related to openness, several interviewees described how relationships within groups of stakeholders at ASB were built on a lot of *trust and respect*. For instance, a manager of one of the divisions of a technology group described their division as one that has a lot of trust and respect between the staff. The manager described the divisions working relationship with other divisions and explained that opportunities for challenges are always present. However, the division is always able to

communicate through any potential problems and retains high levels of trust. The interviewee stated:

“In a year (that I have been) in charge I have not struck an issue where there has been distrust, and we can be pretty open and robust with ourselves I think, I would much prefer that...”

### 7.3.2 STAFF DEVELOPMENT

Three resources related to the *staff development*. These resources are presented in Figure 7-14 and discussed below.



#### **AWARE OF NEEDS**

ASB has a staff development program in place which reflects the different development needs of staff at distinct times in their employment at the bank. For instance, in the first year of employment new staff members undertake a one year induction program. As an extension of this foundation, throughout an employees work life at ASB, ongoing training and development is also provided. This means ensuring employees are continually developed to keep up to date with developments and best practices in the field. In describing this ongoing development one interviewee described the bank’s supportive approach, stating:

“We are always looking at our staff development needs, it’s like, what would you like to do? How are you going to do it? How do you get there? What training do you need and so on? Then our career pathing includes talent spotting, putting people into categories where different development needs are required.”

Employees at the bank are supported in their pursuit of personal development and training in a number of different ways, often on a case by case basis. For example, one interviewee remarked:

“...staff are supported by a mixture of some paying fees, some time, so different ways of support really...”

In pursuit of developing staff, ASB also employ some specific strategies such as staff rotation. For personal banking branch staff, this involves internal transfers to work in different branches to encourage cross pollination of ideas. Another benefit the bank sees from internal transfers is avoiding a position where employees may get stagnant in the same position. An interviewee with a senior position in personal banking described the rotation practice and benefits by stating:

“We don’t tend to leave staff in the same spot, we will revolve them around within a reasonable location of home... ..it is just good to change. It gives them (employees) another perspective for doing the same job but in a different area with a different customer.”

Employee’s staff development reviews are undertaken at least every twelve months. Development reviews encompass aspects such as the direction the employee would like to head in and any needs that the employee has to get to where they are heading. In staff development reviews, and in other more candid times, personal development is strongly encouraged. For example, one interviewee described how they moved into a new role within the bank with blessing and support from their previous boss.

“...my boss said if you are that keen on it why don’t you take the jump, you can always come back, and you will always be a lawyer if you really want to be one, why don’t you get into the business units and see how you go with it.”

In a similar way, another interviewee described their own experience and how they perused a new path in a different role. In their description the interviewee hinted at some of the benefits to ASB for staff to experience such personal growth and fulfilment. For example, the interviewee described how they were able to take their learning into different roles. The interviewee stated:

“...we try to constantly develop staff, and I suppose like myself, when I spent some time in computer operating, I learnt lots of things, I was able

to leave that (role) and take that (experience) back to another part of the bank, so in my own team we look at all our staff's options for their longer term development.”

Beyond pure institutional knowledge benefits, if staff are continually growing and developing they are able to be more personally fulfilled and will contribute more to the role.

ASB are also aware of development needs from a company perspective. That is, when gaps exist in skill sets of employees, ASB actively seek to grow people into the gaps. For instance, when undertaking a large complex project, ASB identified the skills they needed for the project and tried to match people to positions on a skill basis. When the current set of employees do not fit with the required needs of the bank, the bank then considers growing staff into these gaps. The process was described by an interviewee who stated:

“The complexity of this project requires someone with this capability, then we need to consider do we have that kind of skill available? If not, we need to consider growing our people into that space.”

#### **TRAINING AND DEVELOPMENT**

Staff *training and development* takes advantage of both internal and external training. For example, internal training includes training such as the in-house training program for any new information systems rollout. Another program of internal development associated with new information systems projects revolves around relationship management. Relationship management is found to be an important skill members of project teams require when undergoing a systems development project. Stakeholders involved in a development team are trained accordingly. For instance, technology employees are trained to manage the sometimes delicate relationship between themselves and end users of the system in development. The relationship between the two different stakeholders becomes delicate when expectations are mismatched. In describing such training one interviewee stated:

“We are training (technical development staff) to train them (end users) to understand about how to manage those expectations and interpersonal relationships.”

External training takes advantage of external relationships ASB have built over time such as their affiliation with Microsoft Technology Education. The use of external

training supports the bank's internal training program by ensuring staff in specialist areas are up to date with best practices in the field. In recounting training in one division of the technology and operations group of ASB, one interviewee stated:

“...we have a strong affiliation with Microsoft Technology, so one of the must do's, I guess, in my training area, is to ensure those guys are familiar with what's happening in the Microsoft arena and what their view of the world is, quite a number of them (employees in this work group) are doing Microsoft exams, so they are developing themselves quite well.”

### **MENTORING**

Providing a supportive, encouraging work environment has been cited as critical to ASB's success. They nurture such an environment by providing internal and external mentoring to employees. This is described as occurring through both formal and informal channels. One interviewee illustrated the informal mentoring that occurs within their workgroup stating:

“They seem to do pretty well in terms of open coaching with each other.”

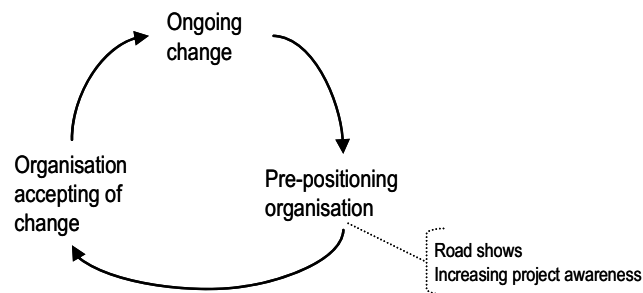
In more formal channels of internal mentoring, partnering staff together by way of a buddy system, is used to help foster mentoring relationships. An example of such mentoring is seen within a technology workgroup. With this technology workgroup a significant mentoring relationship exists between junior and senior developers within a project team. In describing such partnering an interviewee stated:

“We have found that the relationship with their fellow developers is pretty important, we try to buddy senior (developers) with junior (developers).”

### **7.3.3 CHANGE MANAGEMENT**

A change culture is a key part of the success of many projects at ASB. This means change is an entrenched part of the culture and an ongoing process. Resources relating to *change management* include; ongoing change, pre-positioning the organisation, and organisational acceptance of change. Each of these attributes has an effect on the other attributes. These attributes are presented in Figure 7-15 and discussed.

Figure 7-15 – Change management at ASB



Change is an accepted and expected part of life at ASB. Such a change culture makes it easier for ASB to implement new developments because of the ongoing change being so entrenched in the bank’s history. Typical comments about such ongoing change being an accepted part of the bank include:

“There is many examples of change here, there is just so much change going on here and we are quite technology driven, so it is just an accepted part of life... ..agility is able to be built in because of all the change.”

“We are readily accepting of change and willing to try new things, so good on those types of things.”

In discussing a recent project, which involved a major business process re-engineering of the credit card approval process, one interviewee outlined how throughout the process the whole organisation was very accepting of the extensive change which was taking place.

“...that is a good example of the whole organisation from end to end, being very accepting of change and wanting it to occur and looking for the benefit, and not being afraid to break away from how things are at the moment.”

The change culture is encouraged by a series of events which pre-position stakeholders for the upcoming change. Such events include road showing to sell the dream of the implementation. Pre-positioning starts months before the actual rollout of a new product or service so that when the change does occur it is not only expected but wanted by the end users of the implementation. For example, one

interviewee described the process several months out from the implementation of a major new information system.

“...they are starting now to sell the dream, so that when it comes, hopefully, we have the whole network just waiting there with mouth open ready to swallow this thing. So will now just lift the intensity of selling the dream.”

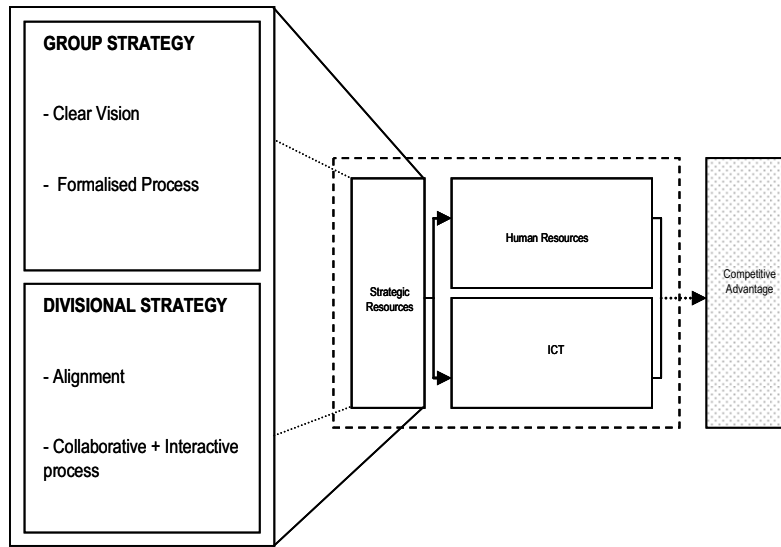
While there is a strong acceptance of change at ASB, a degree of resistance to change can creep into the process when uncertainty about what the change will mean increases. Naturally when uncertainty increases, resistance to change is also noted to increase. The pre-positioning process is important to reduce such resistance to change. For example, one interviewee stated:

“(The response to change is) always good, it is always good, but it is always, it is the same thing, some people would rather stay where they are, you know, the uncertainty of innovation, you know you go to people and you say well I think we should have an internet credit card or something and they will go, why would you want one of those?”

#### **7.4 STRATEGIC RESOURCES**

*Strategic resources* relate to the level of strategic thinking and planning within ASB. These can be broken into types of resources, those relating to *group strategy* and *divisional strategy*. Group strategy related to the company’s overall strategic vision and planning, whereas, divisional strategy related to the strategic thinking and planning in business units or divisions within the bank. The resources as they related to the overview model (Figure 6) are presented in Figure 7-16 and discussed.

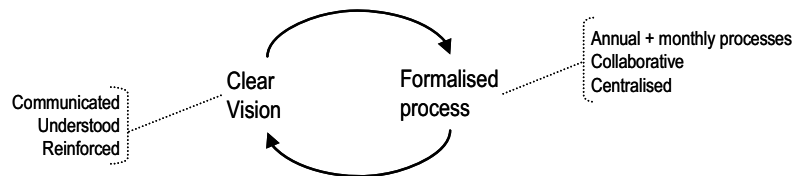
Figure 7-16 – Strategic resources



**7.4.1 GROUP STRATEGY**

Group strategy refers to the deliberate top down planning at ASB. Two attributes related to this resource. The attributes are presented in Figure 7-17 and discussed.

Figure 7-17 – ASB’s group strategy



**CLEAR VISION**

ASB has a clear strategic vision which is widely communicated and understood within the bank. Significant effort is directed towards ensuring that this position is maintained. That is, the vision is reinforced at every available opportunity. An example of such a time is when ASB road-show a new product or services pre-implementation. For instance, while on a recent road show the Managing Director travelled to every region within which the bank operates and started his presentation by reiterating the company’s vision. One interviewee described the road show, stating:

“Hugh Barrett, our Managing Director, right now is in the middle of a road show, now that road show takes him the whole width and breadth of the country, talking to every manager, he does it in regions, and this is the start of his talk, ‘ASB Bank’s vision is to be New Zealand’s best bank and financial service provider excelling in customer service...’”

Another example of communicating and reinforcing the company’s vision was seen by the researcher on monthly communication videos which is sent to all of the bank’s divisions and branches as a communication tool. In the same way that the Managing Director personally started each of the road shows reiterating the company’s vision and values, he also appeared at the start of each of the videos reiterating the company’s vision and goals.

Building the importance of the company’s vision and values begins at the very conception of an employee’s employment. For instance, either the Managing Director or another member of the senior management team speaks to every new member of staff explaining the bank’s vision and values. For example, one senior manager stated:

“He (Hugh Barrett, the Managing Director) or I (Murray Beckman, the Chief Manager of Corporate Development) talk to every new person that joins the bank on vision and values and we push this customer service ethic.”

The education of new staff members continues in a formal induction program. At this time the vision and values are further explained including a discussion on the history of the vision and how it was created. Of this, one interviewee stated:

“...then the following week I am talking to a new intake of people (new employees at ASB) on vision and values and I talk to them about how we developed that vision...”

The ongoing reinforcement and communication of the vision has had a positive effect in the level of knowledge and understanding of the vision within the bank. Every interviewee the researcher talked to easily spoke of the company’s vision and what it means for the direction of the company. One interviewee stated that the level of knowledge about the vision and direction of the company is high right throughout the bank. For instance, the interviewee stated:

“You could ask as many staff as you want, but everybody’ll say that’s why the business is there – to be the best bank in New Zealand, and everyone knows that, and everyone kind of works towards that.”

### **FORMALISED PROCESS**

ASB has a formal planning process. The process starts with reconfirming the corporate strategy and longer term plans. Then shorter term plans are considered and these plans are translated into resources. The process is very collaborative ensuring everyone is on the same page and happy with the outputs. This means stakeholders representing all of the major business areas or divisions are involved in the process.

“(The) formal (planning) process starts next week, and goes through till about April, (it) sets us up for the start of the financial year, starting first of July. So it is about three months... ..we reconfirm the strategy, reconfirm the longer term plans, reconfirm the shorter term plans, translate that into people, money, initiatives...”

During the process of getting everyone on the same page, an open and honest dialogue is held about the pros and cons of each new initiative on the shorter term plan. The dialogue is held over multiple days with representatives from all of the major business units present. In describing the collaborate approach of the business division towards group planning and strategy a member of the technology group, when interviewed, stated:

“...we have a challenge, not really a challenge session but we have a session over two days where everyone presents their plans to everyone. And we sit there and go, oh ok, do you know that, do you know that? And you say yip, yip... ..one of the beauties of ASB, is the collaborative approach to make sure we are all doing the same thing. And I have worked for many organisations where the right hand is doing that and the left hand is doing that. And that is planning let alone doing stuff, and you end up with huge disconnects in the organisation.”

The planning process functions like a runway. That is, first the longer term plans or the big picture is considered. Then as shorter term plans come into focus, more detail is applied. In describing the process the bank went through when planning for a new health insurance plan, one interviewee described how first the project was put into the long terms plans which then over time became the shorter term plans. The interviewee stated:

“...this year we need a new health insurance system for example, so we are going to need one of those so we better put that on that five year plan, then the five year plan becomes the three year plan after two years, so things kind of get on a runway.”

The formal planning process is considered complete when all stakeholders are informed and happy to sign off on the plans. One interviewee’s description of the concluding of the formal planning processes stated:

“...everyone is on the same page, everyone signs it off, that’s the deal, very straightforward.”

The annual formal planning process is supported by a more regular process called the Executive Projects Committee (EPC) which meets on a monthly basis. The EPC ensures ASB still undertakes a process of prioritising and having all activities coordinated outside their formal planning round. This process involves new initiatives being reviewed by a representative senior executive committee. The committee review short terms plans and re-prioritising in light of the proposed new initiative. In describing the more informal process that occurs when new initiatives crop up throughout the year, one interviewee stated:

“...we also have some more informal planning... ...things come up in the year, we get them into the EPC... ... and say well I forgot this before. If you forgot just which bit do you know you want to bump off so we can fit this bit in? So that is the process... ...(we still need to carry out) prioritising and getting everyone on the same alignment... ...because you can’t just keep adding stuff in and expect the same sort of outcomes otherwise everything kind of slips.”

As in the formal planning process, stakeholders from each area or division of the project are represented on the EPC.

“The EPC meets monthly, and so it’s a great way of just getting alignment and priority across all the functional areas of the organisations, the membership of the committee represents all the major functions of the organisation.”

Projects of note that come with a degree of cost or risk go through the EPC. An example of a project of note was a recent development of a human resource management system. The project was of note because it had an effect on stakeholders from all of the organisations divisions. Sending projects such as this

through such a committee allows communication to be open and honest so that all the major stakeholders can be engaged in the project. One interviewee's description of the EPC project stated:

“...anything that is kind of note, that everyone should be aware of because it does come with some risk and/or bigger price tags... ..out of courtesy and out of making sure everyone understand where they are at, that gets discussed across the whole management team, the senior team. So things like we are producing a new human resource system at the moment, that is a good example, it is of interest to everybody, we communicated it widely, everyone will be engaged in it.”

The EPC process has developed and become more formal over time. The formalisation of this process, like the annual formal process, ensures new initiatives are coordinated and aligned with the rest of the organisation. For instance, one interviewee stated:

“The EPC is made up of the senior executive team, so they give priority to initiatives, where prior to having that a couple of years ago everyone was doing everything.”

When new initiatives go through the EPC a specific process is followed. First a two page summary is written up describing the project to other stakeholders. Then if the initiative gets through this stage another two weeks is allocated to further scope the project. Then the initiative is presented back to the EPC and a decision is made on the merit of the project and the alignment with the rest of the organisation. This process is further explained in the following extract:

“(In the planning process) we say in two pages look we think this is something we want to do, we would like to spend two weeks on it, is everyone ok with that? And we have a formal process, that is called an EPC, when those come up we go, yip, it sounds like a good idea, or nar, I don't think you need to worry about that one at the moment.”

The formal and informal planning processes have had a positive effect on planning at ASB. The process allows new initiatives to be captured and fed up to the executive team allowing all stakeholders to be aware of new developments. Such awareness allows developments with common themes to be identified and tied together early in the initiatives lifecycles. Prior to such a coordinated approach to planning, the different divisions of the organisation would independently pursue different projects,

some of which may have had common themes. One interviewee described the problems of an approach which is not collaborative and coordinated stating:

“(Prior to having the EPC) if you were in a department and you just thought you might need a new business banking thing, off you would go and do that, now that gets trapped, quite early on, and we go through stages where we allocate resources and time to, otherwise everyone is doing everything and nothing is coordinated.”

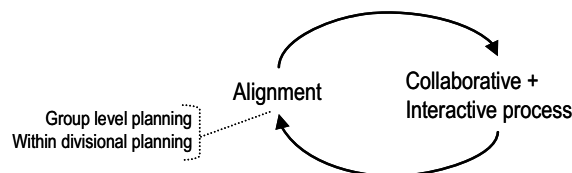
Another interviewee described the success ASB has had utilising such a centralised coordinated approach to planning. The interviewee outlined how different ideas have been put together to get the maximum benefit out of a new initiative. In one instance the bank were able to put together four separate projects into a bigger enterprise wide application. The combined end result was a centralised system which met the needs of every department involved. In describing the project the interviewee stated:

“...we have had great success with that (using the EPC), where we have had one’s (ideas or projects) come up and another’s (idea or project) come up and we have said well why don’t we put those two together and we have had like four projects together into a bigger enterprise wide thing as apposed to one (system) in that department and one (system) in that department, so it is just good for everyone.”

#### 7.4.2 DIVISIONAL STRATEGY

*Divisional strategy* refers to the deliberate bottom up planning at ASB. Divisional planning feeds into and contributes to group level strategising. Two occurrences of *divisional strategy* are presented in Figure 7-18 and discussed.

**Figure 7-18 – ASB’s divisional strategy**



Planning at a divisional level also involves gaining alignment with the group level strategy, as well as, a degree of collaboration and interaction with other business units or divisions.

When discussing divisional planning, several interviewees described the clear intention to align planning at this level with the overall group strategy and the strategic direction of the company. This means business group planning is an interactive process which feeds into the centralised corporate strategy and planning. After the small units have done their planning, the plans are fed into the divisional level plan, and then each divisional plan feeds into the corporate level planning. Gaining alignment was considered an important part of divisional planning which like within group planning, helps to avoid islands of projects and focuses. If an integrated plan is followed, and alignment between divisional plans and group strategy is gained, then the end results will be much better for the organisation as a whole. For example, an interviewee described their desire to ensure alignment between their planning process and group level planning stating:

“(When undergoing new developments we need to) make sure we have got an alignment of business strategy, operational process and technology capability, that is probably the key thing that we do.”

Another interviewee described how their small unit within the technology group carry out their planning. The interviewee described how they complete a first cut of their inputs which get fed up to the technology group which then get fed into the group level planning. In describing this bottom up approach to divisional planning the interviewee stated:

“...so we are doing a first cut of what our inputs are for the next technology year, which then goes through our technology group which Clayton heads up and that feeds back in kind of an iterative process, back into our business unit planning to get those key themes from technology and then those go up into the corporate planning.”

For the information technology division, gaining alignment does not only require alignment with the group level strategy, but also alignment and collaboration with the different divisional business units. In describing the hierarchy between information systems plans and other business units plans the head of information systems, Clayton Wakefield, explained that business plans should drive technology. That is, the direction technology follows should be dictated by business to some degree. This further reinforces the view that technology is an enabler or foundation for the business (outlined in Section 7.2 - ICT Resources) rather than technology for the sake of technology. In demonstrating such alignment, one interviewee stated:

“(The big picture about what the business is trying to achieve has to be considered) otherwise you end up with islands... ..so it is really around making sure you have got a good integrated technology plan with the business strategy. So the business plans should drive the technology not the other way around.”

Similarly, another interviewee outlined how the information technology and operations division are clear that they are focused on the business issues not myopically focused on technology.

“(Information technology planning is) quite well integrated in the business planning. And that is an organisational thing, the business planning is, it is not me planning for information technology, it is me planning the information technology for the business, my customers, you know so I treat myself very much as, you know, they are my customers and I need to get their business.”

More specifically, in the process of information technology being involved in planning for business, representatives from the technology division may be involved with many of the business units planning days. For example, representatives from the technical division ASB Online are often involved in many of the other business areas’ divisional planning. One interviewee from ASB Online described the involvement they have had with other business units in their planning processes, stating:

“Technology groups are quite involved in business planning. The channel managers will be part of this next planning round that is happening in the business units. So yesterday I was at Bank Direct planning, to get a feeling for what the different business units are after and tomorrow securities. So I spend quite a lot of time in those different business areas.”

At the highest levels of planning within the bank, the group plan and the divisional plans would mirror each other well. However, as the level of the organisation goes down (and the planning level goes from group plans to divisional plans to business unit plans) it is much harder to gain alignment. This is because at the lower levels of planning, lots of compromises must be made as different initiatives compete for scarce resources. When explaining the difficulties involved with such lower level planning one interviewee stated:

“The high level technology plan and the corporate plan would absolutely reflect each other. There are more challenges around the individual technology business unit plan and the general technology plan because there are more compromises to be made. But there is certainly one picture where it hits the corporate plan.”

## 7.5 OTHER RESOURCES

Some ideas emerged from the results of this research which were not outlined in this chapter. That is, after the analysis stage was completed some of the resources identified did not help to address the research questions. This is common to the research approach employed as outlined in Section 5.5.2 (in the discussion of the selective coding stage of grounded theory analysis). The ideas which emerged from the raw data, which were not discussed in this section all related to environmental conditions within the New Zealand banking industry and were considered beyond the scope of this research.

## 7.6 CHAPTER SUMMARY

This chapter used the results of the research to highlight individual sources of advantage at ASB. The individual sources of advantage were termed organisational resources and the resources presented were grouped into three main types of resources: ICT, human and strategic resources. While bigger picture linkages were hinted at in this chapter, the next chapter examines the interrelationships between these three different types of resources in much more detail. More specifically, the next chapter joins different resources to form capabilities and an *integrated model of advantage* at ASB.

## CHAPTER EIGHT – INTEGRATED CAPABILITIES AS A SOURCE OF ADVANTAGE AT ASB

---

*This chapter discusses the interrelationships between the resources presented in Chapter Seven – Sources of Advantage at ASB. The discussion starts with the introduction of two distinct types of capabilities, lifecycle and embedded foundational capabilities, which are developed from an aggregation of resources outlined in the previous chapter. The discussion then leads to the presentation of an integrated model of advantage at ASB. Linkages between capabilities in the integrated model are then highlighted. Literature which links capabilities is also used to support the discussion. The chapter finishes by outlining the story of ASB in regard to the integrated model of advantage and providing a summary of the chapter.*

### 8.1 INTRODUCTION

Chapter Seven presented the results of the research as resources which were identified as sources of advantage. However, it is clear that many of these resources do not exist in isolation but in a myriad of complex interrelationships with each other. This chapter presents and discusses such interrelationships between the individual resources as presented in Chapter Seven. When compiling this chapter, the researcher sought to interpret the dynamic interrelationships between each of the individual sources of advantage. This was achieved by revisiting each of the resources (outlined in Chapter Seven) in an attempt to develop a more aggregate model of advantage. While undertaking this process, it became clear that two distinct types of advantage existed.

While some of the individual sources of advantage have an effect on ASB's information system development or usage at a particular point in time (i.e., a point in time in the life of a product or service), other sources of advantage appeared to contribute across a project's life (i.e., at each stage in the life of a product or service). Therefore, each of the resources, presented in Chapter Seven, were revisited and regrouped into two new *constructs*<sup>25</sup> which together provide an *integrated model of advantage* at ASB. The first construct is termed '*lifecycle capabilities*' and the second

---

<sup>25</sup> *Constructs* are the names of groups of capabilities which form an *integrated model of advantage at ASB*, created from an aggregation of resources.

‘*embedded foundational capabilities*’. *Lifecycle capabilities* effect the development and usage of information systems at ASB at a particular point in an information system’s lifecycle. For instance, the capability *strategic leadership* has an effect early in the lifecycle of an information system, while the capability *institutionalisation*, has an effect mid-way through the lifecycle. *Embedded foundational capabilities*, on the other hand, are capabilities which have an influence across the whole development process of new information technology products and services. For instance, *joint problem solving*, and *socialisation* are key capabilities which are utilised across time in the development and use of information systems.

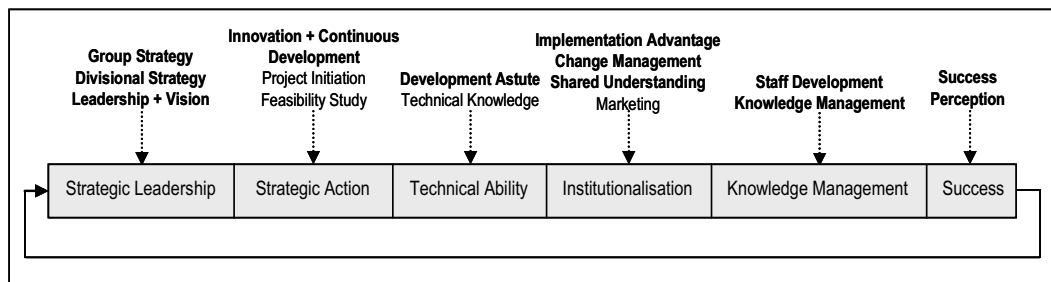
All resources outlined in Chapter Seven contribute to one if not both of the new *constructs*; however, other resources were also seen to contribute to the *constructs*. Resources introduced at this stage were not identified as sources of advantage from the results of the research (hence, not discussed in Chapter Seven); however, they are still required parts of the information system development and usage at ASB. While each of these resources could be examined in their own right, to identify whether they contribute to the bank’s competitive advantage, it is anticipated that they are requirements in the process (or table stakes as outlined in Chapter Two), rather than sources of competitive advantage in their own right. For instance, “technical knowledge” contributed to the lifecycle capability *technical ability*. While this is an important part of the lifecycle it was not identified by participants in the research process as a source of advantage at ASB. Each of the constructs and the resources which contribute to them are discussed in turn below.

## 8.2 LIFECYCLE CAPABILITIES

As briefly outlined above, the construct *lifecycle capabilities* represents an information systems lifecycle that exists at ASB. The *construct* is made up of six key capabilities which form a continuous cycle of development of information systems. The six capabilities represent an aggregated model of the individual sources of advantage and other resources, which have a clear place in time within the life of information systems at ASB. As outlined above, both sources of advantage (that is, *resources*, as presented in Chapter Seven) and other resources contribute to the lifecycle. Figure 8-1 presents the six capabilities which make up the lifecycle. The figure also outlines the resources which contribute to each of the six capabilities. The contributing

resources depicted in bold, are the original sources of advantage (as presented in Chapter Seven). As outlined above, the other resources (not presented in bold) stem from the researcher’s observations and prior knowledge. A table which cross references each of the capabilities with the resources which contribute to the capability and the page reference from Chapter Seven can be found in Appendix G.

**Figure 8-1 - Lifecycle capabilities at ASB**



Note: The shaded block of capabilities depicts the *lifecycle capabilities* identified at ASB. The resources which are linked to each of these capabilities are shown above the block of capabilities. Resources in bold emerged from Chapter Seven.

The combined effect of the integration of these capabilities outlines a clear way information systems are developed at ASB. That is, *lifecycle capabilities* are valuable strategic, technological, and organisational capabilities fundamental to the successful development of information systems at ASB. The capabilities are built over time from experiences, knowledge, and skills embedded at ASB. The capabilities evolve, and continue to evolve, as learning from each project is fed back into the lifecycle. For instance, learning from experiences regarding ways of working and interacting, change capabilities over time.

A specific example of such learning can be seen in the way implementing information systems has changed over time at ASB. The process used for implementing information systems has evolved over time, drawing on lessons from previous implementations. Therefore, capabilities are built on learning from historical projects<sup>26</sup>. As participants in a development process undertake a project they learn at each stage, individually, as well as at group and organisational levels. This learning in turn, feeds back and changes the process (and therefore capabilities are evolved based on such learning).

<sup>26</sup> It is clear that ASB’s capabilities change and evolve. However, the way in which this happens is beyond the scope of this research. What is significant to this research is that there is collaboration and knowledge sharing which influence how capabilities are interrelated.

Learning from such a development cycle is highlighted in the work of others such as Dodgson (1992) who described how technological collaboration should be seen as a learning experience and throughout the process organisations should strive to develop new skills and improve their learning capabilities. In a similar way, Simonin (1997) found medium to large companies developed skills through learning from past collaborations. Hitt et al. (2000) describe how organisations must learn and grow about technology and relationships in a path dependant way to create valuable knowledge. Cyclic learning is also described by Gold, Malhotra, and Segars (2001) who posit the more a company undertakes a process the more effective they can be.

In summary, the lifecycle reinforces the knowledge base (both at an implicit and tacit level) at ASB. Such knowledge is grown by training and ‘learning by doing’. Since knowledge was seen as a critical strategic resource (and described by many researchers as the most critical resource), the more this is grown, the better for ASB. While this learning is represented in *knowledge management* (and *knowledge diffusion* in the *embedded foundational capabilities* section outlined in Section 8.3), it is a significant part of the model which deserves additional note.

While the capabilities which form the lifecycle are presented as a series of independent stages undertaken in a cyclic manner, it must be noted that the lifecycle is not rigid, nor are the stages independent of each other. Instead, multiple projects may be undertaken at the same time and each of the stages can occur in a much more fluid manner. Each of the stages are also very interconnected. It is also important to highlight the continuous nature of the lifecycle depicted in Figure 8-1 by the arrow from success to strategic leadership. The arrow visually depicts the continuous change taking place at ASB and acknowledges the ongoing maintenance and development of projects<sup>27</sup>. The continuous nature of change is a critical element of the *lifecycle capabilities*, and the change and learning have a big impact on each of the capabilities which contribute to the lifecycle. The following paragraphs outline the contribution each of the capabilities makes to the construct.

---

<sup>27</sup> It should be noted that maintenance and development did emerge as part of the *strategic action* stage (by way of innovation and continuous development process at ASB, as presented in Chapter Seven). However, the researcher felt that the concept formed a critical part of the lifecycle in its own right, therefore, should be discussed independently.

The first capability in the lifecycle is *strategic leadership*. *Strategic leadership* encompasses three key resources identified in Chapter Seven<sup>28</sup> as sources of advantage for ASB. In essence, *strategic leadership* involves the high level initiation, alignment, and leadership involved in information system projects. Therefore, *strategic leadership* encompasses the overall strategic direction of the organisation<sup>29</sup> and alignment of this high level plan with lower level plans, as well as coordination of planning with divisions of the business<sup>30</sup>. *Strategic leadership* also involves an element of outward focus, sustaining belief, and ownership from top level management, as well as providing a clear and supportive process<sup>31</sup>.

The second capability in the lifecycle is *strategic action*. Innovation and continuous improvement are the only resources discussed in Chapter Seven which contributed to this capability. Other resources which contributed included: project initiation and feasibility study. The name “*strategic action*” reflected the important part this capability plays in an information system’s life as a major change agent. This capability reflects the key elements of promoting idea generation then capturing ideas and ensuring they are realised<sup>32</sup>. Therefore, this capability follows the capability *strategic leadership* by taking the big picture and creating operational projects ready to be developed. While sometimes ideas generated at this stage involve new projects, at other times they involve reengineering or improving current projects.

The third stage, *technical ability*, encompasses technical development skills required to take a concept through to an end product. Two resources contributed to this capability: development astute and technical knowledge. While development astute encompassed a degree of agility in the product and process, technical knowledge related to specific knowledge about technical rules and processes which relate to particular vintages of technology. Development astute is fundamental to this capability; however, projects can not come to fruition without the appropriate technical knowledge.

---

<sup>28</sup> Group strategy, divisional strategy, and leadership and vision.

<sup>29</sup> The resource group strategy in Chapter Seven.

<sup>30</sup> The resource divisional strategy in Chapter Seven.

<sup>31</sup> The resource leadership and vision in Chapter Seven.

<sup>32</sup> The resource innovation and continuous development in Chapter Seven.

*Institutionalisation* is the next capability in the lifecycle. Four resources contribute to this stage: implementation advantage, change management, shared understanding, and marketing. The essence of this stage is maintaining alignment and awareness of staff involved in projects, along with ensuring a continued level of commitment to projects at hand<sup>33</sup>. This stage also encompasses an element of marketing, both internally and externally<sup>34</sup>, which provides a positive information flow. This means stories of success are shared within the organisation and publicly which reinforces ASB's staff motivation internally, as well as builds, or enforces a positive public perception of ASB externally.

The fifth stage of the cycle is *knowledge management*. Two of the resources outlined in Chapter Seven contributed to this capability: staff development and knowledge management. The title reflects the capture, active management, and promotion of knowledge at ASB<sup>35</sup>. For ASB, this means creating a codified body of knowledge, identifying gaps in skill sets, and continuously improving processes. *Knowledge management* at ASB also involves an ongoing dialogue with external stakeholders such as external technology trainers<sup>36</sup>.

The last stage of the cycle is *success*. *Success* encompasses both real and perceived success (two distinct resources presented in Chapter Seven). While Chapter Seven presented these resources as different entities<sup>37</sup>, the grouping of them in the lifecycle acknowledged the minimal difference that each of the resources has to ASB. *Success* whether real (from success as it was outlined in Chapter Seven – by way of external recognition and awards) or perceived (from perception as it was outlined in Chapter Seven – by way of marketing and the halo effect ASB have experienced from their external success) has little difference to the bank in terms of the end result. That is, each of these resources creates a legacy of success which is reinforcing for the lifecycle. Therefore, *success* reinforces *strategic leadership*, *strategic action*, and so forth, through the whole lifecycle.

---

<sup>33</sup> These two aspects are reflected in implementation advantage, change management, and shared understanding resources presented in Chapter Seven.

<sup>34</sup> Also reflected in implementation advantage and change management presented in Chapter Seven.

<sup>35</sup> This can be seen in the resource knowledge management in Chapter Seven.

<sup>36</sup> This can be reflected in the resources staff development and knowledge management in Chapter Seven.

<sup>37</sup> The resources success and perception.

Table 8-1 builds on the presentation and discussion of the *lifecycle capabilities* by outlining each of the *lifecycle capabilities* with key actions which have been developed over time at ASB to enable and support the capabilities. The key actions are a summary of specific actions outlined by interviewees at ASB or observed by the researcher (as outlined in Chapter Seven).

**Table 8-1 – Key actions that support *lifecycle capabilities***

Lifecycle Capabilities					
Strategic Leadership	Strategic Action	Technical Ability	Institutionalisation	Knowledge Management	Success
<b>Key Actions that Support Capabilities</b>					
Develop a strategic focus	Develop an innovative culture	Develop agility in product and process	Maintaining internal engagement	Create a codified body of knowledge	Spread word of success
Clear vision, communicated and understood	Creating an ongoing innovation cycle for incremental and step function change	Maintain leading edge technical abilities	Ongoing alignment and awareness of project and processes	Continually identify and develop needs	External Marketing of position and external recognition and success
External awareness	Action ideas via project initiation and feasibility study			Maintain an internal knowledge dialogue	Actively manage risks of success
Formalised planning process				Maintain an external knowledge dialogue	
Sustaining belief and ownership					
Creating a supportive bureaucracy					
Managing scarce resources					

It is important to acknowledge that many of the individual elements of the *lifecycle capabilities* presented and discussed above, have had some attention in current literature and have been documented as sources of advantage in their own right (such as the brief discussion of literature associated with learning outlined earlier in this section). Another example is the quantity of research in the literature which examines many different aspects of the capability *strategic leadership*. For example, aspects of *strategic leadership* examined as potential sources of value in other research include: strategic intent and foresight (e.g., Prahalad & Hamel, 1990; D'Aveni, 1995; Leonard, 1995), planning controlling and decision making (e.g., Steiner, Miner, & Gray, 1986), and the alignment of business and IT planning (e.g., Ross et al., 1996; Kearns & Lederer, 2003; Ray et al., 2005). *Success* is another of the *lifecycle capabilities* which has received attention in the literature. Success, whether perceived or real, is associated with organisational reputation which in turn has been documented as a

source of sustained competitive advantage (e.g., Shrum & Wuthnow, 1988; Hall, 1993; Roberts & Dowling, 2002; Carmeli & Tishler, 2004). Table 8-2 provides a summary of key research associated with each of the *lifecycle capabilities*.

**Table 8-2 – Support for individual elements of *lifecycle capabilities* in literature**

Capability	Related literature which is also linked to organisational value
Strategic Leadership	Strategic action system – involves scanning the environment to identify opportunities and threats and triggers competence building (Savory, 2006)
	The importance of decision makers in enacting and directing the use of capabilities (Zahra et al., 2006)
	Business/IT strategic thinking (Bharadwaj et al., 1998)
	The more innovativeness is embedded within a firm (i.e., linked to culture), the greater its value as a complementary organisational resource (Menguc & Auh, 2006)
	Strategic intent and foresight (Prahalad & Hamel, 1990; D'Aveni, 1995; Leonard, 1995)
	Planning, controlling and decision making (Steiner et al., 1986)
	Top level commitment to information technology (Teo & Ranganathan, 2003)
	Alignment of business and IT planning (Goldsmith, 1991; Ross et al., 1996; Powell & Dent-Micallef, 1997; Reich & Benbasat, 2000; Kearns & Lederer, 2003; Teo & Ranganathan, 2003; Ray et al., 2005)
Strategic Action	Integrate IT and business processes (Benjamin & Levinson, 1993; Bharadwaj et al., 1998; Bharadwaj, 2000)
	Continuous improvement incorporating incremental and breakthrough change (Brumagim, 1994)
	Ongoing innovation and change management (Hall, 1993; Brown & Eisenhardt, 1995; Brown & Eisenhardt, 1997, 1998; Eisenhardt & Brown, 1998; Turner, 1998; Danneels, 2002)
	Time paced change (scheduled innovation) (Vestey, 1990; Rosenberg, 1992; Prior, 1996; Eisenhardt & Brown, 1998; Turner, 1998; Chen, 1999)
	Innovative processes (DeWoot, Hayvaert, & Martou, 1978)
Technical Ability	Agility or flexibility (Allen & Boynton, 1991; Weill, 1993; Davenport & Linder, 1994; Duncan, 1995; Ross et al., 1996; Broadbent & Weill, 1997; Broadbent, Weill, & St.Clair, 1999; Bharadwaj, 2000; Ray et al., 2005)
Institutionalisation	Gaining internal commitment (Montealegre, 2002)
Knowledge Management	Knowledge is widely acknowledged to be a source of sustained competitive advantage (Leonard-Barton, 1992; Teece, Pisano, & Shuen, 1992; Hitt & Ireland, 1999; McEvily & Chakravarthy, 2002; Wiklund & Shepherd, 2003)
	Knowledge management is the most strategically important resource on which a position of competitive advantage may be built (Nonaka, 1994; Miller & Shamsie, 1996; Marsh & Ranft, 1999; Simonin, 1999; Subramaniam & Venkatraman, 1999; McEvily & Chakravarthy, 2002)
	Competitive advantages are reliant on the ability to create, share, and utilise knowledge throughout the organisation (Druker, 1999; Hoopes & Postrel, 1999)

	Procedural knowledge (knowledge of systems and procedures for how to carry out organisational activities) is valuable to organisations (Lesgold, 1988; Prahalad & Hamel, 1990; Hall, 1993; Henderson & Cockburn, 1994; Gupta & Govindarajan, 2000; Wiklund & Shepherd, 2003)
Success	Shared stories can maintain a groups' collective learning (Savory, 2006)
	Successes can be broken down to activities and competencies that a company can utilise and build on (Miller, 2003)
	A reputation derived from success or perceived organisational reputation is an important intangible source of competitive advantage (Shrum & Wuthnow, 1988; Hall, 1993; Roberts & Dowling, 2002; Carmeli & Tishler, 2004)

While each of these individual capabilities (which make up the *integrated model of advantage*) and any linkages with other research (such as those indicated in Table 8-2) may be examined in more detail, it is beyond the scope of this research. Table 8-2 is provided to highlight research related to individual elements of the *lifecycle capabilities*. Future research could investigate these capabilities and the linkages to other research individually in a much more detailed way.

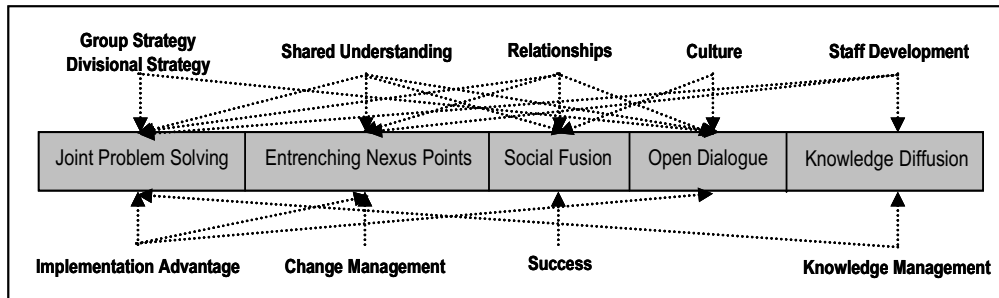
### 8.3 EMBEDDED FOUNDATIONAL CAPABILITIES

The second construct, *embedded foundational capabilities*, is a group of key organisational capabilities which are seen to contribute to the success of ASB across time. That is, these capabilities do not have an effect at a point in time like the *lifecycle capabilities*. Rather, *embedded foundational capabilities* have an effect across the complete lifecycle of products and services. The name of this group of capabilities reflects the deeply embedded nature of these organisational capabilities. That is, each of the capabilities are fundamentally linked to other capabilities such as those outlined in the lifecycle presented in Section 8.2<sup>38</sup>. There are five *embedded foundational capabilities*: joint problem solving, entrenched nexus points, social fusion, open dialogue and knowledge diffusion. While *lifecycle capabilities*, presented in the previous section, combined technical and other organisational capabilities, *embedded foundational capabilities* are all organisational capabilities. More specifically, each of the *embedded foundational capabilities* relates to the organisationally specific ways of working and the relationships between different stakeholders at ASB. Each of the capabilities and the original resources (as outlined in Chapter Seven) which contribute to the capability are presented in Figure 8-2 and discussed in turn. A table which cross

<sup>38</sup> Linkages with other capabilities are examined in more detail in Section 8.5.

references each of the capabilities with the resources which contribute to the capability and the page reference from Chapter Seven can be found in Appendix G.

Figure 8-2 – *Embedded foundational capabilities at ASB*



Note: The shaded block of capabilities depicts the *embedded foundational capabilities* identified at ASB. The resources which are linked to each of these capabilities are shown. All resources (depicted in bold) emerged from Chapter Seven.

The *embedded foundational capabilities* are presented as a block of connected capabilities and may be seen as rather static (due to the depiction of them in Figure 8-2). However, it is important to highlight that this is not the case; the capabilities evolve over time and are closely linked to each other. The capabilities are deeply embedded within ASB by way of the culture, and ways of working, and are built and evolve over time as different projects are embarked on. Each of the *embedded foundational capabilities* influences other *embedded foundational capabilities* and also has a large impact on other organisational capabilities (such as the *lifecycle capabilities* outlined in Section 8.2). Such interconnections are discussed more in Section 8.5. It is also important to note that while the *embedded foundational capabilities* are presented and discussed in a particular order, it is not intended to suggest an order of importance. Rather, all of the *embedded foundational capabilities* should be seen as equal in terms of importance.

The inclusive approach to problem solving (and decision making) is seen as an embedded organisational capability which is used throughout the lifecycle of the development of information systems related products and services. Seven of the original resources (as presented in Chapter Seven) relate to *joint problem solving*: group strategy, divisional strategy, shared understanding, relationships, knowledge management, implementation advantage, and staff development. The label “*joint problem solving*” seemed the most important as this was a fundamental element of all of the contributing resources. The large number of resources which contributed to this capability demonstrates the importance of this capability to ASB. Working in a

collaborative mode, such as demonstrated between and across workgroups at ASB<sup>39</sup>, contributed to the tacit knowledge and created an environment of shared responsibility while at the same time promoted understanding<sup>40</sup>.

The capability *entrenching nexus points* is made up of five of the resources discussed in Chapter Seven: shared understanding, relationships, implementation advantage, staff development, and change management. The labelling of this group of resources encompassed the key attribute of each of the underlying resources, which is to protect key crossover or nexus points within working relationships between different stakeholders involved in the development and use of information systems at ASB. *Entrenching nexus points* is seen as important because different stakeholders such as information systems and business professionals often have conflicting priorities. The conflicting priorities create a natural tension which requires careful management to maintain positive working relationships. ASB have evolved the way different stakeholders interact over time which has significantly contributed to this capability's value.

*Social fusion* is another of the *embedded foundational capabilities*. Four of the original resources (from Chapter Seven) relate to this capability: relationships, shared understanding, success, and culture. The label “*social fusion*” refers to the mixing of individuals and teams, in work<sup>41</sup> and play<sup>42</sup>, which forms a critical part of the ways of working at ASB. This capability is supported by the ways of working, including physical structures and development process<sup>43</sup>, and the celebration of milestones and achievements<sup>44</sup> at ASB. The innovative workplace design at ASB<sup>45</sup> also embodies the social fusion of ASB; this is achieved by promoting balance and fun in the workplace.

*Open dialogue* is considered an *embedded foundation capability* because of the critical role two way communication plays at all parts of the lifecycle of information technology products and services. As seen in Figure 8-2, six of the resources presented in

---

<sup>39</sup> As seen in all of the Chapter Seven resources which related to this capability.

<sup>40</sup> This can be seen in the resources group strategy, divisional strategy, shared understanding, implementation advantage, and knowledge management in Chapter Seven.

<sup>41</sup> Seen in shared understanding and relationships in Chapter Seven.

<sup>42</sup> Seen in culture in Chapter Seven.

<sup>43</sup> Described in relationships in Chapter Seven.

<sup>44</sup> Seen in the resource success in Chapter Seven.

<sup>45</sup> Described in both relationships and culture in Chapter Seven.

Chapter Seven make up this capability: group strategy, divisional strategy, shared understanding, relationships, implementation advantage, and culture. ASB achieve high levels of communication and collaboration through physical structures in the workplace<sup>46</sup>, as well as, through collaborative ways of working<sup>47</sup>. Such work practices build an environment of trust, respect, and understanding.

*Knowledge diffusion* is the last of the *embedded foundational capabilities*. Two of the resources outlined in Chapter Seven related to this capability: staff development and knowledge management. This capability acknowledges the tacit and explicit knowledge at ASB, which stems from internal ownership of knowledge<sup>48</sup>, as well as learning from communication, experience, training and results<sup>49</sup>. ASB's strong hold on technology helps to ensure individual and group knowledge is retained within the bank. Knowledge is shared through communication and ways of working<sup>50</sup>, which means individual knowledge, albeit tacit, is cultivated within the bank.

While each of these capabilities are presented as distinct capabilities in their own right, it must be acknowledged that the group of *embedded foundational capabilities* are very closely related, as alluded to above (even more than *lifecycle capabilities*). For example, *joint problem solving* over time creates a greater body of shared knowledge. Therefore, *joint problem solving* naturally facilitates organisational learning and hence, organisational knowledge (*knowledge diffusion*). Table 8-3 builds on the presentation and discussion of each of the *embedded foundational capabilities* by highlighting key actions which support the capabilities at ASB. The key actions are a summary of specific actions outlined by interviewees at ASB or observed by the researcher (as outlined in Chapter Seven).

---

<sup>46</sup> As seen in relationships and culture in Chapter Seven.

<sup>47</sup> Described in the resources: group strategy, divisional strategy, shared understanding, relationships and implementation advantage in Chapter Seven.

<sup>48</sup> Which can be seen in the resource knowledge management in Chapter Seven.

<sup>49</sup> Seen in the resources knowledge management and staff development in Chapter Seven.

<sup>50</sup> Including work place practices such as staff rotation, and branch staff secondments.

**Table 8-3 – Key actions that support embedded foundational capabilities**

Embedded Foundational Capabilities				
Joint Problem Solving	Entrenching Nexus Points	Social Fusion	Open Dialogue	Knowledge Diffusion
<b>Key Actions that Support Capabilities</b>				
Create an environment of shared responsibility	Protect key crossover points within the organisation (different divisions working with each other)	Create an enriched culture mixing work and play	Create an ongoing and open dialogue through physical structures and ways of working	Retain strong internal hold of knowledge
Extensive use of cross functional working groups		Celebrating organisational milestones and successes	Build an environment of trust and respect	Learning from experience, training, and results
				Maintaining an internal knowledge dialogue
				Promote open coaching of staff

In the same way many of the *lifecycle capabilities* have been individually discussed in the current literature, many of the *embedded foundational capabilities*, presented and discussed above, have individually received attention in current literature. For example, the use of joint problem solving has been well documented. In particular, problem solving partnerships between businesses and information systems professionals, have been described as valuable by many (e.g., Rockart, 1988; Henderson, 1990; Benjamin & Levinson, 1993; Boynton, Zmund, & Jacobs, 1994; Ross et al., 1996; Bharadwaj et al., 1998; Bharadwaj, 2000; McEvily & Marcus, 2005). A specific example can be seen in the work of Ray et al. (2005) who discusses the relationship between information system and customer service managers. The researchers note that a shared or common understanding is required to improve the performance of the customer service unit. The researchers posit that such a shared or common understanding is developed over time from joint problem solving, and more particularly from the shared knowledge this process creates.

Similarly, fostering social interaction (which relates closely to *social fusion*) is widely seen in current literature (e.g., Ouchi, 1980; Clark & Fujimoto, 1991; Heimer, 1992; Kogut & Zander, 1992; Larson, 1992; Leonard & Sensiper, 1998; Schulze & Hoegl, 2006). A specific example can be seen in the way Schulze and Hoegl's (2006) term "socialisation". Socialisation is presented in a similar way to *social fusion*, and is seen as important because of the role it plays in bonding relationships between different stakeholders and the new knowledge it yields. In much the same way, Danneels

(2002) use of the term ‘project-firm synergy’ has strong links to the capability *knowledge diffusion* used in this research. ‘Project-firm synergy’ in Danneels’ research refers to the way future projects of a firm can draw on existing in-house skills and experiences created over time (through past experience), which is also seen in *knowledge diffusion* in the way in which ASB internalise knowledge from *lifecycle capabilities*. Table 8-4 provides a summary of key research associated with each of the *embedded foundational capabilities*.

**Table 8-4 - Support for *embedded foundational capabilities* in literature**

<b>Capability</b>	<b>Related literature which is also linked to organisational value</b>
Joint Problem Solving	Joint problem solving integrates IT and business processes (Benjamin & Levinson, 1993; Bharadwaj et al., 1998; Bharadwaj, 2000)
	IT/business partnerships (Rockart, 1988; Henderson, 1990; Benjamin & Levinson, 1993; Boynton et al., 1994; Ross et al., 1996; Bharadwaj et al., 1998; Bharadwaj, 2000; McEvily & Marcus, 2005; Ray et al., 2005)
	Problem solving orientation (Ross et al., 1996)
	Joint problem solving relationships are valuable (Boynton et al., 1994; Nelson & Coopridge, 1996; McEvily & Marcus, 2005; Ray et al., 2005)
Entrenching Nexus Points	Capacity to understand the effect of IT on other business areas (Benjamin & Levinson, 1993)
	Individuals in a process have very different “socially constructed understandings of reality or systems of meaning” therefore it is important to be proactive in managing change (Tyler, 2001, p 15)
Social Fusion	Relationship building (Fenny & Willcocks, 1998)
	Fostering social involvement contributes to the success of a project (Ouchi, 1980; Clark & Fujimoto, 1991; Heimer, 1992; Kogut & Zander, 1992; Larson, 1992; Leonard & Sensiper, 1998; Schulze & Hoegl, 2006)
	Socialisation capabilities – the ability of a firm to create a shared ideology to help outline tacitly understood rules for appropriate action (De Boer, Van den Bosch, & Volberda, 1999)
Open Dialogue	Rich communications (Gupta & Govindarajan, 2000)
Knowledge Diffusion	Knowledge diffusion is a part of knowledge translation capacity (Savory, 2006)
	Project-firm synergy – internalised knowledge which can be drawn on in future projects (Danneels, 2002)
	The importance of learning by doing (Dodgson, 1992; Simonin, 1997; Gold et al., 2001; Bhatt & Grover, 2005)
	The development path of projects creates a history which in turn shapes the future path through knowledge and learning (Teece et al., 1997; Montealegre, 2002)
	Knowledge creation and human capital (Klein, Crawford, & Alchian, 1978; Lepak & Snell, 1999; Hitt, Bierman, Shimizu, & Kochhar, 2001)
	Knowledge is “most valuable and most inimitable when it is firm-specific and

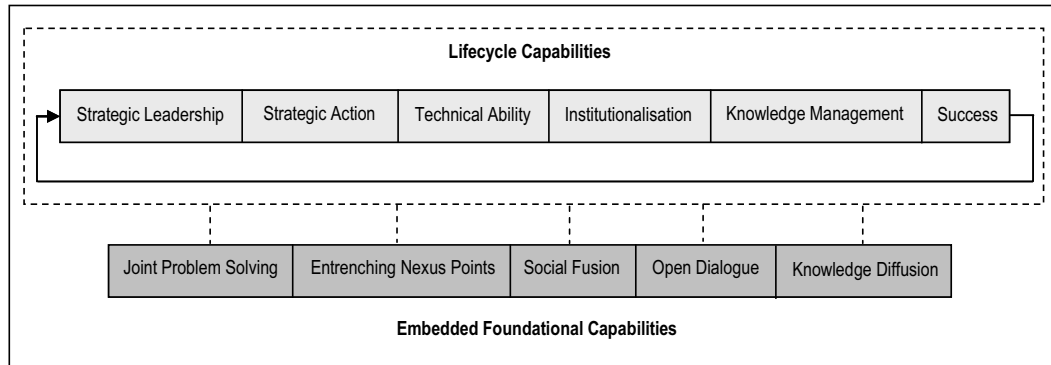
resides in the environment where it was originally (optimally) developed” (Hatch & Dyer, 2004, p 1155)
“Unstructured, uncodifiable, generally verbal, and often face-to-face communication demanded by integrated project management” (Monteverde, 1995, p 1629)
Learning by monitoring is said to be an ongoing interactive system of continuous improvement, which includes practices such as the sharing of designs of development projects in real time (Helper, MacDuffie, & Sabel, 1999)
Tacit knowledge or local capabilities are developed over time and may become a source of sustained competitive advantage (Leonard-Barton, 1992; Teece et al., 1992)

Each of the linkages between *embedded foundational capabilities* and concepts in the literature, as outlined in Table 8-4, could be examined in their own right. However such parallels are considered beyond the scope of this research. Table 8-4 is provided to highlight parallels in the literature to each of the *embedded foundational capabilities*, rather than to provide an in-depth discussion. The parallels identified in Table 8-4 may be used as a starting point in future research which may attempt to map out and seek understanding of different labels and their meanings.

#### 8.4 INTEGRATED MODEL OF ADVANTAGE AT ASB

While the two constructs *lifecycle* and *embedded foundational capabilities* were presented in isolation, in practice each *construct* formed a critical part of an *integrated model of advantage* at ASB. The model shows how interlinked capabilities are used in the conceptualisation, development, and use of information systems at ASB. Sources of advantage which contributed to the model are information technology, strategic, and other organisational capabilities. The *integrated model of advantage* at ASB is presented in Figure 8-3. As outlined in the preceding sections, there are strong linkages between the *embedded foundational capabilities* and each of the *lifecycle capabilities*. The linkages are indicated in the diagram (at a high level) via the dotted lines from each of the *embedded foundational capabilities* circling the *lifecycle capabilities*. This emphasises the supportive role each of the *embedded foundational capabilities* plays in the development of information systems at ASB.

Figure 8-3 – Integrated model of advantage at ASB



While at one point in time the model is constrained by the firm's antecedent capability base, it also creates new resources (and therefore, alters capabilities) over time through a process of path dependant learning<sup>51</sup>. That is, as each new project is undertaken and moves through the lifecycle, path dependant learning occurs which is used to alter capabilities in search of continuous improvement. While the way in which capabilities evolve is beyond the scope of this research, it is clear to see that learning and knowledge about each of the capabilities is valuable to ASB. Therefore, a critical part of this model is the institutional knowledge captured in each stage of the lifecycle. This research recognises such knowledge, as seen by the two occurrences of aspects of knowledge in the *Integrated Model of Advantage* (outlined in Sections 8.2 and 8.3).

## 8.5 LINKAGES AMONG CAPABILITIES

Sections 8.2 and 8.3 presented and discussed two constructs (*lifecycle* and *embedded foundational capabilities*) which together form the *integrated model of advantage* at ASB. This section examines linkages<sup>52</sup> between two or more of the capabilities within the *integrated model of advantage*. Current literature which relates to the linkages or relationships between two or more capabilities is also presented<sup>53</sup>. The linkages observed between capabilities in the *integrated model* are presented in Figure 8-4 and

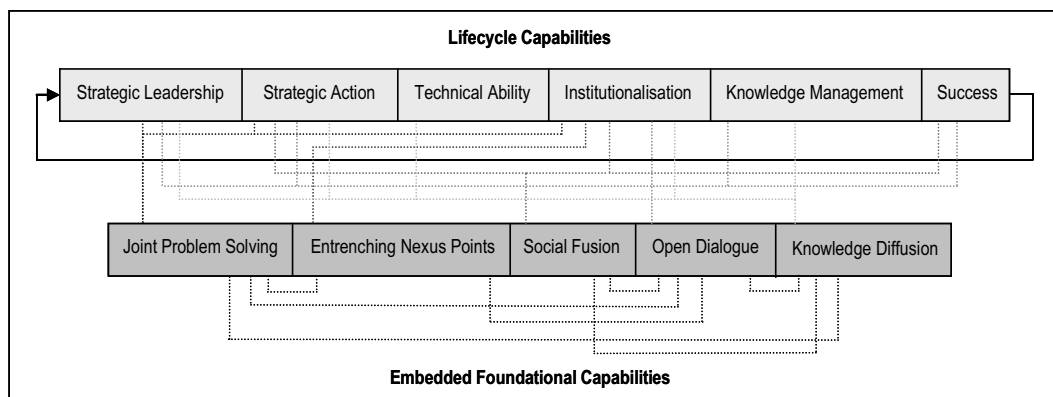
<sup>51</sup> The way in which capabilities evolve is hinted at but, as previously mentioned, is beyond the scope of this research. Examination of the evolution of the *integrated model* over multiple projects would be a fruitful area for future research.

<sup>52</sup> By *linkages* this researcher means relationships between two (or more) of the capabilities which make up the *integrated model of advantage*.

<sup>53</sup> It must be noted that the review of literature related to linked capabilities is not intended to be an exclusive review of all research. Rather literature is used as and where appropriate to support the discussion.

discussed in turn. It is important to acknowledge by design all of the *embedded foundational capabilities* have an influence across all *lifecycle capabilities*. This section however, highlights strong or important linkages between capabilities. Several significant linkages between *embedded foundational capabilities* were also deemed noteworthy and are indicated in the figure and discussed.

Figure 8-4 – Linkages within the *integrated model of advantage*



Note: Linkages between capabilities are depicted by the dotted lines between capabilities.

#### **JOINT PROBLEM SOLVING AND LINKAGES TO OTHER CAPABILITIES**

*Joint problem solving* has many linkages to other capabilities in the *integrated model of advantage*. Linkages that were considered stronger or more important (by the researcher) are discussed below.

##### **...STRATEGIC LEADERSHIP**

A large part of *strategic leadership* involves the different stakeholders at ASB working together to set the strategic direction and ensure alignment of lower level strategies. The *joint problem solving* aspect of *strategic leadership* is considered important since working together allowed different stakeholders to have buy-in and ownership of the company's strategy.

##### **...STRATEGIC ACTION**

*Joint problem solving* was seen as an important part of the *strategic action* process at ASB. More specifically, getting people together to focus on a specific idea is seen to be a valuable part of innovation. There is also evidence of a relationship between these two capabilities in the literature. For example, joint problem solving is seen as essential in the process of innovation (and innovation is a large part of the capability

*strategic action*) (Arrow, 1962; Badaracco, 1991; Ancona & Cladwell, 1992; Boynton et al., 1994; Leonard & Sensiper, 1998; Gold et al., 2001). Gold et al. (2001) describe joint problem solving as a critical part of the creation of new ideas. The researchers suggest that joint problem solving should be encouraged and nurtured in organisations. In a similar way, Kanter described how “a closer interpersonal contact or connectedness via interpersonal communication channels in an organisation” is positively related to high rates of innovation (1988, p 177). *Joint problem solving* between employees in both business and information systems sides of an organisation, is seen as an important contributor to an organisations ability to conceive, develop, manage, and use firm-specific information technology applications that improve process performance (Boynton et al., 1994).

#### ...INSTITUTIONALISATION

*Joint problem solving* aids many aspects of *institutionalisation*. For instance, in moving projects from production to implementation, partnerships in problem solving between different stakeholders are seen as critical at ASB. The use of this capability enables stakeholders to feel involved and therefore it increases levels of stakeholder engagement in a project which has many positive externalities. *Joint problem solving* in this stage is also a valuable aid in maintaining alignment and awareness of projects. Many other researchers also highlight the use of high involvement of staff, and problem solving in enabling institutionalisation of projects (e.g., Bharadwaj, 2000; Lawson & Samson, 2001; Batt & Moynihan, 2002; Pan, Pan, & Hsieh, 2006).

#### ...ENTRENCHING NEXUS POINTS

*Entrenching nexus points* means protecting key areas of a project where employees from different business unit or divisions (who often have conflicting objectives) are working together. The use of *joint problem solving* and *entrenching nexus points* together creates an environment of shared responsibility and understanding which is seen as valuable. A shared responsibility in projects with stakeholders from different areas of ASB was often cited as a core source of value.

#### ...OPEN DIALOGUE

The capabilities *joint problem solving* and *open dialogue* are very tightly coupled. Successful working relationships are very dependant on open communication between stakeholders in a project. The use of both of these capabilities together has

many positive influences, such as building trust, respect, awareness, and shared responsibility. Evidence of a close relationship between these capabilities is also seen in the work of McEvily and Marcus (2005).

*...KNOWLEDGE DIFFUSION*

*Joint problem solving* has a significant positive impact on the diffusion of knowledge and therefore the knowledge base at ASB. Working together allows the transfer of individual knowledge to group knowledge. The link between these two capabilities is also evident in the literature. For instance, Janz and Prasarnphanich (2003) and McEvily and Marcus (2005) discuss the strong link between joint problem solving and new knowledge creation. Janz and Prasarnphanich describe how tacit knowledge is transferred through joint problem solving by way of observing and sharing experiences in a face to face manner. McEvily and Marcus describe how stakeholders engaged in successful relationships will create specific heuristics and languages for the transfer of knowledge within the organisation. The researchers stress the importance on ongoing two way interaction in the transfer of tacit knowledge. Other researchers (e.g., Nonaka, 1990; Kogut & Zander, 1992; Nonaka, 1994; Madhok, 1995; Nonaka & Takeuchi, 1995; Cohen, 1998; Nonaka & Konno, 1998; Hansen, Nohria, & Tierney, 1999; Tyler, 2001; Bixler, 2002) have also stressed the importance of this tacit knowledge transfer between individuals in a collaborative, interactive social process. Alavi and Leidner (2001) and Grant (1996b) describe bringing knowledgeable stakeholders together in a collaborative way, sharing, and enhancing knowledge as a fundamental part of good knowledge management and learning. This makes team work or joint problem solving an important process in organisational design (Senge, 1990; Janz, Wetherbe, Davis, & Noe, 1997; Hult, 1998; Hult, Hurley, Giunipero, & Nichols, 2000).

**ENTRENCHING NEXUS POINTS AND LINKAGES TO OTHER CAPABILITIES**

Three important linkages were noted between *entrenching nexus points* and other capabilities in the *integrated model of advantage*, that is, linkages were seen with the capabilities: *institutionalisation*, *joint problem solving*, and *open dialogue*. The link between *entrenching nexus points* and *joint problem solving* is discussed in the above section, while the links to the other capabilities are discussed below.

...*INSTITUTIONALISATION*

*Institutionalisation* involves a lot of different stakeholders, with differing priorities and needs, working together. Therefore, utilising capabilities which protect crossover points within working relationships (as present in the capability *entrenching nexus points*) is seen as important to ASB. The use of these capabilities in a coupled way allows for harmonious relationships to exist.

...*OPEN DIALOGUE*

*Entrenching nexus points* is concerned with protecting crossover points of a project where stakeholders from different areas work together. *Open dialogue* is a valuable capability which greatly aids in creating better working relationships and therefore aiding the abovementioned crossover points in a project.

**SOCIAL FUSION AND LINKAGES TO OTHER CAPABILITIES**

*Social fusion* had five linkages with other capabilities of note. Each of these linkages is now discussed.

...*STRATEGIC ACTION*

The use of *social fusion*, and more particularly mixing work and play, alongside the *strategic action* capability allows for employees at ASB to share in more casual ways. While this is not seen as a primarily source of ideas and innovation at ASB, it does allow for communication to flow in more informal ways. For example, ideas can be shared that sometimes may not come through more formal channels. Gold et al. (2001) and O'Dell and Grayson (1998) also describe the importance of relationships in both formal and informal or social channels in idea generation. In a similar way, Ancona and Cladwell (1992) describe social fusion and the cross pollination of teams within a project as associated with the development of quality technical innovations.

...*INSTITUTIONALISATION*

Utilising ASB's *social fusion* coupled with *institutionalisation* capabilities helps to maintain alignment and awareness in a positive, informal way. For instance, project milestones are often celebrated. Therefore, in essence, employing *social fusion* and *institutionalisation* capabilities at the same time helps to provide a positive working environment at ASB.

...*SUCCESS*

*Social fusion* is seen as a critical part of celebrating *success* at ASB. This allows for formal and informal channels to spread the word of success in the organisation. Celebrating project success in social ways is also seen as team building. The coupling of these capabilities reinforces internal commitment, passion and pride, and allows for a positive momentum for change to develop.

...*OPEN DIALOGUE*

*Social fusion* is seen as tightly coupled with *open dialogue*. Providing opportunities for work and play enables new channels for communication and cross pollination of teams at ASB. ASB recognises the importance of coupling these capabilities and have designed workplaces specifically to mix teams in social ways to promote *open dialogue* within and across projects.

...*KNOWLEDGE DIFFUSION*

*Social fusion*, or mixing work and play, has many positive externalities in relation to knowledge. For example, providing a balance in terms of formal and informal interactions allows relationships to develop between different stakeholders and eases knowledge transfer. Evidence of the link between these capabilities is also seen in the work of others (Kogut & Zander, 1992; Nonaka, 1994; Madhok, 1995; Nonaka & Takeuchi, 1995; Gold et al., 2001; Schulze & Hoegl, 2006). For instance, Schulze and Hoegl (2006) outline how informal interaction is needed in the exchange of tacit knowledge. Nonaka and Takeuchi (1995) describe how a degree of social interaction is required for knowledge to become a valuable organisational asset (or capability). Such interaction moves individual knowledge to organisational knowledge, albeit at an implicit level. In the same way, Nonaka (1994) describes how there are different levels of knowledge within an organisation and knowledge may be moved from one realm of the organisation to another. The knowledge moves through formal and informal interactions between individuals and groups which verbalise tacit and explicit knowledge. Others suggest specific roles social fusion plays with regard to knowledge. For example, social fusion helps in the creation (Gold et al., 2001), transfer, and understanding (Kogut & Zander, 1992; Tyler, 2001) of organisational knowledge. Gold et al. (2001) describes how social capital (a network of relationships within a social unit) required for the creation of new knowledge to occur. Kogut and Zander (1992) emphasise relationships between a social unit (the

researchers call this network of relationships social capital) as a key requirement in the transfer of knowledge, and more importantly, for knowledge to be understood.

#### **OPEN DIALOGUE AND LINKAGES TO OTHER CAPABILITIES**

*Open dialogue* had nine linkages with other capabilities of note. Five of these are discussed below (the link with the other four capabilities are discussed in the preceding sections).

##### **...STRATEGIC LEADERSHIP**

*Open dialogue* coupled with *strategic leadership* is important in developing the strategic focus and plans for ASB. There are two important roles *open dialogue* plays in its linkage to *strategic leadership*. First, communication builds awareness of the planning processes used at ASB which allows for more informed participation. Second, the strategic vision, once developed, needs to be well communicated (and understood).

##### **...STRATEGIC ACTION**

Creating ongoing and *open dialogue* between different stakeholders was seen to be an important part of the *strategic action* of projects at ASB. The dialogue helps to ensure there is a meeting of the minds of the various stakeholders. Support for the link between the two capabilities is also seen in the work of Monge et al. (1992), who found the more informed and engaged individuals were in the problem solving in a variety of group settings, the greater the number of innovative ideas were produced.

##### **...INSTITUTIONALISATION**

The *institutionalisation* process, or more precisely taking projects from production to implementation, requires ongoing, open, two way communications. Such *open dialogue* helps to ensure alignment and awareness of both projects and processes which are deemed important to project success.

##### **...KNOWLEDGE MANAGEMENT**

An open and ongoing dialogue is seen to have a big impact on the *knowledge management* at ASB. Communication and sharing of knowledge allows ASB to create codified bodies of knowledge which are valuable for future projects. Internal and external dialogue are actively encouraged and seen as valuable to ASB. Communication and knowledge are also well linked in the literature. Research on the

ease in the transfer of knowledge demonstrates that several factors contribute to a successful environment. Factors key to success include; use of rich and open communications (Nonaka & Takeuchi, 1995; Bharadwaj et al., 2000; Gupta & Govindarajan, 2000; Sher & Lee, 2004), cultivating relationships among employees (Hansen, 1999; Reagans & McEvily, 2003), as well as the use of technologies and structures to aid communication and create opportunities for exchange (Argote, McEvily, & Reagans, 2003).

*...SUCCESS*

Sharing stories of *success* or the combination of *open dialogue* and *success* is important to ASB. When the *success* of projects or the business as a whole is shared many positive flow on effects can be observed (in the same way that *social fusion* and *success* has many positive externalities). While informal channels of communication are strong within the bank, ASB also acknowledge the importance of more formal channels of communication to spread stories of *success* which helps build pride and create a positive momentum for change.

*...KNOWLEDGE DIFFUSION*

*Open dialogue* is also seen to have a valuable influence over knowledge diffusion or more tacit knowledge. For example, sharing knowledge within project teams allows ASB to have a strong internal hold of their technology projects. Learning from experience, training and results, as well as open coaching of staff, are also seen to have a positive impact on levels of organisational knowledge at ASB.

**KNOWLEDGE DIFFUSION AND LINKAGES TO OTHER CAPABILITIES**

*Knowledge diffusion* has an impact across all of the other capabilities, since learning from experience and results is a critical part of ASB's success (as previously mentioned). Linkages with eight of the other capabilities are considered more significant and are highlighted. Five of the linkages are discussed below (the link with the other capabilities are discussed in the preceding sections).

*...STRATEGIC LEADERSHIP*

Knowledge from each development project undertaken needs to be fed back into the next project. As such, *knowledge diffusion* and in particular, maintaining a knowledge dialogue is important to the bank's *strategic leadership* capabilities.

...STRATEGIC ACTION

*Knowledge diffusion* is also tightly coupled with *strategic action*. Learning from *strategic action* is seen to have a time value. That is, when change is regular the culture of the bank is more receptive to change and knowledge gained from previous projects is more readily available. This means *knowledge diffusion* has a time quality at ASB. The link between strategic action, regularity of change, and procedural knowledge diffusion is also evident in the literature. This is often referred to as time pacing (Eisenhardt & Brown, 1998). Time paced strategies of change are seen as critical to successful innovation due to the learning associated with the correct pacing of change (Maidique & Zirger, 1985; Eisenhardt & Brown, 1998; Argote, 1999; Eisenhardt & Martin, 2000; Danneels, 2002; Droge et al., 2003). For instance, Eisenhardt and Martin (2000) outlined how a fast paced innovation may overwhelm employees involved and hinder learning experiences. On the other hand, innovation which occurs infrequently can lead to loss of tacit group and individual knowledge (Argote, 1999).

...TECHNICAL ABILITY

*Technical ability* and *knowledge diffusion* are linked for several reasons. ASB seek to retain a strong hold of internal knowledge about their information systems and this desire extends to technical knowledge regarding projects and processes. Maintaining a knowledge dialogue and open coaching are particular aspects of ASB's *knowledge diffusion* capabilities which are important to their *technical ability*.

...INSTITUTIONALISATION

Strong linkages are also seen between *knowledge diffusion* and *institutionalisation*. Learning from experience, training and results in regard to *institutionalisation*, also has a time quality. When processes are undertaken more regularly the level of *knowledge diffusion* and therefore internal knowledge is high. As such project and process awareness is strong. Dorge et al. (2003) also discuss how procedural knowledge is greater and more effective when processes are undertaken regularly.

...KNOWLEDGE MANAGEMENT

As could be predicted *knowledge diffusion* and *knowledge management* are closely coupled. Learning from *knowledge diffusion* is often incorporated into more formal *knowledge management* capabilities such as creating a codified body of knowledge. The ongoing

internal dialogue and open coaching of staff from *knowledge diffusion* also contribute to ASB's *knowledge management* practices.

## 8.6 THE STORY OF ASB

Chapter Six introduced ASB as a major player within the retail banking industry in New Zealand. The chapter highlighted ASB's point of difference in the marketplace in terms of innovation and technology. ASB's success, financial and otherwise, was also highlighted. Chapter Seven started to tell the story of ASB in terms of those resources valuable to them. The chapter outlined three distinct types of resources (ICT, strategic, and human resources) which are seen as sources of advantage. So far, the current chapter has outlined an aggregation of the resources outlined in Chapter Seven by placing resources into two constructs, *lifecycle*, and *embedded foundational capabilities*, which together form an *integrated model of advantage* at ASB. This section further explains the story of ASB and how they gain value from the integration of resources. This will be achieved by drawing on the above mentioned chapters to provide answers to each of the research questions presented in Chapter Four.

This research set out to answer the questions, *What are sources of ICT advantage?* and *How are ICT's combined with other resources to create valuable resources and capabilities?* Each of the research questions is now discussed.

### **WHAT ARE SOURCES OF ICT ADVANTAGE?**

Individual sources of advantage were outlined in Chapter Seven – Sources of Advantage at ASB. In essence, three groups of resources were found to be valuable to ASB: ICT, strategic, and human resources. Eleven specific ICT related resources are seen as valuable to ASB<sup>54</sup>. These can be seen as relating to four types of resources: initiation, enabling, procedural and output. In essence, each of the resources enables the development of information systems at ASB. Innovative resources are one of the individual sources of ICT resources valuable to ASB. Exploiting such resources mean ASB is able to generate a collaborative environment

---

<sup>54</sup> The eleven ICT resources are: leadership and vision, innovation and continuous development, relationships, shared understanding, knowledge management, development astute, implementation advantage, functionality, perception, and success.

in which innovation is fostered. Development astute is another example of an individually valuable resource. When utilised, this resource enables the technical development of agile information systems. While all eleven resources are valuable individually, they are more valuable when coupled with other organisational resources (as addressed in the second research question).

**HOW ARE ICT'S COMBINED WITH OTHER RESOURCES TO CREATE VALUABLE RESOURCES AND CAPABILITIES?**

The *integrated model of advantage* presented in Section 8.4 starts to demonstrate how resources combine to form capabilities critical to the development of information systems at ASB. Each ICT resource is coupled with other resources to form capabilities. For example, resources related to project methodologies<sup>55</sup>, change processes<sup>56</sup> and teamwork practices<sup>57</sup> are bundled to form a capability which allows ASB to take an ICT project from a technical development to a rolled out 'live' information system<sup>58</sup>. Capabilities are then coupled with other capabilities (and presented as constructs) to form parts of the *integrated model*.

Two different types of capabilities are evident in the model which assist in the development of information systems at ASB: procedural capabilities<sup>59</sup> utilised at different points in time throughout a project, and capabilities that support the procedural capabilities<sup>60</sup>. Procedural capabilities have an influence at different points in the conception, development, implementation and use of information systems. For instance, at the conception of projects, strategic, leadership and innovation capabilities are employed at ASB. Alternatively, when a project is being implemented and used, other capabilities are required, such as the aforementioned capability to take a project from a technical development stage to a rolled out 'live project'. The second type of capability which supports the procedural capabilities are utilised throughout the conception, development and use of information systems at ASB. For instance, support capabilities outline ways stakeholders at ASB interact, communicate and share knowledge throughout all the different stages of information systems development. The relationship between procedural and supportive

---

<sup>55</sup> 'Implementation advantage'.

<sup>56</sup> 'Change management' and 'marketing'.

<sup>57</sup> 'Shared understanding'.

<sup>58</sup> 'Institutionalisation'.

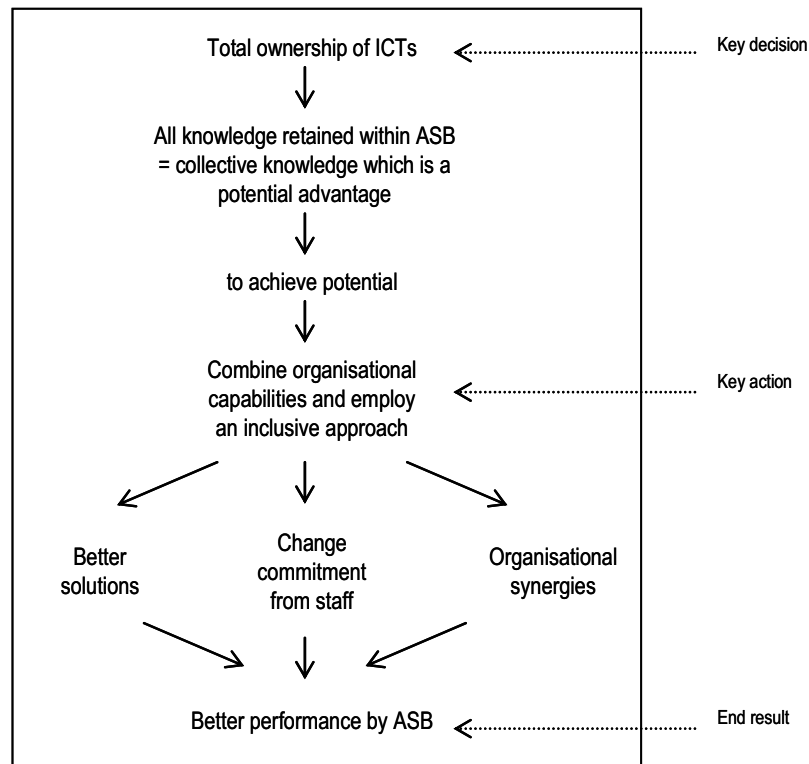
<sup>59</sup> Termed *lifecycle capabilities*.

<sup>60</sup> Termed *embedded foundational capabilities*.

capabilities demonstrates how ICT's are combined with other capabilities in valuable ways.

The key story of ASB's advantage<sup>61</sup> is based on their total ownership of technology. The flow on effects which ASB have gained from this can be seen in Figure 8-5 and is discussed in the following paragraphs.

**Figure 8-5 - The story of ASB**



The critical decision ASB have made to retain ownership and knowledge of fundamental parts of their ICT's underlines potential advantages. In other words, retaining knowledge of their ICT's means ASB have a pool of collective knowledge which has potential to enable a position of advantage. This means ASB retains strategy and architectural knowledge of their ICT's at a macro level, as well as procedural and institutional knowledge about specific ICT's at a micro level. For instance, strategic knowledge of business critical ICT's and how they combine with other ICT's is retained within the bank. Additionally, knowledge of development

<sup>61</sup> How ASB gain advantage from the *integrated model of advantage* presented in this chapter.

methodologies, ways of working, and project specific knowledge<sup>62</sup> are also captured. Knowledge is captured in multiple ways. For example, ASB have technical knowledge banks of procedural practices and capability indexes outlining skills and capabilities of employees. As you will see below, the collaborative approach to ICT development is another way in which ASB capture organisational knowledge. The macro and micro knowledge outlined gives ASB a large potential advantage over other bank's that develop ICT's in different ways.

However retaining knowledge alone only gives ASB advantage potential. To realise this potential, ASB combines organisational capabilities. Combinations of capabilities are achieved by utilising multiple capabilities at the same time and using an inclusive approach to the development of ICT's. Extensive use of teams in the development of ICT's aids in cultivating an inclusive approach. As such, many formal and informal channels of communication exist which protect and enhance relationships and knowledge sharing within teams<sup>63</sup>. These channels allow knowledge which is largely tacit in nature to transfer from the individual to group levels and allow ASB to grow the abovementioned level of procedural and institutional knowledge. Physical work structures also reflect the inclusive approach used at ASB in that they promote formal and informal interactions. Transfer of knowledge through these multiple channels, and experience in developing ICT's, help reinforce the knowledge base at ASB.

Three significant benefits of this inclusive approach are evident: better ICT solutions, a commitment to change from employees of the bank, and organisational synergies realised. For example, there are strong levels of satisfaction evident within ASB regarding their recent major upgrade to their CRM solution. Such satisfaction is largely a function of the way the solution meets the bank's needs. The inclusive approach to the development of ASB's CRM solution ensured stakeholder's needs were met.

The commitment to change is built from awareness and understanding of where a project is at, what the process is going forward and what the different stakeholder's roles are. Supportive capabilities at ASB help foster such awareness and

---

<sup>62</sup> Such as knowledge of key directions and decisions of specific ICT projects.

<sup>63</sup> As reflected in the *embedded foundational capabilities* in the *integrated model of advantage*.

understanding. Increasing levels of group and institutional knowledge by the transfer of knowledge within teams enable awareness and understanding. For instance, if one stakeholder holds project and process knowledge then change can occur. However, if groups of stakeholders hold project and process knowledge then more harmonious change can occur because many are taken on the journey of change. Therefore, increasing levels of group and institutional knowledge increase levels of trust, engagement and most significantly, cultivate commitment to change. Furthermore, the ongoing nature of change at ASB helps further strengthen relationships, knowledge sharing and the resultant knowledge base at ASB.

Synergy gained from interlinked capabilities and the inclusive approach mean that the linkages between capabilities are as important, if not more important, than each of the capabilities being present in an organisation in a non-integrated way. This is because the capabilities are coupled in such a way that the sum of all the capabilities has greater organisational value than the sum of individual capabilities. In other words, if the inter-linkages did not exist many of the benefits of the model would not be realised. For instance, if ASB did not form development teams, interact, communicate and share knowledge in the ways they do, then their procedural and institutional knowledge base would be limited and would certainly not grow in the way that it does. While a development methodology could still be followed without the closeness and interactions of capabilities, the level of strategic alignment, awareness, commitment and engagement from stakeholders would not be as strong. Moreover, the synergy implicit in the integration of capabilities means that if another organisation *could* imitate multiple capabilities they are not likely to see the level of advantage evident at ASB.

In summary, retaining collective strategic and operational knowledge give ASB a potential advantage. To realise this potential ASB employ an inclusive approach to ICT development. The inclusive approach means multiple procedural and enabling capabilities are utilised at the same time. The effect of this approach is better ICT solutions and a change commitment by stakeholders who become *part* of a project. Organisational synergies are also realised. The end result is better performance for ASB.

## 8.7 CHAPTER SUMMARY

This chapter presented an *integrated model of advantage* developed from an aggregation of the valuable resources presented in Chapter Seven. The model was made up of two constructs (*lifecycle* and *embedded foundational capabilities*) which contribute to the conception, development, and use of information systems at ASB. In understanding the story of ASB it became clear that their total ownership of technology gives them a potential advantage. This potential is realised by the integration of organisational capabilities and the inclusive approach to ICT development employed at the bank. The next chapter makes comparisons between the *integrated model of advantage* and other significant integrated models in the literature. The RBV is also drawn on to examine if the *integrated model of advantage* can be a source of sustained competitive advantage.

## **CHAPTER NINE - DISCUSSION OF INTEGRATED MODEL OF ADVANTAGE AT ASB**

---

*Individual elements of the integrated model of advantage were presented and discussed in Chapter Eight (in Sections 8.2 and 8.3). The complete model was also presented and discussed (in Section 8.4). This chapter takes a more systemic approach discussing the integrated model of advantage in its totality. This chapter begins by outlining other models of interconnecting resources or capabilities in the literature. Such models are compared to the integrated model of advantage at ASB, presented in this research. This chapter then uses RBV based logic to confirm the potential of ASB's integrated capabilities to enable a position of competitive advantage (or sustained competitive advantage) at ASB. A brief summary of the chapter then follows.*

### **9.1 COMPARISONS WITH THE LITERATURE - EXAMINING INTERCONNECTED RESOURCES OR CAPABILITIES**

This section discusses the *integrated model* presented in Section 8.4, comparing the model to other models which combine resources and capabilities in integrated or dynamic ways. As discussed in Chapter Three, there is a growing body of theoretical and empirical work (e.g., Teece et al., 1997; Verona, 1999; Helfat & Raubitschek, 2000; Tyler, 2001; Montealegre, 2002; Rosenzweig & Roth, 2004; Pan et al., 2006) which suggest a firm's source of advantage rests upon integrated or dynamic groups of resources and capabilities that are deeply embedded within an organisation. While this view of competitive advantage has been discussed over the last decade, empirical research which extends beyond basic coupling of resources and capabilities (such as those outlined in Section 8.5) is only now starting to gather momentum (e.g., Henderson & Cockburn, 1994; Iansiti & Clark, 1994; Tripsas, 1997; Helfat & Raubitschek, 2000; Tripsas & Gavetti, 2000; Rosenzweig & Roth, 2004; Pan et al., 2006). How this research adds to the discussion is outlined in the following paragraphs.

A distinct body of research closely linked to the RBV makes a significant contribution to the literature which examines interconnected resources and

capabilities. This body of work is known as the *dynamic capabilities* approach<sup>64</sup> (Teece et al., 1997) and views sources of advantage as a series of events and actions pursued in a continuous manner. Utilising this approach, Teece et al. (1997) describe a chain of resources which are required to achieve what they term ‘core technological know-how’. Specific resources these researchers outline to achieve core technical know-how include finance, manufacturing, and marketing. This work is one of the seminal theoretical articles examining the dynamic capabilities approach. Teece et al.’s work compares to the *integrated model of advantage* presented in this research at a high level. Parallels can be seen in the way both describe a ‘chain’ or ‘linkage’ between ‘events’ or ‘capabilities’. However, Teece et al.’s work is conceptual and much less detailed than the model outlined in this research. Other researchers have examined linkages between different capabilities such as, organisational learning, information technology quality, information technology business expertise, relationship infrastructure (Bhatt & Grover, 2005), organisational innovativeness (Macpherson, Jones, & Zhang, 2004), knowledge (Sher & Lee, 2004), and competitive advantage. A summary of empirical work examining dynamic capabilities can be seen in Appendix H.

Interestingly, as the body of research examining dynamic capabilities has grown, there has been substantial discussion of the links between dynamic capabilities, learning, and knowledge (e.g., Sher & Lee, 2004; Bhatt & Grover, 2005; Mitchell, 2006; Prieto & Easterby-Smith, 2006; Zahra et al., 2006). Zahra et al. (2006) makes similar conclusions in their review of the literature. The researchers present a stylised model of “the various activities associated with the creation of dynamic capabilities and, in turn, their effect on a company’s performance” (Zahra et al., 2006, p 925). The model relates entrepreneurial activities with promoting organisational learning and knowledge management. This body of work has significant parallels to this research, in the way the *integrated model of advantage* is very reliant on learning as an ongoing process and the knowledge derived from this. Zahra et al. also note that integrated models are missing from current literature, and conceptually add to the gap using their stylised model. The *integrated model of advantage* presented in this research further adds to the gap by providing new empirical work which examines interlinkages between capabilities.

---

<sup>64</sup> See Section 3.5.1 - Dynamic Capabilities, for a brief review of the dynamic capabilities approach.

In their review, Zahra et al. (2006) start to distinguish between different types of capabilities. The researchers suggest the set of interlinked resources and capabilities which go into solving a problem or achieving an outcome are a *basic capability*<sup>65</sup>. Strong parallels can be seen between ‘basic capabilities’ and the individual capabilities which make up the *integrated model* presented in this research. A second category of capabilities termed ‘dynamic capabilities’ have the ability to change or reconfigure basic capabilities. The key difference between the *basic* and *dynamic* capabilities is the ability to change, which can be seen as the capacity to learn and integrate the outcomes of learning<sup>66</sup>. Based on Zahra et al.’s definition, the combination of capabilities in each of the constructs (*lifecycle* and *embedded foundational capabilities*) presented in this research are *dynamic capabilities*. This is due to the ability to learn, as seen in the capability ‘knowledge management’ (which allows ASB to retain ownership and learning of projects) seen in *lifecycle capabilities* and ‘knowledge diffusion’, as well as the intrinsic learning in each of the *embedded foundational capabilities*.

A distinct body of research utilising a dynamic capabilities approach considers evolution of routines or development of products and services as potential sources of advantage (e.g., Verona, 1999; Montealegre, 2002; Ettlie & Pavlou, 2006; Pan et al., 2006). Many have suggested that such routines or development processes may be plausible sources of advantage (e.g., Dierickx & Cool, 1989a; Nelson, 1991; Henderson & Cockburn, 1994; Verona, 1999). Empirical research is now also confirming this premise (e.g., Clark & Fujimoto, 1991; Leonard-Barton, 1992; Henderson, 1993; Montealegre, 2002; Pan et al., 2006). For instance, Montealegre (2002) provides one of the first steps towards a descriptive model of capability development in his empirical study of dynamic capabilities. The model outlines three distinct stages required in capability development: establishing direction, focusing on strategy development, and institutionalising the strategy. Similarities can be seen in the *integrated model* in this research which outlines capabilities valuable in conceptualising, developing, and implementing information systems. Both models

---

<sup>65</sup> Such a stance is also seen in the work of Winter (2003). The researchers term this basic capability *substantive* or *ordinary*.

<sup>66</sup> Pavlou and Sawy also distinguish between two distinct capabilities: *functional competence* which they define as “the ability to effectively execute operational new product development processes” and *dynamic capabilities* or “the ability to reconfigure functional competence to address turbulent environments” (2006, p 198).

incorporate strategy and implementation of change. The *integrated model* differs in the way that the primary group of interconnected resources is supported by other organisational capabilities. For instance, research examining routines of development outline a series of interconnected resources and capabilities however no distinction is made between different roles such capabilities may have. Pan et al. (2006) builds on Monteglegre's work providing an organisational perspective of capability development at the project level (or business unit). The researchers present key capabilities and actions which could be useful for practitioners in much the same way this research does.

Interestingly, a system of connected steps, which could be seen as required organisational capabilities, has long been detailed as a development methodology in information systems research (Larman & Basili, 2003). For instance, the systems development lifecycle (Valaich, George, & Hoffer, 2001) and other variations of this (e.g., prototyping approach (Naumann & Jenkins, 1982); rapid application design (Bourne, 1994); and agile models of development (Cockburn, 2006)) have a rich history in information systems research. This has strong parallels with the abovementioned research since the focus of this body of work describes how resources combine. Like the *integrated model of advantage*, development methodologies outline capabilities required to successfully develop and implement information systems in organisations. A form of lifecycle model (such as presented as part of the *lifecycle capabilities* in the *integrated model*) is also evident in many systems development methodologies. However, unlike the model presented in this research, *all* resources and capabilities within the development methodologies are seen as part of the lifecycle. In contrast, the *integrated model* distinguishes between two types of capabilities. Another significant difference between the *integrated model* and development methodologies outlined in information systems research is the stronger influence of non-information systems capabilities present in the *integrated model*.

While many different capabilities have been examined as dynamic sources of advantage (as seen in Appendix H), several researchers have grouped capabilities into specific constructs. This is significant to this research because the *integrated model of advantage* is made up of two distinct constructs. Therefore, it is important to compare the constructs in the literature to those presented in this research. Constructs

emerging in the current research include: *integrative* (Henderson & Cockburn, 1994; Iansiti & Clark, 1994; Tripsas, 1997; Verona, 1999; Yeoh & Roth, 1999), *architectural* (Henderson & Clark, 1990; Henderson & Cockburn, 1994), *combinative* (Kogut & Zander, 1992; De Boer et al., 1999; Van den Bosch, Volberda, & de Boer, 1999; Tyler, 2001; Koruna, 2004; Rosenzweig & Roth, 2004; Savory, 2006), *component* (Henderson & Clark, 1990; Leonard-Barton, 1992; Teece et al., 1992; Yeoh & Roth, 1999), and *cooperative* (Tyler, 2001) capabilities. Several such constructs have similar meanings or close associations. Linkages between the different constructs and the *lifecycle* and *embedded foundational capabilities* are highlighted in Table 9-1 and then discussed. Note that several of the constructs presented in the literature have very similar meanings and are therefore grouped into one construct in the table.

**Table 9-1 - Capability ‘constructs’ compared to the *integrated model of advantage***

<b>Construct in the literature</b>	<b>Brief description of construct</b>	<b>Comparisons and contrasts with <i>integrated model</i> presented in this research</b>
Integrative <sup>^</sup> (Lawrence & Lorsch, 1967; Henderson & Cockburn, 1994; Iansiti & Clark, 1994; Tripsas, 1997; Verona, 1999; Yeoh & Roth, 1999)	The integration of resources and capabilities to promote organisational renewal.	Both constructs refer to the integration of capabilities and relate to change within an organisation.  The <i>integrated model</i> outlines specific capabilities which together form an ‘integrative capability’ not seen in the construct ‘integrative’.  The specific application of the <i>integrated model</i> is narrower in its context.
Component (Leonard-Barton, 1992; Teece et al., 1992; Henderson & Cockburn, 1994; Yeoh & Roth, 1999)	Capabilities which relate to integrative capabilities and are products of experience and knowledge.	Both constructs relate to capabilities built on learning from experience and organisational knowledge.  The <i>integrative model</i> outlines specific types of capabilities which can be seen as ‘component’ capabilities.
Cooperative (Tyler, 2001)	Combines elements of both of the aforementioned capabilities. In essence the construct combines change, learning or aptitude to learning, and tacit knowledge.	Strategy, change and knowledge related capabilities are seen in both constructs.  The <i>integrative model</i> describes more distinctions in the types of capabilities not evident in cooperative capabilities.  Capabilities outlined in the <i>integrated model</i> are also described in more detail.

<sup>^</sup>Other closely related constructs include Architectural (Henderson & Cockburn, 1994) and Combinative (Kogut & Zander, 1992; De Boer et al., 1999; Koruna, 2004; Rosenzweig & Roth, 2004; Savory, 2006) capabilities.

As indicated in Table 9-1, three of the aforementioned constructs (*integrative, architectural, and combinative capabilities*) refer to the way resources are integrated and used to develop new resources or capabilities<sup>67</sup>. *Integrative capabilities* have been discussed by a growing group of researchers (e.g., Lawrence & Lorsch, 1967; Henderson & Cockburn, 1994; Iansiti & Clark, 1994; Tripsas, 1997; Verona, 1999; Yeoh & Roth, 1999) and refer to the integration of resources and capabilities to

<sup>67</sup> De Boer et al. (1999) also highlight the close proximity of these constructs. The researchers also suggest a parallel with the term *configuration* used by Henderson and Clark (1990).

promote organisational renewal. This is achieved by creating dynamic capabilities which lead to a position of competitive advantage. This concept has been examined in empirical research in the pharmaceutical (Henderson & Cockburn, 1994), automobile and computer (Iansiti & Clark, 1994), as well as typesetter (Tripsas, 1997) industries. Henderson and Cockburn (1994) discussed the importance of integrative capabilities within and external to an organisation. Specific tactics which have been identified as contributing to integration include: cross functional teams (Henderson & Cockburn, 1994; Iansiti & Clark, 1994), and an integrative or team approach to systems development (Iansiti & Clark, 1994). Both of these tactics are also evident in the *integrated model*.

Henderson and Cockburn (1994) discuss a similar construct they called *architectural competence*. Architectural competence is described as the ability “to integrate them (component competence<sup>68</sup>) in new and flexible ways and to develop new architectural and component capabilities as they are required” (Henderson & Cockburn, 1994, p 66). In presenting their construct the researchers draw on the work of Henderson and Clark (1990) and their concept ‘architectural knowledge’; the communication channels and problem solving processes within an organisation. Henderson and Cockburn extend architectural knowledge by including other organisational characteristics used in structuring problem solving that shape the development of new competencies, such as control systems, cultural elements or the dominant values of an organisation.

Others still refer to such a chain of events as *combinative capabilities* (Kogut & Zander, 1992; De Boer et al., 1999; Koruna, 2004; Rosenzweig & Roth, 2004; Savory, 2006) and describe in more detail how the firm’s advantage is dependant on their ability to be “innovative, learn and transfer information both within organisations and between organisations and its environment” (Tyler, 2001, p 8). Kogut and Zander’s (1992) combinative capabilities focus on innovation which they see as the result of the firm’s capacity to develop new applications or capabilities from existing knowledge, building on social relationships within the firm. The advantages gained from such combinative capabilities are, therefore, hard to imitate because they are deeply

---

<sup>68</sup> Component competence is described by Henderson & Cockburn (1994) as the embedded product of experience and knowledge. This competence is discussed further, later in this chapter.

embedded or integrated within the firm's other organisational activities. The value from combinative development capabilities is said to develop and grow over time.

Strong parallels can be seen between the three aforementioned constructs and other research examining interconnected capabilities previously described in this section. For instance, the constructs merely outline types of 'dynamic capabilities' and are linked with integration and change, in much the same way 'routines of development' and 'systems development methodologies' are. It is not surprising then that some linkages or similarities can be seen between *integrative capabilities*<sup>69</sup> and *lifecycle capabilities* presented in this research. Where the *integrated model* differs is that more detail is provided outlining what capabilities join to form an 'integrative capability'. As alluded to above, research examining some tactics or resources required to foster integration is provided by others. However, little detail is provided to suggest how multiple resources and capabilities combine as is achieved in the *integrated model*.

Yeoh and Roth (1999) and others (e.g., Leonard-Barton, 1992; Teece et al., 1992; Henderson & Cockburn, 1994) discuss *integrative capabilities* in combination with another construct: *component capabilities*<sup>70</sup>. That is, the organisational renewal achieved through integrative capabilities is supported by fundamental component capabilities. Component capabilities are the product of experience and knowledge, and as such, are skills that are embedded within an organisation. Leonard-Barton (1992) in their study of production processes suggests that such capabilities are developed by skilled engineers over an extended period of time and may be a source of sustained competitive advantage. Similarly, Teece et al. (1992) outline how knowledge and skills are built up over time creating local component capabilities which are strategically important. Each of the capabilities which form the *integrated model* is also founded on knowledge built from experience. The notion 'component' capabilities is extended by the *integrated model* in the way that it specifies types of capabilities which can be seen as 'component' capabilities. For instance, *embedded foundational capabilities* are developed from embedded knowledge. Moreover, resources which combine to form these capabilities are also outlined in detail.

---

<sup>69</sup> As well as *architectural* and *combinative* capabilities.

<sup>70</sup> In the same manner that Henderson and Cockburn (1994) discuss architectural competence with component competence.

Tyler (2001) and Helfat and Rubitscheck (2000) present models which combine elements of the aforementioned constructs. Tyler (2001) describes a group of capabilities called *cooperative capabilities* which can be expected to create competitive advantage. The researcher views her work as a first step towards outlining cooperative capabilities which are complex and interdependent. Cooperative capabilities combine *transformational capability* (Garud & Nayyar, 1994) and *absorptive capacity* (Cohen & Levinthal, 1990), along with a firm's capacity to combine *information and know-how* (e.g., who knows what and cooperative capabilities), *technical learning capabilities* (which transformational capability and absorptive capacity feed into), and the firm's *opportunity set* (organisational and technological opportunity) (Kogut & Zander, 1992).

Tyler's (2001) work has strong parallels to the *integrated model* as a whole, in that it combines strategy (opportunity set) and process (transformational capability) with other knowledge based organisational capabilities (absorptive capacity, information know-how, and technical learning capabilities). The strategy and process elements can be seen in the *lifecycle capabilities*, whereas the other knowledge based capabilities are evident in the *embedded foundational capabilities*. Differences are introduced when considering the level of discussion. The *integrated model* distinguishes much more clearly between two types of capabilities. The first type of capability is linked with a process whereas the second type supports the process. The *integrated model* provides much more detail about the integration of capabilities, and the resources which contribute to them.

Helfat and Rubitscheck (2000) describe how an organisation moves across a supply chain creating learning and knowledge along the way. The researchers see an organisation's present state as a platform for future product sequences. Systems of knowledge and learning yield "a model of the co-evolution of knowledge, capabilities, and products" (Helfat & Raubitschek, 2000, p 961). The model provides opportunities for creating a position of competitive advantage through the strategic linkages of products up, down, and across vertical chains. According to Helfat and Raubitschek their model applies to technology intensive companies such as those in high-technology industries or businesses that require complex or technologically sophisticated knowledge. Like Tyler (2001) and the *integrated model of advantage*, at the

heart of the researcher's work is a change process supported by organisational learning.

A summary of the major similarities and differences between the *integrated model of advantage* and other literature discussed in this section is presented in Table 9-2. Note that the capability constructs presented in Table 9-1 are summarised as one of the research themes in this table.

**Table 9-2 – Integrated or dynamic models of research compared to the *integrated model of advantage***

Theme	Comparisons with Current Research	Points of Difference from Current Research
Dynamic capabilities	Each of the models describes a chain of integrated capabilities associated with organisational renewal.  Strong links are evident between change, learning and knowledge.	Dynamic capabilities are normally defined with very broad concepts or events that are conceptually related, whereas this research presents an empirical model outlining specific capabilities with close interrelationships.
Research and development routines as a source of advantage	Models which incorporate strategy and implementation of change are seen in both.	The interlinked capabilities are supported by other organisational capabilities.
Systems development methodologies	All models present a lifecycle of capabilities used in the development of information systems.	The integrated model outlines two different types of capabilities: capabilities in the lifecycle and those that support the lifecycle.  There is a much stronger influence of other organisational capabilities (i.e., non-information system based such as strategic and human resource capabilities) in the <i>integrated model</i> .
Capability constructs (e.g., Integrative, component, cooperative capabilities)	Integration of capabilities is evident in both with some capabilities linked to change and others to knowledge.	The <i>integrative model</i> describes how multiple resources and capabilities combine in detail not seen in the other constructs.

In summary, many parallels between the *integrated model* and other research which examines interlinkages between resources and capabilities are evident. The *integrated model* compares to research which examines: dynamic capabilities, research and development routines, systems development methodologies, as well as different

capability constructs. Each of the distinct research focuses outline integration of capabilities in search of change. Evidence of links to strategy and knowledge are also evident in much of the aforementioned research and the *integrated model*. This research provides empirical support for this current research and suggests that organisational advantages are built on interlinked capabilities which are embedded within an organisation, and which exhibit elements of continuous improvement. The *integrated model of advantage* extends current research by outlining two constructs or different groupings of resources and capabilities which are made up of specific interlinked organisational capabilities which in turn serve as a source of advantage. Differences are introduced in the level of detail provided in the *integrated model* which is not evident in other research. For instance, this research outlines multiple resources which are linked in complex ways that form capabilities. The capabilities in turn are linked to other capabilities in complex ways.

## 9.2 ANALYSING THE INTEGRATED MODEL IN LIGHT OF THE RBV

The above section compared and contrasted the *integrated model of advantage* presented in this research to emerging interconnected models in the literature. This section examines the model in light of RBV based reasoning. That is, this section examines the potential of the integration of resources to contribute to a position of sustained competitive advantage, and therefore, ASB's advantageous position in the marketplace.

Many of the individual capabilities which make up the *integrated model of advantage* at ASB have been discussed and found to be sources of competitive advantage in their own right (as outlined in Sections 8.2 and 8.3). For example, the use of the individual capability; *joint problem solving*, which is one of the *embedded foundational capabilities*, has been seen to be valuable by many researchers (e.g., Rockart, 1988; Henderson, 1990; Benjamin & Levinson, 1993; Boynton et al., 1994; Ross et al., 1996; Bharadwaj et al., 1998; Bharadwaj, 2000; McEvily & Marcus, 2005). It is therefore not surprising that the resources put into new constructs such as *lifecycle* and *embedded foundational capabilities* may be a source of competitive advantage. To further examine the likelihood that the integration of capabilities represented in the *integrated model* is a source of advantage, RBV based reasoning is used. That is, the *integrated*

*model* is considered in terms of value potential, distribution, and mobility (Barney, 1991a).

To date, the value of the *integrated model of advantage* is built from sources of value identified by participants in the research process and the researcher (subject to their interpretation). It is therefore useful to examine other researcher's explanations of value. RBV based reasoning suggests value has to do with strategic fit (Black & Boal, 1994) and the ability to exploit opportunities or combat threats (Michalisin et al., 1997). The integrated model allows ASB to develop new information systems to meet their needs. Therefore, value can be confirmed using RBV logic; the integration of resources allows ASB to rapidly and successfully develop new information systems to exploit opportunities and threats in the competitive environment.

The firm specificity or social embeddedness of the separate individual capabilities, and of the *integrated model* as a whole, suggests that they are heterogeneously distributed. The heterogeneity of the *integrated model of advantage* is also likely to be long lived due to time compression diseconomies<sup>71</sup>. In other words, *lifecycle and embedded foundational capabilities* have been built and evolve over time through experience and learning (which in turn has created firm specific knowledge). This means the second question of the RBV regarding uneven distribution, is also confirmed.

For a resource or capability to be a source of sustained competitive advantage, RBV based reasoning also suggests that it should be imitable (Michalisin et al., 1997) and imperfectly mobile (Mata et al., 1995). The social complexity (Reed & DeFillippi, 1990) and casual ambiguity (Barney, 1991a) of many of the capabilities and the model as a whole make both imitable. Barney suggests that capabilities with casual ambiguity (such as the capabilities in the *integrated model*) are hard to replicate in other parts of the organisation which own them, let alone another organisation imitating such resources. In regard to mobility, individual capabilities which contribute to the *integrated model*, at best, may be bought and sold on a factor market. For instance, members of the management team may be headhunted because they possess many

---

<sup>71</sup> The time needed to acquire resources and capabilities through learning, experience and firm-specific knowledge.

very desirable skills that contribute to the capability *strategic leadership*. However, the capability is made up of, and depends on, a combination of skills and experiences of many people in the management team which means the combined effect of the team is much less mobile (Carmeli & Tishler, 2004). In the same way individual capabilities are made up of multiple resources, the *integrated model*, in its entirety, is made up of a myriad of capabilities which combine in socially complex ways. As such, the highly interconnected nature of the capabilities which make up the *integrated model* indicate the model is extremely immobile.

Therefore, advantages gained from the integration of capabilities are valuable, heterogeneously distributed, and imperfectly mobile, and consequently are a source of sustained competitive advantage for ASB. Table 9-3 summaries the above discussion, outlining the capabilities, constructs, and the *integrated model of advantage* in its totality, indicating the value, distribution and mobility of each of the elements to consider the potential of each to contribute to advantages at ASB.

**Table 9-3 - Analysing integrated sources of advantage using RBV logic**

	Valuable	Heterogeneously distributed	Imperfectly mobile
<b>Lifecycle Capabilities</b>	√	√	√
Strategic Leadership	√	√	√
Strategic Action	√	√	½
Technical Ability	√	√	½
Institutionalisation	√	√	√
Knowledge Management	√	√	½
Success	√	√	½
<b>Embedded Foundational Capabilities</b>	√	√	√
Joint Problem Solving	√	√	½
Entrenching Nexus Points	√	√	√
Social Fusion	√	√	√
Open Dialogue	√	√	½
Knowledge Diffusion	√	√	√
<b>Integrated Model of Advantage at ASB</b>	√	√	√

Key: √ - confirms the element under consideration has multiple parts which make the element successfully meet the criteria. ½ - suggests that some parts of the element under examination meet the criteria.

As indicated in Table 9-3, all of the capabilities which contributed to the two constructs (*lifecycle* and *embedded foundational capabilities*) were individually valuable and heterogeneously distributed. However, there was more variation in terms of the different capability's mobility. While all capabilities were seen to be somewhat immobile (as indicated in the table by the  $\frac{1}{2}$ ), some of the capabilities had multiple elements which contributed to the immobility and were therefore easily categorised as imperfectly mobile (as indicated in the table by the  $\sqrt{}$ ). When the capabilities were examined as part of a construct or as part of the *integrated model* in its entirety, all of the components of sustained competitive advantage were confirmed. That is, *lifecycle* and *embedded foundational capabilities* are supported by the RBV as sources of competitive advantage at ASB. It is not surprising then that the integration of both of these capability constructs is also valuable, heterogeneously distributed, and imperfectly mobile, and therefore, a source of sustained competitive advantage at ASB. While other companies may be able to acquire or develop one or two of the valuable resources which contribute to each of the capabilities in the model (and possibly even capabilities), few, if any, will be able to replicate the complete complex system of interconnected capabilities. This means the complex and interrelated nature of each capability and construct represented in the *integrated model* indicate that each element is likely to be harder to imitate. Therefore, based on RBV logic, which outlines resources or capabilities which are valuable, heterogeneously distributed, and imperfectly mobile, the *integrated model* (through the integration of capabilities) serves as a source of *sustained* competitive advantage<sup>72</sup>.

As outlined in Chapter Three, sustained competitive advantages built on valuable, heterogeneously distributed, and imperfectly mobile resources (or capabilities) may be challenged when unanticipated changes in the economic structure occur. For example, if a major 'schumpeterian shock' occurs, the nature of competition and any sources of sustained competitive advantage may be nullified. This means while the integration of capabilities represented in the *integrated model of advantage* represents a source of sustained competitive advantage for ASB at the time of this research it does not necessarily mean that the position will hold. For example, technological innovations may change the nature of competition, and change the nature of resources and capabilities which are associated with competitive advantage.

---

<sup>72</sup> Naturally other organisations in the industry may also experience advantages from other capabilities as outlined in Chapter Three.

### 9.3 CHAPTER SUMMARY

This chapter provides a higher level discussion of the results and highlighted similarities and differences between the *integrated model of advantage* and other research. The chapter outlined many other integrated or dynamic models which are linked with change. This research differs from existing research in the level of detail provided. Therefore, this research provides an empirical contribution in the way it outlines the interrelationships between resources and capabilities in much more detail than is evident in other research. This chapter finished by analysing the *integrated model of advantage* in light of the RBV. Based on RBV based reasoning the construct, *lifecycle capabilities* supported by *embedded foundational capabilities* represent a valuable, highly integrated, firm specific and socially complex way in which ICT's are developed at ASB. Therefore, the *integrated model of advantage* proved to be a source of *sustained* competitive advantage at ASB.

## CHAPTER TEN – CONCLUSIONS, LIMITATIONS, AND DIRECTIONS FOR FUTURE RESEARCH

---

### 10.1 INTRODUCTION

Given the ongoing interest and spending on information systems in organisations there is little doubt that understanding these entities in more detail is valuable. Prior research in the area has examined potential advantages derived from information systems in a fairly simple and uncoupled way. This research sought to understand the potential advantage of ICT's, as well as the relationship of ICT's with other valuable organisational resources. The research addressed the first research question, '*What are sources of ICT advantage?*' by outlining three broad groups of resources which were seen to be valuable to ASB: ICT, strategic, and human resources. While these resources were individually valuable, the total value of the resources working together was seen to be more valuable than the sum of the parts. As such, the second research question, '*How are ICT's combined with other resources to create valuable resources and capabilities?*' resulted in an *integrated model of advantage* at ASB. The model outlined how two distinct types of capabilities are valuable to ASB: *lifecycle* and *embedded foundational capabilities*. The essence of the *integrated model of advantage* suggests that the success of ASB can be attributed to the complex and interlinked nature of capabilities and the inclusive approach utilised in the development of ICT's, as well as the embedded knowledge underlying each capability and the model in its entirety.

Despite the grounded approach used in this research, many elements of the final model are individually evident in the literature which allows corroboration of these findings. Therefore, this research is largely consistent with predictions of the RBV and empirical findings of other RBV research. The main contribution of this research is the integrated approach to understanding ASB's position of competitive advantage. Claims have been made in the literature about interconnection of resources and capabilities (conceptually) and some research is now starting to show linkages among resources or capabilities (at a basic level). However, research which provides distinctions between types of interconnected resources and capabilities is considered to be at an infant stage. Therefore, this research provides one of the first

in-depth case studies which identify integrated capabilities as a source of competitive advantage.

The RBV was drawn on in discussing the results of this research and enabled the researcher to suggest that the integration of capabilities evident in the *integrated model of advantage* could be the underlying reason ASB achieves ongoing above-average performance in comparison to other industry players. The *lifecycle* and the *embedded foundational capabilities* are valuable, firm specific and socially complex, therefore, the RBV confirms that the model is extremely hard to imitate, and furthermore, a likely ongoing source of competitive advantage for ASB. It was also argued that competitive advantages gained from the *integrated model of advantage* have an even greater potential to be a source of *sustained* competitive advantage than any single source of advantage (for instance, a single resource or capability) due to the high barriers to imitation associated with the combination of capabilities. The results and discussion of this thesis lead logically to a number of important implications for theory and practice as discussed in the following sections.

## 10.2 IMPLICATIONS FOR THEORY

This research has important implications for researchers in the field of information systems and strategic management. The implications relate to the results and limitations of this research, and fruitful areas for future research.

The individual resources outlined as sources of advantage in this research (in Chapter Seven) provide strength to other research which also outlines valuable organisational resources such as *strategic leadership*. Hence, the findings of this research are individually supported by prior research and the *integrated model of advantage* (presented in this research) in its entirety, as a source of advantage, is consistent with predictions of the RBV. The main contribution of this research is an *integrated model* which allows work of many researchers who have examined single sources of advantage to be tied together in the *integrated model of advantage*. The *integrated model* makes a significant contribution to research in the area of information systems and strategic management.

This research makes a contribution to information systems research by confirming the value of information systems in organisations and providing one of the first grounded models of integrated or interlinked ICT and other organisational capabilities. The results suggest that the total ownership of technology evident at ASB offers a potential advantage which can be realised through the integration of capabilities and an inclusive approach to ICT development. A contribution is also made to the strategic management area, and more specifically the body of RBV research, which is concerned with identifying specific sources of advantage. This research empirically demonstrates that there is a strong connection between resources and capabilities (and capabilities and capabilities) in a high performing organisation. Furthermore, this research also adds strength to the claims that organisational advantages are largely dependant on organisational knowledge.

The findings of this research are based on an in-depth case study of ASB. ASB was chosen due to the unique position of advantage they have in the marketplace. The research discussed ASB's idiosyncratic characteristics which have impacted on their current position in the marketplace. Therefore, it is likely that the findings are not generalisable to all players in the banking or financial services industry.

In the same way that Montealegre (2002) made comment that resources and capabilities associated with his model of 'capability development' are not exhaustive, the results of this research are not intended to be an exclusive list of all aspects of ASB's advantage. Furthermore, this research made no attempt to examine the link between capabilities and competitive advantage. Future research could take the capabilities identified in the *integrated model of advantage* in this research and examine the link between the capabilities and competitive advantage at ASB.

Given the clear lack of empirical research in the area of combining capabilities, the potential for future research in this area is substantial. Building on research by Tyler (2001), which calls for more work which examines the relationships between key organisational resources and capabilities, it is hoped that this research will encourage more research which does this.

While the case examined in this research, ASB, was chosen as an exemplar of a successful organisation, future research could compare other like (exemplar) cases and also other cases which may not hold such an advantage in their industry. Such research effort would further confirm which resources are truly valuable and unique to organisations.

Another potential extension of this research could adapt a positivist methodology. Such an approach could examine other banks or other service based organisations to see if the sources of advantage identified in this research are found to be sources of value in other contexts. Utilising this approach would allow the findings to be generalised beyond ASB.

It must be noted that while higher level resources and capabilities are explored in this research, more micro level influences on such resources and capabilities are beyond the scope of this research. Researchers who wish to explore such micro level influences could look to Jones and George (1998) who outline influences of trust as the interplay of an individual's values, attitudes, moods, and emotions, as a starting point.

It is worth considering if there are any differences between CRM systems and other information systems. For instance, is there anything unique to CRM technologies that would make the results of this research only applicable to other research which focuses on CRM technologies? While the researcher does not anticipate the research results to be specific to CRM technologies, future research could examine the development of other types of information systems, such as enterprise resource planning (ERP) systems, and compare those results to the results of this research.

A significant part of ASB's advantage was found to be associated with the embedded organisational knowledge captured. ASB successfully capture such organisational knowledge due to the way they retain total ownership of their information systems. Future research could examine other organisations that undertake development projects using alternative methodologies and ways of working. Such research should consider how or if the organisation (undertaking developments with significant difference) captures such valuable knowledge. For example, future research might

examine how organisational knowledge is captured if other development styles, such as employing extensive use of outside consultants, are utilised.

### **10.3 IMPLICATIONS FOR PRACTICE**

Gaining an appreciation of the sources of value, and how resources and capabilities combine in valuable ways, has obvious significance to managers. The RBV suggests that the role of senior managers within an organisation is to leverage valuable corporate resources and accumulate, develop, and protect such resources to be competitive in the future marketplace (Prahalad & Hamel, 1990; Tyler & Steensma, 1995; Tyler, 2001). Therefore, to be able to identify what are valuable organisational resources and capabilities, and how they are connected, becomes critical to senior managers successfully completing their role.

This researcher echoes comments from other researchers (such as Tyler (2001)) who encourage managers and executives to understand their organisational resources and capabilities. This is an important task for managers because it is widely noted that an organisation is not able to improve organisational processes and practices in which they do not understand (e.g., Teece et al., 1997; Tyler, 2001). Furthermore, if managers and executives do not have an appreciation of where they are currently at, it is difficult to make plans for the future of the organisation and compare the two, creating a plan to get to the desired future position (Tyler, 2001).

This research provides practitioners with a model to consider and compare with their organisation in understanding resources and capabilities involved in the development of information systems. In so doing, practitioners may identify what is valuable in their own processes and seek to protect or maintain such practices. Barney (1986b) argues that an organisation may gain significant advantages by understanding and analysing information about their current resource base. Therefore, managers can use the *integrated model of advantage* along with the key actions tables, outlined in this research, to understand and protect their valuable resources and capabilities, and to seek to extend the competitive advantages they may gain from these.

This research also presents important implications for managers regarding organisational knowledge. The results of this research add further credence to the

important role of knowledge in organisation. The *integrated model of advantage*, presented in this research, demonstrates that critical capabilities are important to an organisation because of the underlying organisational knowledge. Therefore, managers may rethink their development strategies when developing new information systems to ensure that knowledge about how the systems are developed, work and are used within the organisation is all held within the organisation.

Interlinkages between ICT capabilities and the inclusive approach utilised at ASB proved to be fundamental to the bank's success. This has significant implications for other organisations embarking on similar development projects. Other organisations could take note of the key aspects of the approach successfully employed at ASB in search of realising potential advantages.

## REFERENCES

---

- Aaker, D. A. (1989). Managing assets and skills: The key to a sustainable competitive advantage. *California Management Review*, 31(2), 91-106.
- Ahuja, G., & Katila, R. (2004). Where do resources come from? The role of idiosyncratic situations. *Strategic Management Journal*, 25, 887-907.
- Alavi, M., & Leidener, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, 25(1), 107-136.
- Allen, B. R., & Boynton, A. C. (1991). Information architecture: In search of efficient flexibility. *MIS Quarterly*, 15(4), 435-442.
- Allison, G. (1971). *Essence of Decision*. Boston: Little, Brown.
- Alpar, P., & Kim, M. (1991). A microeconomic approach to the measurement of information technology value. *Journal of Management Information Systems*, 7(2), 55-69.
- Alvarez, S. A., & Busenitz, L. W. (2001). The entrepreneurship of resource-based theory. *Journal of Management*, 27, 755-775.
- Amit, R., & Schoemaker, P. J. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 13, 33-46.
- Ancona, D. G., & Cladwell, D. F. (1992). Demography and design: predictors of new product team performance. *Organizational Science*, 3(3), 321-341.
- Andrews, K. R. (1971). *The Concept of Corporate Strategy*. Homewood, IL: Irwin.
- Aplar, P., & Kim, M. (1991). A microeconomic approach to the measurement of information technology value. *Journal of Management Information Systems*, 7(2), 55-69.
- Argote, L. (1999). *Organizational Learning: Creating, Retaining and Transferring Knowledge*. Boston, MA: Kluwer Academic.
- Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes*, 82(1), 150-169.

- Argote, L., McEvily, B., & Reagans, R. (2003). Managing knowledge in organizations: an integrative framework and review of emerging themes. *Management Science*, 49(4), 571-582.
- Armstrong, C. P., & Sambamurthy, V. (1999). Information technology assimilation in firms: The influence of senior leadership and IT infrastructures. *Information Systems Research*, 10(4), 304-327.
- Arrow, K. (1962). The economics implications of learning by doing. *Review of Economic Studies*, 29(3), 155-173.
- ASB. (2005). *ASB General Disclosure Statement (Annual Report)*. Auckland: ASB.
- ASB. (2007a). *ASB Homepage* [Company website]. ASB Bank. Retrieved 24 April, 2007, from the World Wide Web: <http://www.asb.co.nz/story501.asp>
- ASB. (2007b). *Vision and Values* [Company Website]. ASB Bank. Retrieved 18 April, 2007, from the World Wide Web: <http://www.asb.co.nz/story333.asp?>
- Badaracco, J. L. (1991). *The Knowledge Link*. Boston: Harvard Business School Press.
- Bakos, J. Y. (1987). *Dependent Variables for the Study of Firm and Industry-Level Impacts of Information Technology*. Paper presented at the Eight International Conference on Information Systems, Pittsburgh, Pennsylvania.
- Bank, A. (2001). C:Drive: A special place to work (pp. 1-29): ASB Bank.
- Banker, R., & Kauffman, R. (1988). *Strategic Contributions of Information Technology: An Empirical Study of ATM Networks*. Paper presented at the Ninth International Conference on Information Systems.
- Banker, R. D., Kauffman, R. J., & Morey, R. C. (1990). Measuring gains in operational efficiency from information technology: A study of positran deployment at Hardee's Inc. *Journal of Management Information Systems*, 7(2), 29-45.
- Barney, J. (1991a). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barney, J. (1991b). Special theory forum - The resource-based model of the firm: Origins, implications, and prospects. *Journal of Management*, 17, 97-98.

- Barney, J., Wright, M., & Ketchen, D. J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, 27, 625-641.
- Barney, J. B. (1986a). Organizational culture: Can it be a source of sustained competitive advantage. *Academy of Management Review*, 11(3), 656-665.
- Barney, J. B. (1986b). Strategic factor markets, expectations, luck, and business strategy. *Management Science*, 41(10), 1231-1241.
- Barney, J. B. (1997). *Gaining and Sustaining Competitive Advantage*. Reading, Massachusetts: Addison-Wesley Publishing Company.
- Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, 27, 643-650.
- Barney, J. B., & Arikan, A. M. (2001). The resource-based view: origins and implications. In M. A. Hitt & R. E. Freeman & J. S. Harrison (Eds.), *The Blackwell Handbook of Strategic Management* (pp. 124-188). Cornwall, Great Britain: Blackwell Publishers Inc.
- Barney, J. B., & Hansen, M. H. (1994). Trustworthiness as a source of competitive advantage. *Strategic Management Journal*, 15, 175-190.
- Barney, J. B., & Zajac, E. J. (1994). Competitive organizational behavior: Toward an organizationally-based theory of competitive advantage. *Strategic Management Journal*, 15(Winter special issue), 5-9.
- Barton, P. S., & Peters, D. H. (1992). The ASB Bank: an IT case study in sustained competitive advantage. *Journal of Strategic Information Systems*, 1(3), 165-170.
- Barua, A., Kriebel, C. H., & Mukhopadhyay, T. (1995). Information technologies and business value: An analytic and empirical investigation. *Information Systems Research*, 6(1), 3-23.
- Barua, A., & Lee, B. (1997). The IT productivity paradox revisited: A theoretical and empirical investigation into the manufacturing sector. *The International Journal of Flexible Manufacturing Systems*, 9(2), 145-166.
- Barua, A., Lee, C. H. S., & Whinston, A. B. (1996). The calculus of reengineering. *Information Systems Research*, 7(4), 409-428.

- Bates, K. A., & Flynn, E. J. (1995). Innovation history and competitive advantage: A resource based view analysis of manufacturing technology innovations. *Academy of Management Journal*, 235-239.
- Batt, R., & Moynihan, L. (2002). The viability of alternative call centre production models. *Human Resource Management Journal London*, 12(4), 14-34.
- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The case research strategy in studies of information systems. *MIS Quarterly*, Sept, 369-386.
- Bender, D. (1986). Financial impact of information processing. *Journal of Management Information Systems*, 3(2), 232-238.
- Benjamin, R. I., & Levinson, E. (1993). A framework for managing IT-enabled change. *Sloan Management Review*, Summer, 23-33.
- Benjamin, R. I., Rockart, J. F., Scott Morton, M. S., & Wyman, J. (1984). Information technology: A strategic opportunity. *Sloan Management Review*, 25(3), 3-10.
- Berndt, E. R., & Morrison, C. J. (1995). High-tech capital formation and economic performance in US manufacturing industries: An exploratory analysis. *Journal of Econometrics*, 65, 9-43.
- Besanko, D., Dranove, D., & Shanley, M. (2000). *Economics of Strategy* (2nd ed.). New York: Wiley.
- Bettis, R. A., & Hitt, M. A. (1995). The new competitive landscape. *Strategic Management Journal*, 16, 7-19.
- Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly*, 24(1), 169-196.
- Bharadwaj, A. S., Bharadwaj, S. G., & Konsynski, B. R. (1999). Information technology effects on firm performance as measured by Tobin's q. *Management Science*, 45(6), 1008-1024.
- Bharadwaj, A. S., Sambamurthy, V., & Zmud, R. W. (1998). *IT Capabilities: Theoretical Perspectives and Empirical Operationalization*. Paper presented at the 19th international conference on information systems, Helsinki, Finland.

- Bharadwaj, A. S., Sambamurthy, V., & Zmud, R. W. (2000). *The Influence of IT Management Practice on IT Use in Large Organizations* (Working paper).
- Bhatt, G. D., & Grover, V. (2005). Types of information technology capabilities and their role in competitive advantage: an empirical study. *Journal of Management Information Systems*, 22(2), 253-277.
- Bixler, C. H. (2002). Knowledge management and the learning organization converge. *KMWorld*, 11(4), 18-19.
- Black, J. A., & Boal, K. (1994). Strategic resources: Traits, configurations and paths to sustainable competitive advantage. *Strategic Management Journal*, 15, 131-148.
- Bogaert, I., Maertens, R., & Van Cauwenbergh, A. (1994). Strategy as a situational puzzle: The fit of components. In G. Hamel & A. Heene (Eds.), *Competence-Based Competition*. Chichester: John Wiley.
- Bogner, W. C., & Thomas, H. (1994). Core competence and competitive advantage: A model and illustrative evidence from the pharmaceutical industry. In G. Hamel & A. Heene (Eds.), *Competence-based competition* (pp. 111-147). New York, NY: John Wiley & Sons.
- Bourne, K. C. (1994). Putting rigor back into RAD. *Database Programming & Design* 7, 8(August), 25-30.
- Boyce, G. (Ed.). (2006). *Financial Institutions Performance Survey 2006*: KPMG.
- Boynton, A. C., Zmund, R. W., & Jacobs, G. C. (1994). The influence of IT management and practice on the use in large organisations. *MIS Quarterly*, 18(3), 299-318.
- Brandenberger, A., & Nalebuff, B. (1998). *Co-opetition*. Boston, MA: Harvard Business School Press.
- Bresnahan, T. F., Brynjolfsson, E., & Hitt, L. M. (1999). *Information Technology, Workplace Organization and the Demand for Skilled Labour: Firm-Level Evidence* (Working paper): NBER.
- Broadbent, M., & Weill, P. (1997). Management by maxim: How business and IT managers can create IT infrastructures. *Sloan Management Review*, 38(3), 77-92.

- Broadbent, M., Weill, P., & Neo, B. S. (1999). Strategic context and patterns of IT infrastructure capability. *Journal of Strategic Information Systems*, 8(2), 157-187.
- Broadbent, M., Weill, P., & St.Clair, D. (1999). The implications of information technology infrastructure for business process redesign. *MIS Quarterly*, 23(2), 159-182.
- Bromiley, P., & Fleming, L. (2002). The resource-based view of strategy: a behavioral critique. In M. Augier & M. J. G (Eds.), *In Change, Choice and Organisation: Essays in Memory of Richard M Cyert* (pp. 319-336). Cheltenham, UK: Edward Elgar.
- Brookes, R., Chen, S. H. S., Parsons, A., & Rose, L. (2005). *Bank customer survey results 2005*. Department of Marketing, the University of Auckland Business School and Department of Commerce, Massey University. Retrieved 10 November, 2006, from the World Wide Web:  
[http://www.auckland.ac.nz/uoa/about/news/articles/2005/11/survey\\_05.cfm](http://www.auckland.ac.nz/uoa/about/news/articles/2005/11/survey_05.cfm)
- Brown, S. L., & Eisenhardt, K. M. (1995). Product development: past research, present findings, and future directions. *Academy of Management Review*, 20, 342-378.
- Brown, S. L., & Eisenhardt, K. M. (1997). The art of continuous change: Linking complexity theory and time-paced evolution in relentlessly shifting organisations. *Administrative Science Quarterly*, 42, 1-34.
- Brown, S. L., & Eisenhardt, K. M. (1998). *Competing on the Edge: Strategy as Structured Chaos*. Boston: Harvard Business School Press.
- Brumagim, A. L. (1994). A hierarchy of corporate resources. *Advances in Strategic Management*, 10A, 81-112.
- Brynjolfsson, E. (1993). The productivity paradox of information technology. *Communications of the ACM*, 36(12), 67-77.
- Brynjolfsson, E., & Hitt, L. M. (1996). Paradox lost? Firm level evidence of high returns to information systems spending. *Management Science*, 42(4), 541-558.
- Brynjolfsson, E., & Hitt, L. M. (1998). Beyond the productivity paradox. *Communications of the ACM*, 1998(41), 8.
- Brynjolfsson, E., Malone, T. W., Gurbaxani, V., & Kambil, A. (1993). An empirical analysis of the relationship between information technology and firm size: MIT Center for Coordination Science.

- Brynjolfsson, E., & Yang, S. (1996). Information technology and productivity: A review of the literature. *Advances in Computers*, 43, 179-214.
- Brynjolfsson, E., & Yang, S. (1997). *Intangible Benefits and Costs of Computer Investments: Evidence from Financial Markets*. Paper presented at the Sixteenth International Conference on Information Systems, Atlanta, Georgia.
- Burrell, G., & Morgan, G. (1979). *Sociological Paradigms and Organisational Analysis*. London: Heineman.
- Butler, B. S. (2001). Membership size, communication activity, sustainability: A resource-based model of online social structures. *Information Systems Research*, 12(4), 346-362.
- Carmeli, A. (2001). High-and low-performance firms: do they have different profits of perceived core intangible resources and business environment? *Technovation*, 21, 661-671.
- Carmeli, A., & Tishler, A. (2004). The relationships between intangible organizational elements and organizational performance. *Strategic Management Journal*, 25, 1257-1278.
- Carr, N. G. (2003). IT doesn't matter. *Harvard Business Review*(May), 41- 49.
- Chan, Y. E. (2000). IT value: The great divide between qualitative and quantitative and individual and organizational measures. *Journal of Management Information Systems*, 16(4), 225-261.
- Cheah, C. Y. J., Kang, J., & Chew, D. A. S. (2007). Strategic analysis of large local construction firms in China. *Construction Management and Economics*, 25(1), 25-50.
- Checkland, P. (1991). From framework through to experience to learning: the essential nature of action research. *Information Systems Research*, 397-403.
- Chen, W.-H. (1999). The manufacturing strategy and competitive priority of SMEs in Taiwan: A case survey. *Asia Pacific Journal of Management*, 16(3), 331-349.
- Choo, C. (1998). *The Knowing Organization*. New York, NY: Oxford University Press.
- Christensen, J. F. (1995). Asset profiles from technological innovation. *Research Policy*, 24(4), 727-745.

- Christiansen, E., & Venkatraman, N. (2002). Beyond Sabrae: An empirical test of expertise exploitation in electronic channels. *MIS Quarterly*, 26(1).
- Chua, W. F. (1986). Radical developments in accounting thought. *The Accounting Review*, 61, 601-632.
- Clark, K., & Fujimoto, T. (1991). *Product Development in the World Automobile Industry*. Boston, MA: Harvard Business School Press.
- Clemons, E. (1986). Information systems for sustainable competitive advantage. *Information and Management*, 11, 131-136.
- Clemons, E. K. (1991). Corporate strategies for information technology: A resource-based approach. *Computer*, 11(3), 23-32.
- Clemons, E. K., & Row, M. C. (1991). Sustaining IT advantage: The role of structural differences. *MIS Quarterly*, 15(3), 275-294.
- Coates, T. T., & McDermott, C. M. (2002). An exploratory analysis of new competencies: A resource based view perspective. *Journal of Operations Management*, 20, 435-450.
- Cockburn, A. (2006). *Agile Software Development: The Cooperative Game* (2nd ed.): Addison-Wesley Professional.
- Cockburn, I. M., Henderson, R. M., & Stern, S. (2000). Untangling the origins of competitive advantage. *Strategic Management Journal*, 21(10-11), 1123-1145.
- Coff, R. W. (1997). Human assets and management dilemmas: coping with hazards on the road to resource-based theory. *Academy of Management Review*, 22(2), 374-402.
- Cohen, D. (1998). Toward a knowledge context: Reporting on the first annual U.C. Berkeley Forum on knowledge and the firm. *California Management Review*, 40(3), 22-39.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Collis, D. J. (1994). Research note: How valuable are organizational capabilities? *Strategic management Journal*, 15, 143-152.

- Collis, D. J., & Montgomery, C. A. (1995). Competing on resources: Strategy in the 1990s. *Harvard Business Review*, July-August, 118-128.
- Collis, J., & Hussey, R. (2003). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students* (Second ed.). Great Britain: Palgrave Macmillan.
- Computer Science and Telecommunications Board. (1994). *Information Technology in the Service Society - A Twenty-First Century Lever*. Washington, DC: National Academy Press.
- Conner, K. R. (1991). A historical comparison of resource-based theory and five schools of thought within industrial organizational economics: Do we have a new theory of the firm? *Journal of Management*, 17(1), 121-154.
- Conner, K. R., & Prahalad, C. K. (1996). A resource-based theory of the firm: Knowledge versus opportunism. *Organizational Science*, 7(5), 477-501.
- Corn, W., & Sobol, M. (1983). The relationship between computerization and performance: A strategy for maximizing economic benefits of computerization. *Information and Management*, 6, 171-181.
- Creswell, J. W. (2003). *Research design: qualitative, quantitative, and mixed methods approaches* (second ed.). United States of America: Sage Publications.
- Creswell, J. W. (1994). *Research Design - Qualitative & Quantitative Approaches*. California: Sage Publications.
- Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (second ed.). United States of America: Sage Publications.
- Crowston, K., & Treacy, M. E. (1986). *Assessing the Impact of Information Technology on Enterprise Level Performance*. Paper presented at the Seventh International Conference on Information Technology, San Diego.
- D'Aveni, R. (1995). *Hypercompetitive Rivalries*. New York: The Free Press.
- Daft, R. (1983). *Organizational Theory and Design*. New York: West.
- Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic Management Journal*, 23(12), 1095-1121.

- Davenport, T. H., & Linder, J. (1994). *Information Management Infrastructure: The New Competitive Weapon*. Paper presented at the 27th Annual Hawaii International Conference on System Sciences, Los Alamitos, CA.
- Day, G. S. (1994). The capabilities of market-driven organizations. *Journal of Marketing*, 58(4), 37-52.
- Day, G. S., & Wensley, R. (1988). Assessing advantage: A framework for diagnosing competitive superiority. *Journal of Marketing*, 52, 1-20.
- De Boer, M., Van den Bosch, F. A. J., & Volberda, H. W. (1999). Managing organizational knowledge integration in the emerging multimedia complex. *Journal of Management Studies*, 36(3), 379-398.
- DeCarolis, D. M., & Deeds, D. L. (1999). The impact of stocks and flows of organizational knowledge on firm performance: An empirical investigation of the biotechnology industry. *Strategic Management Journal*, 20(10), 953-968.
- Deetz, S. (1996). Describing differences in approaches to organisational science: Rethinking Burrell and Morgan and their legacy. *Organizational Science*, 7(2), 191-207.
- Demarest, M. (1997). Understanding knowledge management. *Long Range Planning*, 30(3), 374-384.
- Denzin, N. K., & Lincoln, Y. S. (1994). Preface. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. ix-xii). Thousand Oaks, CA: Sage.
- Devan, S., & Min, C. (1997). The substitution of information technology for other factors of production: A firm level analysis. *Management Science*, 43(12), 1660-1675.
- Devaraj, S., & Kohli, R. (2000). Information technology payoff in the health-care industry: a longitudinal study. *Journal of Management Information Systems*, 16(4), 41-67.
- Devaraj, S., & Kohli, R. (2003). Performance impacts of information technology: Is actual usage the missing link? *Management Science*, 49(3), 273-289.
- Dewan, S., & Kraemer, K. L. (1998). International dimensions of the productivity paradox. *Communications of the ACM*, 41(8), 56-62.
- Dewan, S., & Kraemer, K. L. (2000). Information technology and productivity: Evidence from country-level data. *Management Science*, 46, 548-562.

- Dewan, S., & Min, C. (1997). The substitution of information technology for other factors of production: A firm level analysis. *Management Science*, 43(12), 1660-1675.
- DeWoot, P., Hayvaert, H., & Martou, F. (1978). Strategic management: An empirical study of 168 Belgian firms. *International Studies of Management and Organizations*, 7, 60-75.
- Dierickx, I., & Cool, K. (1989a). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35(12), 1504-1511.
- Dierickx, I., & Cool, K. (1989b). Asset stock accumulation and the sustainability of competitive advantage: Reply. *Management Science*, 35(12), 1514.
- Diewert, E. W., & Smith, A. M. (1994). Productivity measurement for a distribution firm: National Bureau of Economic Research, Washington, D C.
- Dillon, S. M. (2002). *Understanding Decision Problem Structuring by Executives*. Unpublished PhD, University of Waikato, Hamilton, New Zealand.
- Dimovski, V., & Skerlavaj, M. (2003). Testing productivity paradox: The Slovenian case. *Journal of Academy of Business and Economics*, 1(2), 53-63.
- Dinsdale, A. J. (Ed.). (2003). *Financial Institutions Performance Survey 2003*: KPMG.
- Dodgson, M. (1992). The future of technological collaboration. *Futures*, 24(5), 459-475.
- Donath, B. (1999). *The Quest for eBusiness Frameworks - Measuring and Tracking eBusiness Strategies*, Marietta, Georgia.
- Doolin, B. (1994). *Case Research in Information Systems* (Research Report Series): Department of Management Systems, University of Waikato, Hamilton.
- Dos Santos, B. L. (1991). Justifying investments in new information technologies. *Journal of Management Information Systems*, 7(4), 71-90.
- Droge, C., Claycomb, C., & Germain, R. (2003). Does knowledge mediate the effect of context on performance? Some initial evidence. *Decision Sciences*, 34(3), 541-568.

- Druker, P. F. (1999). *Management Challenges for the 21st Century*. New York: Harper Business.
- Due, R. T. (1994). The productivity paradox revisited. *Information Systems Management*, 4(1), 74-76.
- Duncan, N. B. (1995). Capturing flexibility of information technology infrastructure: A study of resource characteristics and their measure. *Journal of Management Information Systems*, 12(2), 37-57.
- Dutta, S., Naasimhan, O., & Rajiv, S. (1999). Success in high-technology markets: Is marketing capability critical? *Marketing Science*, 18(4), 547-568.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532-550.
- Eisenhardt, K. M., & Brown, S. L. (1998). Time pacing: Competing in markets that won't stand still. *Harvard Business Review*, March-April, 59-69.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10-11), 1105-1121.
- Elden, M., & Chisholm, R. F. (1993). Emerging varieties of action research: introduction to the special issue. *Human Relations*, 46(2), 121-141.
- Ettlie, J. E., & Pavlou, P. A. (2006). Technology-based new product development partnerships. *Decision Sciences*, 37(2), 117-147.
- Evans, B. (1999). A culture of innovation. *Information Week*, 725, 10.
- Fahy, J. (2000). The resource-based view of the firm: Some stumbling-blocks on the road to understanding sustainable competitive advantage. *Journal of European Industrial Training*, 24, 94-104.
- Fenny, D. F., & Willcocks, L. P. (1998). Core IS capabilities for exploiting information technology. *Sloan Management Review*, 39(3), 9-21.
- Floyd, S., & Wooldridge, B. (1990). Path analysis of the relationship between competitive strategy, information technology, and financial performance. *Journal of Management Information Systems*, 7, 47-64.

- Foss, N. J. (1997). *Resources, Firms and Strategy: A Reader in the Resource-Based Perspective*. Oxford: Oxford University Press.
- Foss, N. J. (1998). The resource-based perspective: An assessment and diagnosis of problems. *Scandinavian Journal of Management*, 14, 113-149.
- Foss, N. J., Knudsen, C., & Montgomery, C. A. (1995). An exploration of common ground: integrating evolutionary and strategic theories of the firm. In C. A. Montgomery (Ed.), *Resource-Based and Evolutionary Theories of the Firm: Towards a Synthesis* (pp. 1-18). Norwell, MA: Kluwer.
- Foss, N. J., & Knudsen, T. (2003). The resource-based tangle: Towards a sustainable explanation of competitive advantage. *Managerial and Decision Economics*, 24, 291-307.
- Foss, N. J., & Robertson, P. L. (2000). *Resources, Technology, and Strategy: Extending the Resource-Based Approach to the Firm*. London: Routledge.
- Francalanci, C., & Galal, H. (1998). Information technology and worker composition: Determinants of productivity in the life insurance industry. *MIS Quarterly*, 22(2), 227-241.
- Franke, R. H. (1987). Technological revolution and productivity decline: Computer introduction in the financial industry. *Technological Forecasting and Social Change*, 31, 143-154.
- Fraser, J., Fraser, N., & McDonald, F. (2000). Insight from industry: The strategic challenge of electronic commerce. *Supply Chain Management: An International Journal*, 5(1), 7-14.
- Garud, R., & Nayyar, P. R. (1994). Transformative capacity: continual structuring by intertemporal technology transfer. *Strategic Management Journal*, 15(5), 365-385.
- Gay, L. R., & Diehl, P. L. (1992). *Research Methods for Business and Management*. New York: Macmillan.
- Glaser, B. (1992). *Basics of Grounded Theory Analysis*. Mill Valley: CA: Sociology Press.
- Glaser, B., & Strauss, A. (1967). *The Discovery of Grounded Theory*. Chicago: Aldine.

- Glunk, U., & Wilderom, C. P. M. (1998). Predictors of organisational performance in small and medium-sized professional services firms. *International Journal of Technology Management*, 16(1-3), 23-36.
- Godfrey, P. C., & Hill, C. W. L. (1995). The problem of unobservables in strategic management research. *Strategic Management Journal*, 16, 519-533.
- Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*, 18(1), 185-214.
- Goldsmith, N. (1991). Linking IT planning to business strategy. *Long Range Planning*, 24(6), 67-77.
- Grant, R. M. (1991). The resource-based theory of competitive advantage: Implications for strategy formulation. *California Management Review*, Spring, 114-135.
- Grant, R. M. (1996a). Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organizational Science*, 7, 375-387.
- Grant, R. M. (1996b). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(Winter), 109-122.
- Grant, R. M., & Baden-Fuller, C. (1995). A knowledge-based theory of inter-firm collaboration. *Academy of Management Best Paper Proceedings*, 17-21.
- Griliches, Z. (1969). Capital-skill complementarity. *Review of Economics and Statistics*, L1, 465-468.
- Gunnarsson, G., Mellander, E., & Savvidou, E. (2001). Is human capital the key to the IT productivity paradox? *Working Paper*. Industrial Institute for Economic and Social Research: Department of Business, Economics, Statistics and Informatics at Orebro Univeristy.
- Gupta, A. K., & Govindarajan, V. (2000). Knowledge flows within multinational corporations. *Strategic Management Journal*, 21(4), 473 - 496.
- Hall, R. (1992). The strategic analysis of intangible resources. *Strategic Management Journal*, 13, 135-144.

- Hall, R. (1993). A framework linking intangible resources and capabilities to sustainable competitive advantage. *Strategic Management Journal*, 14, 607-618.
- Hammer, M., & Champy, J. (1993). *Reengineering the Corporation: A Manifesto for Business Revolution*. New York, NY: Harper Business.
- Hansen, G. S., & Wernerfelt, B. (1989). Determinants of firm performance: The relative importance of economic and organizational factors. *Strategic Management Journal*, 10, 399-411.
- Hansen, M. (1999). The search-transfer problem: the role of weak ties in sharing knowledge across organisational subunits. *Administrative Science Quarterly*, 44, 82-111.
- Hansen, M., Nohria, N., & Tierney, T. (1999). What's your strategy for managing knowledge? *Harvard Business Review*, 77(2), 106-116.
- Harris, S. E., & Katz, J. L. (1988). *Profitability and Information Technology Capital Intensity in the Insurance Industry*. Paper presented at the Twenty-First Hawaii International Conference on System Sciences, Hawaii.
- Harris, S. E., & Katz, J. L. (1991). Organizational performance and information technology investment intensity in the insurance industry. *Organization Science*, 2(3), 236-295.
- Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review*, 20(4), 986-1014.
- Hatch, N. W., & Dyer, J. H. (2004). Human capital and learning as a source of sustained competitive advantage. *Strategic Management Journal*, 25, 1155-1178.
- Hawawini, G., Subramanian, V., & Verdin, P. (2003). Is performance driven by industry - or firm-specific factors? A new look at the evidence. *Strategic Management Journal*, 24(1-16), in press.
- Hax, A. C., & Wilde, D. L. I. (2001). *The Delta Project: Discovering New Sources of Profitability in a Networked Economy*. New York, NY: Palgrave.
- He, X. J. (2004). The ERP challenges in China: a resource-based perspective. *Information Systems Journal*, 14, 153-167.

- Heimer, C. (1992). Doing your job and helping your friends: universalistic norms about obligations to particular others in networks. In N. Nohria & R. Eccles (Eds.), *Networks and Organizations: Structure Form, and Actions* (pp. 118-142). Boston, MA: Harvard Business School Press.
- Helfat, C. E. (2000). Guest editor's introduction to the special issue: The evolution of firm capabilities. *Strategic Management Journal*, 21(10-11), 955-959.
- Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: capability lifecycles. *Strategic Management Journal*, 24(10), 997-1010.
- Helfat, C. E., & Raubitschek, R. S. (2000). Product sequencing: Co-evolution of knowledge, capabilities and products. *Strategic Management Journal*, 21(10-11), 961-979.
- Helper, S., MacDuffie, J. P., & Sabel, C. (1999). *The Boundaries of the Firm as a Design Problem* (Working Paper): The Wharton School, University of Pennsylvania.
- Henderson, J. C. (1990). Plugging into strategic partnerships: The critical IS connection. *Sloan Management Review*, 31(3), 7-18.
- Henderson, R. (1993). Under-investment and incompetence as responses to radical innovation: Evidence from the semiconductor photolithographic alignment equipment industry. *Rand Journal of Economics*, 24(2), 248-270.
- Henderson, R., & Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*, 15, 63-84.
- Henderson, R., & Mitchell, W. (1997). The interactions of organizational and competitive influences on strategy and performance. *Strategic Management Journal*, 18(Summer special issue), 5-14.
- Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: the reconfiguration of existing product technologies and the failure of established firms. *Administrative Science Quarterly*, 35, 9-30.
- Hildebrand, C. (1994). Resounding maybe. *CIO, February*, 35-37.
- Hitt, L. M., & Brynjolfsson, E. (1996). Productivity, business profitability, and consumer surplus: Three different measures of information technology value. *MIS Quarterly*, 20(2), 121-142.

- Hitt, M., & Ireland, R. D. (1999). The intersection of entrepreneurship and strategic management research. In D. L. Sexton & H. Landstrom (Eds.), *The Blackwell Handbook of Entrepreneurship* (pp. 45-63). Malden, MA: Blackwell Business.
- Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional firms: a resource-based perspective. *Academy of Management Journal*, 44(1), 13-28.
- Hitt, M. A., & Ireland, R. D. (1985). Corporate distinctive competencies, strategy, industry and performance. *Strategic Management Journal*, 6, 273-293.
- Hitt, M. A., Ireland, R. D., & Lee, H. (2000). Technological learning, knowledge management, firm growth, and performance: An introductory essay. *Journal of Engineering and Technology Management*, 17(3/4), 231-246.
- Hoopes, D. G., Madsen, T. L., & Walker, G. (2003). Guest editors' introduction to the special issue: Why is there a resource-based view? Towards a theory of competitive heterogeneity. *Strategic Management Journal*, 24(10), 559-902.
- Hoopes, D. G., & Postrel, S. (1999). Shared knowledge, "glitches", and product development performance. *Strategic Management Journal*, 20, 837-865.
- Hoskisson, R. E., Eden, L., Lau, C. M., & Wright, M. (2000). Strategies in emerging economies. *Academy of Management Journal*, 43(3), 249-267.
- Huang, S. M., Ou, C. S., Chen, C. M., & Lin, B. (2006). An empirical study of relationship between IT investment and firm performance: A resource-based perspective. *European Journal of Operational Research*, 173(3), 984.
- Hult, G. T., & Ketchen, D. (2001). Does market orientation matter? A test of the relationship between positional advantage and performance. *Strategic Management Journal*, 22(9), 899-906.
- Hult, G. T., Ketchen, D., & Nichols, E. (2002). An examination of cultural competitiveness and order fulfilment cycle time within supply chains. *Academy of Management Journal*, 45(3), 577- 586.
- Hult, G. T. M. (1998). Managing the international strategies sourcing process as a market-driven organizational learning system. *Decision Sciences*, 29(1), 192-216.

- Hult, G. T. M., Hurley, R. F., Giunipero, L. C., & Nichols, E. L. J. (2000). Organisational learning in global purchasing: a model and test of internal users and corporate buyers. *Decision Sciences*, 31(2), 293-325.
- Hussey, J., & Hussey, R. (1997). *Business Research: A Practical Guide for Undergraduate and Postgraduate Students*. Hampshire, UK: Macmillan Business.
- Iansiti, M., & Clark, K. (1994). Integration and dynamic capability: Evidence from product development in automobiles and mainframe computers. *Industrial and Corporate Change*, 3, 557-605.
- Itami, H., & Roehl, T. (1987). *Mobilizing Invisible Assets*. Cambridge, MA: Harvard University Press.
- Janz, B. D., & Prasarnphanich, P. (2003). Understanding the antecedents of effective knowledge management: The importance of a knowledge-centred culture. *Decision Sciences*, 34(2), 351-384.
- Janz, B. D., Wetherbe, J. C., Davis, G. B., & Noe, R. A. (1997). Reengineering the systems development process: The link between autonomous teams and business process outcomes. *Journal of Management Information Systems*, 14(1), 41-68.
- Jarvenpaa, S. L., & Leidner, D. E. (1998). An information company in Mexico: Extending the resource-based view of the firm to a developing country context. *Information Systems Research*, 9(4), 342-361.
- Jones, G. R., & George, J. M. (1998). The experience and evolution of trust: implications for cooperation and teamwork. *Academy of Management Review*, 23(3), 531-546.
- Kanter, R. M. (1988). When a thousand flowers bloom: structural, collective, and social conditions for innovations in organization. In L. L. Cummings & B. M. Staw (Eds.), *Research in Organisational Behaviour* (Vol. 10). Greenwich, CT: JAI Press.
- Kauffman, R. J., & Kriebel, C. H. (1988). *Modelling and Measuring the Business Value of Information Technology*. Washington, DC: ICIT Press.
- Kearns, G. S., & Lederer, A. L. (2003). A resource-based view of strategic IT alignment: How knowledge sharing creates competitive advantage. *Decision Sciences*, 34(1), 1-29.

- Keen, P. (1993). Information technology and the management difference: A fusion map. *IBM Systems Journal*, 32, 17-39.
- Keen, P. G. W. (2000). The 'déjà vu' effect. *Computerworld*, 34(24), 56.
- Kelley, M. (1994). Productivity and information technology: The elusive connection. *Management Science*, 40(11), 1406-1425.
- Kettinger, W. J., Grover, V., Guha, S., & Segars, A. H. (1994). Strategic information systems revisited: A study in sustainability and performance. *MIS Quarterly*, March, 31-58.
- Kevin, C., Gregory, B. M., & Stephen, K. C. (2007). More bang for your buck: Small firms and the importance of aligned information technology capabilities and strategic flexibility. *Journal of High Technology Management Research*, 17(2), 187.
- Khandekar, A., & Sharma, A. (2005). Managing human resource capabilities for sustainable competitive advantage: An empirical analysis from Indian global organisations. *Education & Training*, 47(8/9), 628-640.
- Kim, D., Cavusgil, S. T., & Calantone, R. J. (2006). Information System Innovations and Supply Chain Management: Channel Relationships and Firm Performance. *Academy of Marketing Science Journal*, 34(1), 40-55.
- Klein, B., Crawford, R. G., & Alchian, A. A. (1978). Vertical integration, appropriable rents, and the competitive contracting process. *Journal of Law and Economics*, 21, 297-326.
- Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organizational Science*, 3(3), 383-397.
- Kogut, B., & Zander, U. (1996). What do firms do? *Organizational Science*, 7, 502-518.
- Kohli, R., & Sherer, S. A. (2002). Measuring payoff of information technology investments: research issues and guidelines. *Communications of the Association for Information Systems*, 9, 241-268.
- Koruna, S. (2004). Leveraging knowledge assets: combinative capabilities - theory and practice. *R&D Management*, 34(5), 505-516.

- Koski, H. (1999). The implications of network use, production network externalities and public networking programmes for firm's productivity. *Research Policy*, 28(4), 423-439.
- KPMG. (2007). *KPMG Financial Institutions Performance Survey* [webpage]. KPMG. Retrieved 16 April, 2007, from the World Wide Web: <http://www.kpmg.co.nz/pages/103244.html>
- Lado, A. A., Boyd, N. G., & Wright, P. (1992). A competency-based model of sustainable competitive advantage: Toward a conceptual integration. *Journal of Management*, 18(1), 77-91.
- Langley, A. (1999). Strategies for theorizing from process data. *Academy of Management Review*, 24(4), 691-710.
- Larman, C., & Basili, V. R. (2003). Iterative and incremental development: a brief history. *Computer*, June, 47-56.
- Larson, A. (1992). Network dyads in entrepreneurial settings: A study of the governance of exchange relationships. *Administrative Science Quarterly*, 37, 76-104.
- Lawless, M., Bergh, D., & Wilsted, W. (1989). Performance variations among strategic group members: An examination of individual firm capability. *Journal of Management*, 15(4), 649-661.
- Lawrence, P. R., & Lorsch, J. W. (1967). *Organizational and Environment: Managing Differentiation and Integration*. Homewood, IL: Irwin.
- Lawson, B., & Samson, D. (2001). Developing innovation capability in organisations: A dynamic capabilities approach. *International Journal of Innovation Management*, 5(3), 377-400.
- Learned, E. P., Christensen, C. R., Andrews, K. R., & Guth, W. (1969). *Business Policy*. Homewood, IL: Irwin.
- Lee, B., & Barua, A. (1999). An integrated assessment of productivity and efficiency impacts of information technology investments: Old data, new analysis and evidence. *Journal of Productivity Analysis*, 12(1), 21-43.
- Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13, 111-129.

- Leonard, D. (1995). *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation*. Boston: Harvard Business School Press.
- Leonard, D., & Sensiper, S. (1998). The role of tacit knowledge in group innovation. *California Management Review*, 40(3), 112-130.
- Lepak, D., & Snell, S. (1999). The human resource architecture: toward a theory of human capital allocation and development. *Academy of Management Review*, 24, 31-48.
- Lesgold, A. (1988). Problem solving. In R. J. Sternberg & E. E. Smith (Eds.), *The Psychology of Human Thought* (pp. 188-213). Cambridge, UK: Cambridge University Press.
- Lieberman, M. B., & Montgomery, D. B. (1998). *First-Mover (Dis)Advantages: Retrospective and Link with the Resource-Based View* (Research Paper Series 1495). Stanford: Stanford University - Graduate School of Business.
- Liebeskind, J. P. (1996). Knowledge, strategy, and the theory of the firm. *Strategic Management Journal*, 17(Winter Special Issue), 93-107.
- Lin, W. T., & Lin, H.-J. (2006). International Productivity Paradox of IT in Commercial Banking: A Cost Efficiency Analysis. *The Business Review, Cambridge*, 5(1), 246-252.
- Lin, W. T., & Shao, B. B. M. (2006). The business value of information technology and inputs substitution: The productivity paradox revisited. *Decision Support Systems*, 42(2), 493-507.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Enquiry*. Beverly Hills: CA: Sage.
- Lippman, S., & Rumelt, R. P. (1982). Uncertain imitability: An analysis of inter-firm differences in efficiency under competition. *Bell Journal of Economics*, 13, 418-438.
- Lockett, A., & Thompson, S. (2001). The resource-based view and economics. *Journal of Management*, 27(Special Issue), 723-754.
- Lorenzoni, G., & Lipparini, A. (1999). The leveraging of inter-firm relationships as a distinctive organizational capability: A longitudinal study. *Strategic Management Journal*, 20(4), 317-338.

- Loveman, G. W. (1994). An assessment of the productivity impact of information technologies. In T. J. Allen & M. S. Scott Morton (Eds.), *Information Technology and the Corporation of the 1990s: Research Studies* (pp. 84-110): Oxford University Press.
- Lucas, H. C. (1999). *Information Technology and the Productivity Paradox: Assessing the Value of Investing in IT*. New York: Oxford University Press.
- Lucas, H. C. J. (1975a). Performance and use of an information system. *Management Science*, 21(8), 908-919.
- Lucas, H. C. J. (1975b). The use of an accounting information system, action and organizational performance. *The Accounting Review*, 4, 735-746.
- Macpherson, A., Jones, O., & Zhang, M. (2004). Evolution or revolution? Dynamic capabilities in a knowledge dependent firm. *R&D Management*, 34(2), 161-177.
- Madhok, A. (1995). Revisiting multinational firms' tolerance for joint ventures: a trust-based approach. *Journal of International Business Studies*, 26(1), 117-137.
- Mahmood, M. A., & Mann, G. J. (2000). Special issue: impacts of information technology investment on organizational performance. *Journal of Management Information Systems*, 17(1), 3-10.
- Mahoney, J. T. (2004). *Economic Foundations of Strategy*: Sage Publications, Inc.
- Maidique, M. A., & Zirger, B. J. (1985). The new product learning cycle. *Research Policy*, 14(6), 299-313.
- March, J. G. (1991). Exploration and exploitation in organisational learning. *Organization Science*, 2(1), 71-87.
- Marchand, D. A., Kettinger, W. J., & Rollins, J. (2000). Information orientation: people, technology and the bottom line. *Sloan Management Review*, 41(4), 69-80.
- Marsh, S. J., & Ranft, A. L. (1999). Why resources matter: an empirical study of the influence of knowledge-based resources on new market entry. In M. A. Hitt & R. G. Clifford & R. D. Nixon & K. P. Coyne (Eds.), *Dynamic Strategic Resources* (pp. 43-66). Chichester: Wiley.
- Marshall, C., & Rossman, G. B. (1995). *Designing Qualitative Research* (Second Edition ed.). Thousand Oaks, California: Sage Publications, Inc.

- Martinsons, M. G., & Martinsons, V. (2002). Rethinking the value of IT, again. *Communications of the ACM*, 45(7), 25-26.
- Mata, F. J., Fuerst, W. L., & Barney, J. B. (1995). Information technology and sustained competitive advantage: A resource-based analysis. *MIS Quarterly*, December, 487-505.
- Mathews, J. A. (2002). A resource-based view of Schumpeterian economic dynamics. *Journal of Evolutionary Economics*, 12, 29-54.
- McCutcheon, D. M., & Merideth, J. R. (1993). Conducting case study research in operations management. *Journal of Operations Management*, 11, 239-256.
- McEvily, B., & Marcus, A. (2005). Embedded ties and the acquisition of competitive capabilities. *Strategic Management Journal*, 26(11), 1033-1055.
- McEvily, S. K., & Chakravarthy, B. (2002). The persistence of knowledge-based advantage: An empirical test for product performance and technological knowledge. *Strategic Management Journal*, 23, 285-305.
- McGahan, A. (1999). The performance of U.S. corporations: 1981-1994. *Journal of Industrial Economics*, 43, 373-395.
- McGahan, A., & Porter, M. (1997). How much does industry matter, really? *Strategic Management Journal*, Summer Special Issue 18, 15-30.
- McGrath, R. G., MacMillan, I. C., & Venkataraman, S. (1995). Defining and developing a competence: A strategic process paradigm. *Strategic Management Journal*, 16(4), 251-275.
- McGrath, R. G., Tsui, M.-H., Venkataraman, S., & MacMillan, I. C. (1996). Innovation, competitive advantage and rent: A model and test. *Management Science*, 42(3), 389-403.
- McLauchlan, G. (1991). *The ASB - A Bank and its Community*. Auckland, New Zealand: Four Star Books.
- Mehra, A. (1996). Resource and market based determinants of performance in the US banking industry. *Strategic Management Journal*, 17, 307-322.

- Melville, N., Kraemer, K. L., & Gurbaxani, V. (2004). Review: Information technology and organizational performance: An integrative model of IT business value. *MIS Quarterly*, 28(2), 283-322.
- Menguc, B., & Auh, S. (2006). Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Journal of the Academy of Marketing Science*, 34(1), 63-74.
- Menon, N. M., Lee, b., & Eldenburg, L. (2000). Productivity of information systems in the healthcare industry. *Information Systems Research*, 11(1), 83-92.
- Michalisin, M., Smith, R., & Kline, D. M. (1997). In search of strategic assets. *International Journal of Organizational Analysis*, 5(4), 360-338.
- Milgrom, P., & Roberts, J. (1990). The economics of modern manufacturing: technology, strategy and organsation. *American Economic Review*, 80(3), 511-528.
- Miller, D. (2003). An asymmetry-based view of advantage: towards an attainable sustainability. *Strategic Management Journal*, 24(10), 961-976.
- Miller, D., & Shamsie, J. (1996). The resource-based view of the firm in two environments: The Hollywood Film Studios from 1936 to 1965. *Academy of Management Journal*, 39(3), 519-543.
- Mishra, A. N., Konana, P., & Barua, A. (2007). Antecedents and Consequences of Internet Use in Procurement: An Empirical Investigation of U.S. Manufacturing Firms. *Information Systems Research*, 18(1), 103-123.
- Mitchell, V. L. (2006). Knowledge integration and information technology project performance. *MIS Quarterly*, 30(4), 919-939.
- Moingeon, B., Ramanantsoa, B., Metais, E., & Orton, J. D. (1998). Another look at strategy-structure relationships: The resource-based view. *European Management Journal*, 16(3), 297-305.
- Monge, P. R., Cozzens, M. D., & Contractor, N. S. (1992). Communication and motivaional predictors of the dynamics of organisational innovation. *Organizational Science*, 3(2), 250-274.
- Montealegre, R. (2002). A process model of capability development: Lessons from the electronic commerce strategy at Bolsa de Valores de Guayaquil. *Organization Science*, 13(5), 514-531.

- Monteverde, K. (1995). Technical dialog as an incentive for vertical integration in the semiconductor industry. *Management Science*, 21, 1624-1638.
- Montgomery, C. A. (1995). *Resource-Based and Evolutionary Theories of the Firm: Towards a Synthesis*. Norwell, MA: Kluwer.
- Mooney, J. G., Gurbaxani, V., & Kraemer, K. L. (1995). *A Process Oriented Framework for Assessing the Business Value of Information Technology*. Paper presented at the International Conference on Information Systems, Amsterdam, The Netherlands.
- Mosakowski, E., & McKelvey, B. (1997). Predicting rent generation in competence-based competition. In A. Heene & R. Sanchez (Eds.), *Competence-based strategic management* (pp. 65-85). New York, NY: John Wiley & Sons.
- Mozaffar, S. (2001). *Leveraging the Network Economy for Business - Manufacturing and Distribution*. Retrieved 11/07, 2001, from the World Wide Web: <http://www.lanka.net/ica/Seminar/manufacturing.html>
- Mueller, D. (1986). *Profits in the Long Run*. Cambridge, MA: Cambridge University Press.
- Mukhopadhyay, T., & Cooper, R. B. (1992). Impact of management information systems on decisions. *Omega*, 20(1), 37-49.
- Mukhopadhyay, T., & Cooper, R. B. (1993). A microeconomic production assessment of the business value of management information systems. *Journal of Management Information Systems*, 10(1), 33-55.
- Mukhopadhyay, T., Surendra, R., & Srinivasan, K. (1997). Information technology impact on process and output quality. *Management Science*, 43(12), 1645-1659.
- Mukhopadhyay, T. S., Kekre, S., & Kalathur, S. (1995). Business value of information technology: A study of electronic data interchange. *MIS Quarterly*, 19(2), 137-156.
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23, 242-266.
- Nanda, A. (1996). Resources, capabilities and competencies. In B. Boingeon & A. Edmondson (Eds.), *Organisational Learning and Competitive Advantage*. London: Sage.

- Naumann, J. D., & Jenkins, A. M. (1982). Prototyping: the new paradigm for systems development. *MIS Quarterly*, 6(3), 29-44.
- Nelson, K. M., & Coopridge, J. G. (1996). The contribution of shared knowledge to IS group performance. *MIS Quarterly*, 20(4), 409-429.
- Nelson, R., & Winter, S. (1982). *An Evolutionary Theory of Economic Change*. Cambridge, MA: Harvard University Press.
- Nelson, R. R. (1991). Why do firms differ, and how does it matter? *Strategic Management Journal*, 12, 61-74.
- Ng, H. Y., & Hope, B. G. (2004). *Information Requirements for Customer Relationship Management: A Case Study in a New Zealand Bank*. Paper presented at the Twelfth European Conference on Information Systems, Turku School of Economics and Business Administration, Turku, Finland.
- Nonaka, I. (1990). Redundant, overlapping organisation: a Japanese approach to managing the innovation process. *California Management Review*, 32(3), 27-38.
- Nonaka, I. (1991). The knowledge-creating company. *Harvard Business Review*, 69(November/December), 96-104.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organizational Science*, 5(1), 14-37.
- Nonaka, I., & Konno, N. (1998). The concept of "ba": building a foundation of knowledge creation. *California Management Review*, 40(3), 40-54.
- Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company*. New York: Oxford University Press.
- O'Dell, C., & Grayson, C. (1998). If only we knew what we know: identification and transfer of internal best practices. *California Management Review*, 40(3), 154-174.
- Olavarrieta, S., & Ellinger, A. E. (1997). Resource-based theory and strategic logistics research. *International Journal of Physical Distribution & Logistics Management*, 27(9/10), 559-587.

- Onyx. (2007, 1 February 2007). *Onyx and ASB Bank* [Company website]. Retrieved 1 February, 2007, from the World Wide Web:  
<http://www.onyx.com/customers/casestudy.asp?casestudy=asb>
- Orlikowski, W. J., & Baroudi, J. J. (1991). Studying information technology in organizations: Research approaches and assumptions. *Information Systems Research*, 2(1), 1-28.
- Ouchi, W. (1980). Markets, bureaucracies, and clans. *Administrative Science Quarterly*, 25, 124-141.
- Pan, S., Pan, G., & Hsieh, M. H. (2006). A dual-level analysis of the capability development process: a case of TT&T. *Journal of the American Society for Information Science and Technology*, 57(13), 1814-1829.
- Papp, R. (1999). Business-IT alignment: Productivity paradox payoff? *Industrial Management Data Systems*, 99(7-8), 367-373.
- Paredes, D. (2006). Special issue - MIS 100 New Zealand's biggest users of I.T - Trends of distinction. *Managing Information Strategies*, 9(07), 4.
- Parsons, G. L. (1983). Information technology: a new competitive weapon. *Sloan Management Review*, 25(1), 3-14.
- Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods* (3 ed.). Thousand Oaks, California: Sage Publications, Inc.
- Pavlou, P. A., & El Sawy, O. A. (2006). From IT leveraging competence to competitive advantage in turbulent environments: the case of new product development. *Information Systems Research*, 17(3), 198-227.
- Penrose, E. T. (1959). *The Theory of the Growth of the Firm*. Oxford: Oxford University Press.
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14, 179-191.
- Pettigrew, A. (1973). *The Politics of Organizational Decision Making*. London: Tavistock.
- Pettigrew, A. (1992). The character and significance of strategic process research. *Strategic Management Journal*, 13, 5-16.

- Pettus, M. L. (2001). The resource-based view as a developmental growth process: Evidence from the deregulated trucking industry. *Academy of Management Journal*, 44(4), 878-896.
- Porter, M. E. (1980). *Competitive Strategy*. New York: Free Press.
- Porter, M. E. (1991). Towards a dynamic theory of strategy. *Strategic Management Journal*, 12(1), 95-117.
- Porter, M. E., & Millar, V. E. (1998). How information gives you competitive advantage. In M. E. Porter (Ed.), *On Competition* (pp. 75-98). Boston: Harvard Business School Publishing.
- Powell, T. C. (1992a). Organizational alignment as competitive advantage. *Strategic Management Journal*, 13(2), 551-558.
- Powell, T. C. (1992b). Strategic planning as competitive advantage. *Strategic Management Journal*, 13(7), 551-558.
- Powell, T. C. (2001). Competitive advantage: Logical and philosophical considerations. *Strategic Management Journal*, 22, 875-888.
- Powell, T. C., & Dent-Micallef, A. (1997). Information technology as competitive advantage: The role of human, business, and technology resources. *Strategic Management Journal*, 18(5), 375-405.
- Prahalad, C. K., & Hamel, G. (1990). The core competence of the organization. *Harvard Business Review*, 68(3), 79-91.
- Prastacos, G., Soderquist, K., Spanos, Y., & Van Wassenhove, L. (2002). An integrated framework for managing change in the new competitive landscape. *European Management Journal*, 20, 55-71.
- Prattipati, S. N., & Mensah, M. O. (1997). Information systems variables and management productivity. *Information Management*, 33(1), 33-43.
- Priem, R. L., & Butler, J. E. (2001). Is the resource-based "view" a useful perspective for strategic management research? *Academy of Management Review*, 26(1), 22-40.

- Prieto, I. M., & Easterby-Smith, M. (2006). Dynamic capabilities and the role of organisational knowledge: an exploration. *European Journal of Information Systems*, 15, 500-510.
- Prior, V. (1996). Creativity and innovation. *Competitive Intelligence Review*, 7(2), 81-83.
- Rai, A., Patnayakuni, R., & Patnayakuni, N. (1997). Technology investment and business performance. *Communications of the ACM*, 40(7), 89-97.
- Rao, H. R., Pegels, C. C., Salam, A. F., Hwang, K. T., & Seth, V. (1995). The impact of EDI implementation commitment and implementation success on competitive advantage and firm performance. *Information Systems Journal*, 5(3), 185-202.
- Ravichandran, T., & Lertwongsatien, C. (2002). *Impact of Information Systems Resources and Capabilities on Firm Performance: A Resource-Based Perspective*. Paper presented at the 23rd International Conference on Information Systems, Barcelona, Spain.
- Ray, G. (2000). *Information Systems and Competitive Advantage: A Process-Oriented Theory*. Unpublished Doctoral Dissertation, The Ohio State University, Ohio.
- Ray, G., Barney, J. B., & Muhanna, W. A. (2001). *Capabilities, Business Processes, and Competitive Advantage: The Impact of Information Technology on Customer Satisfaction in North American Insurance Industry* (Working Paper): University of Texas at Austin.
- Ray, G., Barney, J. B., & Muhanna, W. A. (2004). Capabilities, business processes, and competitive advantage: Choosing the dependent variable in empirical tests of the resource-based view. *Strategic Management Journal*, 25(1), 23-37.
- Ray, G., Mauhannan, W. A., & Barney, J. B. (2002). *Information Technology, Business Processes, and Competitive Advantage: A Resource Based Investigation* (Working Paper): University of Texas at Austin.
- Ray, G., Muhanna, W. A., & Barney, J. B. (2001). *Information Technology and Competitive Advantage: A Process-Oriented Assessment* (Working Paper): University of Texas at Austin.
- Ray, G., Muhanna, W. A., & Barney, J. B. (2005). Information technology and the performance of the customer service process: A resource based analysis. *MIS Quarterly*, 29(4), 653-672.
- Reagans, R., & McEvily, B. (2003). Network structure and knowledge transfer: the effects of cohesion and range. *Administrative Science Quarterly*, 48(2), 240-268.

- Reed, R., & DeFillippi, R. J. (1990). Causal Ambiguity, Barriers to Imitation, and Sustainable Competitive Advantage. *Academy of Management Review*, 15(1), 88-102.
- Reich, B. H., & Benbasat, I. (2000). Factors that influence the social dimension of alignment between business and information technology objectives. *MIS Quarterly*, 24(1), 81-111.
- Ricardo, D. (1817). *Principles of Political Economy and Taxation*. London: J Murray.
- Roach, S. S. (1988). Technology and the service sector: The hidden competitive challenge. *Technological Forecasting and Social Change*, 34(4), 387-403.
- Roberts, P. W., & Dowling, G. R. (2002). Corporate reputation and sustained superior financial performance. *Strategic Management Journal*, 23(12), 1077-1093.
- Rockart, J. F. (1988). The line takes the leadership - IS management in a wired society. *Sloan Management Review*, 29(4), 55-64.
- Rosen, M. (1991). Coming to terms with the field: understanding and doing organizational ethnography. *Journal of Management Studies*, 28(1), 1-24.
- Rosenberg, D. (1992). Where does the passion go? *Industry Week*, 241(16), 11-12.
- Rosenzweig, E. D., & Roth, A. V. (2004). Towards a theory of competitive progression: evidence from high-tech manufacturing. *Production and Operations Management*, 13(4), 354-368.
- Ross, J. W., Beath, C. M., & Goodhue, D. L. (1996). Developing long-term competitiveness through IT assets. *Sloan Management Review*, 38(1), 34-45.
- Rouse, M. J., & Daellenbach, U. S. (1999). Rethinking research methods for the resource-based perspective: Isolating sources of sustainable competitive advantage. *Strategic Management Journal*, 20, 487-497.
- Rouse, M. J., & Daellenbach, U. S. (2002). More thinking on research methods for the resource-based perspective. *Strategic Management Journal*, 23(10), 963-967.
- Rudestam, K. E., & Newton, R. R. (2001). *Surviving Your Dissertation: A Comprehensive Guide to Content and Process* (2nd Edition ed.). Thousand Oaks, California: Sage.

- Rugman, A. M., & Verbeke, A. (2002). Edith Penrose's contribution to the resource-based view of strategic management. *Strategic Management Journal*, 23(8), 769-780.
- Rumelt, R. P. (1984). Towards a strategic theory of the firm. In R. B. Lam (Ed.), *Competitive Strategic Management* (pp. 566-570). Englewood Cliffs, NJ: Prentice Hall.
- Rumelt, R. P. (1987). Theory, strategy and entrepreneurship. In D. J. Teece (Ed.), *The Competitive Challenge* (pp. 137-158). New York: Harper & Row.
- Rumelt, R. P. (1991). How much does industry matter? *Strategic Management Journal*, 12, 167-185.
- Rumelt, R. P., Schendel, D., & Teece, D. J. (1991). Strategic management and economics. *Strategic Management Journal*, 12(Special Issue), 5-30.
- Rumelt, R. P., & Wensley, R. (1981). *In Search of the Market Share Effect*. Paper presented at the Academy of Management Proceedings.
- Sambamurthy, V., Bharadwaj, A. S., & Grover, V. (2003). Shaping agility through digital options: Reconceptualizing the role of IT in contemporary firms. *MIS Quarterly*, 27(2), 237-263.
- Santhanam, R., & Hartono, E. (2003). Issues in linking information technology capability to firm performance. *MIS Quarterly*, 27(1), 125-153.
- Sarantakos, S. (1998). *Social Research*. South Melbourne, Australia: Macmillan Education.
- Sarkis, J. K., & Erik, R. (2006). Conceptual model for explaining the IT investment paradox in the banking sector. *International Journal of Technology Policy and Management*, 6(3), 309-326.
- Savory, C. (2006). Translating knowledge to build technology competence. *Management Decision*, 44(8), 1052-1075.
- Scandura, T. A., & Williams, E. A. (2000). Research methodology in management: Current practices, trends and implications for future research. *Academy of Management Journal*, 43(6), 1248-1264.

- Schendel, D. (1994). Introduction to 'competitive organizational behavior: Toward an organizationally-based theory of competitive advantage'. *Strategic Management Journal*, 15, 1-4.
- Schmalensee, R. (1985). Do markets differ much? *The American Economic Review*, 75, 341-350.
- Schroeder, R. G., Bates, K. A., & Junttila, M. A. (2002). A resource-based view of manufacturing strategy and the relationship to manufacturing performance. *Strategic Management Journal*, 23, 105-117.
- Schulze, A., & Hoegl, M. (2006). Knowledge creation in new product development projects. *Journal of Management*, 32(2), 210-236.
- Schumpeter, J. (1942). *Capitalism, Socialism, and Democracy*. New York: Harper.
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Senge, P. M. (1990). *The Fifth Discipline*. New York: Doubleday.
- Sher, P. J., & Lee, V. C. (2004). Information technology as a facilitator for enhancing dynamic capabilities through knowledge management. *Information and Management*, 41, 933-945.
- Shrum, W., & Wuthnow, R. (1988). Reputational status of organisations in technical systems. *American Journal of Sociology*, 93(4), 882-912.
- Siegel, D., & Griliches, Z. (1992). Purchased services, outsourcing, computers, and productivity in manufacturing. In Z. Griliches (Ed.), *Output Measurement in the Service Sectors* (pp. 429-458). Chicago, IL: University of Chicago Press.
- Simonin, B. L. (1997). The importance of collaborative know-how: an empirical test of the learning organisation. *Academy of Management Journal*, 40(5), 1150-1174.
- Simonin, B. L. (1999). Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic Management Journal*, 20, 595-625.
- Skerlavaj, M., & Dimovski, V. (2006). Study of the mutual connections among Information-communication Technologies, Organisational Learning and Business Performance. *Journal for East European Management Studies*, 11(1), 9-29.

- Soh, C., & Markus, M. L. (1992). *How IT Creates Value: A Process Theory Synthesis*. Paper presented at the International Conference on Information Systems, Amsterdam, The Netherlands.
- Sohal, A. S., Moss, S., & Ng, L. (2000). Using information technology productively: Practices and factors that enhance the success of IT. *International Journal of Technology Management*, 20(3-4), 340-353.
- Spanos, Y. E., & Lioukas, S. (2001). An examination into the causal logic of rent generation: Contrasting Porter's competitive strategy framework and the resource-based perspective. *Strategic Management Journal*, 22, 907-934.
- Spender, J. C. (1994). Organizational knowledge, collective practice, and Penrosian rents. *International Business Review*, 3(4), 353-367.
- Spender, J. C. (1996a). Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal*, 17(Special Issue), 45-62.
- Spender, J. C. (1996b). Organizational knowledge, learning and memory: Three concepts in search of a theory. *Journal of Organizational Change Management*, 9, 63-78.
- Spender, J. C., & Grant, R. M. (1996). Knowledge and the firm. *Strategic Management Journal*, 17(Winter special issue), 5-9.
- Stalk, G., Evans, P., & Shulman, L. E. (1992). Competing on capabilities: The new rules of corporate strategy. *Harvard Business Review*, 70(2), 57-69.
- Steiner, G. A., Miner, J. B., & Gray, E. R. (1986). *Management Policy and Strategy* (3rd ed.). New York: Macmillan.
- Stinchcombe, A. L. (1965). Social structure and organizations. In J. March (Ed.), *Handbook of Organizations* (pp. 142-193). Chicago, IL: Rand-McNally.
- Strassmann, P. (1985). *Information Payoff*. New York: Free Press.
- Strassmann, P. A. (1990). *The Business Value of Computers*. New Canaan, CT: Information Economics Press.
- Strauss, A. (1987). *Qualitative Analysis for Social Scientists*. New York: Cambridge University Press.

- Strauss, A., & Corbin, J. (1998). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. United States of America: Sage Publications, Inc.
- Stubner, S., Wulf, T., & Hungenberg, H. (2007). Management support and the performance of entrepreneurial start-ups - An empirical analysis of newly founded companies in Germany. *Schmalenbach Business Review: ZFBF*, 59, 138-159.
- Subramaniam, M., & Venkatraman, N. (1999). The influence of leveraging tacit overseas knowledge for global new product development capability: an empirical examination. In M. A. Hitt & R. G. Clifford & R. D. Nixon & K. P. Coyne (Eds.), *Dynamic Strategic Resources*. Chichester: Wiley.
- Tallon, P. P., Kraemer, K. L., & Gurbaxani, V. (2000). Executives' perception of the business value of information technology: a process-oriented approach. *Journal of Management Information Systems*, 16(4), 145-173.
- Tapscott, D., Lowy, A., & Ticoll, D. (1998). *Blueprint to the Digital Economy: Creating Wealth in the Era of E-Business*. New York: NY: McGraw-Hill.
- Teece, D. J. (1980). Economies of scope and the scope of the enterprise. *Journal of Economic Behavior and Organization*, 1, 223-247.
- Teece, D. J. (1982). Towards an economic theory of the multi-product firm. *Journal of Economic Behavior and Organization*, 3, 39-63.
- Teece, D. J. (1986). Profiting from technological innovation: implications form integration, collaboration, licensing and public policy. *Research Policy*, 15, 285-305.
- Teece, D. J. (1998). Capturing value from knowledge assets: The new economy, markets for know-how, and intangible assets. *California Management Review*, 40(3), 55-79.
- Teece, D. J. (2000). Strategies for managing knowledge assets: The role of firm structure and industrial context. *Long Range Planning*, 33(February), 35-54.
- Teece, D. J., & Pisano, G. (1994). The dynamic capabilities of firms: an introduction. *Industrial and Corporate Change*, 3(3), 537-556.
- Teece, D. J., Pisano, G., & Shuen, A. (1992). *Dynamic Capabilities and Strategic Management*. Berkeley, CA: Haas School of Business, University of California.

- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Teo, T. S. H., & Ranganathan, C. (2003). Leveraging IT resources and capabilities at the housing and development board. *Strategic Information Systems*, 12, 229-249.
- Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: Is organizational learning a missing link? *Strategic Management Journal*, 24(8), 745-761.
- Tripsas, M. (1997). Unravelling the process of creative destruction: complementary assets in incumbent survival in the typesetter industry. *Strategic Management Journal*, Summer Special(18), 119-142.
- Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal*, 21(10-11), 1147-1161.
- Turner, I. (1998). Strategy and organization. *Manager Update*, 10(2), 1-13.
- Turner, J. (1985). Organisational Performance, Size and the Use of Data Processing Resources, *Working Paper #58*. Centre for Research on Information Systems (CRIS), Leonard N. Stern School of Business, NYU.
- Turner, J., & Lucas, H. C. (1985). *Developing Strategic Information Systems*. Boston: Warren, Gorham and Lamont.
- Tyler, B. B. (2001). The complementarity of cooperative and technological competencies: A resource-based perspective. *Journal of Engineering and Technology Management*, 18, 1-27.
- Tyler, B. B., & Steensma, H. K. (1995). Evaluating technological collaborative opportunities: a cognitive modelling perspective. *Strategic Management Journal*, Summer Special(16), 327-351.
- Valaich, J. S., George, J. F., & Hoffer, J. A. (2001). *Essentials of Systems Analysis and Design*. New Jersey: Prentice Hall.
- Van den Bosch, F. A. J., Volberda, H. W., & de Boer, M. (1999). Co-evolution of firm absorptive capacity and knowledge environment: organizational forms and combinative capabilities. *Organizational Science*, 10(5), 551-568.

- Verdin, P. J., & Williamson, P. J. (1994). Core competencies, competitive advantage and market analysis: Forging the links. In G. Hamel & A. Heene (Eds.), *Competence-Based Competition* (pp. 77-110). New York, NY: John Wiley & Sons.
- Verona, G. (1999). A resource-based view of product development. *Academy of Management Review*, 24(1), 132-142.
- Vestey, J. T. (1990). Meeting the new competitors: They think in terms of speed to market. *Industrial Engineering*, 22(12), 20-26.
- Wade, M., & Garavill, J. (2003). Diversification and performance of Japanese IT subsidiaries: a resource-based view. *Information and Management*, 40(4), 305-316.
- Wade, M., & Hulland, J. (2004). Review: the resource-based view and information systems research: review extension, and suggestions for future research. *MIS Quarterly*, 28(1), 107-142.
- Walsham, G. (1993). *Interpreting information systems in organisations*. Chichester, UK: Wiley.
- Walsham, G. (1995a). The emergence of interpretivism in IS research. *Information Systems Research*, 6(4), 376-394.
- Walsham, G. (1995b). Interpretive case studies in IS research: nature and method. *European Journal of Information Systems*, 4, 74-81.
- Walton, R. (1989). *Up and Running: Integrating Information Technology and the Organization*. Boston, MA: Harvard Business School Press.
- Weill, P. (1992). The relationship between investment in information technology and firm performance: A study of the valve manufacturing sector. *Information Systems Research*, 3(4), 307-333.
- Weill, P. (1993). The role and value of information technology infrastructure: some empirical observations. In R. D. Banker & R. J. Kauffman & M. A. Mahmood (Eds.), *Strategic Information Technology Management: Perspectives on Organizational Growth and Competitive Advantage* (pp. 547-572). Harrisberg, PA: Idea Group Publishing.
- Weill, P., & Olson, M. H. (1989). Managing investment in information technology: Mini case examples and implications. *MIS Quarterly*, 13(1), 3-17.

- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5, 171-180.
- Wernerfelt, B., & Montgomery, C. A. (1988). Tobin's q and the importance of focus in firm performance. *American Economic Review*, 78, 246-250.
- Wernerfelt, N. (1989). From critical resources to corporate strategy. *Journal of General Management*, 14, 4-12.
- Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24(13), 1307-1314.
- Williams, J. R. (1992). How sustainable is your competitive advantage? *California Management Review*, Spring, 29-51.
- Williamson, O. E. (1985). *The Economic Institutions of Capitalism*. New York: Free Press.
- Williamson, O. E. (1999). Strategic research: Governance and competence perspectives. *Strategic Management Journal*, 20, 1087-1108.
- Wilson, D. (1995). IT investment and its productivity effects: An organizational sociologist's perspective on directions for future research. *Economics of Innovation and New Technology*, 3, 235-251.
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991-995.
- Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management*, 27, 701-721.
- Wu, L. Y. (2006). Resources, dynamic capabilities and performance in a dynamic environment: Perceptions in Taiwanese IT enterprises. *Information and Management*, 43, 447-454.
- Yeoh, P. L., & Roth, K. (1999). An empirical analysis of sustained advantage in the US pharmaceutical industry: Impact of firm resources and capabilities. *Strategic Management Journal*, 20, 637-653.
- Yin, R. K. (1994). *Case Study Research: Design and Methods*. California: Thousand Oaks.

---

Yin, R. K. (2003). *Case Study Research: Design and Methods* (3rd ed. Vol. 5). United States of America: Sage.

Zaheer, A., & Zaheer, S. (1997). Catching the wave: alertness, responsiveness, and market influence in global electronic networks. *Management Science*, 43(11), 1493-1509.

Zahra, S., & Pearce, J. (1990). Research evidence on the Miles-Snow typology. *Journal of Management*, 16(4), 751-768.

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: a review, model and research agenda. *Journal of Management Studies*, 43(4), 917-955.

Zammuto, R. F. (1982). *Assessing Organizational Effectiveness: Systems Change, Adaption and Strategy*. Albany, NY: State University of New York Press.

Zander, U., & Kogut, B. (1995). Knowledge and the speed of transfer and imitation of organizational capabilities: an empirical test. *Organizational Science*, 6, 76-92.

## APPENDIX A – METHODOLOGICAL ASSUMPTIONS

---

*Section 5.2 - Research Methodology and Underlying Assumptions – Interpretive Research states that this research holds phenomenological assumptions. This appendix supplements Section 5.2 by further explaining the underlying methodological assumptions associated with the two main paradigms and placing this research in the context of these.*

In order to place this research in the context of other social science research and allow readers to understand the underlying assumptions of this research the researcher's assumptions about social science and society are outlined. Many frameworks exist to help researchers articulate this context and the associated underlying methodological assumptions. For instance, Burrell and Morgan (1979) present a two-dimension, four-paradigm framework. The dimensions relate to the way in which researchers view the nature of social science and society; while the paradigms relate to the methodologies a piece of research can follow. When it was published (in 1979) there was "rapid acceptance of the Burrell and Morgan grid into the mainstream of management science" (Deetz, 1996, p 192). Today many frameworks exist and as outlined in Section 5.1 this researcher chose to follow Collis and Hussey's (2003) interpretation of the paradigms. Collis and Hussey outline two main paradigms: positivistic and phenomenological research. The underlying assumptions of a piece of research will vary according to the choice of paradigm as shown in Table A1.

**Table A1 - Assumptions of the two main paradigms**

<b>Assumption</b>	<b>Question Addressed</b>	<b>Positivistic</b>	<b>Phenomenological</b>
Ontological	What is the nature of reality?	Realism – reality is objective and singular, apart from the research	Nominalism – reality is subjective and multiple as seen by participants in a study
Epistemological	What is the relationship of the researcher to that researched?	The researcher is independent from that being researched	Researcher interacts with that being researched
Axiological	What is the role of values?	Value-free and unbiased	Value-laden and biased
Rhetorical	What is the language of research?	Formal, based on set definitions, impersonal voice, use of accepted quantitative words	Informal, evolving decisions, personal voice, use of accepted qualitative words
Methodological	What is the process of research?	Deductive process Cause and effect  Static design – categories isolated before study  Context-free Generalisations leading to predictions, explanation and understanding  Accurate and reliable through validity and reliability	Inductive process Mutual simultaneous shaping of factors Emerging design – categories identified during research process Context-bound Patterns, theories developed for understanding  Accurate and reliable through verification

Adapted from Collis and Hussey (2003) and Creswell (1994)

As previously outlined, this research employs a phenomenological approach. Such an approach is gaining popularity in social science research (Orlikowski & Baroudi, 1991). The underling assumptions of this approach (as briefly outlined in the above table) are now discussed. While presented independently, naturally each of the underlying assumptions about phenomenological research are interrelated.

*Ontological* assumptions relate to beliefs about the nature of being or reality. Ontologically, phenomenological research emphasises the importance of subjective meanings and symbolic action “in the processes through which humans construct and reconstruct their reality” (Orlikowski & Baroudi, 1991). Therefore, phenomenological research assumes that individuals through their social interaction, and participation in a social world give it status and meaning (Orlikowski & Baroudi, 1991). The ontological assumptions about phenomenological research have big implications for a piece of research’s design. For instance, because individuals, groups, organisations, and entire social systems do not exist without social interaction, they can not be measured, apprehended, or characterised in objective or universal ways (Orlikowski & Baroudi, 1991).

*Epistemological* assumptions relate to beliefs about the way in which humans acquire knowledge. Phenomenological research is based on the epistemological belief that understanding comes from getting involved in the world of those generating it (Rosen, 1991). Therefore, in phenomenological research the researcher needs to interact with what is being researched.

*Axiological* assumptions are concerned with values. Phenomenological research assumes that the researcher has values which may bias their research. Therefore, a phenomenological researcher’s values may help them distinguish facts from interpretations in their research.

*Rhetorical* assumptions are concerned with the language used in research. While research employing a positivistic approach is usually written in a formal style or passive voice (Collis & Hussey, 2003), there is less unity in the language or style of phenomenological research. This research has employed a formal passive approach to language which the researcher felt was consistent with other literature in the parent disciplines which informed this research.

*Methodological* assumptions relate to the beliefs about the “consequences for each way in which one attempts to investigate and obtain ‘knowledge’ about the social world” (Burrell & Morgan, 1979, p 2). In other words, the methodological assumptions are concerned with the process for research. The choice of research paradigm (and

therefore the way the researcher views the world) greatly influences the choice of methodology or approach to the research process. A research methodology in phenomenological research is likely to seek understanding using a range of research methods.

## APPENDIX B – EMPIRICAL BASE

The following tables provide a description of the empirical base of this research. Table B1 outlines the number of interviewees used and who the subject of the interview was.

**Table B1 – Description of the interviews undertaken**

<b>Division of the organisation interviewee is from+</b>	<b>Position of interviewee in the organisation+</b>	<b>Length of Transcript<sup>^</sup></b>
Senior Management	Information Technology	13 pages
Senior Management	Information Technology	20 pages
Senior Management	Corporate Services	12 pages
Middle Management	Information Technology	23 pages
Middle Management	Personal Banking	24 pages
Middle Management	Personal Banking	8 pages
Senior Management	Personal Banking	24 pages
Senior Management	Information Technology	8 pages
Senior Management	Information Technology	12 pages
Middle Management	Personal Banking	16 pages
Senior Manager	Information Technology	12 pages
End User	Personal Banking	6 pages
End User	Personal Banking	5 pages
End User	Personal Banking	6 pages
Middle Management	Information Technology	16 pages

+ While the interviewees' workgroup and position was important for this research it was also important for the interviewees to remain anonymous due to the confidentiality they were ensured by the researcher. Therefore, the researcher has only identified the interviewees by division and position in the organisation not job title or name.

<sup>^</sup> Length of transcript refers to the number of 1.5 lined spaced typed pages of transcript.

The researcher did not pre-determine what a suitable number of interviews would be. Instead data collection through this method was determined in the analysis stage (which was performed in parallel to data collection) once theoretical saturation was reached (see Section 5.5.2 for more details on theoretical saturation). Moreover, some interviewees were interviewed more than once. This is because the researchers' sensitivity to relevant phenomena grew throughout the research process therefore it was deemed suitable to resample some interviewees. Strauss and Corbin (1998) recommend such a strategy. In fact the researchers suggest who the interviewee is is often of less significance in the grounded theory process since the researcher's

objective is not to sample people rather it is to “sample incidents, events, or happenings” (Strauss & Corbin, 1998, p 202). The interview base (i.e., who was to be interviewed) was also not predetermined. Rather sampling occurred throughout the intertwined data collection and coding process. Further details of the sampling strategy followed in this research are provided in Section 5.5.2.

Table B1 provided a description of the interviewees used. The following table (Table B2) provides a brief description of the data gathered from each of the interviewees and identifies which other interview source(s) that each interviewee lead the researcher to.

**Table B2 – Description of data gathered from interviewees**

<b>Interviewee</b>	<b>Brief summary of contribution</b>	<b>Lead to</b>
A	Interviewee A was a senior member of the information technology team who had a strategic understanding of the project at hand. This interviewee was interviewed to gain a high level perspective of information technology at ASB, as well as the RSA project at hand. The interviewee was interviewed several times throughout the research for his senior perspective.	B, C, F
B	Interviewee B was a senior member of the corporate services division of the company. The researcher sought an understanding of human resource practices and the culture at ASB from this interviewee.	D
C	Interviewee C had knowledge of information systems projects in general and had a hand in the development of innovation at ASB. These were the principle topics the researcher sought an understanding of from this interviewee.	
D	Interviewee D was sought out for their role in personal banking. This was a new side of the organisation to the researcher and the researcher sought an understanding of the RSA project from this interviewee's perspective.	E
E	Interviewee E was identified by interviewee D. This interviewee had a more senior role in personal banking than interviewee D and allowed a more strategic perspective to be gained.	
F	This interviewee was contacted because their workspace is situated within an innovative building housing most of the information technology team. The researcher sought an understanding of the work environment and the interviewees' involvement in the RSA project.	G
G	This interviewee had a significant role in the RSA project and was interviewed to outline their middle management personal banking perspective.	H, I, J
H	The researcher sought an understanding of the RSA project from an end users perspective from this interviewee.	I
I	The researcher sought an understanding of the RSA project from another end user from this employee.	
J	The researcher sought an understanding of the RSA project from another end user of the system from this employee who was housed in a different location to interviewee H and I.	

Table B3 provides a summary of each of the observations undertaken in the process of carrying out this research. The table describes the setting of the observation and the length of observation. The selection and number of observations relates to the sampling strategy and theoretical saturation (discussed in Section 5.5.2).

**Table B3 – Description of the observations undertaken**

<b>Description of setting</b>	<b>Scope of observation</b>	<b>Length of observation</b>
Steering Group Meeting	Major project stakeholders from all parts of the organisation were present to discuss the position of the project.	1 hour
Steering Group Meeting	Major project stakeholders from all parts of the organisation were present to discuss the position of the project.	1 hour
End User Training	End users of the systems were present (30) to be trained by a “super users” in the use of the new system pre-rollout.	1 hour
Workgroup Meeting	Meeting regarding stakeholders with specific needs of the new system to inform them of what they can expect from the new system.	30 minutes
Head Office Visit (developers and end users)	Observation of developers and end users of the system shortly after implementation of the project.	30 minutes
Queen Street Visit (end users)	Observation of end users of the system after the implementation of the project.	25 minutes
C-Drive Visit (development site)	Observation of the main technology development centre where the project was created.	1 hour

Table B4 provides a summary of the documents reviewed in the process of undertaking this research. The selection and number of documents relates to the sampling strategy and theoretical saturation (discussed in Section 5.5.2).

**Table B4 – Description of the documents utilised**

<b>Description of document</b>	<b>Division of organisation sourced from</b>	<b>Length of document</b>
Vision and Values Document	Corporate Services	2 pages
HR Documentation (Corporate health check)	Corporate Services	20 pages
Corporate Intranet	Corporate Services	Various
Site Design (workplace) Publication	Information Technology	29 pages
Implementation Video	Personal Banking	8 minutes
IT Product Video	Personal Banking	5 minutes
Communications Video	Personal Banking	21 minutes
Project Scoping Paper	Personal Banking	12 pages
Project Discussion Paper	Personal Banking	23 pages
IT Product Document	Information Technology	66 pages
Steering Group Meeting Agenda	Information Technology	2 pages
Steering Group Meeting Minutes	Information Technology	11 pages
Annual Reports	www.asb.co.nz	Various
Industry Reports	www.kpmg.co.nz	Various

It is also important to note that the research took notes after all interviews and observation visits to ASB. This enriched the empirical base outlined in this appendix.

## APPENDIX C – INFORMATION SHEETS GIVEN TO EACH PARTICIPANT

---

### Competitive Advantage in “Techno Savvy” Organisations Participant Information Sheet



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

---

MANAGEMENT SCHOOL  
*Te Raupapa*

---

#### **Objective**

The objective of this study is to investigate the way in which “techno savvy” organisations, such as ASB Bank, use information communication technology based resources to gain a competitive advantage.

#### **Your Role**

I wish to discuss with you the way in which you are involved with the development, use, or evolution of information communication technologies at ASB Bank. This will principally be addressed through the discussion of technology based projects you have been involved with or technology based products you use in your work. This will all take place within a single interview of approximately one hour duration.

#### **Research Outcomes**

Your contribution will form an integral part of my PhD research in the Department of Management Systems. In addition to this, I hope to have results of my work published in academic journals.

#### **The Benefit to You**

Your contribution will aid me to identify key technology based resources, which enable ASB Bank to achieve a competitive advantage. As a result of this, I will be able to provide a valuable in-depth analysis of how these resources are developed, evolve and are used in combination with other resources in the organisation. Obtaining an in-depth, independent analysis such as this will allow ASB Bank to have a close look at how they develop valuable resources. I will supply my summary results to participants involved in this study.

#### **Confidentiality**

Any information disclosed will remain confidential. Your interview will be recorded for transcription, after which it will be deleted. The transcriptions will be coded so that your name or any other obvious reference to you cannot be found and will be stored in a locked filing cabinet. The nature of the study means the participants are not the subjects of the study, rather the processes used in the organisation is the focus.

#### **Declaration**

If you agree to take part in the study, you have the right to:

1. Refuse to answer any particular question, and to withdraw from the study at any time.
2. Ask any further questions about the study, which occur to you during your participation.
3. Be given access to a summary of the findings from the study when it is concluded.

#### **Contact Details**

If you have any further questions or queries, please feel free to contact me in any of the following ways:

Post	Karyn Rastrick Department of Management Systems The University of Waikato Private Bag 3105 Hamilton
Phone	07 838 4207
Email	karyn@waikato.ac.nz

## APPENDIX D – SAMPLE INTERVIEW QUESTIONS

---

### Competitive Advantage in “Techno Savvy” Organisations Sample interview questions



THE UNIVERSITY OF  
**WAIKATO**  
*Te Whare Wānanga o Waikato*

MANAGEMENT SCHOOL  
*Te Raupapa*

---

Based upon the research questions being addressed in this study, the following are examples of the types of questions used within the interviews. The exact questions will vary depending on who is being interviewed and what area of the business they originate from. These questions will be used as a base but it is expected that these will evolve over time as the interviewer completes more interviews. It is also expected that these questions will be expanded upon within the interview setting. This leaves the interviewer free to explore, probe and ask further questions that will illuminate the subject area (Patton, 2002).

#### Scene Setting

How is your department/division made up?

- ✓ Staff Numbers
- ✓ Divisions

What is your role in the organisation?

- ✓ Present
- ✓ Past
- ✓ Time in organisation
- ✓ Number of staff responsible for
- ✓ Accountable to

#### Information Technology

What are core information systems in your area?

- ✓ Customer facing and non-customer facing
- ✓ Compared with others in the industry
- ✓ What do you see as critical assets

How would you discuss competitive advantage in your company?

- ✓ Information Technology
- ✓ Human Resources
- ✓ Customers perception
- ✓ Benchmarking

How are new ideas generated in your company?

- ✓ Top management
- ✓ Information technology development team
- ✓ Customer service
- ✓ Customers

Are ideas on product and process improvement taken seriously?

- ✓ Never
- ✓ Sometimes
- ✓ Always

How would you discuss your company in terms of:

- ✓ Innovation
- ✓ Risk-taking
- ✓ Bureaucracy

How independent are systems in your organisation?

How are IT projects initiated in your area?

- ✓ Proactive
- ✓ Reactive
- ✓ Driven by who

How would you describe the involvement your staff have with IT development projects?

- ✓ What stages are they involved in

How are information systems developed in your company?

- ✓ Internally
- ✓ Externally

How are IT projects concluded?

- ✓ Technology review
- ✓ Team review
- ✓ Training
- ✓ Benefits calculated
- ✓ Feedback

How would you describe staff in your areas response to change?

Do staff in your area openly embrace new information technologies?

Do you have much trouble fitting information technology with the company culture?

### **Human Resources**

Is there a staff development program in place?

- ✓ Organisational wide
- ✓ Divisional

How would you describe your division in terms of:

- ✓ Communication and teamwork
- ✓ Trust and openness
- ✓ Conflict

Do staff in your area have any shared training/knowledge sharing with your parent company?

Do you think there is a shared understanding of what your department does across other divisions of the company?

Do staff in your area have an understanding of other areas of the business?

Do staff from your area participate in:

- ✓ Business planning
- ✓ IT planning

## **APPENDIX E – EXAMPLE OF GROUNDED THEORY DATA ANALYSIS**

---

The following is a brief example of how the grounded theory process was applied to this research. The sample provided uses an extract from a transcript from one interview which is representative of other transcripts. Any reference which may identify the participant has been removed. Since the sample is only a brief extract it does not highlight all of the phenomena, categories, and concepts, however, the example is representative of the process used throughout the data analysis.

### **TRANSCRIPT EXTRACT**

The following extract is an example of an interview transcript in its pre-coded state, i.e., what the researcher began with prior to employing the grounded theory approach to data analysis.

Uh, the senior team, the chief executive said I want to be able to do this, and as a result of that, so it was top down, we will do this. And then a lot of collaboration across functionality between branches, credit department, and the technology team, about how best to do this. In fact, it was a painfully long period of time while everyone collaborated on it, because everyone kind of, once you decided to do stuff you want to get on and do it, so it kind of dragged on for a long time while we figured out the most optimum way of doing it. And the reason it took so long is because of having that good conversation between the guys in the branches how were saying we want to do this way and our technology guys saying well, are you sure that makes sense that is kind of the old world, why don't we do it like this, because people don't know what they don't know. So they just want to automate what they have and so you have to kind of have this conversation with them where you stimulate business process reengineering and the like.

### **OPEN CODING**

The first step in employing a grounded theory approach to data analysis is using open coding. This stage is undertaken to identify initial phenomena in the transcript.

During the process of open coding the researcher examines the text looking for events, objects, actions, or interactions which are considered relevant to the research. Phenomena are identified in the below extract and are numbered and indicated in bold.

Uh, the senior team, the chief executive said **(1) I want to be able to do this**, and as a result of that, so it was **(2) top down**, we will do this. And then a **(3) lot of collaboration across functionality** between branches, credit department, and the technology team, **(4) about how best to do this**. In fact, it was a painfully **(5) long period of time** while **(6) everyone collaborated** on it, because everyone kind of, once you decided to do stuff you want to get on and do it, so it kind of **(7) dragged on for a long time** while we **(8) figured out the most optimum way of doing it**. And the reason it took so long is because of having that **(9) good conversation** between the guys in the **(10) branches** how were saying we want to do this way and our technology guys saying well, are you sure that makes sense that is kind of the old world, why don't we do it like this, because **(11) people don't know what they don't know**. So they just want to automate what they have and so you have to kind of **(12) have this conversation with them** where you stimulate **(13) business process reengineering** and the like.

Phenomena identified from the extract are labeled and listed below.

- (1) Future plan
- (2) Top down drive
- (3) Collaboration across functionality
- (4) Optimisation sought
- (5) Time consuming
- (6) Everyone collaborated
- (7) Long time
- (8) Searched for optimal way
- (9) Good conversation
- (10) Different visions/plans
- (11) Limited foresight in other areas
- (12) Two way conversation

(13) Business process reengineering

The next stage of open coding involved grouping similar phenomena and re-labeling them as concepts. This process (as it related to the small extract presented in this Appendix) is shown below. The number shown in brackets at the end of the concept names relate to the phenomena numbered in the previous step.

- (A) Strategic plan (1)
- (B) Leadership (2)
- (C) Collaboration (3, 6)
- (D) Optimisation (4, 8)
- (E) Time intensive (5, 7)
- (F) Open dialogue (9, 12)
- (G) Conflicting plans (10)
- (H) Limited external awareness (11)
- (I) Business process reengineering (13)

The last stage of open coding involved comparing concepts with each other to identify similarities and differences. Concepts that were found to be conceptually similar or related are then termed categories. The list of categories (which relate to the extract presented in this Appendix) are presented below. The letters shown in brackets related to the concepts presented in the previous step.

- (I) Strategic and Leadership (A, B)
- (II) Ways of working (C, D, E, F, I)
- (III) Conflicts (G, H)

Please note: concepts and categories presented here differ slightly from labeling used in the phenomena table presented in Appendix F. The different labels reflect the evolution of concepts and categories which occurred over time.

### **AXIAL CODING**

This stage of the grounded theory analysis involves starting to reassemble the data. Axial coding involves finding relationships among categories. This process occurred at a more abstract level over several months. The researcher has tried to recreate some of the process to illustrate the axial coding stage. Relationships among

categories which relate to the open coding results (presented above) are presented below. The roman numerals related to the last stage of the open coding process.

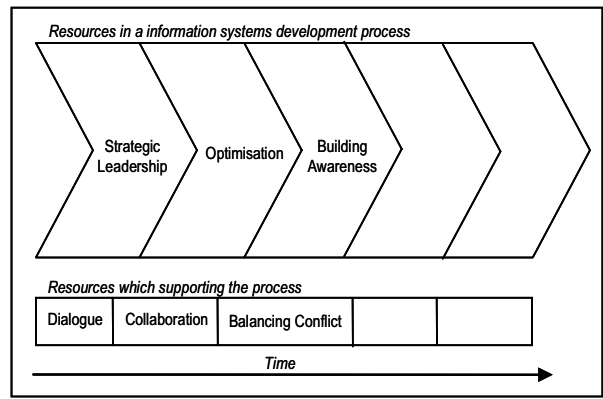
Things to do with process: strategic and leadership (I) and Conflicts (III)

Things that are supportive of the process: ways of working (II)

**SELECTIVE CODING**

Selective coding involves integrating categories into a final theoretical scheme. Again this process (or more particularly the final theoretical scheme) evolved over several months. The primary method this researcher used in the selective coding stage was developing diagrams to examine the interrelationships between categories. An example of how a diagram would have helped undertake the selective coding process (using the data presented in this Appendix) is presented in Figure E1. As can be seen the diagram is not complete, rather it is indented to demonstrate how the researcher would use the limited information in this Appendix to make sense of the data.

Figure E1 – Example of how a diagram could help the researcher in the selective coding stage



## APPENDIX F – PHENOMENA TABLE

The table presented below (Table F1) summarises the occurrences of phenomena, concepts and categories that were created during the grounded theory analysis (described in Chapter Five). Presenting data from the grounded theory analysis in phenomena tables (counts of phenomena, concepts and categories that occurred in the raw data) involves turning qualitative data into a more quantitative form. While this is not completely desirable, since the researcher undertook a qualitative approach, in this case the phenomena table provided another supporting tool to discuss the results of the research. The phenomena table presented below was created from the raw data gathered in the interview process. While other data collection approaches were also utilised in this research, data from such sources are not reflected in the phenomena table.

**Table F1 – Summary of interview data**

Category	Concept	Phenomena	IT Occurrences +	Business Occurrences ^	Total Occurrences
Strategic Advantage (46)*	Group Strategy	Vision/Planning	6	1	7
		Alignment	5	4	9
	Divisional Strategy	Vision/Planning	24	2	26
		Awareness	4	0	4
Human Resource Advantage (105)*	Culture	Pride	6	1	7
		Low turnover	6	4	10
		Engaged	5	2	7
		Open	5	5	10
		Balance	5	9	14
		Passion	4	1	5
		Trust/respect	3	1	4
		Set up for success	3	3	6
		Belief	2	2	4
		Motivated	2	1	3
		Teamwork	1	4	5
		Understanding	1	1	2
		Shared vision	0	4	4
	Supportive/caring	0	1	1	
	Staff Development	Mentoring/encouragement	4	0	4
		Aware of needs	1	2	3
		Relationship management	1	0	1
		Continuously develop	0	3	3
		Training	0	1	1
Talent spotting		0	1	1	
	Change Management	Embrace Change	7	3	10
IT Advantage (464)*	Leadership and Vision	Awareness	15	7	22
		Personal traits	9	0	9
		Vision/goals	9	13	22
		Managing resources	7	0	7
	Innovation and Continuous Development	Process	28	7	35
		Strive for	18	9	27
		Risks	7	0	7

	Relationships	Collaboration	13	0	13
		Good rapport	7	0	7
		Cross functional teams	3	0	3
		Strong internal links	0	1	1
	Shared Understanding	Business/IT work interactively	3	0	3
		Internal transfer	3	1	4
		Roles and process understanding	2	0	2
	Knowledge Management	Longevity of staff	4	0	4
		Capability index	1	0	1
		Knowledge sharing	0	11	11
		Lesson sharing	2	0	2
		Learning from experience	0	6	6
		Sharing with parent	2	0	2
		External partners	5	1	6
	Development Astute	Mask complexities	4	0	4
		Agility	3	0	3
		Rapid development	3	0	3
		Test processes	1	0	1
		Business awareness	1	0	1
	Implementation Advantage	Review/debrief	16	8	24
		Delivery	12	23	35
		Communication	9	31	40
		Engaged	7	2	9
		Specialist knowledge groups	4	0	4
		Alignment	4	7	11
		Awareness	3	17	20
		User involvement	2	2	4
Functionality	Product	8	5	13	
	Result of product	7	7	14	
	Volume advantage	5	0	5	
	IT and good people	7	0	7	
Perception	Ahead	8	1	9	
	Halo effect	1	0	1	
	First mover	1	0	1	
Success	External	22	16	38	
History	CEO Technology background	1	1	2	
	First mover, quick learner	1	1	2	
	IT loyalty	1	0	1	
	IT enabler	1	0	1	
	Organic growth	1	4	5	
	Total ownership of IT	0	4	4	
	No retrenchment	0	2	2	
	Independence from parent	0	1	1	
	Origins small regional	0	1	1	
	Legacy of culture reinforcing	0	3	3	
	Confidence from experience	0	1	1	

\* The number in brackets beside the category names represents the total number of occurrences of this category seen in the raw data.

+ 'IT occurrences' identifies the number of phenomena identified from interview transcripts of interviews where the interviewee was based in an information technology orientated role within ASB.

^ 'Business occurrences' identifies the number of phenomena identified from interview transcripts of interviews where the interviewee was based in a business orientated role within ASB.

Please note: the development of concepts and categories and hence the final model presented in this research evolved over several months, however the phenomena table presented above was only developed at one point and time. The researcher

favoured visual depictions of the data to help make sense of the research findings. Therefore, multiple diagrams were developed over time as the researcher made sense of the data.

## **APPENDIX G – LIFECYCLE AND EMBEDDED FOUNDATIONAL CAPABILITIES – CROSS REFERENCED**

The following tables provide details of how each of the resources (outlined in Chapter Seven) form to create lifecycle and/or embedded foundational capabilities. The tables also provide the reader a page number on which the contributing resources were individually discussed in Chapter Seven. Table G1 outlines the cross references for lifecycle capabilities.

**Table G1 – Lifecycle capabilities – Cross Referenced**

<b>Capability</b>	<b>Resource</b>	<b>Page</b>
Strategic Leadership	Group Strategy	159
	Divisional Strategy	164
	Leadership and Vision	105
Strategic Action	Innovation and Continuous Development	110
	Leadership and Vision	105
	Project Initiation	*
	Feasibility Study	*
Technical Ability	Development Astute	125
	Technical Knowledge	*
Institutionalisation	Implementation Advantage	127
	Change Management	156
	Shared Understanding	118
	Marketing	*
Knowledge Management	Staff Development	153
	Knowledge Management	122
Success	Success	141
	Perception	139

\* As noted in Chapter Eight, four other resources (marked with a star) were seen to contribute to lifecycle capabilities but were not identified as sources of advantage in Chapter Seven.

Table G2 outlines the cross references for embedded foundational capabilities.

**Table G2 – Embedded Foundational capabilities – Cross Referenced**

<b>Capability</b>	<b>Resource</b>	<b>Page</b>
Joint Problem Solving	Group Strategy	159
	Divisional Strategy	164
	Shared Understanding	118
	Relationships	115
	Staff Development	153
	Implementation Advantage	127
	Knowledge Management	122
Entrenching Nexus Points	Shared Understanding	118
	Relationships	115
	Staff Development	153
	Implementation Advantage	127
	Change Management	156
Social Fusion	Shared Understanding	118
	Relationships	115
	Culture	146
	Success	141
Open Dialogue	Group Strategy	159
	Divisional Strategy	164
	Shared Understanding	118
	Relationships	115
	Culture	146
	Implementation Advantage	127
Knowledge Diffusion	Staff Development	153
	Knowledge Management	122

## APPENDIX H – RECENT EMPIRICAL RESEARCH EXAMINING DYNAMIC CAPABILITIES

Table H1 provides a brief review of empirical research which examines dynamic capabilities.

**Table H1 – Recent empirical studies which examine dynamic capabilities**

Study	Capabilities assessed	Empirical approach	Major finding
Evolution or revolution? Dynamic capabilities in a knowledge dependent firm (Macpherson et al., 2004)	Technological and organisational innovations	Case study	Relational elements of inter-firm transactions provide entrepreneurs with the opportunity to expand their organisational capabilities
Information technology as a facilitator for enhancing dynamic capabilities through knowledge management (Sher & Lee, 2004)	Knowledge managements effect on dynamic capabilities	Survey	Management of both endogenous and exogenous knowledge through IT applications significantly enhances dynamic capabilities
Types of information technology capabilities and their role in competitive advantage: an empirical study (Bhatt & Grover, 2005)	IT infrastructure, IT business experience, relationship infrastructure, and intensity of organisational learning	Survey	Quality of IT business expertise and the relationship infrastructure had a significant effect on competitive advantage. The intensity of organisational learning (a dynamic capability) was also found to be significantly related to all of the capabilities
A dual-level analysis of the capability development process: a case study of TT&T (Pan et al., 2006)	Capability to strategise; capability to be flexible; capability to engender trust	In-depth case study	The research uncovered how fundamental capabilities can be leveraged through specific actions (outlined in the research)
Technology-based new product development partnerships (Ettlie & Pavlou, 2006)	New product development partnership dynamic capabilities; IT support for new product development	Survey	The study highlighted the importance of new product development partnerships and the need for IT support in such relationships
Dynamic capabilities and the role of organisational knowledge: an exploration (Prieto & Easterby-Smith, 2006)	Forms of knowledge as a dynamic capability	Longitudinal case study	Social and technical organisational knowledge contribute to flexibility in resources and routines (and dynamic capabilities)

Resources, dynamic capabilities and performance in a dynamic environment: Perceptions in Taiwanese IT enterprises (Wu, 2006)	Willingness to cooperate; innovation speed; market response speed; production efficiency; and production flexibility of a firm	Survey	Performance of a firm is influenced by existing dynamic capabilities
Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness (Menguc & Auh, 2006)	Market orientation – using an internal approach by focusing on existing stocks of resources within the firm while controlling for environmental conditions	Survey	The effect of market orientation on firm performance is strengthened when market orientation is bundled together with internal complementary resources like innovativeness
Knowledge integration and information technology project performance (Mitchell, 2006)	Project completion, and two dimensions of management’s integrative capability; external knowledge and internal knowledge integration	Longitudinal survey	Integrative dimensions significantly mitigate the duration of IT-related project delays. The importance of management structure was also highlighted
From IT leveraging competence to competitive advantage in turbulent environments: the case of new product development (Pavlou & El Sawy, 2006)	IT leveraging competence	Survey	IT leveraging competencies is seen to have a mediating link to functional competencies and dynamic capabilities (and hence competitive advantage)