IT VALUE MANAGEMENT IN LEADING FIRMS
THE FIT BETWEEN THEORY AND PRACTICE

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ABSTRACT

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This research addresses the perpetual problem raised by many firms of how to improve management of value from information technology (IT), particularly from strategic IT-enabled initiatives. Evidence in academic and professional literature shows firms often perceive poor returns on IT investments overall. The research specifically addresses the question of how firms leading in BtoB (business-to-business) e-business in their industries can improve the management of value from IT. It focuses on value identification, creation, and capture from strategic IT-enabled business initiatives such as e-business. The scope of the research is restricted to management of value from IT over the business lifetime of strategic IT-enabled initiatives, as expressed by current theory and as demonstrated in practice. The theoretical focus pursues models or frameworks for IT value management that attend to all the phases in the business lifetime of an IT-enabled initiative and that also tightly connect IT value management with business strategy and activities. The objectives are to assist firms to improve management of value from their IT and, specifically, to contribute to the development of theoretical considerations and frameworks in academic research targeting IT value exploitation.

The thesis discerns theoretical frameworks currently available in the academic literature to advise firms on IT value management throughout the business lifetime of an IT investment. Analysis of the literature reveals that only two theoretical frameworks currently conform to criteria for integrated IT value management. These are models proposed by Soh and Markus (1995) and Peppard and Ward (2004). Five case studies of firms leading in BtoB e-business in their industries were conducted using an interpretive approach to the study of the phenomenon of IT value management in the field. Current theory is compared with perceptions and practice in the field regarding both evaluation and exploitation of IT value.

The research shows that the models' IT value management approaches are not emulated in the field and also reveals several significant gaps between the theory and practice. The empirical field findings show that the concepts highlighted by these gaps are key to improving IT value management. These key concepts form the basis of extension to current theory and an Integrated IT Value Management Framework is proposed to assist firms to improve IT value management from strategic IT-enabled business initiatives. Although the Framework requires further research to test and confirm its robustness in theory and practice, it is a distinct development in knowledge and theory about IT value management with evident implications for practice. The thesis' various research outcomes provide a significant contribution to theoretical understanding of how IT value management can be improved.

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DECLARATION

I certify that, except where due acknowledgment has been made, this work is that of myself alone, no material in the thesis has been submitted previously (in whole or in part) to qualify for any other academic award, and the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research programme.

Susan V. Keyes-Pearce

15 December 2005

TABLE OF CONTENTS

LISTS OF FIGURES AND TABLES

List of Figures

List of Tables

CHAPTER ONE

THE RESEARCH CHALLENGE

1.1 The IT Value Management Problem and the Research Rationale

1.1.1 Establishing the research challenge

This chapter sets the scene for research into management of value from strategic IT-enabled business initiatives. It outlines and explains the research problem and rationale from both practitioner and academic perspectives. It then articulates the research objectives and supports them with a set of pragmatically connected research questions. The overall research approach is outlined with an introduction of the research epistemology and associated methods, a brief description of the context for the field component, and definition of the research boundaries. The last two sections outline the structure of the remaining thesis presentation and the research's contribution to the body of knowledge in information systems and business.

Terms and acronyms frequently used throughout the research are described here to reduce the need for longer terms and repeated definitions and explanations:

- *Information technology* (IT) refers to all the technology and systems organisations may utilise for information management or for control or monitoring of other systems. Reflecting common industry usage and unless otherwise stated, IT is taken to also mean information systems (IS). The abbreviated forms, IT and IS, are used frequently and interchangeably.
- *IT value management* refers to overall management of value from IT. It includes identification, creation, and capture of value from IT through the business lifetime of an IT initiative (for example, infrastructure) or an IT-enabled business initiative. This term is further explained and discussed in the review of research literature on IT value in Chapter Two.
- *CIO, COO, CFO, and CEO* are used frequently and refer to Chief Information Officer, Chief Operating Officer, Chief Financial Officer, and Chief Executive Officer or their equivalent roles.
- *Leading firms* applies to the context for the field component of the research. 'Leading' refers to firms leading in e-business interactions in the BtoB context within their industries, and where their expectation of value from these types of strategic IT-enabled business initiatives is high. The rationale for this choice of context for the field research is outlined in sections 1.1.3, 1.2.2, and 3.5.1.

1.1.2 The research problem: Field evidence

The essence of the research problem is that firms are uncertain not only about the value they may receive from IT investments, but how to ensure they capture that value. This is particularly the case for e-business initiatives. The major symptom is that organisations often cannot clearly identify financial IT payoff nor can they ensure all the value from potential benefits is identified and realised. At the US Computerworld's Premier 100 IT leaders Conference 2002, 68% of 150 IT executives said they rarely measured return on investment (ROI) six months after completion of projects and 65% said that they did not have the 'knowledge or tools' needed even to calculate ROI (Bushell 2002). Consulting and IT services provider CSC's survey data show that North American firms indicate 46% of IT investments have unknown ROI, and in Australia, 53% say ROI for general technology investment is unknown (CSC 2001). Where the return on IT investment is unclear, problems experienced with IT initiatives are not. The CEO of the Commonwealth Bank of Australia, branded IT as a "costly failure" at the World IT Congress in March 2002, and the National Australia Bank was reported as having a project running $200M over budget (Colquhoun 2002). The problem not only occurs in the private sector but in government. In England "the government has staked its credibility on delivering clear improvements to public services NHS". For £12 billion over the next five years from 2003, it proposes to reduce costs and increase responsiveness within the National Health Service by 'doing away with paperwork', delivering 50% by December 2005. Yet since government IT projects often fail, this "could be an IT fiasco of unprecedented proportions" (The Economist 2002). Although organisations realise they must spend on IT and ensure they get business value, either as a competitive necessity or to reduce risk (Berinato 2002), for some organisations IT is still 'an expensive mess' (Feld and Stoddard 2004).

CIOs still see that the issue of IT value remains a problem that lies partially in their control. The pressure to demonstrate their IT group's contribution to business growth and efficiency is indicated in issues ranking by CIOs in 2003, where measuring the value of IT investments ranks fifth after IT-business alignment, IT strategic planning, security, and staffing (Luftman and McLean 2004). In 2005, IT value ranks even higher. Gartner's 2005 comprehensive survey of CIOs priorities, initiatives, and issues finds that demonstrating the business value of IT ranks third in the 2005 priority rankings (second in 2003 and 2004), after delivering projects that enable business growth and linking business and IT strategies and plans (GartnerEXP 2005).

A second symptom is that there are multiple ways in which firms try to assess potential value of IT investments as well as real return on investment. There is little agreement on what metrics are most realistic and suitable and which also give a translatable output for shareholder consumption. CEOs, CFOs and shareholders want tangible proof of payback on IT investments (Ellis 2001). Some firms insist on 60-90 day ROI, low risk and high rapid return on the investment. Others believe that this is counter-productive and see lack of integrity in ROI estimates, including an

incentive for project leaders to be "creative with numbers" (Bushell 2002). Traditional use of ROI calculators such as IRR, NPV, and Payback Period lack inclusion of well determined productivity and process benefits. The flaw with these measures is that the benefit figures used are not predicted through good methodology and so give an unrealistic result. There are also few methods in use for tracking benefits and comparing proposals. (Koch 2002). Although boards are becoming more focussed on increasing public trust and expect company executives to explicitly report on value returned from IT investment as part of the corporate reporting supply chain (DiPiazza and Eccles 2002), CIOs in many organisations are under pressure to produce business cases with ROI that proves the value of the proposed investment and yet 'nobody believes the ROI' (Bushell 2005).

Researchers measure IT value at various levels of analysis (economy, industry, firm, business process and individual), however understanding where potential value lies and how best to measure realised value from investments in IT are important concerns for both academics and managers (Davern and Kauffman 2000). Research shows that market and shareholder response to announcements of 'innovative' IT investments are associated positively with the context of the prevailing conditions in the industry regarding competitor IT-enabled actions, and not as isolated events (Richardson and Zmud 2002), but this is only an association and not a certain measure of return on investment. Devaraj and Kohli (2002) suggest that "the e-commerce era has brought a plethora of new metrics' for IT payoff and which reflect the customer interaction with the company but that determining whether it was the IT which influenced firm improvements or some other changed factor in the company is difficult.

A third symptom is that much of the benefit from e-business initiatives has yet to be realised. Firms are unable to identify the full potential for value creation from these initiatives. Business Week reports that to survive in the current U.S. weak economy, companies have to keep wringing productivity gains out of existing IT and resume at least modest IT spending by 2006. " 'They have to do it, or they're dead,' says Standard & Poor's economist David A. Wyss. … Despite the hand-wringing over the bursting of the Net bubble, information technology continues to contribute to productivity growth". Business Week's analysis also shows that by the end of 2007, IT investments could yield US$140 billion in annual cost savings, much of it due to web-based IT initiatives (Mullaney and Coy 2003). There is even more new evidence for IT's contribution to firm-level productivity; particularly that greater IT contributions to productivity occur over 3-7 years, well beyond the useful returns in the first years of service (Brynyolfsson and Hitt 2003). However, this is relatively new evidence of firm and industry benefits from IT and e-business.

Prior findings show that many organisations expect to make customer acquisitions and cost savings but are not sure what other value may be created. In 2001, the financial services industry globally saw the biggest barrier to e-business in the industry as "unclear return on investment" (CSC 2001).

Many firms are also concerned that they are unable to identify just how e-business will affect their industry value chains and where their own organisation will be able to create and capture value in the future. For example, some investment banks might find they lose business through internet-enabled disintermediation (Field 2001). For many industries, the return from BtoB (business-to-business) e-business initiatives is potentially bigger than from business-to-consumer. The financial services industry is taking a lead in adoption of BtoB initiatives and also extending their global reach and their range of services. Whilst more than 75% of global respondents in financial services are currently planning implementation of e-business strategy, Australia appears to be leading the world with BtoB initiatives in financial services (CSC 2001). Further, although there are numerous e-business challenges for wholesale financial markets, individual organisations can undertake initiatives to improve their efficiency, competitiveness and market positioning in this area (Elliot and Briers 2001).

How can organisations attack this problem of uncertainty in obtaining IT value? The identified pieces of the problem include that organisations are unsure about the return on their IT investments, they would like to be more certain about value from e-business initiatives, and they often find measurement of IT value difficult. Together these parts of the problem imply that organisations would welcome ways to improve their management of value from IT with the aim of improving their overall capture of that value. The indication for research is to develop further assistance that specifically helps firms to improve management of value, that is, value identification, creation and capture, from strategic IT–enabled business initiatives such as e-business.

1.1.3 The research rationale

How is the business problem of IT value reflected in academic literature? There have been many studies and theoretical developments regarding return on IT investments (and how to measure these) or on value creation from IT. However, recent literature still identifies the problem and clearly indicates that moves to e-business have created some different environmental and competitive influences that sustain management of value around IT as a research issue. Some examples are shown here to illustrate how research in this area is still required. Chapter Two provides an extensive review of academic literature focussed on IT value and its management.

e-Business IT value

The complexity and cost of strategic IT-enabled business initiatives has increased. This means organisations are being pushed to rethink the value of IT and ensure value is realised from their IT investments (Davern and Kauffman 2000, Kudyba and Diwan 2002). Drivers of the potential for value creation are still being identified for some sectors of e-business and raise the issue of changes in the industry value chains (Amit and Zott 2001). Common financial and operational measures that focus on cost and performance give an incomplete picture of its strategic impact on the firm

and the true value which could be created and captured from IT investments and therefore give sustainable returns. Identifying where the value is created and where it can be captured has proved problematic for organisations (Marcolin 2001, Sawhney 2001). Approaches such as the Balanced Scorecard are often used in an attempt to both ensure value is created from strategy implementation and to measure that value (Ahn 2001). Because IT in e-business creates value in new ways, to realise IT value firms need to promote e-business in the firm's value chain processes and this has implications for the way firms approach IT investment and management (Zhu and Xu 2004). Whilst new business value is created through specific internet-enabled value chain activities, in order to create value through their online information capabilities firms should consider the readiness of other players in the value network and recognise the importance of supplier-side interactions in improving customer-side interactions (Barua, Konana, et al 2004)

In order to meet strategic goals, some contemporary firms have taken approaches to managing IT that differ from established patterns. As business requirements change and time frames shorten, managers under pressure to move forward are concerned that decisions made to satisfy immediate priorities may increase the risk of re-work, raising the total cost of the investment and delaying the creation of value (Earl and Kahn 2001). Earl and Kahn highlight that, for some firms, the IT function is now perceived no longer as just supporting the business but being a key to building the business. Decision-making mechanisms and relationships change in expression of this new ontology. The firm's altered view of the role of IT in the organisation and the new style of the IT function may affect how value is created and captured from strategic IT-enabled business initiatives. Sauer and Willcocks (2002) also suggest that the strategic uncertainties of e-business mean that a different approach to managing IT and business is required. With new information technologies emerging as strategic differentiators, principles and models for organising the IT function are specifically driven by changes in the role of IT in industries and firms (Agarwal and Sambamurthy 2002). Some firms will need to completely rethink relationships with other firms and alter segments of their business models (Weill and Vitale 2001, Geis 2002, Madnick and Seigel 2002). Cases in the investment banking industry exemplify how e-business is changing industry business models (Ross and Woodham 2001). The conditions of business environments have changed. Competition now requires "more emphasis on innovation, adaptation and attention to rapidly changing environments" and "organisations need to nurture their knowledge and capabilities, strengthen and renew strategic alliances, align information technology and systems, in order to sustain the value generation and facilitate business services innovation to meet the demands of dynamic global competition. Traditional, functional and prescriptive strategy models are clearly redundant in these dynamic circumstances" (Hackney, Burn and Salazar 2004, p101).

These changed business conditions and evolving business models also mean that approaches to management of value from strategic IT-enabled initiatives need to be adapted to the complex contexts of necessary IT-mediated interactions with other organisations.

Research on IT value management for practice

Research on IT value has largely focussed on quantitative measures and metrics for IT payoff, return on investment, productivity, efficiency or overall firm performance. Brynjolfsson and Hitt (1996) conclude that "the productivity paradox disappeared by 1991, at least in our sample of firms". For information systems, the 'productivity paradox' means that despite enormous improvements in the underlying technology, the benefits of spending on IT and systems have not been realised in organisational level and industry level productivity outputs. Other researchers suggest that the productivity problem is in realising anticipated economic benefits from IT investments, so they focus research on measurement tools designed to address why certain IT impacts occur at strategic business unit level (Barua, Kriebel and Mukhopadhyay 1995). Choosing the right metric is critical to the success of the assessment, yet the processes firms use to make choices regarding metrics for IT value are not well described and may result in metrics which are unsuitable and difficult to change and which are counter-productive (Hauser and Katz 1998). IT investment benefits are often measured using 'soft' metrics for subjective outcomes yet what gets reported upwards to the board tends to be objective numerical assessments of IT value (Chan 2000). Specific management practices (strategic alignment and IT evaluation) are associated with perceived payoff from IT investments yet IT goals are sensitive to the firm's environment and strategic intent for IT varies considerably across firms. Executive perceptions are a proxy for objective measures of realised IT value (Tallon, Kraemer and Gurbaxani 2000). From the CIO's perspective, current important issues for IT practice include the need for business executives to recognise the value of IT, linking IT and business plans through effective marketing of the value of IT, for the IT group to demonstrate leadership by enumerating the value of IT, and the need for executives to regularly demonstrate IT's value to the business (Luftman and McLean 2004). This perspective compels CIOs to 'sell' IT to the business, yet from a business perspective this should be unnecessary.

Most IT value research addresses "what value do IT investments provide?" rather than "why, where, how, when and to whom do these investments provide value?" which are about both value creation and value capture (Chan 2000). Nevertheless, several researchers have developed frameworks, models and mechanisms for creating or managing IT for business value (for example: Soh and Markus 1995, Weill and Broadbent 1998; Lenz, Gogan and Henderson 2002; Smith and McKeen 2003; Kohli and Deveraj 2004, Peppard and Ward 2004, Weill and Ross 2004). The review of IT value literature in Chapter Two indicates limited research on how to improve IT value

identification, creation, and capture in concert. For research, this signals room for further development of theoretical considerations and frameworks targeting IT value management.

1.1.4 The research objectives

Firms are uncertain what value they are getting from IT investments, particularly from e-business. Evidence from practitioners and academics supports a research objective that is not purely about helping firms to identify value or measure it, but targeted at finding an entire approach to management of value from IT. The objectives therefore specifically aim to establish how firms might be assisted through outcomes of academic contributions to knowledge and understanding of the area. The major research objectives are both empirical and theoretical:

- Objective 1. To assist firms to improve management of IT value from strategic IT–enabled business initiatives by comparing and critiquing how practice in firms leading in the business-to-business context aligns with current theory and, if required, revising or extending current theory;

and,

- Objective 2. To contribute to the development of theoretical considerations and frameworks in academic research targeting IT value management.
-

1.2 The Research Questions and Research Design

1.2.1 Key questions to drive the research

The nature of the problem and the state of current research are reflected in the objectives. These two objectives suggest that the foremost research question would most appropriately address how improvements to IT value management can be made for firm leading in the business-to-business e-business environment.

The Chief Research Question: ***How can leading organisations improve the management of IT value, that is, value identification, creation and capture, from strategic IT-enabled business initiatives such as business-to-business e-business?***

The two research objectives (1.1.4) can be met through addressing more specialised research questions tailored to cumulatively support the Chief Research Question and thereby the objectives. Table 1.1 summarises these key supporting research questions and their contribution to the chief question.

Table 1.1: Key Supporting Research Questions

Key Supporting Research Questions:	Contribution to the Chief Research Question
1. *What theoretical frameworks are currently available to address management of value from strategic IT-enabled business initiatives?*	- addresses the opportunity for further development of theory for IT value management;
2. *How do firms leading in the business-to-business context approach management of value from strategic IT-enabled business initiatives?*	- addresses the need to articulate and better understand current IT value management practice of firms leading in BtoB e-business, as exemplars of this practice;
3. *How does current theory reflect the requirements for management of value from strategic IT-enabled business initiatives for leading firms?*	- addresses the association of current theory with current practice;
4. *What adjustments or extensions, if any, could usefully be made to current theory to assist organisations to improve management of value from strategic IT-enabled business initiatives?*	- addresses whether the level of association between current theory and practice indicates a need for any extension of theory to further assist organisations to improve their IT value management.

1.2.2 An outline of the research design

Research theory and techniques

Chapter Three shows the development of the research design most appropriate to address the research objectives and questions. The research is founded on a constructionist epistemology. The theoretical perspective guiding the research approaches is interpretive, with a focus on the phenomenon of IT value management. The methodology is a multi-site case study where the unit of analysis is the firm.

Methods for data collection and analysis for theoretical data i.e. IT value management frameworks or models focus on investigation of current theoretical frameworks for comprehensive and integrated IT value management. The data sources are the academic literature. The theoretical frameworks are systematically analysed against substantiated criteria over several stages including a detailed comparison of theoretical frameworks conforming to the criteria for description or modelling of IT value management.

Empirical field data provides evidence of practice in IT value management. The investigation of current practice in management of value from IT-enabled strategic initiatives sources information about the firms' approaches from executive managers (Chief Financial Officer, Chief Operating Officer, Chief Information Officer, Business Unit Managers), conducting 19 interviews over five case firms. The data collection is triangulated through multi-perspective data collection and multi-site cases. Semi-structured interviews of approximately one-hour were conducted on the sites of

business, digitally recorded and the transcript verified by interviewees. Interview analysis used staged thematic coding which also established a data audit trail, supporting research validity and reliability. The research output includes case firm representations of approaches to IT value management.

An analysis for associations between current practice and current theory in IT value management shows systematic comparison for connections and gaps. An empirically-based theoretical response to these findings is developed. Key outcomes from all parts of the research are collated to address the Chief Research Question and ensure it has attended to the research problem.

Chapter Three develops, discusses and substantiates the research epistemology strategy and tactics in more detail.

The context for the field research

For many industries, the return from BtoB (business-to-business) e-business initiatives is potentially bigger than from business-to-consumer. The field research was undertaken within firms leading in BtoB e-business in their industries. The wholesale financial services industry is a leader in the development and implementation of strategic IT-enabled business initiatives, including extension of global reach and the range of services. The case studies include four firms in this category. The fifth case study is a leader in BtoB e-business in the building development and management industry.

The term *leading firms* refers to firms leading in e-business interactions in the BtoB context in their industries and so their expectation of value from these strategic IT-enabled business initiatives is high. The rationale for this choice of context for the field research is further outlined in section 1.1.3 and also in section 3.5.1 under methods for the field research component.

Detail regarding the field component of this research is discussed later as part of the methods and particularly in the section describing the process and criteria for site selection for case studies (section 3.5.1).

1.2.3 Boundaries defining this research

The scope of the research is restricted to management of value from IT over the business lifetime of strategic IT-enabled initiatives, as expressed by current theory and as demonstrated by practice in five established firms leading in business-to-business e-business. The theoretical focus is around models or frameworks for integrated IT value management, that is, those that attend to all the phases in the business lifetime of an IT-enabled initiative and that also tightly connect IT value management with business strategy and activities.

Whilst it is acknowledged that there are several significant contributing areas of the literature, these are beyond the scope of the research. Their connection to IT value management is discussed in Chapter Two, where the relevance of the range of IT value literature is also refined. This defines the limits of IT value research applicable to addressing the research problem (section 2.10 and Figure 2.4). The thesis does not cover all aspects of research on business value of IT, for example, it does not investigate IT value management practice from the accounting nor the economic perspectives of value. It is also not focussed on causative investigation such as the causal relationships between specific elements of practice and firm performance. The research emphasis is on how IT value management is currently approached and how it can be improved.

The use of field cases in this study has clear benefits and yet there will always be some questions regarding applicability of results to other firms whether or not they are in other industries. It is important to recognise that the case firms have a set of attributes in common that are key to them being in a position and condition suitable for this research focus. However, the results of this research should be considered in the light of the limitations of case study methods and of the interpretive theoretical perspective adopted for this research into the phenomenon of management of value from strategic IT-enabled business initiatives. Limitations of the research design, including generalisability of findings, are explained further in Chapter Three through how the design was derived, as well as more specifically in section 3.7.

1.3 Contributions to Business Information Systems Research

This research contributes new knowledge:

- to what is known about management of value from IT from a theoretical perspective
- to researchers' understanding of practice and the distinctions between academic thought and industry perspective and practice.

The research outcomes provide a significant contribution to theoretical understanding of how IT value management can be improved. The proposed Integrated IT Value Management Framework (section 7.2.3) is a new framework that extends upon current theory by addressing requirements for practice identified through empirical research, so filling the identified gaps between current theory and practice. It is founded on systematic analysis of the theory available in the literature and of practice. Not only does it extend current theory, it is designed to be translatable to action and so to assist organisations to improve their approach to IT value management in both operational and strategic contexts. The Integrated IT Value Management Framework has potential for development into a more theoretically informed model through incorporation of a broader range of literature and for further confirmation of its validity in practice.

Other contributions to knowledge about IT value management arise from the analysis of available theory and of practice and include:

- A synthesis of literature on IT value management.
- Promising theoretical support for integrated IT value management: Identification and analysis.
- Cases as illustrations of IT value management practice.
- A concise demonstration of the gaps between theory and practice in IT value management.

State-of-the-art research design is applied to the problem specifically to address the requirement for field case studies. This is appropriate to understanding current practice in how firms manage value from strategic IT-enabled business initiatives in order to determine if and how to extend current theory.

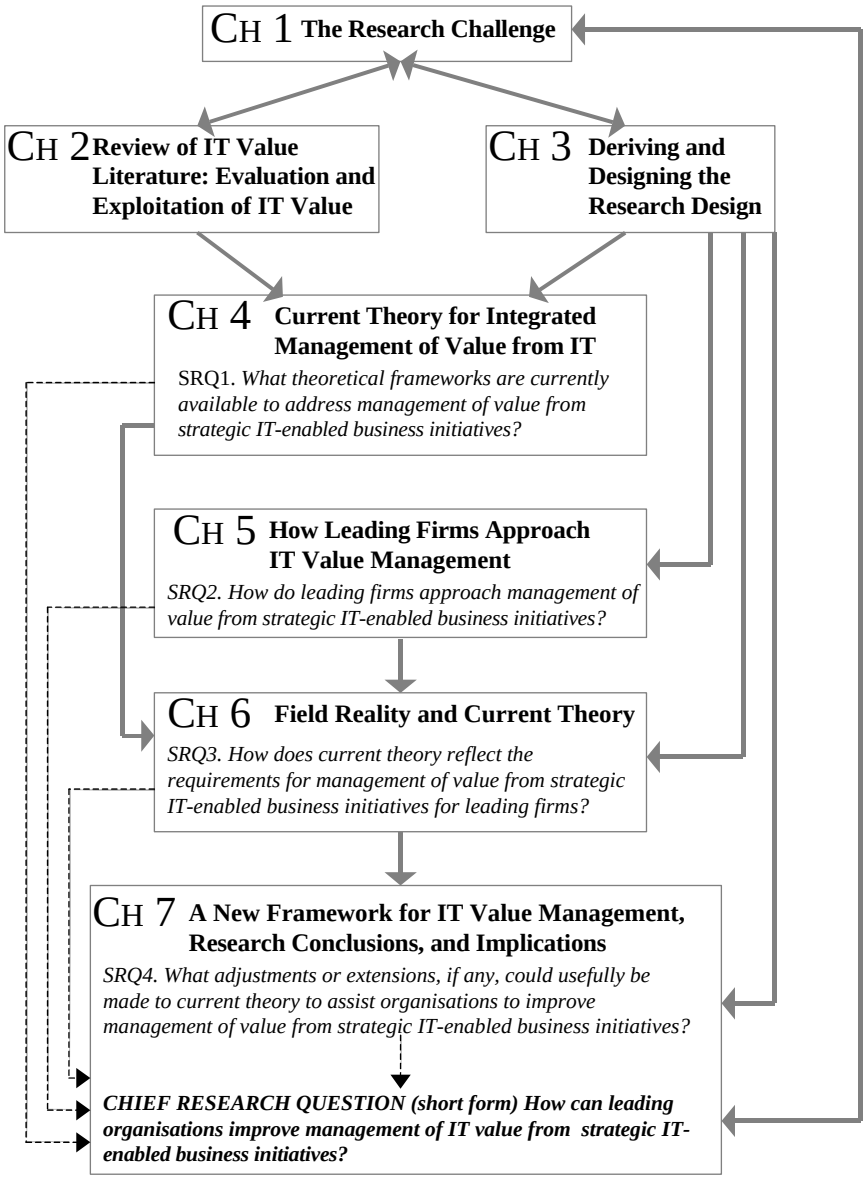
1.4 Overview of the Thesis

The chapters' structural logic and relationships are as follows:

- Chapter One delineates the problem, research objectives and research questions and outlines the approach to addressing these. This chapter underpins two foundations for the research activities, the literature review (Chapter Two) and the research design (Chapter Three).
- The research design determines the way that all the findings, discussion and outcomes of the research questions are managed in separate chapters.
- Chapter Four and Five address the first two supporting research questions regarding current theory for IT value management and identifying approaches to IT value management in the field.
- Findings from Chapters Four and Five are then combined and further analysed for association. This is presented in Chapter Six and addresses the third supporting research question.
- Outcomes from Chapters Four, Five, Six, and the first part of Chapter Seven are brought together in the second part of that final chapter in order to address the Chief Research Question. Chapter Seven also reviews the research's compliance with the stated objectives, its limitations, and implications and links the final chapter back to Chapter One's mission.

Figure 1.1 shows how the chapters are logically related in terms of addressing the research questions and bringing the research to closure. The grey arrows represent logical connections and where findings feed to the next part of the research. Dotted grey arrows represent transfer of outcomes to support the Chief Research Question and fulfil the objectives. A double-ended arrow represents the two-way connection between the intentions specified in Chapter One and the research's cumulative outcomes and its conclusions of Chapter Seven.

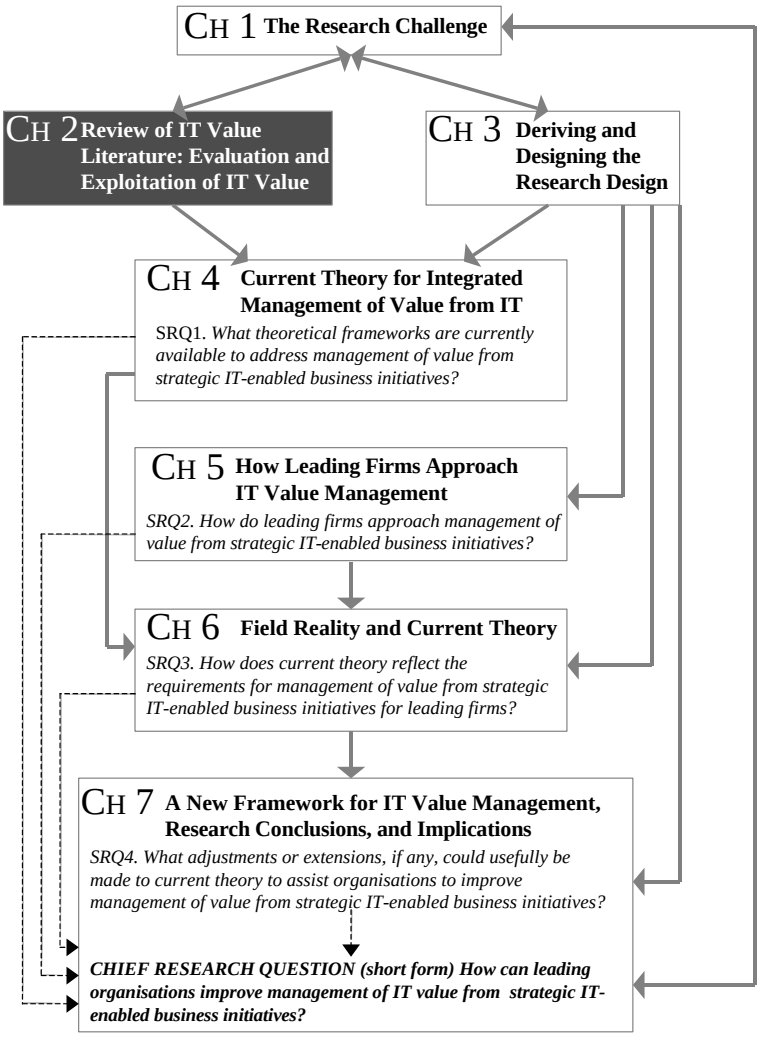
Figure 1.1 The Structural Logic and Relationships between the Thesis Chapters



CHAPTER TWO

REVIEW OF IT VALUE LITERATURE

EVALUATION AND EXPLOITATION OF IT VALUE



> In a down economy the focus of an organisation shifts from revenue expansion to bottom-line profitability. Where's the money going? Where's the value? Are we making the smartest decisions possible? In this environment, the need to create measurable value from IT investments becomes more critical than ever. And even with IT's ubiquitous acceptance, it's still not clear how to best measure the value IT investments create. As CIO, how do you explain where the dollars are going? And how do you explain it in terms that CEOs and CFOs understand?
>
> *Finding The Value In I.T. Where's The Money Going?*
> Deloitte Consulting January 2003

2.1 Representing IT Value Literature

2.1.1 Review purpose and structure

Comments similar to the one above still reverberate throughout many organisations. Academics also express concern that more research is required in the area regarding IT value across all aspects of IT in the business experience (ie evaluation and exploitation from investment through use to organisational impact).

The purpose of this literature review is to summarise and synthesise the range of concepts and issues developed and discussed by academic researchers around the notion of IT value, its measurement and, particularly, how IT value can be created and captured within an organisation and so exploited through focussed IT value management.

The review objectives are:

- to synthesise the range of research conducted over varied aspects of IT value through a systematic identification of IT value research foci currently published in academic sources;
- to identify prominent or emerging concepts, arising from the literature which researchers deem important to IT value management processes and principles;
- to delineate the boundaries of IT value research necessary to achieve the aims of this dissertation; and,
- to clarify the fit with the needs for the research problem by identifying patterns, distinctions, and gaps in the literature.

Towards achieving the purpose and objectives, the literature review is laid out over two main groupings as follows:

- Evaluation of IT Value – covering identification and measurement as well as assessment tools and frameworks.
- Exploiting Value from IT – covering processes, activities, and principles around management approaches and theory about creating and capturing value from IT.

A thematic approach is then applied across both the groupings described above, to further relate the literature to the business lives of IT-enabled business initiatives, through the investment phase, when they are in-use, and their organisational impact. The design and rationale for these categorisations is addressed in the next section.

2.1.2 The approach used to provide a meaningful representation of the literature

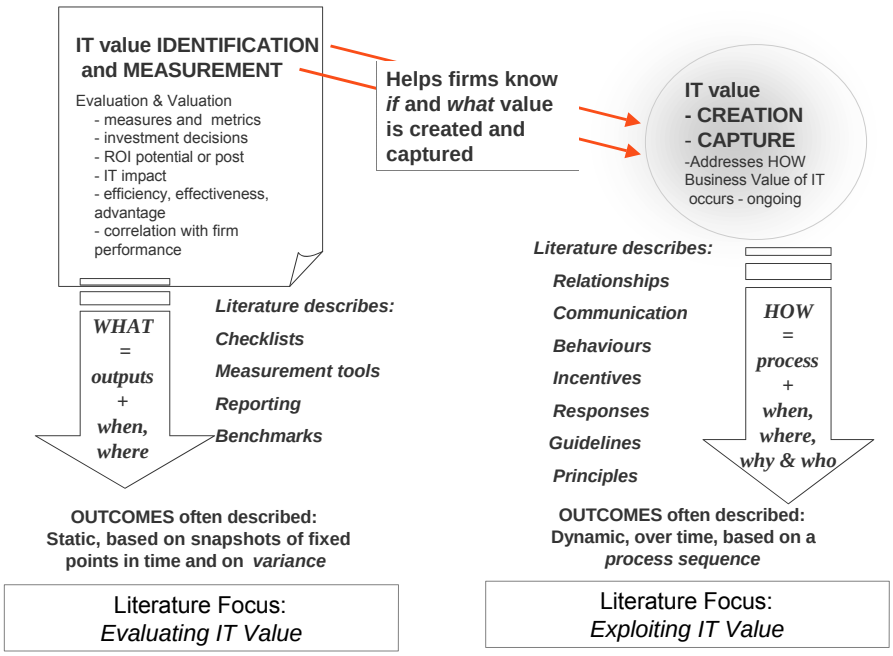
Splitting the review into two parts – 'evaluation' and 'exploitation'

The review process began by sifting and sorting research papers for common foci. This revealed two major groupings, those with an outcome focussed on *evaluating IT value* or identification and measurement of IT value, and a group focussed on how organisations can ensure they actually get value from IT (or *exploiting IT value*). The second group is focussed on value creation and/or how it is captured into the business.

Figure 2.1 Two Trig Points[1] on the Landscape of IT Value Literature shows how the foci of evaluation and exploitation fit together. *Evaluation* of IT value takes snapshots of a condition at a point in time. *Exploiting* value from IT involves actions driven by principles and guidelines and must include processes that acknowledge both the passage of time and influences that may make such processes dynamic. Figure 2.1 is intended to help express the general groupings of the literature so it is not prescriptive, nor does it mean that all research foci and outcomes fit neatly into these categories.

[1] Trig point (triangulation point): *n* a reference point on high ground used in surveying, frequently marked by a small pillar [*The Concise Oxford Dictionary Ninth Edition* Oxford University Press 1995]

Figure 2.1: Two Trig Points on the Landscape of IT Value Literature



Further dissection: INVESTMENT, IN-USE, and IMPACT as major themes

A further segmentation of the literature that also emerged was that papers were pertinent to at least one of IT investment, IT in-use, or IT impact. This suggested a theme based on the 'business life' of any IT-enabled business system. The three areas of focus are akin to three phases in this business life. The logic behind this thinking is as follows: To initiate the business life of an IT-enabled system, a 'decide and implement' activity looks at the need for, opportunity created by, and potential of the system, then implements it. This is clearly an INVESTMENT phase. Post-implementation is where one would expect much of the value creation to occur, but value may also be created from the IT-enabled system whilst it is being implemented (for example, through business process reengineering, resource reduction, and so on). While employees or automation use the system (IN-USE phase), it would be expected that any value created is somehow captured into the business and, over time, it becomes integrated value. However some value created in-use may be lost. Businesses implement IT systems with the intention of positive business impact (the IMPACT phase). Impact may also occur during investment (eg process reengineering, resource changes, project management and costs) and in-use. Figure 2.2 indicates how these business life phases of an IT system can be used in making sense of the range of research available.

Figure 2.2:
Making Sense of Literature:
Literature foci matched with the business life phases of information systems

Literature Review Focus EVALUATING IT VALUE		**Business Life of an information system**	**Literature Review Focus EXPLOITING IT VALUE**	
Identification and/or Measurement	**What is being identified or measured**	**Phase of the system (relative)**	**What is being performed?**	**Exploiting IT Value: Processes and Principles**
Assessment or evaluation & tools for predictive use ROI, payback, NPV, cost-benefit analysis	**Potential**	INVESTMENT Investment process	**Investment decision** **Implementation**	Perception management Predictive capability Planning and design; alignment IT organisation design and function IT governance
Tools for taking snapshots of dynamic states Monitoring and feedback frameworks	**Emerging benefits or costs** Monitoring change	IN-USE Value creation Value realisation Value destruction	**Opportunity uptake** **Leveraging benefits**	Business change development Capabilities Risk management Business change management IT organisation, IT-business relationship IT governance
Correlations IS success factors IS conversion	**Links with non-aggregate IT effects**: user satisfaction; operational change	IMPACT Value capture = IT value becomes integral to the business	**Leveraging benefits** **Mitigating loss**	Operability for: competitive advantage; organisational behaviour Contingency management Managing unintended effects Business management
Correlations IT investment with firm or industry performance IT econometrics	**Aggregate impact effects**: profit; productivity; performance; 'effectiveness'	Outcomes of both Value realisation and Value destruction	**Embedding benefits**	Operating efficiency Plugging value 'leaks' Competitive advantage (demonstrated) Ensuring translation to "bottom line" Raising perceived shareholder value (incr. share price)

2.1.3 The structure of the rest of the review

The review begins with definitions of IT business value in the research literature to provide a foundation for thinking about the rest of the literature. A representation of six extensive literature reviews by established researchers follows, as an orientation to the review. The literature is then presented in two major segments regarding evaluation and exploitation of IT value (Figure 2.1). Each segment is further dissected the under the phases and general topics illustrated in Figure 2.2.

Sections 2.4 to 2.6 address the *Evaluation of IT value*, concentrating on research published regarding identification and measurement of IT value. Following the layout of the three phases as contexts, the sections address: INVESTMENT phase - methods and measurement of potential IT value; potential benefits identification, and some issues around investment phase evaluation of IT value; IN-USE phase - identification and measurement of emerging benefits and costs, and the monitoring of changes in these; IMPACT phase - non-aggregate and aggregate measurements of IT 'success', user satisfaction, and IT effectiveness as 'captured' or embedded IT value.

Sections 2.7 to 2.9 deal with *Exploitation of IT value*. This literature is about IT value *management* as distinct from *measurement*. The research discussed concentrates on *how* to achieve IT value through IT value management approaches, including process and principles, frameworks and models, and practice reports. Under the three phases used to present the literature the first section spotlights on how value can be created during the INVESTMENT phase, and the second context is IT value creation and realisation by the organisation during the IN-USE phase, centring on opportunity uptake and leveraging benefits as IT value. The third section looks at literature on IT value exploitation at the IMPACT phase, particularly around embedding benefits as captured value from IT and on mitigating value loss.

The chapter is tied together with conclusions of the review and implications for this IT value management research. Conclusions offered are based upon patterns, distinctions and gaps in published literature on IT value, the scope of the dissertation is established, and the fit with the needs for the research questions and objectives is clarified.

2.2 Definitions of 'IT Business Value' in Research Literature

There is little consensus about the nature of IT business value but it is clearly a joint technology-organisation phenomenon (Mooney, Gurbaxani and Kraemer 1995). There are few definitions of 'IT value', or similar terms, in the literature and specifically the literature shows a "lack of construct validity, and definitional inconsistency" (Cronk and Fitzgerald 1999). Simmons (1998) points out that some agreement on what constitutes value is necessary before any measures for performance, or any other outcome, can be determined. Bannister and Remenyi (2000) also lament the weakness of definitions of IT value in research on the topic, stating that definitions are "usually

unclear, frequently inadequate, often partisan and sometimes completely absent." Arguably, managers' "investment decisions are based on perceived value – no matter what the measurement" (Bannister and Remenyi 2000, p234).

The diversity in definitions or terms used is addressed explicitly by Cronk and Fitzgerald (1999) where they define the construct and its dimensions in a new model of 'IS business value' to tap all aspects of the value contribution of IT to business. Other examples of approaches to clarifying 'IT business value' include concentration on the relationship between potential value, conversion contingencies, and realised value, and use the 'locus of value' (Davern and Kauffman 2000); defining it in a way specifically tailored to their research focus, for example e-business value (Amit and Zott 2001); and by assigning dimensions of IS business value that, in total, reflect the meaning of the construct under 'dependent' dimensions (system, user, and business) (Stamoulis, Kanellis, and Martakos 2002).

Econometric views of IT value shape the way many researchers implicitly define IT business value as financial or other economic measures of productivity. Barua, Kriebel, and Mukhopadhyay (1995) assert that "… measuring the economic contribution of IT investments is a key activity that can shape the very nature of the business through its influence on corporate strategies and future investments in technology" (p 21). Looking at the model developed in their study, this theme could be interpreted to mean that the impact *is* the value and that the contributions are the part of the value. Further examples in this vein include profitability, consumer surplus and productivity as three different measures of IT value (Hitt and Brynjolfsson 1996) and the use of multiple econometric variables to measure IT impact, but with acknowledgement that to focus on these directly tangible measures of output doesn't account for the full effect of IT on a firm (Sircar, Turnbow and Bordoloi 2000). However, if applying corporate financial theory to IT, the value of the IT investments should be determined by their effects on firm value because they contribute to future cash flows by reducing costs or increasing revenue, or product value (Peffers and Saarinen 2002). Debate about these relative approaches to evaluation of IT is exemplified by Dehning and Richardson (2002) in their investigation of how research in accounting, finance, and managerial accounting can be adapted to IS research on return on IT investments.

Some IS researchers take a process-oriented view of IT value. Using a process focus, Soh and Markus (1995) look at IT conversion to business value and state that their focus is not on "whether IT creates value but how, when, where, and why benefits occur or fail to do so" (p29). Although not specifically expressed by Soh and Markus the implication is that definitions of IT value must be determined by the organisation's managers responsible for getting value from IT (a further implication is that only then can suitable measures and metrics be decided upon and applied). Extending IT value's links to real business activities, Tallon, Kraemer and Gurbaxani (2000) define

IT business value as the contribution to firm performance through how IT affects critical business activities. They use process-oriented measures for business value from IT and use executive perceptions as a proxy for realised business value. In a new take upon this last view, which apparently dispenses with executive perceptions, Melville, Kraemer, and Gurbaxani (2004) define IT business value as "the organisational performance impacts of IT at both the intermediate process level and the organisation-wide level, and comprising both efficiency impacts and competitive impacts" (p287).

Weill and Broadbent (1998) draw on managerial perceptions for a hierarchy of business value encompassing firm context and objectives and consisting of business value from firm-wide IT infrastructure, business unit IT applications, business unit operation and business unit financial foci. Business value of IT is defined by its impact on each level. In attempting to further clarify perceptions of IT value in firms, Smith and McKeen (2003) see it as a subjective assessment and find that contemporary firms define IT value broadly and beyond financial foci. Because different conceptions of value can lead to the belief that value wasn't delivered, "a prerequisite of any IT value proposition is that everyone involved in an IT initiative agree on what value is to be delivered and how it will be recognised" (Smith and McKeen 2003, p441).

In summary, the review of relevant literature indicates that the majority of authors do not include a definition of IT value, nor of similar terms, in their papers. The accounting literature does not offer clear definitions of 'value' or IT value, the apparent assumption being that any chosen metric is taken as the standing definition of IT value and also implying that firms using multiple metrics would then have multiple definitions of IT value. It is also clear that there is a problem of differing perceptions of IT value by people in the same organisation. This diversity of views in the academic literature is possibly also reflected in the field. Mindful of this likelihood, the dissertation research design incorporates investigation of the managerial perceptions of IT value in the case firms.

2.3 Extensive Reviews Across the IT Value Research Literature

It is important to acknowledge that there are already several examples of extensive literature reviews in the area of business value of IT. Six examples of such reviews are illustrated in Table 2.1, showing the review focus, the frameworks or approach used to analyse the literature, and key messages. These reviews are referenced as appropriate throughout the chapter so are compared only briefly following the table.

Table 2.1: Examples of Extensive Reviews of IT Value Research Literature

Authors, Review Subject and IT Value Focus	Frameworks used to Analyse Literature	Key Messages
Mooney, Gurbaxani, and Kraemer (1995) *Process orientation and performance evaluation* EVALUATION AND EXPLOITATION	Splits literature into three groups: studies on business value; studies on IT, organisations, and organisational processes; studies on linkage between IT, process and value	Current literature elucidates problems but few solutions to how to assess the business value of IT. Approaches to assessment using firm-level output measures result in conflicting accounts of IT impact, and few insights to processes by which IT creates value within organisations. Develop process-oriented model of IT business value and framework for identifying created IT value to improve understanding of links between IT and firm performance.
Simmons (1998) *Evaluation and measurement for investment - costs and benefits* EVALUATION	Views evaluation methods from several disciplines – accounting, economics, IS	Some frameworks give structure to benefits lists and open up opportunities to recognise other potential benefits, but potential impact is harder to fully define. Finds a shift in emphasis from IT evaluation as once-off exercise to being it part of a more complete process to achieving benefits.
Chan (2000) *Gaps in IT value research* EVALUATION	Reviews all IS research on IT value in key IS journals 1993-1998	There is a gap between the use of organisational-level IT value measures and other measures and between the use of quantitative and qualitative measures. Relative measures used are not always consistent with the unit of analysis being reported on. Little is known about the use of IT value measures in practice. IT value research mostly addressed the question of "what value"… "the related set of questions, 'why, where, when, how and to whom do these investments provide value?" (p245) aren't well addressed.
Devaraj and Kohli (2000) *Process engineering, IT, and 'payback'* EVALUATION	Two major literature groupings analysed: Technology-profitability link; Technology-quality relationship	Surmise that the connection between IT investments and payoff isn't very conclusive Literature used to frame propositions linking technology and process engineering with profitability and quality. Findings indicate that quality of service or product is enhanced by IT investment.
Dehning and Richardson (2002) *Return on IT investments and performance measures* EVALUATION	Focus on 'understanding' the return on IT investments through a synthesis of research on accounting or market performance measures, in IS, finance, and accounting literature	Compares relationship between IT measures and process measures with the relationship between IT measures and measures of firm performance. A key conclusion: Although IT now plays a more important role in firms, "the overall impact of IT on performance remains largely an unexplained puzzle" (p27). Another outcome of this synthesis is a model to guide future research in the evaluation of IT investments.
Melville, Kraemer, and Gurbaxani (2004) *Integrative view of business value of IT and organisational performance* EVALUATION AND EXPLOITATION	Leading sources (1990-2002) Uses the resource-based view of the firm as a theoretical base to integrate various strands of research into a single framework, then uses this model to synthesise what is known about IT business value	There is diversity in conceptualisations of key constructs and their interrelationships in studies focussed on IT and organisational performance. An integrative model of IT business value with three domains: focal firm; competitive environment; and macro environment. RBV is used to describe phenomena and how they shape the relationship between IT and organisational performance. Model is useful to interpret objectives and findings of relevant literature and then to develop research questions and associated propositions with the goal of building a systematic theory of IT business value.

These examples of extensive literature reviews provide a useful foundation in that they give six different perspectives on IT value literature. They take comprehensive, but differing, approaches to managing the literature analysis. Although they are each developed for different purposes, they indicate the range of IT value research in the literature.

The reviews focussed on literature around assessment of IT value tend to describe measurement, evaluation methods and frameworks, and the investment decision. In a detailed descriptive approach, Simmons (1998) limits her review to a large range of traditional measures and some new versions. Devaraj and Kohli (2000) give more detail on firm-level studies and consider a new set of linkage measurements for profitability and quality for specific IT investments. Dehning and Richardson (2002) concentrate more on the 'productivity paradox' and firm performance than on any other measures of return.

Exploitation of IT value is an additional interest of Mooney et al (1995), who do not cover the wide range of IT value measurement literature, but use the literature to guide and support their development of a process-oriented model of IT business value by concentrating on literature concerning process-oriented perspectives and IT-enabled process innovation. Melville et al (2004), who actively synthesise the literature to develop a model of IT business value, use the resource based view of the firm as a theoretic underpin for not only analysing the literature but for working with their model. Melville et al are the only authors in this set to explicitly apply a theoretical 'mechanism' to create an integrated result through literature analysis.

Research issues and IT value research gaps are addressed by several reviewers. Mooney et al (1995) note that across the literature, there is not much consistency about the nature of IT value, little empirical evidence that IT can provide a capability to create value, and apparently no comprehensive framework of business value of IT has yet emerged. Chan (2000) has suggestions for researchers including: more emphasis on theory generation rather than on 'black-box' statistical linkage approaches; explicit recognition of limitations in methods and measures; and making a shift towards responding to recommendations to act more innovatively in research rather than remaining within the established camps. Researchers' business familiarity should be developed, including an intimate knowledge of business process, managerial and financial accounting systems and contextual factors in order to make a breakthrough in research on returns on IT investments (Dehning and Richardson 2002). Yet the "uncertainty and debate about what we know and don't know" about how IT contributes to organisational performance is still with us (Melville et al, 2004). Mooney et al, Dehning and Richardson, and Melville et al, all suggest that their analysis and their frameworks or models should be used by researchers to further work in the arena of IT business value.

Although all six views of the literature clearly contribute to the evolution of understanding of measurement of IT value and its exploitation, the research issues and gaps highlighted indicate the need for more IT value research. Certainly these authors look to theoretical development but particularly towards understanding and developing improvements for business practice.

2.4 The Decision to Invest: Evaluation of IT value as Potential Value

Reasons for evaluating potential IT value evolved with the concepts of 'relevance, timeliness and accuracy' for information systems (Feltham, 1968). Benefits became equated with dollar values, IT-spend/value data charted, and user satisfaction measured (Matlin, 1979). The academic literature now covers a range of approaches to IT evaluation for investment purposes. This section of the review looks at research about common financials and benefits identification and then highlights issues in the evaluation of potential IT value.

2.4.1 Common financials and appraisal

Investment decisions involve one or more financial measures. Return-on-Investment (ROI) techniques, costs, and real options are variously represented in the literature. Costs are a common basis for these but dollar translation of benefits is often assumed. The time-value of money is incorporated in some commonly used ROI techniques such as discounted cash flow, but others ignore it (Bacon 1992). As ROI is often used for project comparison, tools should be selected based upon the role and timing of the evaluation and other factors, yet firms some firms appear to lack knowledge about appropriate techniques and sometimes use no formal approach (Farbey, Land, and Targett 1992; Lubbe and Remenyi 1999). Whilst some practice research concentrates on financial techniques for evaluating IS/IT investments, the majority considers wider issues of IS evaluation. These issues include the identification of problem areas, however the accounting/finance literature tends to ignore problems inherent in financial techniques for IT appraisals (Ballantine, Galliers and Stray 1996; Ballantine and Stray 1998). Problems of traditional approaches are further complicated by a lack of distinction between IT investments for efficiency and for effectiveness (Fitzgerald 1998). Other approaches use common financial appraisals but build refinements such as distinguishing between potential and realised value (Davern and Kauffman 2000), addressing limitations in IT investment appraisal techniques separately to traditional capital budgeting processes (Irani and Love 2002), and taking multiple approaches according to technology scope and strategic objective to 'build beyond the business case' (Ross and Beath 2002).

Since the value of a management information system is partially tagged to the perceived value of reports managers would be willing to pay for (Gallagher, 1974), one would expect costs estimating should be accurate and avoid huge cost overruns, yet it is often done poorly for IT investment (Lederer, Mirani et al 1990). Although a variety of factors influence costs of IT, certain specific 'costs' analyses may lead organisations to think differently regarding how they use cost estimates in investment decisions (West 1994). Intuition also often influences cost assessment (Ezingeard, Irani, and Race 1998). Newer cost methods include conceptual models based on a deep understanding of such costs and their respective taxonomies (Irani, Love and Hides 1999) and

practical approaches, including lengthy identification of initial and recurring costs and ways to determine the cost of capital for investments (Mogollon and Raisinghani (2003). Yet cost metrics can give an incomplete assessment, for example if focused only on total cost of ownership or benchmarking (van Maanen and Berghout 2002). The activity based costing approach, drawn from accounting methods, is touted as a way of getting a fuller assessment of costs because it relates investments to activities (Peacock and Tanniru 2005).

Beyond traditional cost/benefit metrics for potential IT value, it is clear that new technology investments can deliver more value after future IT investments are also made (Dos Santos 1991). Advantages of real-options analysis are illustrated in the case of a banking network point of sale decision (Benaroch and Kauffman 2000) and in evaluating IT infrastructure investments (Balasubramanian, Kulatilka and Storck 2000). Its contribution to identifying potential IT value is shown by Davern and Kauffman (2000) who note managers often underestimate expected returns, partly because of cost-based assessments, and "because they fail to recognize the option value inherent in most IT projects" (p138). Kim and Sanders (2002) offer a framework of strategic actions based on real option theory and designed for managers. Schwartz and Zozaya-Gorostiza (2003) go a step further, incorporating probabilistic interpretations of IT value in models for either development or acquisition projects depending on the lead-time for benefits to have impact after the decision.

2.4.2 Potential benefits identification

Many researchers have developed frameworks or tools to identify benefits and sometimes also to add metrics for quantifying or even 'qualifying' these benefits. Weill and Olson (1989) emphasise the need to separate different types of investments and to use suitable performance measures for them. Lederer and Mirani (1995) identify factors for anticipated benefits of proposed systems, refining these later as strategic, informational, and transactional (Mirani and Lederer 1998). Farbey, Land, and Targett (1995) offer a tool specifically to cope with evaluating returns from different types of potential IT investments which vary both in terms of the ability to provide straightforward measurement of costs and benefits, and in the degree of certainty with which estimates of cost/benefits will be realised. In yet another approach, Sherer, Ray and Chowdhury (2002) propose an integrative framework to assess IT investments, addressing what they describe as 'the responsibility gap' between responsibilities taken by business and IT people regarding decision-making and accountability for benefits identification and realisation. Research on enterprise resource planning systems (ERP) illustrates benefits identification (and realisation) approaches which emphasise the importance of intangible benefits to the nature of ERP projects (Stefanou 2001; Staehr, Shanks and Seddon 2002; Murphy and Simon 2002).

2.4.3 Some issues around investment phase evaluation of IT

Critical analysis of IS evaluation theory and approaches has formed the basis of arguments about the relative merits of ways to evaluate investment proposals (Hirschheim and Smithson 1988). Some groups of issues are relevant in the context of this research. Recognition of issues, in hindsight, can contribute to how IT value management may be improved. Issues presented here concern: a) Measurement tools and metrics, b) Perceptions of business managers regarding IT value, and c) Good evaluation practices.

a) Measurement tools and metrics

Overcoming measurement problems in evaluation begins with asking the right questions, such as, whose value? what type of value? who performs the evaluation and when? (Ahituv 1980). The choice of measurement tools also involves choosing suitable metrics and every metric will affect actions and decisions (Hauser and Katz 1998). However some managers develop decision-making approaches that rely on instinct and 'acts of faith' and exhibit little objectivity or clear metrics (Bannister and Remenyi 2000). Khalifa, Irani and Baldwin (2000) discuss factors limiting the use of IT evaluation methods in industry, finding that drivers of method choice include financial constraints, functionality of the IT system, and organisational investment decision-making. Choice of measurement tools is also complicated by debate about whether relatively new tools such as real options analysis are really suitable for IT value measurement (Tallon, Kauffman, et al 2002; Adner and Levinthal 2004a, 2004b; Zardkoohi 2004).

Issues around intangible or 'non-quantifiable' benefits, and certain versus uncertain benefits, are often in focus. The nature of some systems means that their value is constantly evolving as they are used and so future benefits are uncertain (Keen 1981). The number of intangible benefits identified can also make it difficult for them to be consistently quantified (Money, Tromp, and Wegner 1988), determination of potential benefits will be affected by the business environment at the time (Dos Santos 1991), and connecting benefits to competitive advantage poses particular problems (Sethi and King 1994). Existing methods for identifying or quantifying all potential benefits are believed to be inadequate (Ward, and Taylor 1996). The lack of formal evaluation procedures within many organisations means that "by far the greatest problems encountered during evaluation were the identification and quantification of relevant benefits and costs" (Ballantine, Galliers and Stray 1996, p139). Research evidence also shows that benefits identification is often 'a set of loosely defined, overlapping, iterative activities' but that uncertain benefits are less important if the process is designed to build commitment (Changchit, Joshi and Lederer 1998). Traditional accounting methods are frequently criticised as ignoring intangible benefits (Anandarajan and Wen 1999). Measurement problems can occur with assets where their boundaries are fuzzy. For example, many benefits attributed to IT infrastructure appear unattained

due to inadequate conceptualisations of IT infrastructure and its measurement and to a lack of theoretical frameworks for explaining its impacts (Kayworth, Chatterjee and Sambamurthy 2001). Assessment of intangible assets is compounded by not being able to reduce the notion of an asset created by the use of IT to identified potential at the investment stage (Brynjolfsson, Hitt, and Yang 2002).

The complexity of benefits identification and the socio-technical nature of IS means that IT project evaluation should be a multi-stage activity running through development and operation (Symons 1990). Evaluation is not only an appraisal, it is also a political process and essential to strategic management where evaluation by consultation and negotiation can establish collective responsibility for 'far reaching' IT impacts (Avergou 1995). IS evaluation is a complex social process, but it is further compounded by a growing number of methods and initiatives (Jones and Hughes 2001). Problems with IT evaluation often do include issues with human and organisational decision-making and concepts of 'value', as well as taxonomies of investment-related benefits, risk assessment, and appropriate technology management resources (Irani 2002) which all suggest that IT investment evaluation should be a form of communication (Stamoulis, Kanellis, and Martakos 2002). Yet organisational 'culture' and human interaction mean that inclusion of social subsystem costs and benefits in IT investment assessment is clearly problematic for IT decision-makers (Ryan and Harrison 2000; Ryan, Harrison, and Schkade 2002).

b) Perceptions of business managers regarding IT

The way executives view the role of IT in the firm, their view of its support of business strategy and business practices, and the management practices which link goals for IT with strategic intent, all have a significant effect on IT investment evaluations and decisions (Tallon and Kraemer 1999; Tallon, Kraemer and Gurbaxani 2000; Peffers and Saarinen 2002). Executives who perceive IT investments as a competitive necessity, or as cost-cutting, impact the investment decision-making and benefits realisation differently than those who see that IT investment as strategic advantage (Peffers and Saarinen 2002). Some organisations have major perceptual problems with IT in that although IT is necessary for the firm's success, the IT group is viewed negatively because management culturally perceive IT as 'overhead', and this impacts investment decisions (Hirschheim, Porra, and Parks 2003). Another serious perceptual problem is inherent in the way individual's views of how IT adds value diverge. Kanungo (2005) concludes, "since the objectives of the different stakeholders are often incongruent, the collective mind of an organisation could appear incoherent when it comes to understanding IT value" (p8).

c) Good evaluation practices at investment

What is 'good practice'? With so many tools and approaches apparently available, how do organisations identify and choose suitable approaches? Willcocks (1992) finds that many

organisations are in a "catch-22" situation where they cannot afford not to invest in IT but also can't find the means to economically justify investment. At the project level, it is important to match specific evaluation techniques to the nature of the project (Hochstrasser 1990; Farbey, Targett and Land 1994). Before attempting IT investment evaluation, answers to basic questions (for measurement) could establish an agreed base and help avoid problems created by unarticulated assumptions or omissions, (Seddon, Staples, et al 1999). Lubbe and Remenyi (1999) believe the evaluation approach can be progressively improved by incorporating investment drivers and a learning process based on well-documented IT investment decisions. Fundamental problems also occur if the processes underlying the use of information in an organisation are not clearly defined before systems in the relevant area are implemented (Rockart 2004). Other issues with evaluation include having no strategic vision that is linked to the justification of IT investments and not being able to identify the far reaching and considerable indirect costs likely to occur as a result of the implementation (Love and Irani 2004).

Even in investment decisions, business-IT relationships can be encouraged. Chargeback provides "… opportunities to build mutual understanding, to express commitment to mutual objectives, and to generate trust by demonstrating concern for business unit needs and the business effects of IT charges" (Ross, Vitale and Beath 1996 p231). Ross and Weill (2002) posit that good practice should not only involve (and make responsible) senior business managers in IT investment decisions, it should mitigate consequences of decision abdication, particularly the possibility that the business value of systems is never realised. This supports the emergent view that IT cannot be considered in isolation from other parts of the business (Smith and McKeen 2003). However the reality of business practice might be that IT investment decisions are being made in the absence of any very thorough approach.

2.5 Evaluation of IT Value During the IN-USE Phase

Fewer published research articles are available on the evaluation of IT value creation in-use than for either evaluation at investment, or measurements of impact such as 'success' or performance. Some of the literature is presented here and covers measurement and monitoring tools or frameworks and raises some issues in managing IT value 'delivery'.

King and Rodriguez (1978) suggest IS post-implementation evaluation's use measures of attitudes, value perceptions, information usage and decision performance and that successive evaluations will improve both the evaluation process and the information systems developed. Although post-implementation reviews are often intended to show benefits, these tend to focus on assessing technical and time/cost conformance for the IT itself, rather than on evaluating outcome achievement (Ward and Taylor 1996). Fearon and Philip (1998) suggest strategic and operational benefits from IT in-use could be better measured by comparing pre-implementation benefit

expectations with post-implementation perceptions of realised benefits through 'self assessment'. However, Staples, Wong and Seddon (2002) find that unrealistically high expectations will result in lower levels of perceived benefit than where expectations match experience. Although more benefits can be gained after implementation, current practices mitigate against exploring these benefits (Lin and Pervan 2003).

Weill and Olson (1989) find the effectiveness of IT investment conversion to useful output is affected by the implementation process, organisational culture and management skill. In other words, management of IT use across the organisation is required, not just from the IT group. Davern and Kauffman (2000) see a critical part of the IT value creation process as conversion contingencies, and stress their importance in ensuring value is appropriated. They emphasise managements' role in promoting effective implementation and use of an IT investment. The responsibility for creating and realising business value post-implementation is shifting towards business managers and away from being solely in the IT group's domain (Avergou 1995; Soh and Markus 1995; Peppard, Lambert and Edwards 2000; Ross and Weill 2002; Sherer, Ray and Chowdhury 2002).

Tools for benefits monitoring have been developed so that system contributions are used to manage current and future technological investments and track unexpected strategic benefits (Chan, Huff and Copeland 1998), and also to assess benefits as indicators of value creation over time and allow managers to deal with emerging problems (Shang and Seddon 2002). The balanced scorecard (BSC) also provides an assessment and monitoring approach that in itself drives performance (Kaplan and Norton 1992). BSC organisational benefits are linked to effective management control, motivation, and strategic alignment (Malina and Selto 2001), it can be used for IT (Ahn 2001; Hagood and Friedman 2002), and its active use translates into financial performance (Davis and Albright 2004). In expanding this approach, application of strategic mapping concepts allow the strategic readiness of intangible assets, including the IT function and IT systems, to be monitored for 'readiness' ongoing (Kaplan and Norton 2004).

2.6 Evaluation of Value Captured from IT Investment at its IMPACT on the Organisation

The volume of research in the area of evaluations of IT impact is considerable compared with either evaluations focussed at the investment or in-use phases. Three main categories of IT impact on organisations are covered here: measuring 'IT success'; measuring user satisfaction; and, measuring IT effectiveness.

2.6.1 Measuring IT 'success'

The idea that 'success' can be achieved by identifying and attending to key success factors is a key driver of this research agenda. Classic research in the area of IT 'success' includes work by Reich and Benbasat, (1990), DeLone and McLean (1992), and Seddon (1997). Both the DeLone and McLean (1992) and Seddon (1997) models are validated by Rai, Lang, and Welker's (2002) empirical test and theoretical comparison.

Other researchers take different views. Saarinin (1996) criticises subjective assessment and surrogate measures, such as the user information satisfaction instrument, and believes benefits should be translated as organisational IS impact, although economic and quantitative measures for IS success can be difficult to obtain. Wateridge (1998) examines published research and develops criteria for IS project success which rely on project managers being in agreement with stakeholders. Field-based research shows IT success in manufacturing and service industries is identified as productivity improvements and cost reduction, yet both industries have similar obstacles to IT success including economic factors, insufficient top management support, and difficulty justifying costs (Sohal, Moss, and Ng 2001). Chourides, Longbottom, and Murphy (2003) show that many managers believe the fundamentals for assessment of success of IT projects rest with on-time delivery, meeting the budget, and matching the specification.

2.6.2 Measuring user satisfaction

Approaches to avoiding failure include managing user expectations. Szajna and Scammel (1993) use cognitive dissonance theory to hypothesise the behaviour and attitudes of end users having certain expectations of a system, then investigate the association between unrealistic expectations with both users' perceptions (i.e., user satisfaction) and their performance with the IS (i.e., decision performance). Their results suggest an association between the realism of users' expectations and their perceptions but not their actual performance. Unrealistic expectations are an issue in delivering IT value. Task-technology fit is proposed as another user evaluation construct. Barki and Hartwick (1994) investigate the relationship among user participation, user involvement, and user attitude during systems implementation and confirm the validity and reliability of associated constructs. However issues are raised regarding IS user satisfaction as a valid measure of system

effectiveness (Gatian 1994). IS researchers (and potentially IS practitioners) rely on user evaluations of systems as a surrogate for IS success but such measures have been strongly criticised as lacking strong theoretical underpinnings and veracity and therefore being only a measurement technique (Goodhue 1995). Goodhue and Klein (2000) consider user evaluations of IS only as surrogates for objective firm performance. As IS itself and the expectations of users regarding its outcomes have become more complex in contemporary organisations, the issue of IS user satisfaction as a valid measure of IT value is raised once more (Zviran and Erlich 2003).

2.6.3 Measuring IT effectiveness

The large array of measurement criteria for gauging the effectiveness of IT is a source of conflict in organisations trying to assess it (Hamilton and Chervany 1981b). This array has been rigorously compared and grouped into several classes and mapped to various evaluative contexts (Hamilton and Chervany 1981a; Grover, Seung and Segars 1996). A range of this literature is presented here according to four major foci: a) Operational efficiency, b) Productivity, and c) Profitability, strategic value, and organisation performance.

a) Operational efficiency

Research demonstrates IT's impact on operational efficiency, for example: reduced materials waste in a fast food industry firm (Banker, Kauffman, and Morey 1990); the effect of IT on manufacturing machining process production efficiency (Kelley 1994); and, Mukhopadhyay, Kekre, and Kalathur's (1995) classic study of the impact of EDI at Chrysler Corporation where business value of IT includes reductions in operating costs and coordination of material movements resulting from better communication.

Approaches to evaluation of IT effectiveness as operational efficiency include: Belcher and Watson's (1993) study which identifies particular benefits from an EIS at Conoco (a major energy company) in a multiperspective post-implementation review via system usage statistics and key user interviews; microeconomic production theory in assessment of IT value for operational control contexts, such as inventory control (Mukhopadhyay and Cooper 1993); and, van Wegen and de Hoog's (1996) approach to assessing IS impact on production efficiency through information commodities, activity-based costing, and graph modelling. An economic production function is used to investigate links between the scale and scope of the firm and IT investments, indicating IT's role in coordination and control (Dewan, Michael, and Min 1998). However, Thatcher and Oliver (2001) challenge the idea that improvements in operating efficiency will lead to economic gains with their findings that IT investments that particularly reduce fixed overhead costs both increase profits and improve productivity. In contrast, Kudyba and Vitaliano (2003), identify significant positive relationships between the rate of investment in IT and firm gross operating margin by using a model encapsulating the firm's capability in managing core operating activities.

b) Productivity

Structured approaches are useful for measuring productivity of particular systems (Stephenson, Hughes, and Heath, 1985) and operational management measures, including productivity, are key to measuring IT business value in terms of organisational effectiveness (Rubin 1991). There are many academic discussions about the nature and construct of IT-induced productivity, particularly regarding perceptions and testing of what is known as the 'productivity paradox' (Brynjolfsson 1993; Due 1994; Brynjolfsson and Hitt 1996, 1998; Dewan and Kraemer 1998; Dos Santos and Sussman 2000; Anderson, Banker and Ravindran 2003). Productivity is one of the three measures of business value delineated by Hitt and Brynjolfsson (1996) who contend that empirical results on IT value depend heavily on which of productivity, consumer value, and business profitability is the basis for the question addressed and what data is being used. Lee and Barua (1999) 're-examine' the paradox via three perspectives: theoretical; measurement issues; and, potential inefficiency in the investment and management of IT. They report significant positive returns from IT investment.

Firm and industry level research includes: links between productivity and strategic investments and using economic analysis to trace and measure significant IT impacts occurring at low levels of the firm (Barua, Kriebel, Mukhopadhyay 1991, 1995); IT and worker composition as determinants of productivity in the life insurance industry (Francalanci and Galal 1998); IT-related productivity in the healthcare industry (Menon, Lee and Eldenburg 2000); how IT is linked to productivity via its effect on organisational transformation (Brynjolfsson and Hitt 2000); and, productivity changes following implementation of specialised IT in an international public accounting firm (Banker, Chang, and Kao 2002). However there is debate around correlative productivity studies and whether the productivity paradox exists. For example, what 'looks like mis-measurement' at national and industry sector levels is an issue for productivity data analysis (Lim, Richardson, and Roberts 2004).

c) Profitability, strategic value, and organisation performance

Weill and Olson (1989) comment that "The crux of the problem is whether investment in IT really makes a difference" (p4) to firm performance, and suggest some organisations are more efficient at converting resources, including IT, to organisational performance. 'Management conversion effectiveness' (a measure of the quality of management and firm-wide commitment to IT) is a significant factor in achieving business value from IT (Keen 1991) and a significant moderator between strategic IT investment and firm performance (Weill 1992). Other firm-level studies look at particular types of IT investments such as how firms taking the initiative with EDI perform better than those that are pushed (Rao, Pegels, et al. 1995), and how IT impacts on the supply chain and its effect on firm performance (Byrd and Davidson 2003).

Research is also building understanding of, and measures for, strategic or competitive value from IT investments as part of defining the impact of IT on firm performance. These are being

developed through approaches such as, conceptualisation and validation of an instrument to measure the perceptions of top management on the strategic value of IT (Subramanian and Nosek 1993), via deeper investigation of the impact of embeddedness of EDI in the firm (Chatfield and Yetton 2000), by linking IT infrastructure investments with the strategic decision-making process (Renkema 1998), linking IT infrastructure flexibility with core competencies for sustained competitive advantage (Byrd 2001), and using an economic model to formalise the complex relationships among IT investments, intermediate performance measures (e.g., product quality and output levels), and economic performance (Thatcher and Pingry 2004).

Correlative statistics is one of the many methods used to investigate the impact of IT on firm performance and profitability at the industry level. Research examples include correlating perceived roles of IS with performance improvement in the financial services industry (Millar and Doyle 1987), correlating IT, decentralisation, and financial performance to investigate IT impact on decision structure and firm performance in the textile and apparel industry (Andersen and Segars 2001), linking CRS ownership and airline performance (Duliba, Kauffman, and Lucas 2001), and longitudinal correlations of whole-of-industry consolidated data for the Mexican banking sector (Navarrete and Pick 2002).

Market measures are also used to reflect IT's impact on firm performance. Tobin's q, a financial market-based measure of firm performance can be applied to measure IT effects (Bharadwaj, Bharadwaj, and Konsynski 1999). As an indicator of performance, the market value of the firm can also be related to IT investments (Im, Dow, and Grover 2001). By linking market value of equity to IT investments for firms in the financial services sector, Sriram and Krishnan (2003) show that the sharemarket sees value-relevance in IT investments. A diverse array of other concepts are demonstrated in approaches for assessing the relationship between IT investment and firm performance such as, a detailed critique of the ranking criteria and the overall effectiveness index developed by Computerworld magazine (Sethi, Hwang, and Pegels 1993), a 'value-based' approach to assess the real contribution made by IT (Tallon, Kraemer, and Gurbaxani 1999), extension of the relationship to both IT and corporate investments as well as using canonical assessment of sets of investment measures rather than individual (Sircar, Turnbow, and Bordoloi 2000), and, using the resource-based view of the firm to relate IT to firm performance by looking specifically at IT capability rather than IT spend (Bharadwaj 2000; Santhanam and Hartono 2003).

Problems and issues are inevitably associated with approaches to measuring the performance impact of IT. Mahmood and Mann (1993) explore the way comprehensive sets of IT investment measures relate to organisational strategic and economic performance measures, concluding that individual IT investment variables are weakly related but are significantly related if grouped. Smith and McKeen (1993) critique assumptions and measures used to equate IT value with

performance. Brown, Gatian, and Hicks (1995) note difficulty in isolating economic benefits attributable to strategic IS implementation but search for evidence of long-term financial success. Many measures should be investigated for validity (Rai, Patnayakuni, and Patnayakuni 1997; Hu and Plant 2001). Santhanam and Hartono (2003) encounter issues using the Resource-based View, suggesting the impact of halo effects and prior financial performance of firms must be accounted for in evaluation of IT capability. Devaraj and Kohli (2003) raise the question whether actual usage is 'the missing link' between IT investment and its effect on organisational performance. No matter what approach is used, measure attributes are important considerations for both the choice and change of performance measures (Malina and Selto 2004).

New strategies and competitive realities demand new measurement systems which include measures of quality, customer satisfaction, innovation, and market share (Eccles 1991), and which ensure that the firm's strategic performance measurements system reflects its financial outputs and customer and market responses (Vitale and Mavrinac 1995). Ultimately, the bottom line of profit is importantly impacted by a significant information orientation throughout the organisation and through a well-managed mix of IT and people (Marchand, Kettinger, and Rollins 2000).

2.7 Exploitation of Value from IT: Creating Value During the INVESTMENT Phase

Having established the scope of literature in IT value evaluation, we know IT value can be measured in a variety of ways and for different outcomes. An obvious question from an organisation perspective could now be: How can we make potential value real? The literature indicates that several 'preparational' activities and behaviours shape if, and how, value is created from IT-enabled business initiatives. Most of these occur prior to or during the investment phase of an initiative, affecting both the decision and the implementation. Evidence of such background preparation in the literature is clustered under the following areas: the role of IT in the firm, capabilities for IT value creation in planning, the contribution of IT-business alignment, the IT-business relationship, IT governance, and managing risk to value building.

2.7.1 Choosing and developing the role of IT in the firm

Managers' perceptions of the role of IT in the organisation provide a foundation for IT initiative choices and for the processes by which IT value might be created, realised, and measured. Dewitt and Jones (2001) identify broad categories of organisational outcomes through IT enablement of information efficiencies and synergies, including improved ability to link and enable employees, improved ability to codify the organisation's knowledge base, improved boundary spanning capabilities, improved information processing that leads to increased efficiency, and improved collaboration and coordination that promotes innovation. One implication of Dewitt and Jones' work is that the role of IT at different levels within the organisation is often not identified and yet

the very perception of those roles by management will clearly impact how an organisation develops business strategy and engineers IT for value.

Various labels are employed by researchers to describe how firms see the role of IT in the organisation. This reflects whether IT is seen as a commodity or a utility, in contrast to having some strategic nature (see the controversial article by Nicolas Carr with the catch-line 'IT doesn't matter' – Carr, 2003). Dantzig (1995) compares IT 'value added' with costs to determine a firm's expression of its use of IT as *IT innovator*, *IT consumer*, or *IT harvester*. This labelling appears insufficient because business executives often have quite different views of the role of IT based on the goals they expect to achieve with it. The differences in corporate goals for IT will influence IT investments and could result in a firm's collective set of goals being *unfocused*, *operations-focus*, *market-focus*, or *dual-focus* (Tallon, Kramer, and Gurbaxani 2001). Philip and Booth (2001) suggest other potential roles for IT to take in an organisation, such as *sources and resources*, *strategic*, *service value analysis*, and *cyberspace.* The authors describe these roles around a core acknowledging the centrality of IT as a competitive necessity but they also relate IS management practice to the strength of emphasis on any particular role. The dichotomy between 'IT as a utility' and 'IT tied to strategic intent' is returned to by Weiss and Anderson (2004) and expressed in their labels for the role of IT as *operational resource*, *strategic resource*, or *strategic weapon*.

Developing suitable approaches for identifying IT's role in the organisation is seen as key to its usefulness as a foundation for business value. If a firm focuses on process issues it may ignore the distinctive information-related competences of the firm and miss opportunities that might result in sustainable competitive advantage. However Vitale, Ives, and Beath (1986) suggest a firm could take the view, and a management approach, that continually assures that the firm is a leader in the strategic use of IT. Broadbent and Weill (1997) base their approach on the reasoning that firms should develop a sound understanding of future directions rather than past paths. They start with the firm's strategic context and its businesses and then lead managers to articulate business and IT maxims to provide a basis for deciding on a view of IT that matches the firm's competitive positioning. Strategic alignment and shared vision should be attached to IT goals, but the fact that business executives have different goals for IT means that communication between business and IS executives is necessary to ensure that these goals are fully understood and acted upon (Tallon, Kramer, and Gurbaxani 2001). Agarwal and Sambamurthy (2002) conclude that senior management's views about the role of IT need embedding through the use of a visioning network and articulation of ways in which IT delivers business value. This is because the value propositions associated with IT are a foundation for organising IT. The identification of roles and goals for IT as a critical part of the IT value proposition is raised again by Smith and McKeen (2003) who assert it is achieved through a group of 'best practices in understanding IT value',

including linkage of IT value directly with the business model and recognition of 'value' as a subjective concept for which perceptions need managing.

Perceptions of the role of IT in the organisation form one of the foundations for choice of IT-enabled initiatives, yet they are often unrecognised, let alone explicit. These perceptions also influence views regarding competencies or capabilities required for the organisation to achieve successful outcomes from these roles.

2.7.2 Competencies or capabilities for creating value in IT planning and making the investment decision

Capabilities for current and future leverage of IT value ostensibly begin at the investment decision phase and incorporate planning. The types of planning actions and behaviours must be appropriate to the organisational context and environment (Byrd, Sambamurthy and Zmud 1995). Given that executives make few choices more critical than deciding which IT investments will be needed for future strategic agility (Weill, Subramani, and Broadbent 2002), executives should develop capabilities that help prioritise their IT investments based on their business goals (Weill and Vitale 2002). These competencies or capabilities for creating value in IT planning and making investment decisions include distinctive approaches to integrating IT and business thinking, traditional information systems planning, and taking a portfolio management approach.

Planning capabilities and preparation are often not well addressed although for each new initiative, value needs to be managed from the beginning. One approach to this is an IT value management capability involving the formulation of initiative principles (establishing value principles, assessing initiative risk, and enhancing platform flexibility) and the design of a measurement system for value (Lentz, Gogan and Henderson 2002). Another fundamental concern is that planning should not be done in isolation of the need to manage organisational aspects of planning pertinent to the initiative. This is highlighted in inter-organisational systems planning, particularly because an interactive business-to-business context means that these planning processes must connect effectively and also be compatible with their intra-organisational counterparts (Finnegan, Galliers, and Powell 2003).

Planning also needs to include the development of strategic capabilities. Systemic competencies or capabilities associated with IT strategy (for example, system reliability, cost-performance levels, interconnectivity, flexibility) are necessary for competitive positioning (Henderson and Venkatraman 1993). "The capabilities approach sees value augmenting strategic change as being difficult and costly. Moreover, it can generally only occur incrementally. Capabilities cannot easily be bought; they must be built" (Teece, Pisano, and Shuen 1997, p529). In fact these authors assert that choosing among, and committing to, long-term courses of competence development is an inherent part of developing and enacting IS and business strategy. Some competencies or

capabilities are deemed essential to making the right IT investments at the outset (Peppard and Ward 2004). Lentz, Gogan, and Henderson (2002) argue for an 'IT value management capability' as a critical process enabling senior executives to focus on IT planning approaches to add business value. New habits need to be developed for investment approaches and should include recognition of the need to spread investment resources over four areas (renewal, process improvement, experiments and transformation) according to how the firm looks to using IT value to shape their business opportunities (Ross and Beath 2002). Feld and Stoddard (2004) recommend a long-term renewable plan linked to corporate strategy which will generate value creation from systems over time and believe that since "making IT work has little to do with the technology itself" (p74), firms should focus on the 'gears' of connecting IT to the firm rather than on the actual information technologies.

Managing the key influences on information systems planning has long been an issue for organisations (Galliers, 1987, 1991) and certainly long-term strategic IS planning (SISP) has not always been successful (Lederer and Sethi 1992). Further research has shown that planners need to consider how well they fit their objectives (including speed to completion of the planning process) with the business and strategic IT objectives to avoid compromising its implementation (Lederer and Sethi 1996). Other research indicates alignment is not a steady state, rather, it should show a dynamic of change (Burn 1996).

Effectiveness of SISP approaches should be evaluated by organisations for suitability (Fitzgerald 1993). SISP requires a holistic or interdependent view, attention to process factors, explicit and positive incorporation in the strategic planning cycle, and users and line managers working in partnership with the IS function to create ownership of both process and outcomes (Earl, 1993). At a higher level, firms should also assess their competitive position by understanding where their organisation has been in the past, build a vision for future positioning, and create a transformation strategy to turn that vision into reality (Boynton, Victor and Pine 1993). If well chosen, strategic planning approaches can positively impact firm performance in execution (Miller and Cardinal 1994). Burn (1996) finds that organisations adopting a cyclical change model of organisational change associated with managing SISP will create opportunities to maximise their utilisation of IS throughout the change cycle. Burn's model can be applied to IS innovation if organisations shift between an 'external strategy lead model' (risk taking and innovative application of IS to emphasize effectiveness), and an 'internal infrastructure lead model' (functional alignment focuses on efficiency). Burn stresses that 'failure to play an effective juggling act' between the two approaches will retard innovative use of IS. This implies loss of value creating potential. SISP is therefore a critical competitive issue for which successful characteristics include comprehensiveness, focus, participation, flow, consistency, and formalization combined in intensity and accent differently by organisations to reflect their view of IT in the firm and how well

they plan strategically (Segars and Grover 1999). Kearns and Lederer (2004) find that two SISP practices, IT participation in business planning and alignment between IT and business plans, have particular impact on use of IT for competitive advantage in changing environments. Peppard and Ward (2004) further suggest that their particular concept of an IS capability shifts practice to a new era where the strategic management of IS is about developing IS competencies, and that this concept subsumes SIS objectives.

The health of the IT portfolio developed through planning processes should be assessed periodically so that it can be fed back into the planning process and also to facilitate dialogue between business and IT people, particularly if it incorporates a business management perspective (Weill and Vitale 1999). As part of the total value proposition, an IT portfolio value management process can be used in identifying relative value potential of projects, to provide a clear plan for the value realisation phase of an IT initiative, and to provide for acting on new opportunities to realise value (Smith and McKeen 2003). In addition, demand for new initiatives or modifications can be managed using a well-defined scheme for screening and ranking projects (Jeffery and Leliveld 2004).

Capabilities and competencies in IT planning can create value as processes. They include formulating strategy for IT, selecting suitable organisation for implementation, and choosing the right projects and managing them effectively (Soh and Markus, 1995). If they do not create value, the 'plans', as outputs, are literally left on the shelf (Keyes-Pearce, 1997). Kohli and Deveraj (2004) present a framework to ensure that the planning becomes action through a series of preparations for the investment phase designed to ensure value creation. These actions work firstly on IT-business alignment and then address involvement of the relevant people early and ongoing. They also address analysis for potential benefits, metrics for realisation, and emphasise communication.

2.7.3 The contribution of IT-business alignment processes to value creation in investment planning management

Alignment is often considered a part of the planning process or one of its outcomes. Chan (2002) notes that the two most accepted descriptions are that IS alignment is "the degree to which the information technology mission, objectives, and plans support and are supported by the business mission, objectives, and plans" (Reich and Benbasat 2000), and that IS alignment involves "fit" and "integration" between all of business strategy, IT strategy, business infrastructure, and IT infrastructure (Henderson and Venkatraman 1993, Luftman and Brier 1999). An analysis of IS alignment literature by Chan (2002) shows an emphasis on the fundamental importance of alignment for organisational effectiveness.

Given that managing alignment between the business and IT is a key approach (and outcome) for creating business value, some alignment research is focussed around IT value creation. This type of research looks for links and coordination between business strategy and IS strategy (Lederer and Mendelow 1989; Baets 1992), models the fit between business strategic orientation and IS strategic orientation (Chan, Huff, Copeland and Barclay 1997), and elucidates what appears to work best and what is required for alignment planning to be successful (Broadbent and Weill 1993; Teo and Ang 1999; Reich and Benbasat 1996, 2000). Other research in this area develops frameworks to understand how to make the link between business and IS objectives and strategies (Vitale, Ives, and Beath 1986; Calhoun and Lederer 1990; Hirshheim and Sabherwal 2001) as well as how to sustain that alignment (Luftman and Brier 1999).

However, there is not one perspective or approach to alignment that should be seen as superior. Rather, Henderson and Venkatraman (1993) argue that the inability to realise value from IT investments is, in part, due to the lack of alignment between the business and IT strategies of organisations, where strategy involves both formulation and implementation. In addition, IT value loss may be from a failure to align business and IT objectives and strategies driven by poor management practices and relationships. Dutta (1996) noted that even with divergent structural management approaches to IT, it is clear that common distance between IT and business management translates into non-aligned IT, one remedy being for senior managers to take responsibility for planning and develop close interactions with IT managers. However, some organisations benefit from a focus on alignment because both the business and IT managers reconsider their strategies for the firm and this then produces a convergence of views and potential for more successful alignment (Burn and Szeto 2000). Chan (2002) observes that a consequence of poor alignment is illustrated by sub-optimal performance from IT investments even although the organisations have invested heavily in IT to compete more effectively. Chan also identifies what might be considered the worst type of scenarios: High-potential IS applications are unknowingly missed, and business executives with unsurpassed technology-related ideas find it difficult to translate those ideas into action.

Various approaches are suggested for developing alignment at the investment phase. Early approaches include a recommendation that practitioners articulate strategic directions and participate in strategy formulation through responsibility in ownership of IT projects and communication of planning outcomes to improve interaction between business and IT people (Broadbent and Weill 1993). Competitive positioning could also be facilitated through the use of IT to transform the business. In this case, strategy execution, technology transfer, competitive potential, and service level perspectives of alignment would need to be adapted to respond to their firm's internal and external environments (Henderson and Venkatraman 1993). In later work, Reich and Benbasat (2000) identify the most important direct predictor of alignment as a high level

of shared domain knowledge in communication between IT and business executives. Reich and Benbasat show that connections in IT and business planning can be optimized through planning processes that include connection events, and avoid top-down, or derived planning processes, unless the business already has clear, unambiguous business objectives. Alignment consistency occurs especially where IT and business are components of a well-integrated system showing technological, functional and strategic integration (Pollanis 2003). Another facilitator of alignment consistency is shared vision. This is emerging as a 'barometer' for assessing future IT initiatives, particularly where shared vision reflects organisational goals well enough to filter and shape technological choice and the diffusion of the technology throughout the organisation (Hilgers, Marcolin, Chiasson, and Javidan 2004). Whether or not shared vision is a good barometer might depend partially on how the relationship between the IS and the business has influenced perceptions of the role and value of IT and opportunities on or over the horizon.

IT-business alignment is an accepted part of the planning process and should force the organisation to rethink its business goals and strategies – there is little value in perfect alignment of IT with poor business strategy. However, in addition to aligning objectives and strategies, there is also a need to understand what influences, and is required for, aligning the IS function with the enterprise (Brown and Magill 1994), and to ensure its capabilities fit changing business imperatives (Feeny and Willcocks 1998, Earl and Kahn 2001). Even the process of developing an IT governance approach can help achieve IT-business alignment (De Haes and Van Grembergen 2005). The relationship between IS and the business is a logical reflection of that alignment.

2.7.4 The relationship between IS and business and its influence on IS investment decisions

The perception of the IT-side of organisations by the business-side has been less than satisfactory for a very long time. Findings from research by Jarvenpaa and Ives (1991) indicate that *executive involvement* in seeing IT as an integral part of business is a psychological state more strongly associated with the firm's progressive use of IT than executive participation (actual behaviours) in IT activities. Current or future issues identified by IS executives often do not match very well with those identified by business-side executives. Galliers, Merali, and Spearling (1994) investigate IS issues with UK executives on both sides and partially explain this mismatch through the recognised historical culture gap between IS and business. It is now established that a strong IT-business partnership is required to manage complex IT investment decisions (Ross, Vitale and Beath 1996). This indicates organisations should include mechanisms to address the IT-business relationship at the IT investment phase in order to improve creation and delivery of IT value.

To give business managers better control over IT costs and the value they may get from IT, and in order to improve the relationship between IT and the business, various approaches have been recommended. One of these is to use the concept of chargeback, albeit applied with considerable

thought to its impact on IT value creation. Olson and Ives (1982) discover users' perceptions of IS efficiency are negatively effected as they become more aware of the costs associated with their IS. On the other hand, this may mean that better approaches are developed to IS decisions. Although chargeback mechanisms can foster communication between IT and the business units which may generate a rich shared understanding for both parties of the costs and benefits of alternative IT investments and service offerings (Ross, Vitale and Beath 1996), a lack of basic financial information on the costs of the chargeback function may result in business executives seeing it as too expensive, hard to understand, and therefore ineffective (Quinlan 2003). Other approaches used to relate IS with business are less reliant on concepts of 'expense' and more reliant on a strategic level of thinking.

The business executive team may set and direct strategic direction, but may not leverage IT for value in a strategic sense because they do not necessarily recognise the potential available. IS management have traditionally had difficulty convincing top management of the potential strategic impact of information systems. Lederer and Mendelow (1988) believe that without 'selling' the idea to the business, strategic implementations would never occur. They recommend using a technique where IS executives persuade other business managers to market the potential. Armstrong and Sambamurthy (1996) find that CIOs with high strategic IT and business-related knowledge and who participate more in top management teams have more influence on the extent of IT deployment in business strategies and at points in the activities of the internal value chain. Enns, Huff, and Higgins (2003) also surmise that strategic information systems require CIOs' effective influence on their peers and that peer commitment is influenced by particular behaviours based on findings that 'rational persuasion' and 'personal appeal' support peer commitment, whereas 'exchange' and 'pressure' create peer resistance.

The relationship between business line employees and IS people has an influence on the development of IT-related competencies and processes for making IT investment decisions. The goals and roles for IT and the IT strategic intent are also informed by executive perceptions of IT value, as well as informing the management practices used to translate IT investments into business value (Tallon, Kraemer, and Gurbaxani 2000). CIOs need to actively manage business executive expectations, but it "takes a keen sense of what the boss anticipates from IT projects as well as a diplomatic understanding of what the boss really does—and does not—know about IT" (p75, Potter 2003). The relative knowledge of business and IT people about each other's domains affects not only the championship of projects and IT in general but the relationships between business and IT groups (Bassellier, Benbasat, and Reich 2003; Bassellier and Benbasat 2004).

Business managers are necessarily involved in relationships with IS managers and these are also guided by both formal and informal controls and authority around IT investments. Organisations'

governance of IT for business value depends on where and how they wish to affect that control and authority. Initially, this is likely to include some definition of outcomes they wish to achieve through governance of IT investment decisions.

2.7.5 IT governance and value creation through investment decision and decision-making

IT governance is evolving. The various models of 'information politics' described by Davenport, Eccles and Prusak (1992) foreshadowed what is now known as IT governance. Researchers and consultants offer a variety of drivers and purposes for IT governance and a range of definitions (Keyes-Pearce 2002). However the literature collectively indicates a shift away from describing IT governance primarily as organisational structures (Brown and Magill 1994; Brown 1997; Sambamurthy and Zmud 1999; Luftman and Brier 1999) bounded by administrative or control mechanisms, or augmented by coordinating and integrating mechanisms (Brown 1999; Peterson, O'Callaghan, and Ribbers 2000). The emerging view of IT governance is as a process centred on capabilities (Feeny and Willcocks 1998; Luftman 2000; Sambamurthy and Zmud 2000; Lentz, Gogan and Henderson 2002) or the allocation of authority and responsibility for all decisions regarding IT and for monitoring the performance of IT-enabled initiatives (Weill and Broadbent 1998; Vitale 2001; Ribbers, Peterson, and Parker 2002; Peterson 2004; Weill 2004). Specifically in the context of managing value from IT at the investment phase, understanding IT governance may shape IT investment decision approaches, the responsibilities and authority for the decisions, project selection, and management for implementation.

Henderson and Venkatraman (1993) suggest that IT governance involves the "selection and use of mechanisms (for example, joint venture with vendors, strategic alliances, joint research and development for new IT capabilities) for obtaining the required IT competencies" and that it is analogous to business governance, as a make-versus-buy business strategy. Soh and Markus (1995) deduce that IT management is critical to the 'IT conversion process' (for IT value creation and realisation) and must focus on IT strategy formulation, selecting appropriate organisational structures for executing that strategy, project selection, and effective project management. But in addition, evaluating individual IT investments should consider their impact on current IT assets (Ross, Beath, and Goodhue 1996). Lentz, Gogan, and Henderson (2002) find that 'IT value management capability' is only one of several IT governance mechanisms at the IT investment stage. The perceived change in the business conditions created by the digital economy make a case for seeking an appropriate organising logic for "fabricating organisational arrangements that position the enterprise to technologically exploit its prevailing downstream and upstream markets" (Sambamurthy and Zmud 2000) and hence for ensuring the most suitable IT investment decisions are made.

The roles, authority, and responsibility taken by management are the basis for IT investment decision-making structures and processes. Boynton, Jacobs, and Zmud (1992) suggest the location of IT decision-making is best determined by overall business strategy but involves technical expertise link with management perspectives and shared responsibilities for IT decisions. Therefore the IT investment process should include judgements from senior business and IT managers regarding the value and costs involved in generating that value (Soh and Markus 1995). IT management and decision making by business maxims draws on a firm's mission or strategy statements and articulates an agreed-on position in a form that executives can readily understand and act on (Broadbent and Weill 1997). Governance approaches combine both governance processes and leadership principles and not only balance decision rights across multiple constituencies but exemplars of IT governance facilitate informed expectations and joint responsibility for IT investment decision making (Weill and Broadbent 1998). The participation of CIOs with high levels of IT knowledge in top management teams enhances their business knowledge and increases firm IT assimilation although it does not appear to matter if business executives IT knowledge is low (Armstrong and Sambamurthy 1999). Apparently this is not reflected in research at board level. Boards often have limited IT experience but younger boards, and those with more IT experienced external board members are associated with larger IT investments and the board presence of a CIO. CEOs and boards of directors affect IT investments and the adoption of IT enabled strategies (Kambil and Lucas 2002). IT governance is shaped by the reporting relationship of the CIO and it plays an important role in IT project selection primarily through its influence on criteria for project justification such as the strategic vision involving IT, IT investment priorities, and decision criteria (Sherer 2004a).

Once a project or initiative is selected and approved, IT governance during the development and implementation of IT initiatives can contribute to value creation at the investment phase. For example, business-IT management agreement is vital in decision making related to ERP adoption and implementation, where the relationship between restructuring, technology adoption, and use of consultants make the project complex (Hirt and Swanson 1999). It is clear that many complex IT decisions take place in the context of such IT projects, making it important to understand governance issues at the project level (Henry, Kirsch, and Sambamurthy 2003). All IT project decisions should involve well-crafted governance because they are critical to value creation and could lead to value destruction if mismanaged (Peterson 2004).

2.7.6 Getting the implementation right – managing risk to value building

So, what can go wrong? There are risks in all IT initiatives, and even in apparent project ‘successes’ achieved in the absence of appropriate regard for the potential impacts - risks which can be addressed if management policies and procedures are developed to insure that potentially

high-risk projects receive the appropriate degree of attention before they are implemented (Vitale 1986). Examples of such hazards include: a large financial services firm hampered from implementing a major IT initiative in a timely, effective, and error-free manner because of the thought and action routines of those responsible for designing and implementing the system (Levine and Rossmoore 1993); high-spend IT investments which are never used or avoided by the very people who are intended to use them because, in building systems, a company may optimize one part of a process and end up creating less optimal performance for the process as a whole (Markus and Keil 1994); lack of interest in IS planning by business management, lack of ongoing assessment of business strategy and shortfalls in methodological skills on business and IT sides with evidence of political game playing, the semantic gap, and pressure to use what is already there (Segars and Grover 1996); and, 'keeping mum' as the project goes under due to propensities to avoid negative reporting, particularly for impact and for 'wrongdoing', even although it is essential that senior management know the actual status (Smith, Keil, and Depledge 2001). Given that a range of things can go wrong at development and implementation, business and IS managers should look at these risks and their mitigation to avoid value destruction and to facilitate value creation during the investment phase.

Many projects at risk are continued once they have begun in earnest. This is despite the magnitude of potential loss shaping the risk perception and the significant relationship between risk perception and decision-making (Keil, Wallace, Turk, Dixon-Randall, and Nulden 2000). Executives should be acutely aware of risks associated with project escalation and should also have some awareness of strategies and tactics that can be used to turn troubled projects around (if possible) and to exit the project (Keil and Montealegre 2000). It is clear that the ability to achieve any of the intended business value of escalated projects is significantly impacted by a variety of project management factors (Zhang, Keil, Rai, and Mann 2003).

Strategies for heading off IS project failure include deliberate choice to keep business managers part of the responsible team with IS managers executing strategic behaviours along with the active participation and guidance of senior management (Cule, Schmidt, Lyytinen, and Keil 2000). Further mitigation tactics include understanding differences in how users and project managers perceive associated risks helps the team identify and manage expectations of multiple stakeholders to ensure the successful delivery of systems (Keil, Tiwana, and Bush 2002). Other approaches involve recognising the potential impact of drivers of individual project configuration, such as whether business or IS professionals control the project (Kirsch, Sambamurthy, Ko, and Purvis 2002), project requirements, strategic IT policies, risk management, pragmatic considerations, the managed exploitation of experience, and the managed adoption of new technologies (Martin 2003). Some research also suggests that value can actually be created through implementing more than one system simultaneously, based on their complementary characteristics, to leverage the systems'

respective strengths and enable organisational efficiency and flexibility to be developed in tandem (Newell, Huang, Galliers and Pan 2003). This type of process would help reduce the risk of failure of either of the projects. Specific organising mechanisms characteristic of high reliability organisations can also be used to manage the risk in socio-technically complex projects by creating and maintaining a collective mindfulness that is critical for risk control and mitigation for these systems (Carlo, Lyytinen, and Boland 2004).

Power, politics and resistance to implementation also shape the risk to value creation and can be driven by IT professionals or business people (Markus 1983, Markus and Bjørn-Andersen 1997, Doolin 2004). Some projects can be forced into evaluation as a 'failure' during the implementation through the 'power, politics and persuasion' of particular social groups within the organisation (Wilson and Howcroft 2005).

Markus and Benjamin (1996) recommend that to avoid conflict where the IS group is resented for being in control of change associated with a project, in-house IS groups relinquish or share control of the change process to increase the credibility of the group and so influence major organisation changes. Other recent research indicates that senior management should take a greater role in mitigating project management risk in implementation, particularly in areas outside the control of the project manager and IS leader such as management of organisational and political risk (Sherer 2004b). An organisation's leaders not only need to sense, recognise and respond to the politics of the place, top management should act as change architects, and business-IT partnerships should be enterprise-wide (Ranganathan, Watson-Manheim, and Keeler 2004). This also relies on IT professionals' aptitude for understanding change management (Paré and Jutras 2004).

However, project teams can also help head off project failures by sharing lessons from their experiences. Newell, Scarbrough, Swan, and Galliers (2005) find that although people may not find it a nice process, reflecting upon what can be learned and documenting that learning, can have benefits whether the projects succeed or fail. The authors note that for projects dubbed failures, "having the discipline to write these lessons down in ways that identify the causal relations underpinning the problems is perhaps even more important in these situations than in situations of success" (p.9.).

The goal of project implementation may be achieved through comprehensive planning, attention to possible impacts on the rest of the organisation and its competitive position, and through mitigation of risks in making the journey. The IT-enabled business initiative is an opportunity specifically developed with its potential value in mind. This potential value may then begin to be created during its actual use in the business of the organisation - with the expectation that it will be leveraged rather than lost.

2.8 Exploitation of Value from IT IN-USE: Approaches for IT Value Creation and Realisation

This section concentrates on activities, processes and behaviours which constitute the approaches organisations might take to ensure that they create value from their IT investments when they are in-use. The literature is presented under some logical topics, again reflecting general topics shown in Figure 2.2. They are: competencies or capabilities for creating value from IT in-use; how IT-business alignment facilitates IT value creation from systems in-use; mechanisms and behaviour to help leverage IT value from system in-use (such as business-IT relationships, the IT organisation, and IT governance); and, the influence of monitoring and feedback mechanisms on IT value delivery.

2.8.1 Competencies or capabilities for creating value from IT in-use

Value creation from IT in-use requires 'highly effective' IT capability which meets business objectives through implementation and involves management of key assets – human IT resources, a strong technology base which can be re-used, partnership between IT and business functions (Ross, Beath, and Goodhue 1996). These capabilities can be refined to include business systems thinking, technology development and management, managing contracts, good governance, and relationship building in order to deliver IS business value (Feeny and Willcocks 1998). Lentz, Gogan, and Henderson (2002) maintain that the value management capability involves two key activities for IT in-use; deployment of strategic control and learning about IT value linkages.

Organisations that do not develop these capabilities effectively may have reduced success in achieving potential benefits and face more issues following implementation. Many of these capabilities point to the level of understanding of business drivers, processes, and strategy, effective management of business and IT, and management of business change. Dos Santos and Sussman (2000) suggest a reason for delays in obtaining benefits from IT is management's failure to strategically leverage the full potential of IT and their failure to overcome resistance to change. Peppard (2001) highlights the assumption that a strong relationship creates the conditions for IS to make a value-added contribution to the business. Peppard surmises that IS capability must be developed by each organisation and cannot be bought because it is organisation specific and path dependent and may even exists in a complex web of social interactions, possibly relying critically on particular individuals. Bassellier, Reich, and Benbasat (2001) argue that individual line managers need to include IT in their business strategies and tactics and have a sufficient process view of their business to gain business value from IT in use. Peppard, Lambert and Edwards (2000) centre their notion of competence within the context of management of information for business value, where exploitation of information is how value is created through organisation-wide competencies with elements in the both business and the IS function. Peterson and Aragon

(2003) agree with Bassellier et al. (2001) in that explicit knowledge regarding IT strategy, planning, policy, and resource allocation is a key IT management competence. However, Peterson and Aragon expand that thinking to include IT relationship and change management as key IT management competencies for IT business value, supporting these ideas with results from case studies which suggest that *managerial* IT competencies are multifaceted (i.e., task, relationship, and change oriented).

Value creation from IT in-use may depend upon several other concepts such as process change, innovation, and iteration. For example, IT value might begin as opportunities emerge for business process reengineering (BPR) and rethinking managerial information flows (Rockart, Earl, and Ross 1996). Mooney, Gurbaxani, and Kraemer (1995) support a concept of a duality between IT business value and business process re-engineering. These researchers make the connection because IT is considered an enabler of process innovation, and process innovation is considered a catalyst for the realisation of the business value of IT. El Sawy, Malhotra, Gosain, and Young (1999) offer another example of innovation as a catalyst for value creation from IT in-use. These are a set of 'distinctive practices' in building and managing IT infrastructures which enable IT value innovation via a focus on customers and 'prototyping' IT strategy and business strategy together as a form of strategic improvisation. Goodhue, Wixom and Watson (2002) show that an incremental approach seems to facilitate value creation in-use for successful CRM, and requires 'hitting three targets' repeatedly overtime: implementing strategically beneficial applications, improving the underlying data infrastructure, and changing the way the business is run.

A capstone capability might be effective conversion of IS value created in-use to realised value. Effective conversion of IT to organisational value is key to business value from strategic IT investment being expressed in the organisation's performance (Weill 1992). The processes to make this happen, the 'IT conversion process' and the 'IT use process', develop and action the appropriate and effective use of IT assets including user skill, as well as applications and infrastructure (Soh and Markus 1995). Conversion processes and understanding where the value is potentially created both help organisations leverage other complementary assets, business process design and human capital, to influence the realisation of IT value (Davern and Kauffman 2000). In another approach for conversion of IT value opportunities (value creation) into realisation of IT value Smith and McKeen (2003) advise best practices should include training in business goals and processes, multifunctional change management and an emphasis on deeper learning and knowledge management.

2.8.2 How IT-business alignment affects value creation or realisation from IT in-use

Many researchers conclude that IT enabled initiatives in-use still require ongoing activities to ensure their IT-business alignment. Inevitably, they involve both the IS group and business

executives. Strategic alignment requires a diversity of roles for both line and IS executives, its performance involves multiple goals, managers should be prepared to continuously make adaptations, and 'strategic alignment is a journey rather than an event' (Henderson and Venkatraman 1993). IS to business unit linkage is important to stronger alignment and comparatively superior exploitation of IT for business value (Tiwana, Bharadwaj, and Sambamurthy 2003; Avison, Jones, Powell, and Wilson 2004, Kohli and Deveraj 2004). Activities in best practice IT portfolio management support this approach and include business and IT senior management holding frequent review sessions to discuss IT and strategy alignment across the portfolio and to make decisions on how best to adjust alignment (Jeffery and Leliveld 2004).

Chan (2002) finds that IS excellence requires flexibility and fluidity but, although it appears that the focus in the literature and in management practice on strategic alignment is warranted, the relative importance of the alignment of formal structures may be exaggerated. According to Chan's results, an important alignment component that appears to require additional emphasis in future management practice is that of the informal organisation structure. Bergeron, Raymond and Rivard (2004) also note structure being important to alignment and that strategic alignment, or 'fit', is seen as crucial in understanding how organisations can translate IT use into actual increases in performance. Their research shows that low-performance firms have a co-alignment pattern of business strategy, business structure, IT strategy, and IT structure that indicates conflict between these domains.

Sauer and Willcocks (2004) point out that in contemporary circumstances, executive teams aim to formulate and execute dynamic strategy because they face high competitive intensity and environmental turbulence. The authors suggest that achieving this degree of flexibility requires activity to create a joint architecture of IT and organisation with a distinctive advantage being that the 'architecture is harmonised' to allow strategy making as a continuing process.

Alignment and particular competencies or capabilities in IT management appear to be critical to creating IT value in-use. The literature reviewed in the last two sections indicates there are at least two other related matters embedded in these attributes; relationships between the IT-side and the business-side of the organisation, and also the functional design of the IS group. Jointly, these are relevant to leveraging value from IT in-use.

2.8.3 Leveraging IT value in-use: Business-IT relationships, IT organisation, and IT governance

There is considerable IS literature focussed on the IT-business relationship, design and function of the IS group, and also on the managerial style or philosophy suitable for success of IT in business. However, IT governance literature to date shows little direct focus on how IT governance contributes to IT value management and leveraging value from IT specifically during the in-use

phase. The selection covering each of these domains draws particularly on the literature pool more explicitly dealing with IT value creation or realisation to fit with the in-use phase of IT-enabled initiatives. It is organised under the following subheadings for better readability: a) The business-IT relationship and 'everyday' value from IT in-use; b) The design of the IS group and IT value in-use; c) The IS group function and 'everyday' IT value; d) Management styles for IT value through the IS group; e) Co-production; and, f) IT governance for IT value in-use.

a) The business-IT relationship and 'everyday' value from IT in-use

The degree of CIO participation in the top management team of the organisation and the level and extent of business knowledge shared with the CIO both influence the success of IT use by the business, particularly in firms where IT is seen in a strategic role in the firm's effect on their industry (Armstrong and Sambamurthy 1996, 1999). Although a strong IS-business relationship is desirable for producing IT value, many organisations have poor relationships with little guidance for bridging the gap (Ward and Peppard 1996, Peppard 2001). Nelson and Cooprider (1996) explore how mutual trust affects shared knowledge between IS groups and their business colleagues as a contributor to IS performance and IT business value and conclude that IS and line managers need opportunities to socially interact and communicate about their work. Peppard's (2001) case research reveals that managers are actually most interested in the consequence of a strong relationship and that delivering IT value is an enterprise-wide issue and not a task that can be abdicated to a single functional area. This implies that the actual relationship is not as important as getting value. Approaches such as shifting responsibility for creating and realising benefits to business management will address the 'benefits realisation gap' and hence the value goals (Sherer, Ray and Chowdhury 2002). Nevertheless, Watson, Goodhue, and Wixom (2002) concur with the necessity for a strong coalition of senior business executives and those with IT expertise but stipulate that any vision for change should come from the business side of the organisation rather than the IT side. Peppard, Lambert and Edwards (2000) believe clarification of roles and responsibilities will assist in maximising value creation from IT after implementation.

b) The design of the IS group and IT value in-use

Underpinning IT-business relationships, the design of the IS group has implications for value in-use. The structural design of the IS organisation may reflect governance of IT or historical organisational culture. The design and role of the IT unit can also be in response to changes in business and technology (Rockart, Earl, and Ross 1996). Rockart et al. see the redesign and management of the federal IT organisation as one of the imperatives for firms to compete successfully. Whatever the structure of the IT unit, it is essential that the CIO role forms an integral part of the top management team (Feeny and Willcocks 1998) whether or not they report directly to the CEO (Armstrong and Sambamurthy 1996). Chan (2002) concludes that, compared

with a formal IS structure, an informal structure can react quickly to internal and external shocks and allow for sustained organisational performance. Given that the IS group typically has many different 'clients' and business needs and IS capabilities change continuously, Chan notes that, at any time, business units probably need multiple coexisting formal structures so an informal structure responds to this. Decentralisation, a federated IT management organisation, and IT systems shared across intra-firm boundaries also affect the ability of IT professionals to facilitate the flow of knowledge about both IT and business practices between separate work units (Pawlowski and Robey 2004).

In some organisations, selected segments of the IT role and resource supply are outsourced to provide both a formal rule-driven structure and some capacity for agility in order to respond to new competitive requirements (Lacity, Willcocks, and Feeny 1996). Ye and Agarwal (2003) highlight mechanisms inherent in IT outsourcing relationships which could create alternative types of value. They view IT outsourcing as a relationship premised on knowledge exchange and learning, and propose that learning arising from knowledge exchange and transfer through the collaboration can then generate value from IT for the firm. Ye and Agarwal investigate strengthened internal IT partnerships, and IT-enabled innovation as extra delivery of IT value from the outsourcing arrangement as it occurs. The knowledge potential inherent in business process or IT outsourcing is another source of value but this may not be released unless there are changes in management practices between the supplier and client (Willcocks, Hindle, Feeny, and Lacity 2004). However, irrespective of its structure within (or outside) the organisation, the IS group function and style has considerable impact on if, and how, IT value is created and realised through IT in-use.

c) The IS group function and 'everyday' IT value.

Rockart, Earl, and Ross (1996) see IT units becoming smaller, but also more critical to its firm's operations, and effective IT units work on two-way strategic alignment, effective relationships with line management, reskilling itself as needed, managing vendor partnerships, and developing internal high performance. Clarke, Cavanaugh, Brown, and Sambamurthy (1997) conclude that a successful IT organisation will develop change-ready IT capabilities and shift from being an 'operational backwater', focused solely on legacy systems, to enabling IT-based strategic differentiation of the business. In order to manage the strategic business focus required for competitive success, Sauer and Willcocks (2002) suggest the functional role of an 'organisational architect' who works with strategists and technologists, has capabilities in managing strategic change, and who's distinct skill supports those of CEO and CIO, and who will emphasise risk-return for future potential. In contrast, Agarwal and Sambamurthy (2002) look at a whole range of processes of which strategic focus is just one part. These processes relate to creating and managing fundamental IT capabilities (IT infrastructure, IT human capital, IT relationships) and conversion of these capabilities into business applications and services supported by strategic planning and

financial management. If the premise is that business management has a key role in the delivery of many services, with the IT organisation taking part, the IT function should be managed as a portfolio of services to build an environment in which business value is created (Peppard 2003).

One aspect of the IS group function is service quality; it is about IS function service delivery measurement and implicitly about getting value from IT investments. Wood and Preece (1992) raise the importance of being aware of both problems and possibilities when using quality measurements given that, in practice, these techniques sometimes fail to deliver expected benefits for a variety of human and organisational reasons. Managers also need to consider whether any emphasis on functional efficiency is negatively affecting the conversion of IT investment to value in-use because critical conversion effectiveness capabilities may be destroyed in the process (Rai, Patnayakuni, and Patnayakuni 1996). Service quality and its measurement has impact on IT value creation and realisation (Kettinger and Lee 1997; Pitt, Watson, and Kavan 1995, 1997), particularly if the IT function is largely in-house. If IT is outsourced, selectively or fully, other service level agreements and contract issues arise, including the experience which allows firms to intelligently evaluate and negotiate outsourcing deals (Lacity, Willcocks, and Feeny 1996).

d) Management styles for IT value through the IS group

Strassman (1990) developed a comprehensive set of concepts, principles and tools, not only for measuring, tracking, and assessing IT, but also for positioning managers to make better decisions about IT, encouraging managers to shift their focus from IT to the executives who manage it and to their own productivity, and emphasises better management. The management approaches and philosophies of the IT organisation constitute a 'style' of IT management overlaid upon structure and functional roles. Neiman (1992) suggests the IT group must 'shift its mental gears' to become a centre for value creation where potential for value creation grows when IT and business groups collaborate. Venkatraman (1997) also proposes managing IT resources as a 'value centre' recognising four interdependent sources of value (cost, service, investment, and profit centres). Venkatraman's value centre concept allows companies to differentiate management approaches to realise these particular sources of value to minimise risks but operate efficiently, create an IT-enabled business capability supporting current strategies, create new IT-based business capabilities and to deliver IT services for incremental revenue. Some IT units require a shift from behaving as an 'IT shop' to focus on business processes and goals. Cross, Earl, and Sampler (1997) find that a suitable management philosophy involves transformation organised around purpose, process, and people. However, sometimes changes to the IT group's approaches might cause unintended damage to the perception of value being created from IT. In a case study of a large financial services firm, Brohman and Copeland (1999) found that after the remodelling of a traditional, technology-centric, independent entity into a customer-focused business unit involving IT and

business integration, the new operating framework was seen by business-side executives as a risk to the firm's leadership in technological expertise.

e) Co-production

Despite inevitable setbacks in the evolution of IT-business relationships and the function and style of IS groups, some key ideas have emerged from recent research that still support the shift towards 'co-production' to best leverage IT value. Leading-edge firms design their IT function to encourage innovation and sustain superior business performance through major guiding principles such as encouragement of co-evolution of IT with the business, fostering relationship networks and organising the IT function by identified value creating processes (Agarwal and Sambamurthy 2002). Schwarz and Hirschheim (2003) conclude that "if organisations focused more on implementing a sound IT governance strategy, it might help senior executives to manage not only the IT-related activities, but also the perceptions between IT and the rest of the organisation, and, in doing so, foster a more successful IT organisation" (p 152). Feld and Stoddard (2004) assert that organisations should not treat IT people differently than the rest of the business and should create an accountable IT leadership team and performance management and feedback system that is matched to that of the corporate side. The authors advise that this fundamental change from past convention, along with a clear cut set of rules, will drive a high performance IT culture transforming the IT group 'from a costly mess into a powerful weapon'.

f) IT governance for IT value in-use

Sambamurthy and Zmud (2000) develop a governance approach informed by platform logic that "sources, configures, and delivers IT capabilities through complex and dynamic arrays of intra- and inter-organisational relationships" (p108). Sambamurthy and Zmud indicate that such 'relational' governance structures allow business value from IT to be realised through the orchestrated interplay of complementary IT and business capabilities. Building on these ideas, Agarwal and Sambamurthy's (2002) approach to governance is to firstly identify the organisation's IT value propositions against the nature of the business, industry environment, and business units' IT sophistication and knowledge, whilst noting the different sets of value-creating processes and relationship networks. They then suggest IT governance could be different for each value-creating process and should be tailored to fit. Ross and Weill (2002) make a strong case for business executives to ensure that senior managers don't ignore their IT responsibilities because there are actually decisions that their IT people shouldn't make. This particularly applies in the instances of data security and management, and the business and organisational changes required to generate value and to ensure that IT-enabled initiatives are used. It is highly evident that the way that IT governance is crafted or developed is fundamental to its ability to derive value from its IT investments (Peterson 2004; Weill 2004).

2.8.4 Monitoring and feedback on IT value creation as an influence on IT value delivery

Monitoring and feedback mechanisms can be designed to encourage and manage both value creation and realisation over time. This approach makes such mechanisms key components of managing IT value delivery. Early research findings indicated the importance of tracking of project benefits after the projects are implemented and the need to keep measuring IT value though the full life of the IS initiative (Weill and Olson 1989). This is supported by Lentz, Gogan, and Henderson (2002) who also argue for the establishment of formal mechanisms to track and manage IT initiatives and to enable their adaptation to changes in the external business environment as determined by business senior management. Smith and McKeen (2003) note that not only should value realisation be assessed over time, but extending this assessment to include all levels of the organisation will give a more comprehensive indication of value creation. Jeffery and Leliveld (2004) also support the tracking of value creation and recommend providing feedback on IT alignment with strategy using scorecards to evaluate each project.

Remenyi and Sherwood-Smith (1999) find that value is better created when all stakeholders are continuously participating in evaluation of an IT system, because they are also involved with moulding and realizing the value in business use. Smith and McKeen (2003) also advise that a clearly defined portfolio value management process should incorporate people and technology and processes in a holistic approach to business change in order to create value from IT. They also recommend it include mechanisms to optimise enterprise value according to the principles the organisation uses to allocate its resources. Constant assessment and feedback for intangible assets such as information capital can give better value creation from the strategic IT portfolio, through a balanced scorecard type dynamic and responsive strategy mapping approach (Kaplan and Norton 2004). Monitoring and feedback mechanisms throughout the full business of IT initiatives also allow organisations to 'routinely weed out' underperforming initiatives, and to manage the aggregate value of their portfolio (Jeffery and Leliveld 2004). A fundamental premise of Jeffery and Leliveld is that mature IT portfolio management is characterised by a synchronisation between business strategy and IT that is shaped by managing risks through a blend of 'run the business' innovation and breakthrough innovation, as well as leveraging the option value of initiatives to enable future opportunities.

2.9 Exploitation of Value from IT at IMPACT: Approaches to Ensuring Organisational IT Value Capture

Literature on the impact of IT, or on evidence of IT value captured, tends to be associated with measurement research focussing on *what* linkages and relationships exist rather than in *how* or *why* value from IT is captured by the organisation. Nevertheless, available research on the latter helps us understand approaches for translation of IT to bottom-line impact and competitive advantage

and, on the other side of the equation, to appreciate how organisations might mitigate value loss and avoid negative impacts on their performance.

2.9.1 Translation of IT value to bottom-line impact and competitive advantage

Years ago it became clear that IT can be used to positively impact the firm's bottom line and its competitive strategy (McFarlan 1984). However the strategic impacts of IT (internal, competitive and business portfolio) highlight different key issues (Bakos and Treacy 1986), and particularly, the competitive dynamics of industries and power of information mean that inter-organisational information systems can support competitive strategy by changing the relationships between a firm, its buyers and suppliers, and so create new networks (Johnston and Vitale 1988). These findings and concepts are still supported by recent research showing that effective leverage of IT investments through a superior IT capability translates into superior current and sustained firm performance when compared to average industry performance (Santhanam and Hartono 2003). Lejeune and Roehl (2003) note that in the financial services industry, failure of the 'pure players' has shown that the information advantages of the internet are not sufficient to lead to sustainable competitive advantage. They find that existing institutions leverage the same information flow by combining it with an interaction of market, organisational, and technological innovations that make the new information more strategically valuable. The details of how to affect superior competitive impact are more elusive.

How is competitive advantage honed through IT impact? Although IT impacts are an uncertain outcome of the conversion process and IT use process, Soh and Markus (1995) see the 'competitive process' as an expression of competitive dynamics, positioning, and organisational performance. They see the last as dependent on how performance is viewed: if the organisation is a rational goal-seeker, then performance is successful goal accomplishment; if the organisation is viewed as a coalition of power constituencies, success includes constituent satisfaction; and if focused on deals and exchanges, performance is tied to bargaining and adding value to resource outputs. Soh and Markus conclude that favourable IT impacts will translate into improved organisational performance, so long as they have not been adversely affected during the competitive process. The actual manner in which all this is achieved is somewhat obscure in articulation. Findings by Powell and Dent-Micallef (1997) suggest that some firms have gained advantages by using IT to leverage intangible and complementary human resources (eg consensus, flexibility, CEO commitment) and business resources (eg process redesign, planning, teams). Their results illustrate how some firms outperform others using the same IT and by explaining why successful IT users often fail to sustain IT-based competitive advantages. Powell and Dent-Micallef deduce that high performers develop strong cultural, structural and systems infrastructures. Peppard and Ward

(2004) suggest an IS capability, built on resource driven IS competencies, is necessary to achieve sustainable competitive value from IT.

Other researchers also see infrastructures being vital to IT impact. Byrd (2001) see the way to connect to, create, and sustain competitive advantage is through IT infrastructure flexibility which acts as an enabler of core competencies key to that have been identified in research literature as key to competitive advantage (ie mass customisation and time-to-market). The notion of infrastructure as a competitive fundamental is supported by Weill, Subramani, and Broadbent (2002), who maintain the concept of IT infrastructure investment as 'buying an option' where successful organisations are able to leverage IT for future initiatives rather than it becoming a sunk cost. Weill et al. find the successful firms create the option for future advantage through regular, systematic, modular and targeted investments on the basis of an overall strategic direction. This concept implies that the 'option' impact on competitive advantage is an inherent value for the IT investment in-use. Smith and McKeen (2003) take a more broad view and concur with Marchand, Kettinger and Rollins (2000) regarding the need for managing and using effective interaction between people, information and technology to create value from IT initiatives, and then leverage that for business value. But Smith and McKeen also suggest adopting a 'holistic orientation' (as a principle), to bind with these three assets together.

Monitoring and feedback mechanisms are clearly required to enhance an organisation's ability to truly embed IT value. Prahalad and Kirshnan (2002) caution that the required flexibility, IT or strategic, will not be created without a shared understanding and a shared agenda between the business managers and IT managers and believe an applications portfolio scorecard shows the trade-off between innovation and efficiency but must evolve in the context of the competitive environment of each business. Jeffery and Leliveld (2004) imply business executives should view monitoring and feedback as useful mechanisms for IT impact management, but warn that expecting immediate bottom-line benefits could negatively affect actual performance of strategic investments over longer time periods. The lack of immediate returns from many IT investments can be interpreted as value latency. Goh and Kauffman (2005) propose a new theoretical perspective on the latency of IT value and argue that IT value flows occur in three phases: value dormancy, value triggering and value transformation. It is expected that applying the value latency model in practice will help managers to better size their "expectations of IT payoff and so focus attention on ways to unlock more value sooner from their investments" (p1).

Whilst sustained competitive advantage requires leveraging unique firm attributes combined with IT capability, it has also been shown that the use of systems cannot confer sustained competitive impact if they have only transient strategic value. Also, IT-enabled initiatives may even offer negative value if matched by a superior response by competitors (Kettinger, Grover, Guha, and

Segars 1994). Powell and Dent-Micallef (1997) demonstrate that, in addition to the IT system components, key complementary business and human resources are difficult to manage in concert for maximum value because the process requires managerial support and forethought, strategic integration, clever organisational redesign and 'a bit of luck'. In the end, the assessment of an initiative's success or failure is often taken for granted, particularly for business process reengingeering projects, but is not easy to gauge and can be more of a subjective judgment than an objective 'fact' (Larsen and Myers 1999). Smith and McKeen (2003) conclude that "delivering IT value means managing the entire process from conception to cash" (p448).

The literature confirms that translation of created value to the bottom line and/or into demonstrated competitive advantage requires approaches which are complex in concept and execution and require long-term persistence. Indeed, research shows that although factors significant in converting IT-enabled competitive advantage into sustainable advantage are largely within the internal architecture of organisations, sustainable IT-enabled competitive advantage is elusive (Griffiths and Finlay 2004). Essentially, exploitation of IT for sustained positive impact is not only highly difficult but it risks serious financial and human costs if mishandled.

2.9.2 Mitigating value loss and avoiding negative impacts on the bottom line

Two major areas of concern for the bottom line and competitive positioning are huge cost blow-outs for major system investments (often also blows to reputation) and sustained internal cultural problems related to the IT-business perception gap. Literature about two key ways to mitigate value loss is addressed here: a) Managing implementation and use, but knowing when to 'pull the plug', and b) 'Dysfunctional' threats to leveraging and embedding value at IT impact.

a) Managing implementation and use, but knowing when to 'pull the plug'

In some situations escalation behaviour associated with IT-enabled initiatives is economically prudent because failure to consider the value of real options results in perceived benefits being lower than the actual benefits. This means managers often cancel projects that would in fact be economically beneficial to pursue (Keil and Flatto 1999). In other cases the bottom line can suffer huge negative impact when potential IT value is destroyed. Keil and Montealegre (2000) explain that the problem is that sometimes executives become so committed to a particular project, technology, or process that they cannot support pulling out. Keil and Montealegre suggest strategies and tactics which can help deal with failing courses of action, including managing pressure, getting objective assessment, involving stakeholders, or even redefining the problem. In one case of escalation, a complex strategic application was cancelled after 15 years and $400 million where fundamental mistakes occurred at the outset through a cultural disconnect between various groups of business management and also with IT management in the firm, then further

serious risks arose through lack of forward and contingency planning (Beachboard 2003). The initiative ceased only when an impasse occurred. Organisations need to be aware of the escalation phenomenon and should develop an effective de-escalation strategy and processes (Pan, Pan, and Flynn 2004).

b) 'Dysfunctional' threats to leveraging and embedding value at IT impact

Avison, Cuthbertson and Powell (1999) raise an obvious irony occurring in some organisations: while IT is critical to an organisation's ability to run and grow business, the IS function is often considered as a secondary activity. The over-riding finding in their study is that the IS group and its activity is regarded as low status, even when the organisation is private and the IS strategic. This finding is also supported by Hirschheim, Porra, and Parks (2003) in a case described as a 'disturbing picture' of this irony. The Texaco IT group was high-performing on operational and strategic elements, yet the business executives still perceived it as a costly and ineffective overhead. Hirschheim et al. deduce that these perceptions had developed in a vacuum, grown through 40 years' historical behaviour and attitude and begun prior to the group's existence. The nature of the circumstance illustrated by the above two studies means that these organisations will experience reduced value from IT impact, because they will disrupt (and possibly destroy) value creation, realisation, and embedding essential to bottom-line and competitive advantages from IT investment. In other related work, Schwarz and Hirschheim (2003) find that the effect of some organisations' recognition of the impact of perceptions of the IT group means that IT governance has moved beyond structure to embrace relationships. This indicates that the focus on whether the structure is centralised or decentralised is less important than on how relationships are formed and managed. The wisdom of Marchand, Kettinger, and Rollins (2000) still stands: that excellence at leveraging IT investment is not sufficient to achieve superior business performance; organisations must also excel at a range of capabilities and develop a culture and incentive system to support it.

2.10 Conclusions and Implications for IT Value Management Research

The outcomes of this review not only illustrate the range of literature that usefully informs preparation for theoretical and field research in the area of management of IT value, they also help make sense of the variety and viability of contributory elements of the business value of IT in organisations. As stated in section 2.1.1, the review objectives are four fold. At one level, objectives are tied to the content of the review and target the range of research on IT value as well as prominent and emerging concepts important for IT value management. At another level, the review is designed to attend to the needs of the dissertation, specifically, to delineate the research boundaries and to examine how the literature helps address the research problem. The conclusions are laid out to address these two strata and include a synopsis of the literature landscape as well as more directed commentary. The intention is to provide a succinct assessment as part of the

foundation for the research design (the problem identification and its rationale and methodological considerations are the other parts of the foundation). In doing so, it provides the terms of reference for the theoretical elements of the dissertation.

I. THE REVIEW CONTENT: The range of research and prominent or emerging concepts for IT value management

The first two objectives are: to develop an appreciation of the range of research in IT value through a systematic identification of IT value research foci currently published in academic sources; and, to ascertain prominent or emerging concepts arising from the literature which researchers deem important to IT value management processes and principles.

The review is largely focussed on the literature with reference to IT value, although it does recognise some of the array of contributory work to the domain. The main components of the literature landscape were highlighted at the beginning of the chapter (refer back to Figure 2.1 in section 2.1.3). After completion of the review, the evaluation and exploitation foci are still viable as 'trig points' on the landscape. What has now emerged are the details of the valleys below those trig points. This means a new diagram is needed in order to provide a relative mapping of the literature areas investigated against the two dimensions used as themes for analysis; the evaluation and exploitation trig points, and the phases in the business-life of an IT-enabled initiative. Figure 2.3 shows the relative spread of research activity in the IS field which addresses IT value.

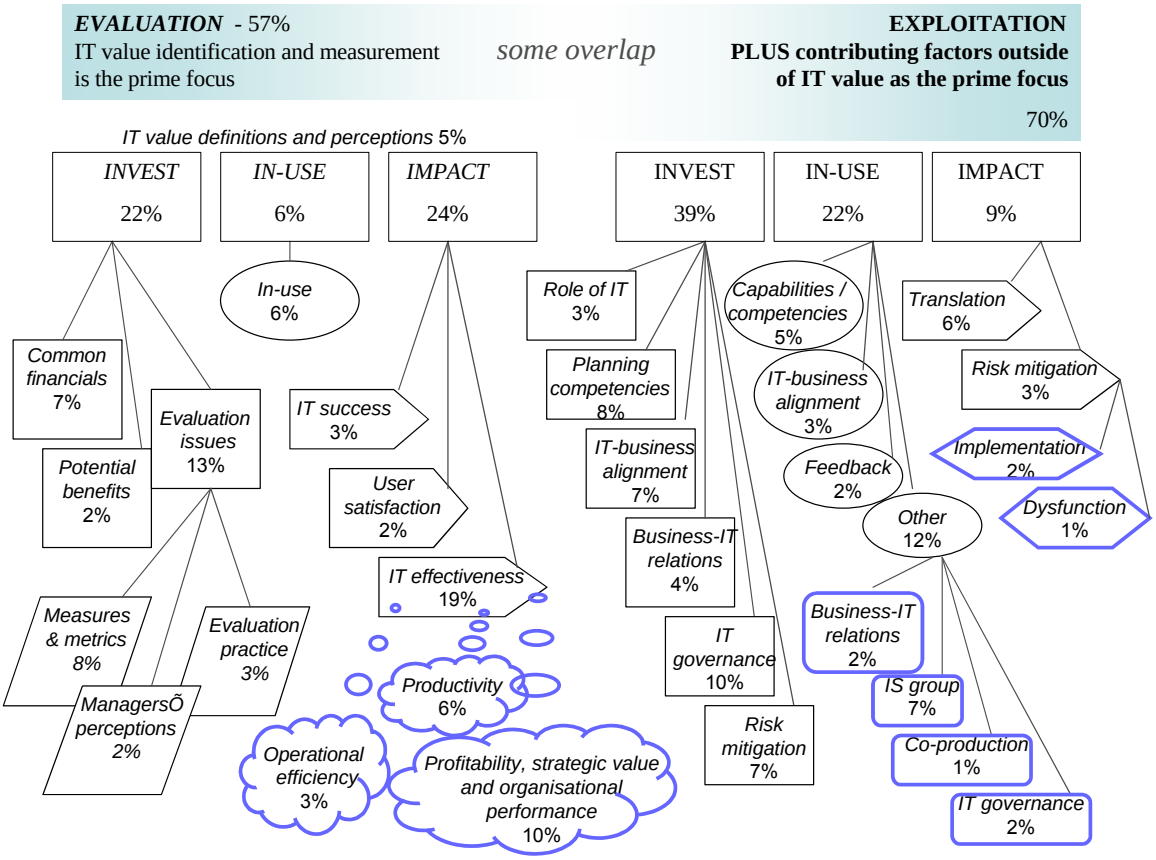
To express the relative emphases Figure 2.3 uses the number of papers reviewed in the area as a percentage of all the papers used in the review (318). There is also some overlap in that some papers appeared in both segments and this is why the total percentage is greater than one hundred. Some topics appear in more than one location because they demonstrate research applicable to those areas. These topics are IT-business alignment, IT governance and business-IT relations and risk mitigation. This diagram is obviously not comprehensive or exhaustive but is purely indicative of where the relative research activity lies and how they are related. It is also important to note that the number of papers reviewed for factors generally accepted to contribute to IT value, such as strategic information systems planning, were limited to a few key papers as most research in the area is not about IT value management, evaluation or exploitation, specifically, but about the alignment concept, process, and its immediate outcomes. Figure 2.2 is used to manage the thematic analysis of the literature, complements this mapping.

The mapping shows that evaluation literature tends to focus on the investment and impact phases. This is not surprising, given the difficulty in identifying value being created in-use and also because the spend-impact connection is of great interest to practitioners who need to substantiate IT spend. The areas emphasised most in the evaluation literature appear to be evaluation issues and IT effectiveness (particularly profitability, strategic value and organisation performance). No clear

areas of heavy emphasis are evident in the range of exploitation literature. It possibly reflects researchers' broader interest in how organisations attain IT value and therefore the spread of research interest is more diverse.

The review also highlights some prominent or emerging concepts for IT value management which, although represented in the exploitation segment, includes evaluation as a subset depending upon how it contributes to the exploitation. However, some papers with a sole focus on evaluation do submit their results as a form of managing IT for value. Also notable is the relative emphasis of literature centred on IT value exploitation on the first two phases of the initiative, looking mostly at how value can be created or 'converted' from IT assets in-use.

Figure 2.3: The Spread of the Reviewed Literature on IT Value



Over the entire review, prominent concepts appear to be: IT-business alignment, IT-business relationships, and developing competencies either in the IS group or between them and the business. Emerging or re-emerging concepts gaining recent attention include communication and shared knowledge (e.g. Newell et al 2005), modifications of the portfolio approach to managing IT

for value (e.g. Jeffery and Leliveld 2004), IT governance (e.g. Weill 2004; Peterson 2004), the dysfunctional aspect of the IT-business divide (e.g. Hirschheim et al 2003) and consideration of end-to-end IT value management and all its processes (e.g. Peppard and Ward 2004).

Research focussed on understanding what is happening in the field through empirical studies at firm-level or business unit level has shifted away from IT evaluation only (what) towards investigating and modelling how IT is actually created and captured. One conclusion that could be drawn here is about the reasoning used, and that the attempts to 'prove' connections between IT spend and firm performance are not so helpful to management unless they can also actually find out how to make that connection happen.

II. REFINING RELEVANCE: Defining the boundaries of IT value research applicable to the dissertation and addressing the research problem

The third and fourth objectives attend to the specific needs of the dissertation research programme. The outcomes of the review process and information are used to delineate the boundaries of IT value research necessary to achieve the aims of this dissertation and also to clarify the fit with the needs for the research problem by identifying patterns, distinctions, and gaps in the literature.

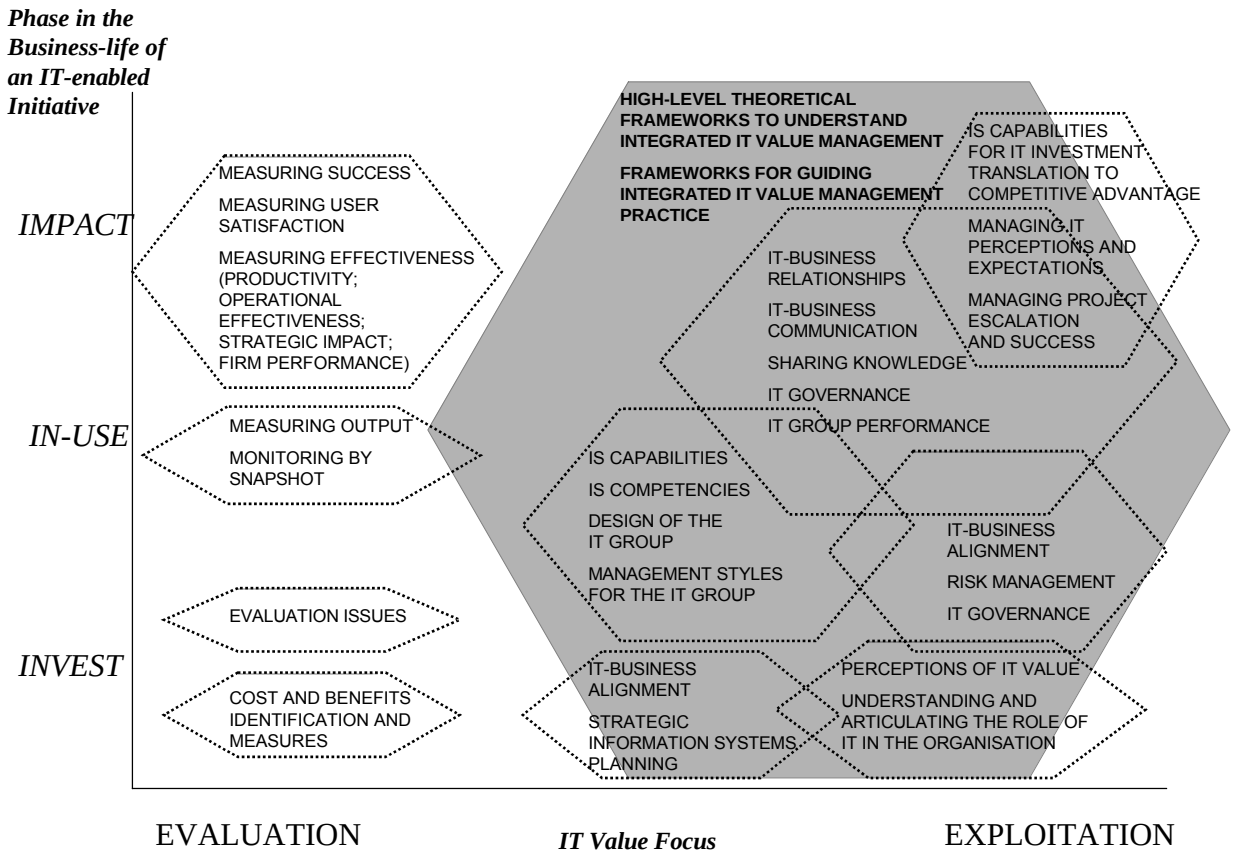
Delineating the research boundaries rests on the nature of the problem – this dissertation highlights a 'how' problem. The problem is that organisations want to go beyond just finding a way to prove ROI in the financial reports – they want to know *how* to improve their IT value management to create and capture more value and to mitigate risk of its destruction. This means addressing a firm's IT from its inception to when they discard it. A conclusion of this review is that relative success of IT value management shows multiple aetiology. The literature to support this level of problem must cut across multiple concepts. There is a lot of highly specific and detailed research on the various factors thought to contribute to IT value. However the literature of most use has the following attributes:

– It provides models or frameworks to explain how organisations can improve their IT value management by providing academically informed guidance;
– The models or frameworks apply at a level that recognises the contribution of multiple research domains within the broader sphere of either evaluation or exploitation;
– The models or frameworks endeavour to draw those multiple research domains together in a conceptually simplified manner to facilitate application in practice.

The literature on IT value exploitation provides a reservoir for the concepts but the literature that specifically connects many or all of these concepts forms the narrower domain of literature suitable for addressing the research problem. The fit of the dissertation within that reservoir is represented in the next diagram. Figure 2.4 is a schematic representation of how specific domains of research fit in the broader research themes (refer Figure 2.2 section 2.1.3 and Figure 2.3 this section). This

figure shows the research themes in the literature relative to their 'coverage' of the themes used for the literature analysis. It also indicates that the area of intense interest for the dissertation is around models or frameworks for integrated IT value management, that is, those that attend to all the phases in the business-life of an IT-enabled initiative. The literature of most interest incorporates many contributory areas of research into theoretical frameworks and presents these at a higher conceptual level. The largest grey hexagon locates the dissertation focus.

Figure 2.4: The Research Themes Relative to the Domains Noted in the Literature



Three major findings arise from the review: IT value perceptions are important (refer to section 2.2); there are relatively new concepts in IT governance which are important for IT value management; and, there are two main gaps evident in the literature. One gap is the small attention to how IT value can be captured or embedded into the fabric of the organisation (the Impact phase), and another gap is the distinct paucity of models for integrated IT value management to specifically address the research problem.

Review impact

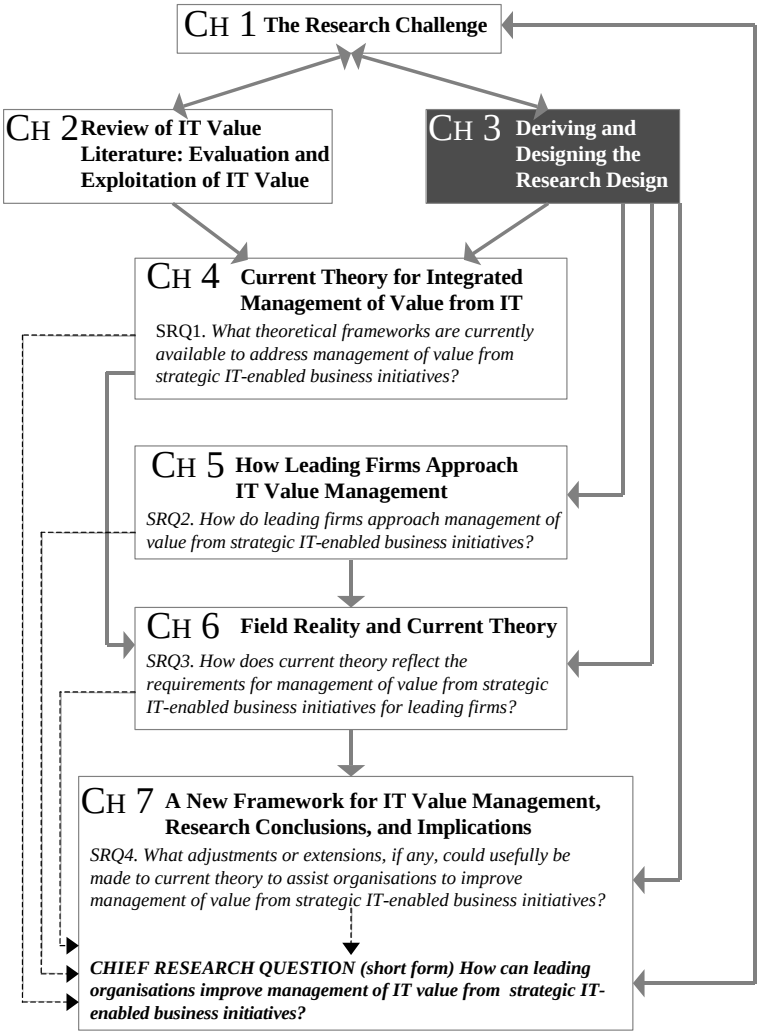
In summary, the literature review of academic works regarding IT value evaluation and exploitation has resulted in several outcomes impacting the dissertation:

- The review articulates the contributing concepts for IT value management models or frameworks across all the phases of the business life of an IT-enabled initiative. There is a refinement of focus on IT value potential, creation and realisation or capture for each of these phases.
- The review confirms the viability of the chosen focus of this dissertation and of the research questions in response to the research problem.
- The review provides the base for targeting the research problem by establishing the foundations for consideration of theoretical frameworks and field realities in IT value management.
- The review contributes to the research design and data collection instruments for field research by highlighting key aspects of IT value management to be incorporated.

These outcomes are taken into account when designing the research programme. This is tackled during the next chapter which looks at the way knowledge of the IT value literature impacts the nature and detail of the data to be gathered for analysis, the required methodology and the specific methods for the investigation, in short, on the entire research design.

CHAPTER THREE

DERIVING AND DESCRIBING THE RESEARCH DESIGN



3.1 Establishing the Research Approach

3.1.1 Variety in research for investigating information systems in organisations

Information systems research in organisations requires particular approaches that respond to the context of the information systems and also help develop understanding of related organisational issues (Orlikowski and Baroudi 1991, Walsham 1993, Remenyi and Williams 1995, Myers 1997, Orlikowski and Barley 2001). There is considerable discussion and argument about research diversity in IS (Benbasat and Weber 1996, Robey 1996, Barkhi and Sheetz 2001, Vessey, Ramesh, and Glass 2002), IS research focus and styles in different countries (Avgerou, Siemer and Bjørn-Andersen 1999), the need for pluralist methodologies (Mingers, 2001, 2003), and the potential research space in MIS (Berthon, Pitt et al 2002). The role of the IT artefact in IS research is also part of this diversity debate (Orlikowski and Iacono 2001, DeSanctis 2003, Robey 2003, Whinston and Geng 2004). However the main diversity issue is fuelled by the observation that output from empirical research in the IS discipline has long been dominantly positivist (Orlikowski and Baroudi 1991, Alavi and Carlson 1992). Although 81% of empirical IS research published 1991-2001 was positivist, there is also a shift from laboratory experiments towards more empirical studies, qualitative research and longitudinal cases (Chen and Hirschheim 2004).

A 'positivist versus interpretivist' argument divides researchers. Galliers and Land (1987) compare traditional empirical approaches - 'the scientific paradigm'- with research approaches using 'interpretations', lamenting the existence of research that applies the scientific paradigm irrespective of the IS topic to be studied. The paradigm (or philosophy) that underlies a researcher's thinking and their research design is sometimes a mix of epistemology and theoretical perspective. For example, three IS research philosophies (positivist, interpretive and critical) differ according to the beliefs about social and physical reality, knowledge, and the relationship between theory and practice (Orlikowski and Baroudi 1991). Quantitative research is often equated with positivist perspectives and qualitative with interpretivist (Remenyi 2002). Chen and Hirschheim (2004) also divide research paradigms only into positivist and interpretivist, where positivists rely on objective data to predict factor relationships and test hypotheses, and interpretivists set their research in cultural and contextual conditions where the primary sources of data are participants' perspectives about the phenomena under investigation. The 'positivist versus interpretivist' argument is not yet resolved (Weber 2004).

'Rigor versus relevance' is one of the major issues in the arguments surrounding IS research designs. Benbasat and Zmud (1999) argue that the relevance of empirical research can be improved under high standards of rigor, but others suggest that excellent practical research can also be done by changing core traditional academic values around research rigor (Davenport and

Markus 1999), and that the IS research relevance argument should not be viewed from a positivist stance alone (Lee 1999). Dennis and Valacich (2001) go as far as to say that "all research methods are seriously flawed". They suggest "it is literally impossible to design a research study that satisfies all three dimensions" of research evaluation (drawn from McGrath 1982) *Generalizability, Realism,* and *Precision* (Dennis and Valacich 2001, p5). The issue of certainty in IS research is also raised by Mumford (2003).

Arguments for particular research designs for studying IT in organisations often combine paradigm or epistemology with methodology or methods. For example, arguments for positivist case study IS research (Benbasat, Goldstein and Mead 1987, Dubé and Paré 2003) are further supported by descriptions of how to build theory from case study research using a positivist approach (Eisenhardt 1989, and Paré 2004). Yin's (1994) positivist case study research approach is a foundation for IS case study research. Various research designs are substantiated specifically for IS qualitative research (Walsham 1995, Myers 1997), for combining positivist and interpretivist approaches (Kaplan and Duchon 1988, Trauth and Jessup 2000), and for other pluralist methodologies (Mingers, 2001). Some authors justify the use of a specific theoretical foundation in the research approach, such as structuration theory (used as an analytical framework by Orlikowski and Robey 1991) or the Resource Based View (as discussed by Wade and Hulland 2004). A framework used in this way could also be construed as methodological i.e. a research strategy. However Walsham (1993) argues that "the use of a particular theory excludes other ways of viewing the same events" and so it "is of no value in aiding the research process itself" p70). Discussions about theoretical perspectives and research design continue. Examples include: researching knowledge management and systems (Alavi and Leidner 2001); suitable perspectives for researching IT and industry transformation (Crowston and Myers 2004); the theoretically informed position of action research (Baskerville and Wood-Harper 1996); and, critical research against interpretivism (see Avgerou 2005, McGrath 2005, Walsham 2005).

Given the state of diversity in research in information systems, researchers should understand the implications of their chosen research perspective and act on them, including how they choose methods for data collection and analysis (Orlikowski and Baroudi 1991) whilst also ensuring the appropriateness of the research methods to researching organisational management aspects of IS (Galliers 1993). This serves to develop consistency between the methods and the philosophy and theoretical stance underlying the research. To facilitate these research criteria, the next section briefly discusses some ways to develop research designs and then introduces an approach from the social research domain. This is then used in framing the development of the specific research design for this thesis.

3.1.2 Research design as an integral part of the research process

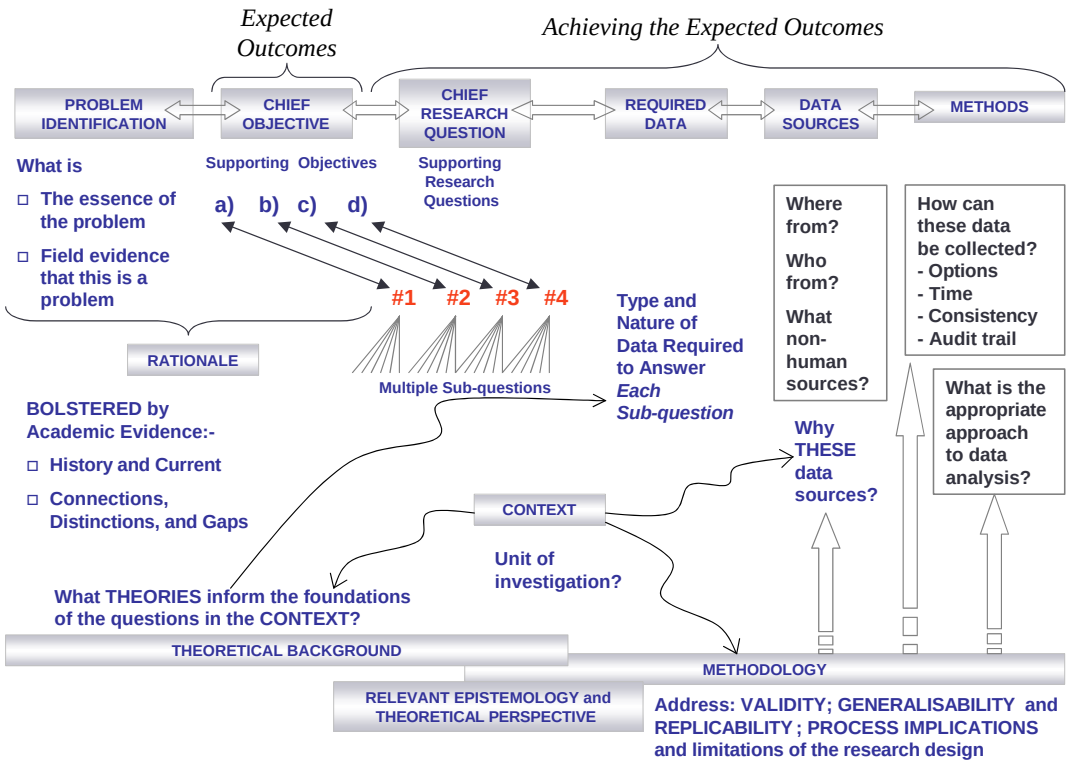
The design of the research is integral to the research process because it involves thinking the entire process through and recognising and acting upon fundamental drivers and components of the design. These design features also drive the nature of the outcomes of the research process. How should building a research design be approached?

Both Patton (2002) and Lee T. (1999) begin the research design with the split between quantitative and qualitative forms of research. Patton merges epistemology with the theoretical perspective. Blaikie (2000) omits reference to epistemology as such and describes research design as "the process that links research questions, empirical data, and research conclusions" (p39). Chen and Hirschheim (2004) use three dimensions of methodology (empirical vs. non-empirical, quantitative vs. qualitative, and cross-sectional vs. longitudinal) then consider research 'designs' as survey, case study, laboratory experiment, field experiment, action research, and others such as secondary data research and descriptive/argumentative designs. It is clear that organisational research design has its problems regarding suitable choices (Grunow 1995; Lee T. 1999). Patton (2002) notes the futility of parochial arguments about appropriate research designs or methods, however Miles and Huberman (2002) emphasise the need to be able to justify what you did as reasonable and to provide evidence to support that.

Figure 3.1 illustrates the general approach taken to ascertain the research methods for this thesis. The figure is not developed from any particular approach to research design but derived from working through an array of possible ways to go about it as described in the literature.

Figure 3.1 not only links the problem to data and methods but also represents how epistemology, theoretical perspectives, context and methodology are all influential in determining the appropriate research methods. This approach begins by identifying the research problem and then developing aims, objectives and suitable questions towards solving it. The research questions require particular kinds of data in order to answer them, one must consider what methods are possible to collect that data, what kind of methodology/strategy supports each of those methods, and so on. The research design process also considers research confidence; in the validity and strength of research process and in how the design impacts the prospective generalisability of the research outcomes. Details about research confidence specific to this research are laid out in section 3.7.

Figure 3.1: Establishing Appropriate Research Methods



High level plans for developing the research design include delineating the elements of the research process (Crotty 1998, Blaikie 2000). Details of the research design emerge through Crotty's design approach. Crotty's view of the connection between the research elements is that methods (techniques/procedures) are informed by methodology (strategy, plan of action, design), which is informed by the theoretical perspective (philosophical stance; as a context for the process, logic and criteria), which is fundamentally informed by epistemology (theory of knowledge). The elements can be expressed in the reverse order, reflecting the need to begin by thinking about research epistemology (outlined in Table 3.1).

Table 3.1: Four Elements of the Research Process (Table 1, p5. Crotty 1998 – abridged)

Epistemology	*Theoretical Perspective*	*Methodology*	*Methods*
Objectivism **Constructionism** **Subjectivism** *(and their variants)*	**Positivism** (& post-positivism) **Interpretivism** - Symbolic interactionism - Phenomenology - Hermeneutics **Critical inquiry** **Feminism** **Postmoderism** *etc*.	Experimental research Survey research Ethnography Phenomenological research Grounded theory Heuristic inquiry Action research Discourse analysis *etc*.	Sampling Measurement & scaling Questionnaire Observation - Participant or Non-participant Interview Focus group Case study Narrative Statistical analysis Data reduction Theme identification Comparative analysis Cognitive mapping Interpretive methods Document analysis Conversation analysis *etc*.

Crotty's approach to defining the elements of the research design is chosen for this research because it relies on clear and logical connections. The logic links background philosophy of knowledge, through research theory and strategy, to the actual methods and forces a link up and down this chain. It also ensures that the nature of the problem, research objectives, and research questions are logically supported by the research design. The specific design for this research is guided by Crotty's approach and laid out accordingly in the rest of the chapter.

3.2 A Relevant Epistemology and Theoretical Perspective

3.2.1 Theories of knowledge

Epistemology is as an underlying philosophy for research, whether acknowledged or assumed. Patton (2002) briefly mentions epistemology, regarding it as 'how do we know what we know' and describing it as the debate about the possibilities and desirability for objectivity, subjectivity, causality, validity and generalisability (p134). In IS, Orlikowski and Baroudi (1991) define broad research philosophies as positivist, interpretivist, and critical but Walsham (1993) merges epistemology and theoretical perspective together, calling his epistemology 'interpretive'. Walsham views the pursuit of meaning and understanding as 'subjective', and views knowledge as social construction (from Walsham 1993, p21). Theoretical perspectives are sometimes referred to as paradigms because they "incorporate epistemological and ontological assumptions" (Blaikie 2000, p160). Crotty's version of epistemology is "the theory of knowledge embedded in the theoretical perspective and thereby the methodology" (Crotty 1998, p3), broadly, Objectivism, Subjectivism and Constructionism.

Given the research context and nature of the problem, what is the most suitable epistemology to frame the research? Firstly, a summary of the research focus: The Research Problem is about organisations' abilities to ensure returns for their investments in IT, particularly from e-business; the Context of the research is largely the organisations, but also academic literature; the Research Objective is to assist organisations to improve management of value from IT. The nature of the problem, context and objective is that understanding how organisations approach IT value management is key to solving the problem. For this to occur, input from people with overall responsibility for value from IT-enabled initiatives is required and executive's views must be taken as 'perspective fact', in their particular position and role in the organisation, at the time of the interview and in the context of the interviewee's business environment.

With the research context and nature of the problem clarified, the second step is consideration of epistemological 'fit'. Immediately, difficulties in 'objectivising' management input become obvious. Treating their perspective facts as purely objective would ignore the construction these people put upon facts about the organisation's approaches, in the context described. This indicates that objectivism ("meaning and therefore reality, exist apart from the operation of any consciousness" Crotty 1998, p8) is not a suitable view of how knowledge is gained from an empirical context for the particular goals of this research. At the other end of the epistemological spectrum, subjectivism views knowledge as being about 'creation' of meaning, and involves 'making' of meaning using theoretical perspectives such as postmodernism or (post)-structuralism. This is quite different from constructing the approach an organisation takes to its IT value management from the 'perspective facts' provided by its executives, as is required for this thesis.

Constructionism, in Crotty's definition, includes recognition of culture shaping our interaction with reality and that "all meaningful reality is socially constructed" (p55). Patton (2002) concurs with Crotty's distinction between 'constructionism' and 'constructivism', where the latter is concerned with "meaning-making of the individual mind" (Crotty 1998, p58). For this thesis, the use of 'perspective fact' provided by firms' executives is less aligned with 'construction' in the social research sense and more aligned with the input from managers being used to construct a representation of the mechanisms and processes by which organisations approach management of business value from IT.

3.2.2 Theoretical perspectives

Following the Crotty (1998) approach to research design, not only the chosen epistemology but also the problem parameters influence the choice of guiding theoretical perspective. The research problem directs the research activity towards organisation-based research and discerning *how* organisations go about getting business value from IT, and to drawing upon existing models for IT value in the academic literature. Under a constructionist epistemology, interpretivism or critical

inquiry are possible supporting theoretical perspectives. Crotty (1998) describes interpretivism as largely an uncritical form of study which seeks to understand, and which "reads the situation in terms of interaction and community". In contrast, he describes critical inquiry as seeking to challenge, as a research approach which reads the situation "in terms of conflict and oppression" (p113), and that it "illuminates the relationship between power and culture" (p158). A theoretical perspective of critical inquiry does not support the nature of the research problem and goals for this thesis.

Why choose an *interpretive* theoretical perspective? Crotty suggests three possible forms of interpretivism; symbolic interactionism, hermeneutics, and phenomenology. Some researchers see interpretivism as hermeneutic (Butler 1998, Klein and Myers 1999) or as phenomenology and hermeneutics in tandem (Denzin 2002). Blaikie (2000) identifies phenomenology as a separate category of theoretical perspective where interpretivism is assumed. Phenomenological research asks questions about the "meaning, structure, and essence of the lived experience of this phenomenon for this person or group of people" Patton (2002 p104). The phenomena are understood in the context in which they occur.

What is the particular phenomenon being investigated for this research? The research questions are developed in response to the research objective and help delineate the phenomenon of interest. The Chief Research Question is *How can leading organisations improve the management of IT value, that is, value identification, creation and capture, from strategic IT-enabled business initiatives such as business-to-business e-business*? The phenomenon or object of experience under investigation is 'IT value management' and the research looks to how leading organisations represent that phenomenon as well as to how current theory presents and interprets it. In summary, the theoretical perspective for this research is interpretive, with a further refinement of phenomenology. This theoretical perspective is "the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria" (Crotty 1998, p3).

3.3 Methodology - The Research Strategy for Field Research

Methodology is "the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes" (Crotty 1998, p3). Phenomenology is tied to field research. The interpretive tradition often includes a case study approach (Walsham 1993) but strategies for phenomenology may include participant observation or other approaches such as using ethnographic methods. The level of engagement of the researcher with the phenomenon depends upon the methods used in a case study approach rather than that it is a case study itself (Nandhakumar and Jones 1997). Crotty's hierarchy of research elements positions ethnography, action research, and survey research amongst a suggested

list of methodologies and positions the case study approach as a method (Table 3.1). However case studies may also be the 'research strategy' for research informed by epistemologies and theoretical perspectives other than interpretivist-phenomenology.

'Case study' may be viewed as a methodology because there are many different methods for the data collection, analysis, interpretation and presentation, some of which can specifically support only positivist research (objectivism), or non-positivist research (subjectivism or constructionism). Here are a few examples of case study as a methodology, but with differing methods. Goodhue, Kirsch et al (1992) refer to case studies as a methodology with interviews and document reviews as the methods, however they omit description of analysis methods but these result in a series of propositions. Bussen and Myers (1997) take a theoretical perspective of interpretive-critical hermeneutics in a case study approach but apply data collection methods and analysis consistent with that perspective. Multiple case studies using the same interview structure form a research strategy for Lacity and Willcocks (1998). Their methods describe the detail of the data collection, analysis and interpretation using 'qualitative' coding techniques. These examples support the view of the case study as a methodology. Case study methodology may be applied to research towards the description, discovery, and testing of theory, may involve qualitative and quantitative data, and is therefore a versatile strategy for IS research (Cavaye 1996). Although a case study strategy is often relevant to interpretive research about a particular phenomenon in IS, the methods must be defined to combine rigour, relevance and pragmatism in effective research (Darke, Shanks, and Broadbent 1998).

Sections 3.1, 3.2, and 3.3 have laid out a range of approaches and current issues in IS research and established a relevant epistemology and theoretical perspective to underpin this research. This last section has argued that the case study methodology is entirely suitable for empirical field research into the phenomenon of IT value management in organisations. The four supporting research questions and their associated research methods are detailed in the following sections, beginning with the methods for identifying current theory for IT value management. This is followed by the methods for the field research case studies, the analysis of theory and practice, and for managing the consequences of the findings from both theory and practice.

3.4 Methods: Identifying Current Theory for IT Value Management

The first supporting research question is relevant to the study of available theoretical frameworks. ***SRQ1: What theoretical frameworks are currently available to address management of value from strategic IT-enabled business initiatives?***

This research question requires identification of theoretical frameworks or models in the academic published literature. The goal of this identification process is to locate theory supporting a

comprehensive view of IT value management. This means looking beyond frameworks for IT value measurement or benefits identification. The theory must also emphasise how IT value management is carried out if it is to assist practice and may include models of causal relationships or explanatory models. The extent of coverage of the end-to-end IT value management experience is also a key criterion. The methods are determined by the nature of data required and data sources. Even for this kind of data, it is important to establish a clear and logical progression for analysis which creates an audit trail (Patton 2002, p93). The methods used for this segment of the research are outlined here to show how the audit trail is formed but the detail of the approach is fully described in Chapter Four.

The relevant material is reduced by identifying promising theoretical frameworks and then comparing each one against key criteria for comprehensive IT value management. Themes are used to position the detailed material in a way that facilitates comparison and critique. The focus of each of the candidate academic models is located within the whole business experience of IT-enabled business initiatives to ascertain the potential 'coverage' of the academic model should it be translated to practice. The analysis also includes searching for evidence that candidate models were applied or tested in practice, and some indication of the results.

Analysis and interpretation of the reduced set of theory is undertaken through thematic analysis covering key attributes of the models, the concepts and principles for IT value management they propose, and an indication of relative extensiveness, to each other and also relative to other areas the authors believe could also be addressed. The findings are represented in tables and diagrams to show some summative and also 'distinctive' findings. This process also highlights some implications arising from the nature and extent of current theoretical frameworks for IT value management, as individual models and as a 'collection'. Chapter Four provides an interpretation of the findings based on the analytical themes and draws conclusions from the outcomes of the process of analysing these models.

3.5 Methods: Field Research

3.5.1 Collection of field data through firm case studies

The second supporting research question is specifically relevant to field research.

SRQ2: How do firms leading in the business-to-business context approach management of value from strategic IT-enabled business initiatives?

The main parameters of this case study methodology are:

- The unit of analysis is the firm in a multi-firm study.
- The method for data collection is by semi-structured interview rather than by survey.

- An audit trail is clearly established (Patton, 2002, p93) through the data collection process and through the analysis process, enabling both backwards and forwards linkage from specific data sources through to representation of a firm's approach to IT value management.
- Triangulation of data collection supports the validity of, and confidence in, the resulting descriptions of firm's approaches to IT value management. These data collection methods support the questions and objectives of the research in a manner consistent with Walsham's (1993) view of triangulation. Walsham concludes that for the data collection approach of case studies, triangulation means taking "views from different participants on the same issues" (p20). Three or four interviews are conducted with executives at the same level of the organisation for each firm case study. Section 3.7 addresses the implications of this approach to triangulation and its effect on the confidence of the research.
- Data is collected from both business and IT/IS executives to ensure both perspectives are represented and this also leads to greater confidence in the case study outcomes. This is partially identified through evidence of concurrence, convergence, or conflict between the multiple perspectives within each firm.
- The order of research methods is not strict in that there are some parallel activities. For example it is not necessary to have completed all interviews prior to commencing analysis.

Case site selection

The Industry: The case selection is based on the research question requirement for a strategic e-business context, as described in Chapter One. For many industries, the return from BtoB (business-to-business) e-business initiatives is potentially bigger than from business-to-consumer. The financial services industry is taking a lead in adoption of BtoB initiatives and also extending their global reach and their range of services. Numbers of large players in wholesale financial markets are investing in strategic IT-enabled BtoB e-business initiatives. The financial services sector is viewed as an e-business intensive sector. It shows rapid adoption, a high reliance on information, the product or service is easily virtualized and is more important than its location, and the existing information infrastructure in the sector is extensive (NOIE Report, 2001). Whilst more than 75% of global respondents in financial services are currently planning implementation of e-business strategy, Australia appears to be a world leader in BtoB initiatives in financial services (CSC 2001).

The field research focuses on leaders in BtoB in the wholesale financial services industry, and also includes a comparative base provided by a firm leading BtoB change in another industry. The construction industry is less rapid in its uptake of e-business however there are some firms leading

change in the industry by developing their own systems and proprietary connections with client and supplier organisations.

The Selection Criteria

A. The firm conducts *BtoB e-business*. The firm conducts inter-organisational electronically mediated business transactions.

B. The firm is *leading firm* with regard to BtoB e-business. It is among the leaders in the implementation of BtoB e-business in that industry. The firm also (a) provides consistency of business focus within an industry (allowing for reasonable comparison between cases) *or* (b) provides a comparative base between industries.

C. The firm *increases the diversity of cases*. Diversity is shown through: **Location** of the main company foundation headquarters – Australia (three firms), Europe (one firm), USA (one firm); **Reach:** Global, origin offshore; Global, origin Australia; Australian domestic leader; Asia-pacific regional; **Holding Status:** public or private holding; and, **Size**: two of the five firms are large, with annual revenues of AU$33b and 65,000 employees, AU$20.8b and 19,000 employees. Two firms are medium sized with annual revenues of AU$2.3b and 26,500 employees, AU$9.7b and 9,000 fulltime employees. The remaining firm is smaller with 600 employees and annual revenues of AU$260m.

All firm names are disguised to protect the confidentiality of the participants and the organisations themselves. The firm codes are: A = AUGMENTER; B = BIGBANK; C = CONTINENTAL; D = DUET; E = EDIFICE. The codenames have no resemblance to the actual names of the companies they represent.

Table 3.2: Case Firms for the Field Research

Case Firm Identifier	Industry Leader in BtoB e-Business	Key Business Focus	Reach Established with Business HQs (or outreach only - OR)			Holding Status
			AU Domestic	Asia-Pacific Regional	Global	
AUGMENTER	Yes - WFS	equities	Yes	OR	OR	Public
BIGBANK	Yes - WFS	equities	Yes	OR	OR	Public
CONTINENTAL	Yes - WFS	equities	Yes	Yes	Yes	Public
DUET	Yes - WFS	equities	Yes	Yes	Yes	Private
EDIFICE	Yes - within its industry	bricks and mortar assets	Yes	Yes	Yes	Public

NOTES:

All firms' major business clients are institutional
WFS = Wholesale Financial Services

Interviews

a) Interview Purpose

The research objective is to assist firms to improve management of value from IT and particularly from strategic IT–enabled business initiatives. The interviews aim to gather data about a firm's approaches to IT value management by clarifying the overall approach to management of IT value and how the firm's value is derived and captured from IT investments. Another aim is to identify issues in IT value management and where opportunities for improvements to management of IT value may lie. Strategic IT–enabled business initiatives are a vital focus since they considerably impact the firm's future competitive position and therefore require maximum value capture from their execution

b) Interview Development and Piloting

The interviews were designed to ensure fit with the purposes of this study, the conceptual context, the research questions, and also to facilitate research validity (Wengraf, 2001). A semi-structured design is preferred to either an open or structured interview approach because the former would require more shaping during the interview to target the needs of the research question and would also require more interview time. The interviewees are all executive managers and have limited time available to participate in research. A very structured approach would limit the responses too much and not allow for related input unforeseen by the researcher. A semi-structured approach gives order to the interview but allows the interviewer to work with the questions more fluidly to make the interview more effective. This applies particularly where the interviewee has already incorporated an answer to a later question in an earlier one, or where there is a need for clarification or attention to gaps.

The interview style and structure was piloted in several organisations. These are not the same firms as the case studies. Pilot interviews were conducted with the CIOs of five organisations, one Australian financial services firm, two firms with parents offshore (in Europe and the USA), a state government, and a private manufacturing firm. The sequence of the questions, alternate question formats, and ways of maintaining control and enhancing the quality of responses was tested according to the approach suggested by Patton (2002). Significant feedback was invited during these interviews and a transcript of the interview returned to the interviewee for comment. The timing of the interviews was also tested through this process to ensure that the final interview design required an estimated time of one hour to conduct. The resulting semi-structured interview used for the case study research interviews is in Appendix A.

c) Interviewee Selection

The research question requires that key interviewees have roles of responsibility for the management of IT investments, business activities where IT is core to those activities, or strategic direction in response to business imperatives based on IT. These managers have significant

influence regarding any strategic IT enabled business initiatives undertaken by their business area or across the firm. Relevant executives include Chief Financial Officer, General Managers of Business Divisions or Units, Chief Operating Officer, and Chief Information Officer.

Three or four interviews were conducted within each firm, with interviewees in one of the positions listed above, but always including the CIO, or equivalent. This ensures both the business-side and the IT-side of the firm is represented. This approach also ensures triangulation of perspectives on the same approach or problem within the firm. All interviews were conducted one-on-one.

d) Interview Management

The initial contact with each firm was made through an introduction by a business acquaintance or by a 'cold call' to the CIO of the firm. The person who was the initial contact then made enquiries of their colleagues regarding participation. Once the initial interview was arranged, the other interviewee contacts and times were also arranged. The location of interviews was at participants' discretion. In all cases, interviews were held at the central business district offices of the firm, and in a meeting room, the boardroom, or the interviewee's personal office. A research information document was used as the contact sheet. The nineteen interviews were conducted in two cities and over a period of ten months. A list of interviewee's roles and dates of interviews is in Appendix E.

The research information document outlines the research as well as giving participation guidelines (including confidentiality). This document was sent to the interviewee prior to agreement for the interview, along with brief information about the researcher (qualifications and experience). A brief 'researcher bio' provided some background information to the interviewees so that they had some way of assessing the authority of the researcher to be handling this type of research interview at the top management level of the firm. The documents were emailed either directly to the intended interviewee or to their personal assistant.

e) Interviews: Recording, transcription, verification, and ethical considerations

All interviews were digitally recorded with the agreement of the interviewee. Occasional requests by the interviewee to turn off the recorder mid-interview were honoured. These applied to specific comments only. The recording of the interview was then continued with the agreement of the interviewee. Although the reliability of the interviews is clearly very good if they are recorded, mistakes or difficulty in hearing the recording may lead to some differences between the recording and the transcribed output. Respondent validation is important to the reliability of interview data (Silverman 2001). Transcripts were returned via email directly to interviewee (NOT to their personal assistant) and the interviewee asked for comments and additional responses. This process included a time limit to the response and stated that after that time expired it would then to be used in the research analysis. An example email regarding interview transcript verification is in Appendix B.

Strict confidentiality for the interviewee and the firm is an integral part of the data management and reporting. All nineteen interviews were undertaken by this researcher. All raw data and data where the source is identifiable is kept securely and not made available to any other person other than the specific interviewee. Aggregate firm data where the firm is identifiable is only made available to executives who were also interviewees for that firm. In accordance with maintaining strict confidentiality, any use of direct quotes within the reporting of the field research in Chapter Five does NOT identify the interviewee's position if any association between that position and the firm can be made. This approach is consistent with the ethical research requirements of the University.

3.5.2 Field data: Reduction, analysis and interpretation

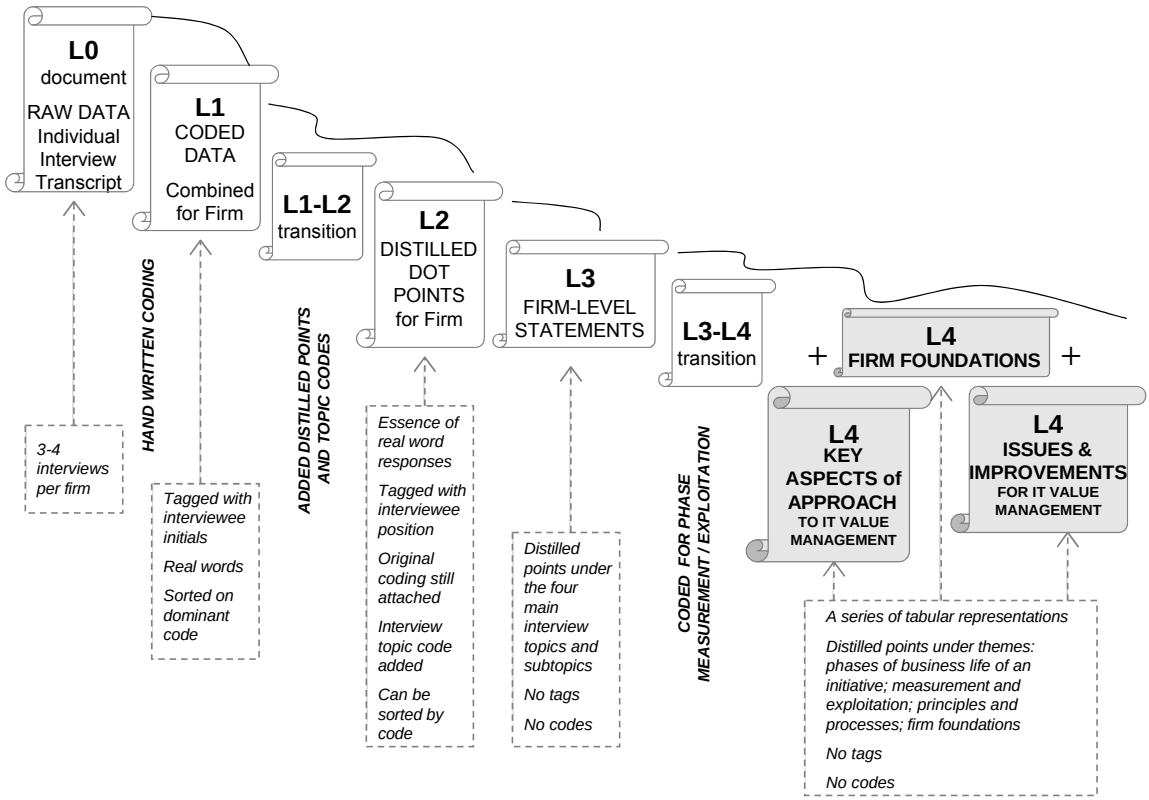
Field data reduction

The starting data sets are interviews from five case organisations. Data reduction is done in two ways: (i) Individual perspectives. Coding of individual interview responses to identify themes provides reduced data to be using in developing the complex firm-level summary. This reduction also provides a basis for checking data consistency; (ii) Initial 'simple' firm-level summary. Topics used in the semi-structured individual interviews are used to reduce data to an aggregate summary at the firm level. This provides a basis for confirmation of the data consistency (internal) when compared later with the complex firm-level results. All reductions can be traced back to the initiating individual and the actual statement they made during the interview. This is done through the use of thematic coding, through tagging each subsequent reduction with an interviewee code, and through the documents saved at four levels of reduction. The Coding Scheme was developed according to the approach suggested Miles and Huberman (1994) and is laid out in Appendix C.

Figure 3.2 shows the method of data reduction and analysis for case firm interview data. It shows the levels of reduction and analysis and also illustrates the audit trail of data connectivity. The topic coding on the Level 1-2 transition is also described at the end of the Coding Scheme in Appendix C. Each of L0 to L4 is an output document. The L4 documents constitute a significant part of the results discussed in Chapter Five as part of the findings about how leading firms approach IT value management.

Figure 3.2: Method for Data Reduction and Analysis

(applied to case firm interview data and showing levels of analysis and file documents created)



The material presented in the multiple tables delivered in Chapter Five are the L4 results and are highly representative of all the participants in each organisation. This material is a condensation of direct quotations developed as described above. The use of these results tables provides a concise presentation of the range of views at each firm and so, how and why the firm takes its specific approach. To this end, the sole purpose of quotes is to illustrate a few highlights in the approach of the firm, nothing more; the deeper analysis having already been done, resulting in the tables. This also supports the concept of the UNIT OF INVESTIGATION being 'The Firm', not the individual or even a business unit.

Field data analysis and interpretation

- Analysis of data by firm and the development of firm-specific representations.

This analysis involves comparison of individual perspectives from within the same firm only. The results of the data reduction methods are brought together for analysis: (i) simple aggregate of interview responses by topic (L1), plus (ii) a simple firm-specific aggregate of descriptive points regarding the interview topics (L3), plus (iii) complex firm-specific descriptions (L4). These data reductions are then drawn upon to develop a descriptive representation of how the firm approaches management of value from strategic IT–enabled business initiatives.

- Interpreting the results of all firm data analyses as five cases.

Results are further analysed are compared and contrasted to identify the approach of each firm and if models or frameworks are currently being used by firms to approach management of value from IT. This includes analysis of how firms are improving their approaches, and current and future issues they believe they face regarding management of IT value. The findings from the collection of cases indicates the characteristics of IT value management in leading firms. The findings for the only firm not focussed on wholesale financial services (Edifice) are used as an indicator of consistency within the WFS industry and as a potential comparative base for limited benchmarking. All findings are reported in Chapter Five and address Supporting Research Question #2 *How do firms leading in the business-to-business context approach management of value from strategic IT-enabled business initiatives?* These field findings are later compared with the outcomes of analysis of theoretical frameworks currently available in the academic literature.

3.6 Further Analysis and Interpretation

Field reality and current theory

The first two supporting research questions focus on current theoretical frameworks and on field evidence of approaches to IT value management. The third supporting research question focuses on how academic theory is reflected in the field. Chapter Six uses results from both the literature review and analysis and the field research. The supporting research question addressed is ***SRQ3: How does current theory reflect the requirements for management of value from strategic IT-enabled business initiatives for firms leading in the business-to-business context?***

The findings regarding models and frameworks currently available in the academic literature are compared and contrasted with the evidence of models or frameworks and approaches to IT value management currently being utilised in the field. Similarities and gaps between theoretical frameworks and practice are elucidated. Areas of clear and fuzzy reflection are laid out, as well as apparent gaps. The details of analysis and interpretation are described in the chapter.

Concluding research activities

The results of the comparison between current theory and current practice in IT value management (Chapter Six) are used to identify the requirements for theory to support practice improvement. These concluding research activities address ***SRQ#4: What adjustments or extensions, if any, could usefully be made to current theory to assist organisations to improve management of value from strategic IT-enabled business initiatives?*** The first part of Chapter Seven shows how current theory can assist firms in improving IT value management. Criteria for a prospective theory of IT value management are outlined and a new framework proposed. The details of this development are described in Chapter Seven.

3.7 Research Confidence

3.7.1 Research process validity and strength

The protocols of the research process can affect research validity and reliability at many stages. Validity "pertains to the kind of understanding that accounts can embody" (Maxwell 1992, p284). Maxwell suggests a typology of the way qualitative researchers think about research validity. Under Maxwell's typology, the protocols of this thesis address factual accuracy of the account (descriptive validity), consistency between the account, theoretical clarification and interpretations (interpretive validity), the account's validity in theory-building around the phenomenon by the use of multiple accounts (theoretical validity), and generalisability (see next section). It does not purport to address Maxwell's 'evaluative validity' because that is associated with a critical theoretical perspective of research, which this thesis has not adopted. Strengths are created in the thesis research design by addressing the consistency between the research philosophy, the theoretical perspective, methodology and methods. This is demonstrated in sections 3.2 to 3.6. Specific attention to strengthening validity and reliability of the process and its outcomes comes through rigor and cohesiveness in the design. The design uses a form of triangulation, and develops logic and audit trails in data collection and analysis to add strength to the protocols, but acknowledges the influence of the researcher on the processes and outcomes.

Darke, Shanks and Broadbent (1998) identify the unavoidable influence of researchers conducting case study interviews. They refer to Orlikowski and Baroudi's (1991) clarification of the situation: "The interpretive researcher acknowledges that they are implicated in the phenomena being studied, either weakly by attempting to understand, describe and interpret the situation from the participants' perspectives, or more strongly by creating and enacting the reality being studied through the constructs they use to view the world" (p286). Patton (2002) also advises that the researcher should report any personal or professional information that may affect data collection, analysis or interpretation "either negatively or positively in the minds of the users of the findings"

(p566). Researcher bias is acknowledged in the context of this thesis and it is recognised that this is a limitation of the research. The researcher's industry experience (in strategic aspects of information systems management for healthcare networks and an airline) and education (information systems, strategy, and business administration) have some influence on the research approaches and focus of the thesis, which is aimed at academic 'users'. Some of Patton's 'users of the findings' will be the interviewees since a findings report will be part of the research feedback to the firms. A brief 'researcher bio' was sent to the prospective interviewees in the case firms (section 3.5.1) so that they would be aware of the researcher's background.

Triangulation involves the use of multiple methods and measures of the phenomenon and can be achieved through data being collected from different sources about the same phenomenon (Cox and Hassard 2005). Patton (2002) suggests triangulation of one or more of methods, sources, number of analysts, or the research theory/perspective. He advises that data sources can be tested for consistency by using multiple sources within the same organisation. In the thesis research design, this is achieved by seeking the perspectives of executives in different key positions in each firm. Additional source triangulation is achieved by using multiple case studies to identify and confirm consistency of findings.

Research validity is increased by creating the case protocol and the data and analysis management and outputs such that the case study lends itself to external inspection and analysis if need be (Lee T. 1999). There are guidelines concerning the validity of data collection instruments for positivist MIS research (Straub 1989, Boudreau, Gefen, and Straub 2001) but less available for non-positivist interview methods. However, it is important to recognise that interviewees can be affected by the context and 'how one should normally express oneself on particular topics' (after Alvesson, in Cox and Hassard 2005, p121). The approach taken to develop appropriate interview questions and to assess possible contextual biases in how they would be received was to pilot the semi-structured interview in several organisations (section 3.5.1). Data analysis should follow a clear and compelling logic, the key informants should ensure the veracity, honesty and clarity of the data, and the use of multiple informants implies internal consistency, which is a form of reliability (Lee T. 1999). The thesis uses multiple interviewees for each firm and ensures the veracity of the interview by returning it for scrutiny before it is used as part of the data analysed (section 3.5.1, and Appendix B). Internal validity of data, from collection to conclusion, is based on the consistent use of a thematic coding technique and consistency of judgement over several settings (Boyatzis 1998). This type of consistency is achieved through systematic thematic analysis of interviews for multiple cases which can be checked through the data audit trail (described in section 3.5.2 and demonstrated in Appendix D).

In sum, the research credibility is supported by "rigorous methods for the field work that yield high-quality data that are systematically analysed", by the "credibility of the researcher, which is dependent on training and experience" as well as "presentation of self", and the fundamental appreciation of the approaches of qualitative inquiry (Patton 2002, p552).

3.7.2 The research design and generalisability

Lee and Baskerville (2003) explicate different types of generalisability with the assumption that non-positivists need to generate forms of generalisability which help them "properly lay claim to generalisability and thereby broader relevance when their inquiry falls outside the bounds of sampling-based research" (abstract). The research design specifically supports one of these types - generalising from empirical statements to theoretical statements. It uses multiple cases upon which to empirically base reconsideration of current theory through investigation of the associations and gaps between it and current practice. External validity is a form of generalisability where the case approach is replicated in another situation so that more than one independent cases are conducted (i.e. multi-firm case studies), indicating that evidence for the development of theory is more than specific to a single case (Maxwell 1992, Lee T. 1999). This is an outcome of the thesis research design. The extent to which the findings of this research might be generalised to other organisations and the relative usefulness of the research outcomes are discussed in section 7.4.

3.8 Summary of the Research Design

The key elements of the research design are brought together in this outline to provide a précis of the research philosophy, strategy and tactics used to address the research questions and also to indicate how these underpin the validity and reliability of the research outcomes.

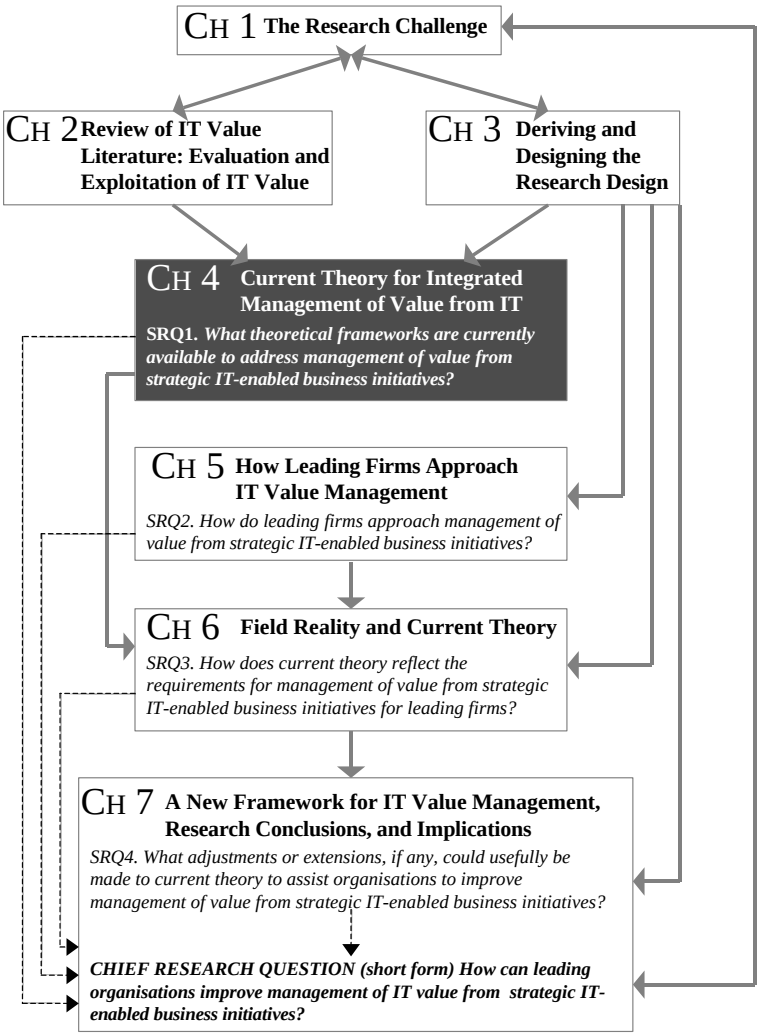
<table>
<tr>
<td>RESEARCH OBJECTIVES
• To assist firms to improve management of IT value from strategic IT–enabled business initiatives;
and,
• To contribute to the development of theoretical considerations and frameworks in academic research targeting IT value management.

These objectives are accomplished by:
a) identifying and appreciating current theory regarding management of value from strategic IT–enabled business initiatives
b) investigating how firms leading in business-to-business approach management of value from strategic IT-enabled business initiatives
c) comparing the IT value management practice with approaches indicated by current theory
d) revising or extending current theory to the extent necessary to further assist organisations in management of value from strategic IT–enabled business initiatives.</td>
<td>RESEARCH QUESTIONS
Chief Research Question –
How can leading organisations improve the management of IT value, that is, value identification, creation and capture, from strategic IT-enabled business initiatives such as business-to-business e-business?

Supporting Research Questions –
1. What theoretical frameworks are currently available to address management of value from strategic IT-enabled business initiatives?
2. How do leading firms approach management of value from strategic IT-enabled business initiatives?
3. How does current theory reflect the requirements for management of value from strategic IT-enabled business initiatives for leading firms?
4. What adjustments or extensions, if any, could usefully be made to current theory to assist organisations to improve management of value from strategic IT-enabled business initiatives?</td>
</tr>
<tr>
<td colspan="2">SCOPE AND CONTEXT
Management of value from IT over the business lifetime of strategic IT-enabled initiatives, as expressed by current theory and as demonstrated by practice in five firms leading in business-to-business e-business.</td>
</tr>
<tr>
<td colspan="2">EPISTEMOLOGY Constructionist ⟺ THEORETICAL PERSPECTIVE Interpretive – Phenomenology ⟺ METHODOLOGY Multi-site Case Study UNIT OF ANALYSIS The Firm</td>
</tr>
<tr>
<td colspan="2">METHODS: DATA COLLECTION AND ANALYSIS</td>
</tr>
<tr>
<td colspan="2">Theoretical Data - IT Value Management Frameworks or Models (Chapter Four)
Investigation of current theoretical frameworks for comprehensive and integrated IT value management
Sources: Academic literature
Data Reduction and Analysis: Systematic analysis against substantiated criteria over several stages. Detailed comparison of theoretical frameworks conforming to the criteria for description or modelling of IT value management.</td>
</tr>
<tr>
<td colspan="2">Empirical Field Data – Practice in IT value management (Chapter Five)
Investigation of current practice in management of value from IT-enabled strategic initiatives
Sources: Executive managers - CFO, COO, CIO, Business Unit Managers (19 interviews over five firms). Research triangulation through multi-perspective data collection and multi-site cases.
Technique: Semi-structured interview; approximately one hour length; conducted on site of business; digitally recorded; transcript verified by interviewee.
Data reduction and analysis: Staged thematic coding. This also establishes a data audit trail between the reduced data and the results of analysis and the source raw data (supports research validity and reliability).</td>
</tr>
<tr>
<td colspan="2">METHODS: FURTHER ANALYSIS AND INTERPRETATION</td>
</tr>
<tr>
<td colspan="2">Firm case representations/findings. (Chapter Five) Validity of findings supported through triangulation.
Analysis for associations between current practice and current theory in IT value management. Systematic comparison for connections and gaps (Chapter Six)</td>
</tr>
<tr>
<td colspan="2">METHODS: DEVELOPING KEY OUTCOMES AND CONCLUSIONS
Response to findings regarding the associations between current theory and current practice.
Collation and further interpretation of the outcomes from addressing the supporting research questions.
Address chief research question and ensure it has attended to the research problem. (All Chapter Seven)</td>
</tr>
</table>

CHAPTER FOUR

CURRENT THEORY FOR INTEGRATED MANAGEMENT OF VALUE FROM IT



"IT business value scholars are motivated by a desire to understand how and to what extent the application of IT within firms leads to improved organizational performance. Researchers have adopted diverse conceptual, theoretical, and analytic approaches and employed various empirical methodologies at multiple levels of analysis."

Melville, Kraemer, and Gurbaxani (2004, p285)

4.1 Purpose and Chapter Structure

The literature review of Chapter Two lays an academic foundation for this research in order to ascertain prominent and emerging IT value management processes and principles. The results of the review also identify patterns, distinctions, and gaps in the literature. One of the findings is that there are few theoretical frameworks for comprehensive and total management of value from IT that is fully integrated with the business perspective and competitive position.

The literature review identifies a plethora of models and frameworks, but many of these are applicable only to a segment of the business life of IT-enabled initiatives, such as the investment phase, and many models addressing this or the in-use or impact phases are restricted to the evaluation of IT value. In this literature the 'models' offered tend to be of the genre of a conceptual map (explanatory or causal) equated with a paradigm or theory, whereas 'frameworks' tend to be an outline, a guide, or a foundation for practice. For the purposes of this dissertation, the term 'theoretical frameworks' helps cross these boundaries and allows for conceptualisations of IT value management with attributes of both models and of frameworks and is used in this chapter to refer to all of these.

Analysis of relevant and academically researched theoretical frameworks provides a significant initial contribution towards tackling the chief research question – *How can leading organisations improve the management of IT value, that is, value identification, creation and capture, from strategic IT-enabled business initiatives such as business-to-business e-business?* In particular, this contribution is made through addressing the first of the four key supporting research questions in the research design:

Key Supporting Research Question #1: What theoretical frameworks are currently available to address management of value from strategic IT-enabled business initiatives?

Useful theoretical frameworks would clearly help address the chief research question by being comprehensive and complete regarding the three 'life' phases. This segment of the research uses the literature as 'data' and the topics addressed by the large range of reviewed papers in Chapter Two as a guide to what constitutes completeness and comprehensiveness in IT value management, and guides integrated IT value management when explicitly incorporated into a theoretical framework.

The explicit purposes of this section of the research are:

- to determine which available theoretical models or frameworks are complete regarding the business lives of IT-enabled initiatives and the focus of IT value interest and activity,
- to explore how comprehensively these theoretical models or frameworks address IT value management, particularly from strategic IT-enabled initiatives,

and, finally,

- to identify current theory where the approach to IT value management is fully integrated with the business perspective and competitive position.

A simple, logical and clear progression of elimination is used to meet the purpose and to answer the research question. It begins with a group of seven suitable candidate theoretical frameworks. Ultimately, it reduces these to two models offering comparatively complete theoretical frameworks for integrated management of value from IT-enabled business initiatives. The chapter concludes with discussion regarding the contribution of each of these papers to IT value management theory or concepts, outstanding differences between them, exciting 'positions' or 'findings' in the context of this dissertation, and any apparent gaps in the models. In line with the research design, the other three supporting research questions are addressed in two further chapters. After an investigation into how leading firms approach IT value management (Chapter Five), the characteristics of these theoretical frameworks will be used to critique the theory against field reality in Chapter Six.

4.2 Identification of Theoretical Frameworks for Integrated IT Value Management

4.2.1 Selection

A theory for integrated IT value management would, at the least, address the three phases of the business life of an IT initiative and also incorporate processes and some measurement for IT value potential, creation and capture. The most viable theoretical frameworks would also address most aspects of IT value and its management. The elimination process is summarised as follows:

- Selection One – **Promising papers** (Table 4.1): A restricted collection showing broader application to IT value management.
- Selection Two – **Phase and focus checklist** (Table 4.2): Elimination against coverage of IT value management across initiative phases and the associated aspects of IT value.
- Selection Three – **Comprehensiveness and depth of coverage** (Table 4.3): A two-part process to check overall coverage in the paper and in the model or framework presented.
- Discussion - **Outstanding theoretical frameworks**: The remaining theoretical frameworks are compared as candidates for explaining integrated IT value management.

4.2.2 Promising theories, models, or frameworks

How the promising papers were selected

Relatively few of the papers in the literature review illustrate coverage of IT value management in any depth beyond a single phase. For those that do, the promise of the paper implies that the authors' model or framework for realising business value from IT will cover more than one of the three phases of the business life of an IT initiative. The chosen papers also offer an approach for, or an explanation of, how to manage IT for value. These theoretical frameworks offered in these papers appear to support the research question in that they could be used to address management of value from strategic IT-enabled business initiatives. Seven papers fit the criteria and are listed below. Table 4.1 provides a succinct review. Highlights of the papers include the nature of the academic application, the 'promise' of the paper (purpose or objectives), the data used, some underlying theories employed in analysis, and key outcomes.

Seven promising papers:

- Mooney J., Gurbaxani V., and Kraemer K. (1995) A Process Oriented Framework for Assessing the Business Value of Information Technology. *Proceedings of the Sixteenth Annual International Conference on Information Systems*
- Soh C. and Markus M.L. (1995) How IT Creates Business Value: A Process Theory Synthesis. *Proceedings of the Sixteenth Annual International Conference on Information Systems*: 29-41
- Lentz C., Gogan J., and Henderson J.C. (2002) A Comprehensive and Cohesive IT Value Management Capability: Case Studies in the North American Life Insurance Industry. *Proceedings of the 35th Hawaii Conference on System Sciences*
- Smith H.J. and McKeen J.D. (2003) Developments in Practice VII: Developing and Delivering the IT Value Proposition. *Communications of the Association for Information Systems* **12**(July): 69-79
- Jeffery M. and Leliveld, I. (2004) Best Practices in IT Portfolio Management. *MIT Sloan Management Review* **45**(3 - Spring): 41-49
- Kohli, R. and Deveraj, S. (2004) Realizing the Value of Information Technology Investments: An Organizational Process. *MIS Quarterly Executive* **3**(1-March): 53-68
- Peppard J. and Ward J. (2004) Beyond Strategic Information Systems: Towards an IS Capability. *Journal of Strategic Information Systems* **13**: 167-194

Table 4.1: Promising Theoretical Frameworks for IT Value Management

Authors and Paper Type (by year)	**Promise**	**Research 'Data' and Theoretical Underpins**	**Key Outcomes**
Mooney, Gurbaxani, & Kraemer (1995) *Literature critique drives theory building and proposal*	**Process theory** • To develop a process oriented conceptual framework of business value of IT intended to enhance understanding of links between organisations and IT, and subsequent effects on firm performance.	DATA: Literature on IT business value and on IT-enabled innovation ⊙ Derived a Typology of processes using Davenport's classification ⊙ Venkatraman's potential benefits of IT-enabled business transformation	• Process focus should enhance validity of the business value assessment, since the analysis is at same level that technology is deployed. Offers insight to processes by which value is created. • The framework provides a structure to help organisations consider business value impacts of an existing or planned IT system • The approach is a new 'lens' or perspective on IT business value and recognises IT impacts operational and management processes and that these impacts occur along three dimensions - automational, informational and transformational. • Argue for a move away from firm-level output and financial measures towards process-oriented measures
Soh & Markus (1995) *Literature critique drives theory extension and proposal*	**Process theory** • To propose a process theory of the relationship between IT investment and business value that accounts for conflicting empirical results. • To address when, how, and why a firm's investments in IT results in improved organisational performance.	DATA: Model 1: Lucas' (1993) concept of 'appropriate use'; Model 2: Grabowski and Lee (1993) – 'Strategic Fit'; Model 3: Markus and Soh (1993) – 'IT Assets'; Model 4: Beath, Goodhue, and Ross (1994) – 'Leveraging IS Processes'; Model 5: Sambamurthy and Zmud (1994) – 'IT Impacts' ⊙ Variance and process theories (Mohr 1982, Markus and Robey 1988) ⊙ The authors' process theory synthesis of the five models	• Comparative analysis of five existing models shows theoretical divergence and also clearly indicates process and variance theory characteristics of each. • Review of theoretical literature suggests the "potential value of a better-developed sequence of 'pure' process theories" (p33). • Possible discontinuities or lack of inevitability exist so conditions are necessary but not sufficient. However the clarity of the ultimate outcome is important, with a focus on 'improved organisational performance' due to IT investment. • Proposes working backwards through 3 linked process models for conditions: Competitive Process (IT impacts focus); IT Use Process (part of the IT assets view); IT Conversion Process (IT management) as a recipe.
Lentz, Gogan, & Henderson (2002) *Interpreted anthology of practice used for theory building and proposal*	**Organisational capability theory** • To examine how companies achieve business value from IT-intensive business initiatives over time through a series of adaptive processes focussed on their planning. • To propose a capability to explain why this occurs.	DATA: Four field cases in the insurance industry ⊙ 'Resource-based theory' of the firm ⊙ Assessment of four value management processes ⊙ Grounded Theory	• Examines the IS-strategic planning and implementation process as a dynamic organisational capability • Findings suggest cohesive integration among four specific processes in the planning is critical to attaining business value from IT investments: (a) formulation of initiatives, (b) measurement system design, (c) strategic control system deployment, (d) learning about IT-performance linkages • Propose that the more cohesive the value management capability, the more likely the firm's IT-intensive business initiatives will lead to improved business performance. The resource-based view of the firm supports the position that an organisational capability (IT value management) must be in place in order for IT strategic planning processes to succeed.
Smith & McKeen (2003) *Interpreted anthology of practice extended with concepts from the literature*	**Concept and action framework** • To explore how organisations are attempting to determine and develop effective IT value propositions. • To derive and describe components and principles of the IT value proposition.	DATA: Focus group of IT managers ⊙ Authors' own approaches	• The concepts involved in IT value must be clearly understood and agreed by business and IT managers • The three components of the IT value proposition are: identification of potential value; effective conversion; and, realising value • Five general principles ensure IT value is achieved: 1. Clearly defined IT portfolio management process; 2. Aim for chunks of value; 3. Adopt a holistic orientation to technology value; 4. Joint ownership of technology initiatives; and, 5. Experiment more often. • Suggest that IT is being used as a catalyst for organisational transformation and strategy and therefore IT must be viewed together with the information and people of the business.

Table 4.1 continued on next page

Table 4.1 CONTINUED from previous page

Authors and Paper Type (by year)	Promise	Research 'Data' and Theoretical Underpins	Key Outcomes
Jeffery & Leliveld (2004) *Interpreted anthology of practice extended with concepts from the literature*	**Concept and action framework** • To propose the use of IT portfolio management for maximising IT business value • To derive and propose a model to guide improvement in ITPM by assessing the extent of its use and benefits in firms	DATA: 130 survey responses from IT executives of Fortune 1000 companies; CIOs interviewed from a representative sample of organisations ⊙ Testing hypotheses ⊙ Correlations – ITPM data with responses ⊙ Capability Maturity Model	• The IT Portfolio Management Maturity Model is a new tool for assessing what constitutes best-practice ITPM • The dimensions of an IT portfolio used for funding decisions are 'value to the business' and 'risk' • Only firms at the fully mature synchronised stage of ITPM show a link between ITPM and improved performance and these firms "adjust course as necessary" by using the processes and measurement as continuous monitoring. • The most valued benefit is improved business-strategy alignment and lack of ITPM can hurt companies • Implementation challenges, particularly the divide between business and IT, are impeding ITPM adoption • A well-defined process to upgrade capabilities is demonstrated by the most accomplished ITPM practitioners and is described here.
Kohli & Deveraj (2004) *Prescription for practice supported by concepts from the literature*	**Concept and action framework** • To present a framework to conceive and implement an IT investment's payoffs, to ensure creation of appropriate assets required to achieve the payoffs, and to measure the outcomes.	DATA: 1 case study to illustrate use of the framework ⊙ Previous work by Devaraj and Kohli resulting in the predecessor of the framework in this paper ⊙ Use of the framework rather than showing how it is built	• Concept and framework for organisational process with heavy reliance on metrics and the measurement process • Framework involves four phases - alignment, involvement, analysis, and communication. Emphasises set-up action at investment such as aligning business and IT strategies, choosing the investment type, involving customers, creating metrics making the business case, guidelines and processes for implementation to include communication • Analysis was done on usage of existing investments in a hospital and following how the organisation managed change and communicated its analysis of outputs or outcomes • Recommendations: Payoffs are responsibility of all; management of payoffs begins prior to investment and continues post-implementation; payoffs are contingent on creating and exploiting complementary assets.
Peppard & Ward (2004) *Literature critique drives theory extension and proposal*	**Organisational capability theory** • To propose a perspective on management of IT that specifically considers how organisations can continuously derive and leverage value though IT. • To define and describe IS capability, to develop a model linking resources to it, and to illustrate how it achieves business performance.	DATA: Literature exploring the sustainability of IT-based competitive advantage; Own previous research on IS competencies ⊙ Resource-based theory of the firm	• Concept and model of IS Capability which extends upon the conceptual set of the SIS (strategic information systems) era of research to concentrate on sustainability and the attainment of continuous value • Model uses three levels as components of IS capability: resource level (skills, knowledge experience, behaviour and attitude); organising level (processes, roles, structures); enterprise level (strategy, investment allocation lead to IS competencies) • IS capability has three inter-related attributes: a fusion of business knowledge with IS knowledge; a flexible and reusable IT platform; an effective use process • Underlying philosophy of strategic decision-making regarding relative focus on outcomes of *the means* (resources), *the ways* (strategies), and *the ends* (objectives/results) • Concludes Soh and Markus (1995) process model attends to *means* and *ends* but the middle process connecting IT assets to IT impacts through appropriate use (*ways*) is about unlocking value and is not well understood. Suggests own model of IS capability provides basis for attending to the *ways* • 'Enhances' Soh and Markus' process model by 'surfacing the mechanisms' ie the competencies through which IT value is actually achieved.

The ensuing commentary largely refers to the data in this table (Table 4.1). It highlights the diversity in the set of promising papers and specifically notes distinctions regarding the promise, the nature of the research, its outputs and conclusions, and lastly explains why no papers offering theoretical frameworks for IT governance (emerging as strong focus of research in IS) are included as candidates for representing integrated IT value management.

A wealth of promises for IT value management

The authors of each paper include some objective about the business value of IT. There are essentially three categories of proposal: a theory based on a process perspective; an organisational capability of IT value management; and, a concept accompanied by a framework for action. Each 'promise' indicates that the reader will get better understanding of how to exploit IT for value. The nature of the papers varies from being purely theoretical to being largely practical advice based on empirical findings and other published research. The outcomes vary in complexity from a visual representation complete with 'causal' or feed arrows, through to building-block grids, tables, and even simple lists.

Process Theories. Both Mooney et al (1995) and Soh and Markus (1995) focus on theory to aid understanding or explain a phenomenon and use a process perspective of IT business value but they use the theory differently. Mooney et al promise a process oriented conceptual framework which relates organisation's IT and effects on firm performance. It has the flavour of a causal model, seen through the lens of a process perspective. This process view is based upon a typology of business processes and identifies the value-adding mechanisms of IT. Soh and Markus promise a process theory of the relationship between IT investment and business value that accounts for conflicting empirical results and that will address when, how, and why IT investment results in improved organisational performance. In contrast to the model from Mooney et al, it reads like an explanatory model with qualified causal concepts included.

Organisational Capability Theories. Two groups of authors describe a theory of an organisational capability for deriving value from IT. Peppard and Ward (2004) offer an IS capability theory which is both explanatory and causal and does not include any new empirical study. It is founded on the premise that an effective IS capability is needed for sustained IT value and that it relies on a range of organisational competencies underpinned by resource elements. Lentz et al (2002) describe a capability to explain how companies achieve business value from IT. The capability is based on four constituent value management processes identified through case studies and is a description of processes the authors' research indicates should be attended to. The capability not only helps explain how value is attained but doubles as an action framework.

Concept and Action Framework. Three 'concept and action' frameworks also offer promise. The approaches of Smith and McKeen (2003) and Jeffery and Leliveld (2004) are similar in that they use an interpreted anthology of practice extended with concepts from the literature. Smith and McKeen's work results in a list of components and principles for the IT value proposition whereas Jeffery and Leliveld offer several connected levels of grid-style frameworks. Kohli and Deveraj (2004) provide a layered prescription for practice supported by concepts from the literature. The framework consists of phases and steps for an ordered approach to IT payoff, including a list of tools and techniques for each step. Although all the papers draw on previous theoretical

developments by other researchers or their own work, none of these three papers gives a 'theory', as such, rather a more practically oriented set of advice.

The nature of the research and outcomes

The purely theoretical papers use a literature critique to drive the theory development. In these cases the 'data' are the published literature. Mooney et al build a model from scratch, but incorporate two conceptual developments into their thinking (Davenport's (1993) 'typology of processes' and Venkatraman's (1994) benefits of 'IT-enabled transformation') and use the process view to analyse the 'data'. They conclude that a process focus would be more valid than firm-level output and financial measures for IT value because the analysis is done at the same level that the technology is implemented and used. The authors also suggest their framework would be helpful for firms to review business value impacts for either existing or planned systems. Five previously developed models are used by Soh and Markus but the vehicle for analysis is process theory, developed by Mohr (1982) and extended by Markus and Robey (1988). Soh and Markus conclude that pure process theories might serve the purpose of understanding IT business value better than other theories existing at the time, that establishing some clarity for the outcomes desired is very important, and that an outcome of improved organisational performance is preferred to something absolute. Their final model links three process models together as a recipe for that organisational outcome. Peppard and Ward's (2004) paper is also strongly theoretical. They note an absence of detail on IS capabilities in the literature and build on the outcomes from their own previous research on IS competencies to propose a multilevel model. A key outcome is the authors assertion that their new model attends to Soh and Markus's acknowledged weakest point, the 'appropriate use' phase, through which IT assets are 'connected to' IT impacts. Peppard and Ward propose a list of competencies through which value is achieved to address this phase and then incorporate them under IS capabilities. A foundation of this model is the resource-based theory of the firm. These three groups of researchers produce theoretical frameworks by relying only upon the literature as 'data' and conceptual fuel and then use one or more diagrammatic models in illustration.

Extensive field data is used by Lentz et al (2002) and Jeffery and Leliveld (2004). Lentz et al develop their capability theory out of interpretive longitudinal field studies of four case sites and using a grounded theory approach. They propose a theory that cohesive integration among four specific processes in planning is critical to getting business value from IT investments, and that the more cohesive this is, the greater performance improvement from IT-intensive business initiatives. Like Peppard and Ward, Lentz et al describe their model as building upon the resource-based theory of the organisation. Jeffery and Leliveld use data from many organisations, most gathered through a survey but with interviews from a representative sample. The intention was to test a set of hypotheses about understanding, use and impact of IT portfolio management (ITPM). The

outcomes from a correlation between the data on implementation hurdles and application helped the authors develop a maturity model and a process for organisations to improve their ITPM. They concluded that only firms with fully mature ITPM see improved performance as a result of the approach, and that lacking ITPM can be detrimental to a firm. Jeffery and Leliveld 'loosely' based their maturity model on the Capability Management Maturity Model for software development validated with this research data and used it to benchmark the ITPM process.

Considerably less field work and fewer existing theories are used by Smith and McKeen (2003) and Kohli and Deveraj (2004). Smith and McKeen conducted a limited exploratory investigation using a focus group of IT managers for their 'data' and then used their own approach for interpretation. Drawing on academic developments and melding them with the field data, they suggest that the value proposition for IT is the key to its business value and identify three main components of that value proposition: identification of potential value, effective conversion to real value, and the process of realising value. Several tasks and tactics are listed for managers to act upon, guided by five general principles. Kohli and Deveraj describe their framework for IT payoff by using results from their previous research as well as drawing on academic literature. The framework rests on four phases of action – Alignment, Involvement, Analysis, Communication – targeted at investment conception and implementation. A significant part of the paper is a single case study to illustrate its use.

A conclusion about promising papers

This set of papers illustrates the diversity of promising theoretical frameworks for integrated IT value management. Most notably, three are purely theoretical, one is limited to describing and illustrating framework application, and empirical data informs the framework development in only three papers. Surprisingly, field data from both business people (general managers) and IT managers are used to shape the theoretical framework of only one group of researchers, Lentz et al. Two other empirically informed frameworks use data limited to IT people as sources. Smith and McKeen restrict their focus group to IT managers and Jeffery and Leliveld only rely on IT executives.

IT Governance is not equivalent to an IT value management framework

Before going further in the identification process, here is an important observation regarding frameworks for IT governance. IT governance was noted as an important topic in the literature review and this area of research is often explicitly associated with the business value of IT. Two recent papers offer clear frameworks for IT governance and also involve empirical research (Peterson 2004, and Weill 2004).

At first glance, they appear to fit the criteria for promising papers. Peterson describes an approach for crafting IT governance with a premise that IT governance is a key to realising business value.

However the paper does not specifically describe a framework for IT value management nor is it a model clearly linking IT governance to IT value through processes. Instead, it focuses on how to craft IT governance through identified value drivers of IT governance and describes establishment and how to develop IT governance maturity. Weill's premise is that effective IT governance can improve the performance of firms. The paper links effective IT governance to value creation as part of the formula required to successfully gain value, then concentrates on the IT governance contribution, what it is, and how it is done by top performing firms (this is presented more comprehensively in a book (Weill and Ross, 2004)). Significant empirical data from IT executives is used to support the link between IT governance and value. Both these papers have significance for IT value management but do not describe integrated theoretical frameworks for it. They will be drawn on later in Chapter Six as part of the consideration of theory mapped to practice reality.

4.2.3 An initial checklist for coverage of IT value management phases and focus

This is a first process of elimination. The simple process involves a check of each promising paper for concepts discussed and the components of the theoretical framework described in the light of the business life of an IT-enabled initiative and the value focus of activity.

The checklist is shown in Table 4.2 and uses the following categories:

- Span of business life of an IT-enabled initiative or IT investment: This indicates how well the model or framework covers the phases of INVEST, IN-USE, and IMPACT**;**

and,

- Value focus studied or conceptualised: This recognises attention to both measurement and exploitation of IT value. Measurement includes potential value, value creation, recognition of value realisation in process, or its capture into the fabric of the organisation. Exploitation of IT for value includes principles and processes targeting the positioning of potential value for later harvest, value creation in-use, and the realisation and embedding of IT value so it becomes integral to the business and can be considered 'captured'.

The number of ticks is representative of intensity of focus and indicates the relative inclusion of this aspect in the model or framework presented by each paper (✓ = mentioned as an aspect only**;** ✓✓ = notable focus; ✓✓✓ = considerable focus). An absence of ticks denotes little or no concentration on that phase or value focus.

Table 4.2: Coverage of Business-life Phases and Value Foci

COVERAGE OF IT VALUE MANAGEMENT	Framework or Model Coverage over the Business Life of an Initiative			IT Value Focus Studied or Conceptualised in the Framework or Model					
				EXPLOITATION FOCUS			MEASUREMENT FOCUS		
Paper	INVEST PHASE	IN-USE PHASE	IMPACT PHASE	Potential Value	Value Creation	Value Capture	Potential Value	Value Creation	Value Capture
Mooney, Gurbaxani & Kraemer (1995)	---	✓✓✓	✓✓	---	✓	---	✓✓	✓✓	✓✓
Soh & Markus (1995)	✓✓✓	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Lentz, Gogan, & Henderson (2002)	✓✓✓	---	---	✓✓✓	---	---	✓✓✓	✓	---
Smith & McKeen (2003)	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓	✓✓	✓	✓✓
Jeffery & Leliveld (2004)	✓✓✓	✓✓	✓✓	✓✓	✓	✓	✓✓✓	✓✓✓	✓✓
Kohli & Deveraj (2004)	✓✓✓	---	✓	✓✓✓	---	---	✓✓✓	✓✓	✓
Peppard & Ward (2004)	✓✓✓	✓✓	✓✓	✓✓✓	✓✓	✓✓	✓✓	✓	✓

Papers identified with a grey background conform more closely to the criteria. The papers which are eliminated at this stage, because their coverage is not complete, are: Mooney et al (1995), Lentz et al (2002), Kohli and Deveraj (2004). The main focus of the work by Mooney et al is on the point at which IT is deployed and value creation at that point (in-use). Their major emphasis is on measurement rather than IT value exploitation, and essentially on process-oriented measures. The Lentz et al emphasis is largely restricted to the investment phase, with strength in both measuring potential value and in planning ways to exploit it. These researchers' concentrate on examination of the IS-strategic planning and implementation process (Table 4.1), and that is highly compatible with the Invest phase. Finally, Kohli and Deveraj focus the bulk of their framework at the Invest phase, and describe an organisational process with heavy reliance on the measurement process and metrics for IT payback. The Kohli and Deveraj approach provides a way of setting up the organisation to exploit IT for business value but does not go further to show how to actually exploit IT value in-use or for the Impact phase. Those papers which appear to cover close to the full business life of an IT investment and IT value potential, creation, and capture (and in more depth than a passing reference) are Soh and Markus (1995), Smith and McKeen (2003), Jeffery and Leliveld (2004), and Peppard and Ward (2004).

4.2.4 Comprehensiveness and depth of the discussion on IT value management

This second elimination stage involves two processes. Together these indicate the paper's overall attention to topics from the literature review which identified areas contributing to the concept of IT value management. The first cross-check focuses on the discussion in the paper. It is assumed that all topics contributing to the model or framework presented would be discussed to some degree, or at least flagged as contributory. The second process involves specifically checking each model or framework for its attention to concepts and targets across all identified themes of IT value management. Taken together, the results indicate concepts the authors have considered valuable in developing their specific perspective. The checklist presented in Table 4.3 involves a simple 'tick' system for each paper's coverage, and shows whether the same or similar topic is addressed (✓ = flagged as contributory**;** ✓✓ = given some emphasis; ✓✓✓ = emphasised as an important contributor).

The results of the checklist process give a picture of the relative coverage of these four papers. Those that have significant shortfalls cannot be classed as 'integrated'. Both Smith and McKeen (2003) and Jeffery and Leliveld (2004) are in this category. The Smith and McKeen paper is intended as an exploratory research and raises the prospect of better IT value management with its principles and recommendations. It contains a small amount of theory and the principles listed for organisations to adopt are not clearly substantiated. In addition, the paper accounts for a very one-sided view of practice with no business people represented and no indication of the size of the focus group. The Jeffery and Leliveld paper also provides little theory but offers substantial input from the field research. The practice input is from IT specialists, albeit executive level, with no input from 'business' executives. This framework involves a relatively intense use of measurement to drive all IT value management and, because this is a way of knowing if value is being created or captured, it acts as a feedback mechanism. Although ITPM clearly helps achieve results from IT investments, it does not attend to the many other value exploitation aspects of IT value management such as relationships and communication, change management, IT governance and business process change. Both the Soh and Markus (1995) and Peppard and Ward (2004) papers offer significantly more coverage of many topics, both in their discussions and in the models themselves. These are both purely theoretical and are conceptual models rather than practice frameworks. It is also true, and not by any intention within the dissertation, that Peppard and Ward seek to model how value is actually 'unlocked' by making their enhancement of Soh and Markus's 'IT Use Process' part of their own proposal.

Table 4.3: Checklist Against Literature as an Indicator of Comprehensiveness

Literature Topic (and section reference)	Soh & Markus 1995	Smith & McKeen 2003	Jeffery & Leliveld 2004	Peppard & Ward 2004
2.4 The Decision to Invest: Evaluation of IT value as Potential Value				
2.4.1 Common financials and appraisal	---	✓	✓✓	---
2.4.2 Potential benefits identification	✓	✓✓	✓✓	✓
2.4.3 Issues: a) Measurement tools and metrics, c) Perceptions of business managers regarding IT, d) Good evaluation practices at investment	✓	✓	✓✓✓	✓
2.5 Evaluation of IT Value During the IN-USE Phase	✓	✓✓	✓✓	✓
2.6 Evaluation of Value Captured from IT Investment at its IMPACT on the Organisation				
2.6.1 Measuring IT 'success'	✓	✓	✓	---
2.6.2 Measuring user satisfaction	✓	✓	---	---
2.6.3 Measuring IT effectiveness - operational efficiency, productivity, profitability, strategic value, and organisation performance	✓✓✓	✓	✓✓✓	✓✓✓
2.8 Exploitation of Value from IT: Creating Value During the INVESTMENT Phase				
2.8.1 Choosing and developing the role of IT in the firm	✓	---	---	✓✓
2.8.2 Competencies or capabilities for creating value in IT planning and making the investment decision	✓✓✓	✓✓	✓✓	✓✓✓
2.8.3 The contribution of IT-business alignment processes to value creation in investment planning management	✓	---	✓✓✓	✓✓
2.8.4 The relationship between IS and business and its influence on IS investment decisions	✓	✓	✓✓	✓
2.8.5 IT governance and value creation through investment decision and decision-making	---	---	---	✓
2.8.6 Getting the implementation right – managing risk to value building	✓✓	✓✓	✓✓	✓
2.9 Exploitation of Value from IT IN-USE: Approaches for IT Value Creation and Realisation				
2.9.1 Competencies or capabilities for creating value from IT in-use	✓✓✓	✓	---	✓✓✓
2.9.2 How IT-business alignment affects value creation or realisation from IT in-use	✓✓	---	✓	✓
2.9.3 Leveraging IT value in-use: a) Business-IT relationship and 'everyday' value from IT in-use	✓	✓	✓	✓✓
b) Design of IS group and IT value in-use	✓	---	---	✓
c) IS group function and 'everyday' IT value	✓✓	---	---	✓
d) Management styles for IT value through the IS group	✓	---	✓	✓
e) Co-production	---	---	✓	✓✓
f) IT governance for IT value in-use	---	---	---	✓
2.9.4 Monitoring and feedback on IT value creation as an influence on IT value delivery	✓	✓	✓✓	---
2.10 Exploitation of Value from IT at IMPACT: Approaches to Ensuring Organisational IT Value Capture				
2.10.1 Translation of IT value - bottom-line impact & competitive advantage	✓✓	✓	✓	✓✓✓
2.10.2 Mitigating value loss / avoiding negative impacts on bottom line: a) Managing implementation and use; knowing when to 'pull the plug'	✓	✓✓	✓✓	---
b) 'Dysfunctional' threats to leveraging / embedding value at IT impact	✓✓	---	---	✓

4.3 Two Models for the Integrated Management of Value from IT

Two theoretical frameworks remain after the selection process. Both models attend to the potentially strategic nature of IT-enabled business initiatives, to the initiation-to-end business life of an IT-enabled initiative or IT investment, and to how IT value can be created and embedded in an organisation's results. These two theories also include the business imperative and competitive perspective. With the inclusion of these three major criteria, the two models can therefore be considered as models for 'integrated' IT value management. Soh and Markus (1995) propose a model of linked process theories developed through a 'process synthesis' of five older models. Published nine years later, Peppard and Ward (2004) offer a model driven by resource-based theory and, significantly, they assert it "enhances the process model of Soh and Markus (1995) which describes how IT creates business value, by surfacing mechanisms, i.e. competencies, through which this value is achieved" (p187). These two particular theoretical frameworks are of the 'theoretical model' genre rather than practice frameworks and as such they show considerable conceptual connections and distinctions. The following sections will show some of these concepts and also highlight some differences between the models.

4.3.1 Theories underpinning the models

Soh and Markus (1995) model – Process Theory

Soh and Markus identify that several models for creation of business value from IT have elements that describe a 'necessary but not sufficient' form of the cause-effect argument. Drawing on Mohr (1982) and Markus and Robey (1988), the authors consider process theories and variance theories. Their argument describes several conceptual elements in establishing process theory as a suitable foundation for the model. Firstly, the authors submit that variance theories are suitable for measuring the magnitude of certain outcomes that "assume and require necessary and sufficient causal relationships" (p30) and usually modelled with dependent variables. Secondly, they surmise variance theories are not suitable where the outcome is a discrete occurrence and therefore uncertain (as in organisational performance). Thirdly, the model requires time and order so it is important to note these are irrelevant to variance theories but crucial to process theories. Finally, Soh and Markus adopt the principle that process theories assume the outcome may not occur "unless a particular recipe, involving external directional forces and probabilistic processes, unfolds" (Table 1. p31). The model is developed backwards from the 'ultimate' desired outcome of 'improved organisational performance' and results in a chain of pure process theories.

Peppard and Ward (2004) model – Resource-based Theory

Peppard and Ward draw extensively upon the developments in the literature on resource-based theory and support the argument that it is suitable for explaining the basis of competitive advantage

though IT. Resources, competencies and capability are the key concepts of resource-based theory and are adopted in the proposed model. The foundation concept of resources is defined as 'stocks of available factors that are controlled by a firm' (after Amit and Schoemaker). A further idea central to the model is that competencies that underpin a capability will be "resourced differently in different organisations and the resources integrated and coordinated in different ways" (p175). Peppard and Ward apply the theory to IS management through the organisational competencies within the IS function and also across the organisation. They use some of their previous work (Peppard et al 2000) to show how their view of competencies incorporates the "notion of exploitation of IT by the organisation to provide a more comprehensive explanation of success" (p176).

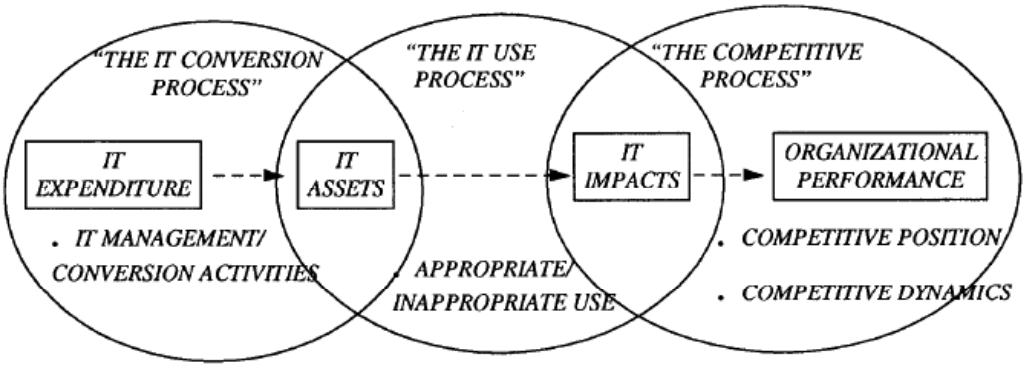
4.3.2 Other key aspects of the models

Soh and Markus (1995) model – How IT Creates Business Value: A Process Theory

The model is shown in two ways; as a diagram (Figure 4.1) and as embedded process theory in Figure 4.2. The phases of the business life of an IT investment are covered by the overlapping processes of the IT Conversion Process (Invest), the IT Use Process (In-use), and the Competitive Process (Impact).

Figure 4.1: Soh and Markus 1995 - How IT Creates Business Value: A Process Theory

(Source: Soh and Markus 1995; Fig.6, p37)



Each of these processes encompasses 'probabilistic processes', showing that certain factors intervene to determine whether favourable outcomes occur. The necessary sequence of conditions and intermediate outcomes are IT expenditure, IT Assets and IT Impacts, to the outcome of Organisational Performance. Study of Figure 4.2 shows the progression from systems and IT assets at the beginning through 'within firm' organisational unit impact to the effect upon the organisation. This model also recognises effects of dysfunctional management and culture and alludes to governance of IT, manifested through the policies and politics of the conversion process.

Figure 4.2: Soh and Markus 1995 - The Process Theory Described in the Paper
(Source: Soh and Markus 1995; Table 3, p37)

Process Theory and Focal Unit	Outcome	Necessary Conditions	Probabilistic Processes	Recipe for Outcomes
Enhanced organizational effectiveness; Focal unit is the organization in its industry or environment	Improved organizational performance due to IT investment: (1) financial (2) stakeholder value (3) productivity	Organizational impacts due to IT investment	Competitive dynamics; Competitor and customer reactions	Outcome occurs when organizational impacts due to IT investment combine with favorable economic and environmental conditions
IT impacts; Focal unit is the organization or some subset (business unit, functional area, business process)	Organizational impact due to IT investment: (1) new products/services (2) redesigned business processes (3) better decision-making (4) improved coordination flexibility	IT assets	Individual discretion in complying with organizational directives, including those pertaining to IT adoption and use	Impacts occur when people and organizational units use IT assets (technology and skills) appropriately, a process affected by organizational structures, processes and culture
IT assets; Focal unit is the IT acquisition or deployment project/process	IT assets: (1) useful, well-designed applications (2) flexible IT infrastructure with good "reach" and "range" (3) high levels of user IT knowledge and skill	IT expenditures	"Process losses" or conversion ineffectiveness – due to poor IT management policies or to inconsistent application of good policies; stakeholder politics; including external vendors	IT assets occur when IT expenditures are converted efficiently and effectively, a process influenced by policies and politics

Adapted from Mohr (1982).

Soh and Markus start with the competitive process, because this is where the desired outcome lies, and recognise the 'tournament of organisational competition' as the target of IT Impacts. The authors derive these IT Impacts from work by Sambamurthy and Zmud and stipulate that these are 'necessary but not sufficient' to ensure improved performance. Logically, IT Impacts are 'uncertain outcomes' of the IT Use Process where both 'appropriate use' and 'inappropriate use' must be considered. The IT Conversion Process described includes IT management processes in four areas implicated in IT conversion effectiveness: formulating IT strategy, selecting appropriate organisational structures for executing IT strategy, selecting the right IT projects and managing IT project effectively. These IT management processes are similar to some of the IS Competencies involved in Peppard and Ward's model (see later). Soh and Markus specify that IT management strategies "are a complex reaction to the many special circumstances" facing an organisation (p38).

Peppard and Ward (2004) model – An IS Capability

Once the argument for a resource-based theory is established, Peppard and Ward provide a long list of IS Competencies (defined as 'abilities' which must be attained) and present this list as comprehensive and mandatory. The resources consist of three components (business, technical, and behaviour) which are 'key ingredients' of these IS Competencies. The source table shows abilities defining each competence which can be mapped to the three phases of the business life of an IT investment used as themes for analysis in the dissertation literature review (Invest, In-use, Impact). A summary version of the list is shown in Figure 4.3.

Figure 4.3: A summary of Peppard and Ward's IS Competencies

(For the complete table, see p178/9 of the paper)

MACRO COMPETENCE	COMPETENCE
1. Formulate strategy	1.1 Business strategy; 1.2 Technology innovation; 1.3 Investment criteria; 1.4 Information governance
2. Define the IS contribution (IS strategy)	2.1 Prioritization; 2.2 IS strategy alignment; 2.3 Business process design; 2.4 Business performance improvement; 2.5 Systems and process innovation
3. Define the IT capability (IT strategy)	3.1 Infrastructure development; 3.2 Technology analysis; 3.3 Sourcing strategies
4. Exploitation	4.1 Benefits planning; 4.2 Benefits delivery; 4.3 Managing change
5. Deliver solutions	5.1 Applications development; 5.2 Service management; 5.3 Information asset management; 5.4 Implementation management; 5.5 Apply technology; 5.6 Business continuity and security
6. Supply	6.1 Supplier relationships; 6.2 Technology standards; 6.3 Technology acquisition; 6.4 Asset and cost management; 6.5 IS/IT staff development

(Source: Peppard and Ward 2004; Table 1, p178-9)

The resources ('Resource Level' of the model) are translated via the 'Organising Level' into these IS competencies (Figure 4.4). Peppard and Ward also describe a competence as "an emerging property of organisational processes" (p180). At this point in the paper, the authors highlight that the processes which are less well defined are those that actually derive the value from the IT investments. It is important to note this key point because Peppard and Ward later suggest that their IS Competencies approach addresses that specific problem.

Figure 4.4: Peppard and Ward 2004 – A Model of the IS Capability

(Source: Peppard and Ward 2004; Figure 2, p180)

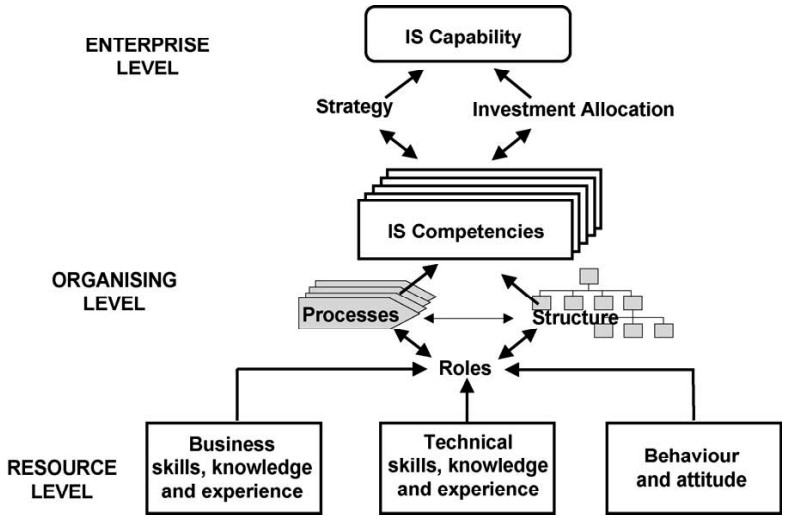
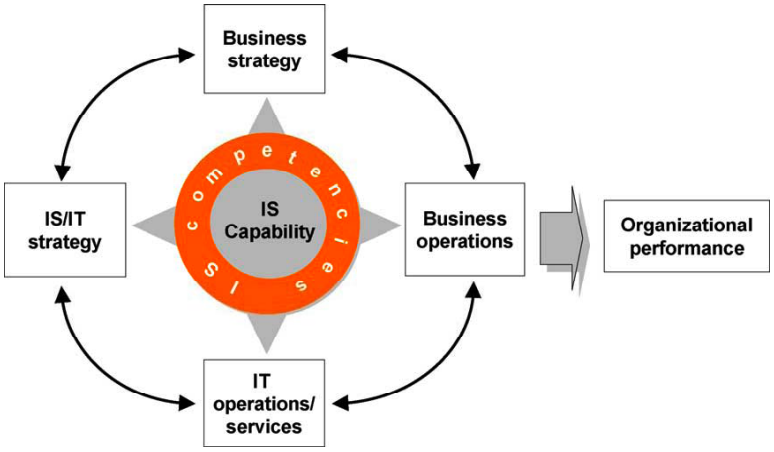


Figure 4.5: Peppard and Ward 2004
The New IS/IT Alignment: IS Capability and Organizational Performance

(Source: Peppard and Ward 2004; Figure 5, p187)



Organisational Capability is defined as the strategic application of competencies and the IS Capability as a meta-level construct resulting from success in the list of IS Competencies. In addition to the complexity of IS Competencies described thus far, these competencies are also modelled as the variables impacting four more areas of activity in order to impact organisational performance (Figure 4.5).

There are some conceptually difficult areas for the model: how to make the IS Competencies contribute toward the IS Capability through the dependency on the organisation's strategy and investment decisions (refer to Figure 4.4); the complexity of interweaving a further two areas of discussion, about IS strategy and its relationship with the change effects of demand and supply and about underlying philosophies for strategic decision-making; and, how the IS Competencies are distinct from the domains of IS/IT strategy and IT operations/services as it is represented in both Figure 4.5 and as discussed by the authors. This paper has developed multiple themes, presented as interrelated, and sometimes the connections between them and the flow of the argument's logic is not clear. The style of the paper has made the cohesiveness of the model difficult to fully decipher. Nevertheless, some of the characteristics of the model are easily compared with those of the model proposed by Soh and Markus.

4.3.3 A summary of the two models

The models are developed based on very different premises and represent how business IT value is conceived and managed very differently. Some key differences were analysed through a series of comparative 'themes' emerging though the iterative process of examining the papers together. This analysis is compiled in Table 4.4. The underpinning theories are not entirely exclusive as the resource-based theory does exhibit elements of the variance and process theories described by Soh and Markus. These significantly different bases have different starting points and also different conceptual convention, but the model outcomes reflect their developmental roots. The key components describe the conceptual and mapping elements of the models. Another, but more structural, difference is in the number of design pieces. These refer to pieces that make up the model itself and any 'sub-models' or attribute lists required to work with the model (restricted to figures and tables).

A fundamental difference between the models, but not noted in the table, is in the level of prescription. Soh and Markus offer a higher-order conceptual level connecting the pragmatic components as a 'recipe' which can be applied to the individuality of the firm and its context. In contrast, Peppard and Ward clearly intend the IS Competencies list as a prescription and, in reference to excellence in "astute assessment of the impact of IS/IT and accurate alignment of IS/IT investments with business strategies", conclude that "the concept of an IS capability suggests that an organisation will not be able continually to achieve both of these unless it has a track record of successful implementation through which it develops a full set of IS competencies" (p188). The authors' self-assessment of their achievements and their proposed future research together indicate how well their model may have addressed integrated IT value management.

Table 4.4: A Comparative Summary of Theoretical Frameworks for Integrated IT Value Management

COMPARATIVE THEMES	**Soh and Markus (1995) How IT Creates Business Value: A Process Theory**	**Peppard and Ward (2004) A Model of the IS Capability and the New IS/IT Alignment**
UNDERPINNING THEORY	Process theory Resource-based theory of the organisation is not part of the model	Resource-based theory of the organisation Although not specifically articulated, variance theory and some process theory are evident in the overall model
STARTING POINT	Competitive position and dynamics	Resources, in tandem with choices in organising
RELIES ON	Concept of 'necessary but not sufficient' Distinction between the nature of the sequence of process theories and the consequences of variance theories	The full set of listed IS competencies being developed for the IS Capability to be achieved Management ability to gather the component resources of IS competencies from any functional areas
EXPRESSED AS	A 'recipe' for transforming IT investment into organisational performance; recipe comprises necessary conditions and probabilistic processes in a sequence (p39)	IS Capability of three interrelated attributes (not shown in the diagrams): a fusion of business knowledge with IS knowledge; a flexible and reusable IT platform; and, an effective use process The New IS/IT Alignment describing the relationship between IS Capability and organisational performance (see p187)
RESULTS IN	*Improved organisational performance*	The *ability of the organisation to deliver specific and measurable business benefits* from an IT investment
KEY COMPONENTS	Conditions: IT expenditure; IT Assets; IT impacts Processes: IT management / conversion activities; appropriate / inappropriate use; competitive positioning, responding to competitive dynamics Focal Unit 'Probabilistic' Processes	Resources and organising choices Processes and structure and roles for conversion of resources to IS competencies Strategy and investment allocation for creation of IS capability out of IS competencies Change strategy for Demand (business drivers) and supply (IT drivers) Strategic decision-making philosophies IS competencies influence IT operations/services; IS/IT Strategy; business strategy; business operations
DESIGN PIECES FORMING THE FINAL MODEL (with labelling as published in the papers)	Figure 6. How IT Creates Business Value, A Process Theory (p37) Table 3. The Process Theory Described in this Paper (p37)	Table 1. Definition of IS competencies (p178/9) Fig. 2. A model of the IS capability (p180) Fig. 3. IS strategy balances the demands for business change with the supply of IT enablers (p185) Fig. 4. Different strategic philosophies (p185) Fig. 5. The new IS/IT alignment: IS capability and organizational performance (p187)
SELF ASSESSMENT OF THE PAPER'S ACHIEVEMENTS	Provides an explanation of how and why IT spending becomes improved organisational performance Is a relatively complete process model of IT and the creation of business value	Improves upon the IT Use Process section of the Soh and Markus (1995) model Offers IS Capability as a fourth era of IT in organisations where the strategic management of IS is about developing IS competencies Addresses ability of organisations to exploit IT investments through delivery of business benefits
PROPOSED FURTHER RESEARCH	IT Use Process needs further explication. Empirical study based on the model will give practical guidance on critical areas (key IT management processes, type and quality of IT assets, specification of appropriate IT use, IT impacts)	Informative research on how value is actually unlocked (Soh and Markus' In-use Process) to objectively assess the results of having or not having a competence Examine and understand how IS competencies and capability can be developed and sustained to provide a real source of value

4.4 Conclusions: Current Theory for Integrated IT Value Management

Each of the theoretical frameworks considered in this chapter contributes useful ideas, problem solving, and challenges to IT value management theory or concepts. The diversity in the nature of the contributions ranges from purely theoretical as an explanatory or causal model or conceptual map to frameworks that are a guide for practice. Promising papers were selected to fulfil the purposes of this section of the research, firstly to identify which available theoretical models or frameworks are coherent regarding the business lives of IT-enabled initiatives and the focus of IT value interest and activity, and also to explore how comprehensively these theoretical models or frameworks address IT value management, particularly from strategic IT-enabled initiatives. A simple but rigorous elimination process has ensured that only the most viable proposals remain to address *Key Supporting Research Question #1: What theoretical frameworks are currently available to address management of value from strategic IT-enabled business initiatives?*

The finding is that only two theoretical frameworks are currently available that match the criteria. They provide a relatively comprehensive guide to understanding and executing IT value management across all the requirements of an organisation regarding the business value of IT and the life of an IT-enabled initiative.

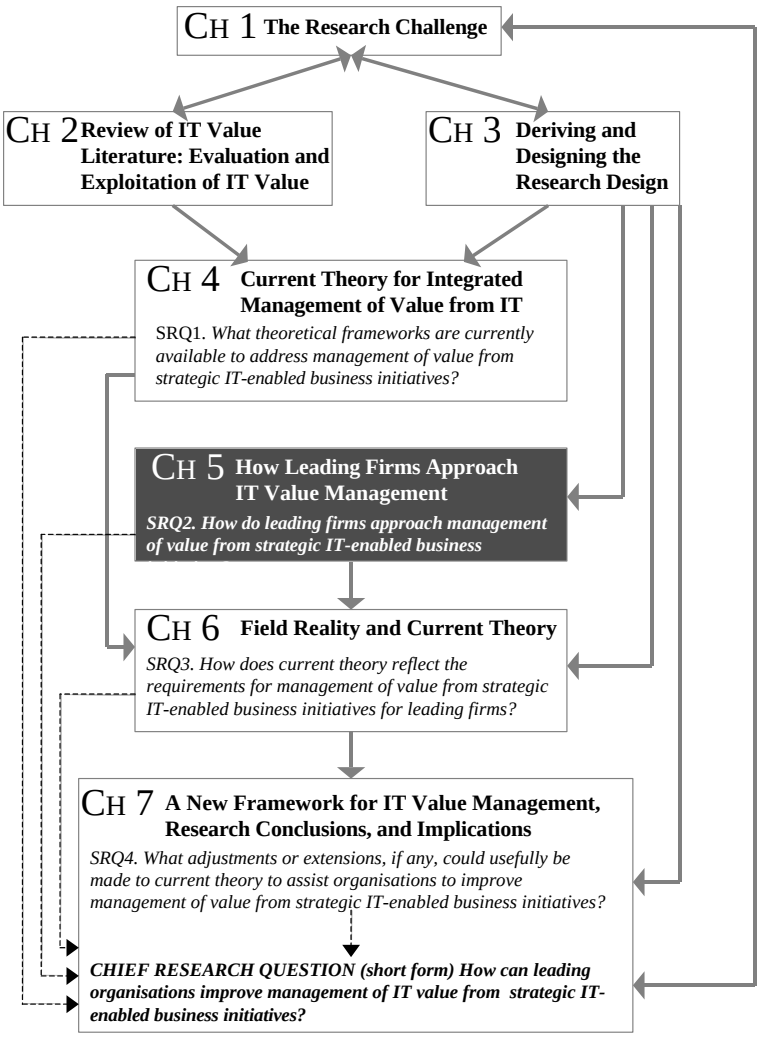
Several other outcomes are observable:

- Only purely theoretical models survived the analysis.
- Both models address the strategic nature of IT in the firms' competitive space.
- There are significant differences between the two candidate models. Some outstanding differences are (i) the driving theory, (ii) the specific goal or endpoint within the model, (iii) the level of prescription and (iv) the degree of complexity in the structure, together with the layering of concepts. In particular, if the models were applied in practice, the difference in the model endpoints or goals (improved performance versus specific, measurable effects) might mean quite divergent incentives and responses from management and users, ultimately affecting that outcome.
- According to the tally with the literature on IT value, both models have some gaps, notably a lack of concentration on IT governance as a key contributor to IT value. Both models touch on one small element of IT governance, each drawing on Davenport, Eccles and Prusak (1992), but do not embrace the broader concept. Soh and Markus refer to 'stakeholder politics' and to IT conversion being ' a process influenced by policies and politics'. Peppard and Ward refer to 'information governance' as a competence.
- These models are 'available' to address IT value management from strategic initiatives but it is not clear how translatable they are for use by organisations.

The identification of these comprehensive theoretical frameworks is a step forward in the discovery of how organisations can improve IT value management. However, the input of academic research leading to theoretical developments only constitutes half of the input required. The other major input is empirical findings from field reality. The next chapter reports on the findings from an investigation into how leading firms approach IT value management from strategic and other IT-enabled business initiatives.

CHAPTER FIVE

HOW LEADING FIRMS APPROACH IT VALUE MANAGEMENT



5.1 Expression of Findings from the Field

5.1.1 Purpose and chapter structure

This chapter provides insights into how organisations actually approach management of IT value over the business life of strategic IT-enabled business initiatives. Insights originate from the viewpoints of business and IT executives in each of five large firms leading business-to-business developments in their industry. The purpose is to address the second supporting research question.

Key Supporting Research Question #2: ***How do firms leading in the business-to-business context approach management of value from strategic IT-enabled business initiatives?***

At this juncture, it is important to re-emphasise the meaning of the term ***leading,*** **as it applies to the context of the research**. *Leading firms* refers to firms leading in e-business interactions in the BtoB context in their industries where their expectation of value from these types of strategic IT-enabled business initiatives is high. The rationale for this choice of context for the field research is outlined in sections 1.1.3, 1.2.2, and 3.5.1.

Chapter Five sections show, firstly, *insights to <u>how</u> IT value management is done in practice by leading firms* (section 5.2). Insights are illustrated beginning with a collection of five tables describing the firm foundations (Tables 5.1A-E). A second set of five tables distils some key aspects of each firm's approach to IT value management and by individual firm (Tables 5.2A-E). A discussion of findings case-by-case is followed by a synthesis across the firms.

As one may expect, behind the façade of the approach lies the detail of the things that are not quite right, difficulties, dilemmas, or even critical issues. Accordingly, challenges or hurdles to a refined approach to IT value management are examined along with real problems that could negatively affect the firm. Issues surrounding IT value perceptions and measurement (sections 5.3.1, 5.3.2), are shown as challenges and problems in Tables 5.3.1 and 5.3.2. These issues are presented for all firms together but with each firm clearly associated with the issues they raised. Issues affecting approaches to IT value management (sections and tables 5.3.3, 5.3.4) for all firms are similarly presented. A further special grouping of three tables shows how firms view the future of IT value management (sections and tables 5.4.1, 5.4.2, 5.4.3) based upon improvements they believe could, or should, be made. Three categories of suggested improvements are distinguished: capabilities and culture, underlying principles, and structures and processes. Each focus of improvement is tagged by firm.

Other field findings are then addressed (section 5.5) and include: firm harmony (concurrence between firm interviewees); idiosyncrasies that are notable distinctions across the complete set of findings; models or frameworks the firms use for IT value management; apparent or acknowledged 'gaps' in practice; and, a précis of the genres of IT value management exhibited by the case firms

at the time of the investigation. The remaining discussion takes an industry perspective and compares the approach taken by members of the wholesale financial services industry with the leading firm from the construction industry. Section 5.6 provides a synopsis of findings and closes with salient conclusions and the link between the field findings and the next section of the research.

5.1.2 Discussion points

Tables of findings resulting from interview data reduction and analysis are presented as topics arise and provide the basis for comment and discussion. Criteria for the analysis show continuation of the two dominant groups of themes already used in the literature review (Chapter Two) and in a critique of key IT value models and frameworks found in academic literature (Chapter Four). These dominant theme groups are:

- Group I - IT Value Measurement and IT Value Exploitation;
- Group II - The three phases of the business life of an IT-enabled initiative (INVEST, IN-USE, IMPACT) across which measurement and exploitation are viewed.

IT Value Measurement is taken together with IT Value Perceptions. IT Value Perceptions are implied in measurement approaches and rules. Perceptions of IT value are derived from what executives perceive as the meaning of 'IT value' (or 'the value of IT') in the context of the firm.

Further thematic analysis highlights the context created by a background of three fundamentals: Competitive Environment and IT (the external environment and the state of business IT relative to competitors); the firm's Philosophies (pervasive and underlying attitudes which shape the thinking about IT in the business); and, the Role of IT in the organisation (i.e. how significant is IT in strategic and operational positioning and performance. Note that the Role of IT in the firm is quite different to IT Value Perceptions described above). These are three fundamental drivers of the firm's current management of IT value defined as firm 'foundations'.

Whilst the findings are presented in sections, it is important to recognise that each firm's approach to IT value management is represented by the whole set of categories taken together, including their issues, rather than by one or other emphasis, phase, or focus. Discussion supports a 'picture' or representation of each firm's approach and also presents significant outcomes from examination of data across the five cases.

5.2 Insights to <u>How</u> IT Value Management is Done in Practice by Leading Firms.

5.2.1 Key aspects of the approach taken to IT value management by individual firms

Each case is presented through three topics: a) Firm Foundations; b) Firm Emphasis - which phase gets the most attention and what is the specific focus of activity and principle; and, c) Firm Synergy - alignment between a firm's foundations and its principles and processes for IT value

management. Synergy is indicated by how the firm involves IT value measurement and exploitation in forming a response to the competitive circumstances as described from the perspective of business IT-enablement. Outstanding findings from key aspects of the approach taken by each firm are then listed as 'interim findings'. The points expressed in the tables may originate with one individual interviewee only or may be the result of input from two or more executives of the firm.

Note that a small number of interview quotes are used to provide some additional context for each case and to illustrate the detail behind the tables' material. Where quotes are attributed to a particular firm, the interviewee position is NOT given to ensure confidentiality for that interviewee. In accordance with maintaining strict confidentiality, the quotes within this chapter do NOT identify the interviewee's position if any association between that position and the firm can be made. However, as described in section 3.5.2, the tabulated results present a large number of points identified throughout the interviews and distilled to provide the essence of each firm's approach to IT value management. Taken together, the individuals' responses represent the unit of investigation, 'the firm'.

CASE FIRM: AUGMENTER

a) Augmenter's Foundations (Table 5.1A)

"Now our Internet site has been a classic for that (creating capability). ... And we had IBM come in and give us a framework of what it should be. So we then went and put a set of tools together to make sure they were seamless and really worked very hard with the teams here to make sure it was scaleable. The thing is it ... was still expensive at the time. With the money we spent internally here, there were a lot of eyebrows raised at why we were spending that much on the Internet, and it was really hard to explain in business terms except the to the CEO. I had a gut feel, we had to be in that space, we had to be good at it, ...(but) any time we had a problem with the Internet I got kicked from here to bloody Maitland and back."

Augmenter has a record of being innovative with IT in its industry. The firm also recognises that the impact of its IT on customers' needs is heavily associated with its reputation and therefore its brand. It is a responsive business and has an enviably good history of IT impact from its systems and their associated products. Yet Augmenter finds it difficult to be clear about potential threats in the current competitive landscape and looks to protecting its market share and also to being more operationally cost competitive. In support of this view of the Competitive Environment and IT, the firm has developed philosophies linked to creating future business capability and retaining

customers. These philosophies include investing to create scalability, reducing operating costs, and creating more value from IT in-use by leveraging existing technologies better.

The firm is also committed to changing the once pervasive cultural view that the organisation is 'rich' and can therefore afford to play with technology investments whimsically and over long periods. The role of IT in the firm is perceived in two major ways, strategic because it enables the firm's shift to a very customer–centric business strategy and, simultaneously it is extremely operational, explicitly under pressure to reduce the cost of doing business.

Table 5.1A: Case Firm – AUGMENTER
Foundations Informing the Firm's Approach to IT Value Management

INVEST	IN-USE	IMPACT
Foundation III: ROLE OF IT - *Operational* **OP** *Strategic* **ST**		
ST Seriously strategic IT-enabled business initiatives or products **OP** Now cutting back on big strategic initiatives, towards a larger number of smaller developments	**ST** The internet web sites create a lot of electronic business for the firm **OP** IT isn't considered a cost to the business, it is seen as part of delivering the business	**ST** Catalysed shift from self-serving to customer-centric competitive strategy **OP** Benefit customers, business unit objectives & shareholders
Foundation II: FIRM 'PHILOSOPHIES'		
Focus on ***creating future business capability*** through a scalable Internet-based foundation; a strategic decision	Business development is not necessarily new technologies but ***leveraging existing technology*** for good products	Shifting away from the ***long term cultural view of being a 'rich' organisation***
- Extremely ***focused on customer retention and generating new business*** - Internal firm ***focus on quality*** with our own perception of what determines that - Assume and confirm that this firm has great ***capability in developing new systems for organic business growth***		
Foundation I: COMPETITIVE ENVIRONMENT AND IT		
POTENTIAL THREATS NOT CLEAR	RESPONSIVE BUSINESS	INNOVATIVE WITH IT
Firm scans competitive landscape for potential threats, particularly to market share protection and comparative costs of operation	Brand's reputation is synonymous with 'always up' Operational capabilities are taken for granted	Focus on better value capture from transactions across market Innovative IT use and business models in industry segment

b) Augmenter's Emphasis (Table 5.2A)

"I've got some pretty radical ideas on IT governance. I think that model's worked very well for us up to date. It has been a distributed model in terms of the business for internal investment for their own projects and where we have looked for economies of scale in terms of the centralised infrastructure, we've done that very well. And consequently we actually got rid of the CIO role about three years ago."

Augmenter's central dogma for IT value exploitation is the convergence of business and IT functions and organisations. Proximal principles include a structure with no CIO position (or equivalent), clarification of accountability for IT-related decisions and their outcomes, and shifting control of IT spend to business managers. The precept for this approach is that there is no

differentiation between business and IT so that IT is incorporated into 'business thinking' and business structures.

Table 5.2A: Case Firm – AUGMENTER
Key Aspects of the Firm's Approach to IT Value Management

FOCUS	INVEST	IN-USE	IMPACT
EXPLOITATION Process Focus	***Approval by line executive manager*** or council for standard business case ***Steering committee*** for progress, business, legal and IT issues ***Cases revisited*** during progress to change direction or check costs	The ***value proposition of the IT groups*** is their knowledge of the business, how systems provide required services, and how they can make it do more without costing the business	Business unit managers and council assume that ***unit budgets reflect efficiency*** and effective use of assets ***Board IT education*** to reduce decision risks and improve understanding of the business
	- The business unit managers align their own budgets with the ***goals of the executive committee*** - ***Relationships / trust developed*** through IT group focus on business directions and business thinking		
EXPLOITATION Principles	- ***Accountability*** clearer for new developments than for maintenance, as they articulate business opportunity - ***Business problems*** are no longer a series of crises but resolved constructively before they become crises - The jury is still out about sunk costs driving ***project continuation***, for strategic reasons and indirect effects such as protection of reputation or revenues - ***IT governance is a distributed model*** for the business' internal projects and for economies of scale of the centralised infrastructure and there is no CIO role - ***Business units control their IT spend*** and technologists are accountable to the business unit manager - Operational capability includes ***problem prevention as a priority*** - ***No differentiation*** between business and IT, but incorporate IT in business thinking and structures - ***Convergence of IT and business creates strong, positive relationships*** between these groups of people - The approach to technological change is to make ***gradual but continuous IT improvements*** to avoid large investments requiring change and so lower the risk of failures affecting much of the organisation - ***IT education of CEO, all senior executives*** helps them understand real issues		
MEASUREMENT Process & Principles	Small project metrics is ***payback, and NPV/ ROI*** for larger ones Most business ***managers look to their technologist partners*** to assist in assessing IT value based on perceived returns for cost	***'One-off' post implementation reviews*** focus on technical aspects and project management Metrics include ***product delivery cost and generated revenues***, to reflect IT value in-use and the delivery process	***Cost savings from an initiative are easier to see*** particularly significant savings because they indicate the completeness of the job
	- Both a chargeback model and a cost allocation model ***track annual cost of all support, by business line*** - ***Running costs are business-as-usual*** and include costs of sufficient capacity and legislative changes - The four executive general managers are responsible for ensuring ***support costs are fully visible***		
IT VALUE PERCEPTIONS	The more focus on developing and growing business, the more value is linked to being able to ***cut the technology cloth to suit the nature of the opportunity***	The ***efficiency of tools and people's knowledge*** are tied to generating more products, more cost effectively ***Effective operation is critical*** to enable added value in other parts of the firm	***Impact on P&L*** or on customer perceptions of the brand
	- Across the organisation generally, there is a sense of ***doing exceptionally well with IT*** - How it ***supports the brand, customer and shareholder*** but, as these sometimes conflict, it is a balance		

Emphasis on the investment phase is strengthened by line executive manager approvals and towards getting IT in a position to support business growth by ensuring IT–enabled business initiatives fit the nature of the business opportunity. Another principle for investment emphasises risk management for the business, both strategically and operationally, by making gradual improvements in an ongoing manner rather than larger investments with big change impacts. There is less emphasis on the in-use phase, given that project post-implementation reviews tend to be one-

off and that the project delivery costs are where key metrics lie. However effective operation and efficiency of information management are seen as vital to the ability to generate products (and cost-effectively) for revenue opportunities.

A principle affecting both investment and in-use phases requires that the value proposition of the IT groups include IT people's knowledge of the business and how the systems serve it. However, the onus is still on the IT groups to demonstrate how systems could be used more effectively, or extended, without costing the business. The development of IT-business relationships appears to be the responsibility of the IT groups through their focus on business directions and business thinking.

The impact phase gets relatively little overt attention and largely through support cost measurement. Cost of delivery is taken as a reflection of the value of the business product delivery process and IT costs are part of that. Perception that the firm is doing exceptionally well with IT overall suggests the firm assumes that value creation is occurring across the phases and therefore the current high level of activity in IT cost measurement, and exploitation through cost management, is justified.

"Value for IT in this organisation as far as I see it is eighty percent plus focussed on product, efficiencies, costs of delivery, cost of development, and matters that I've just said. In terms of … the value, translate that into tools, tools for the trade, sure, … because it is such an IT intensive organisation you can draw strong parallels about the efficiency of the tools that we use and the knowledge that the people have, as long as it is all tied to generating more product, more cost effectively."

c) Augmenter's Synergy

Foundations present a strategic view by highlighting customer-centric ideas and innovation within the firm. This strategic view is not so evident in the principles and processes for IT value measurement and exploitation where the emphasis is largely on investment and support costs and on risk reduction, giving a picture of IT value management more restricted to the operational context. Although its philosophies include leveraging existing technology for good business products, 'quality' across the firm, and developing new systems for organic business growth, Augmenter does not have clear IT value management policies linked to its foundations, and uses simple costs and revenues to monitor IT value creation.

Interim Findings: Upshots from the approach taken by Augmenter

– A mix of approaches is used. The variety is demonstrated by techniques to understand IT costs better and a strong shift towards blending the IT function and organisation with the business, including right up to board IT education. Problem prevention is a mantra for IT operations. However guiding principles are not always clearly articulated.

– The structure of the IT organisation is distributed with a key feature being the absence of any form of CIO role. IT governance is becoming deeply distributed.

– IT is designed into business activity rather than through separate strategy – taken as part of doing business, as the essence of products and communication, and now seen as intrinsic to business thinking.

– Talk is strategic but most of the emphasis of the firm's actions is on operational risk management. The focus on support costs after the fact contrasts with the fact that perceptions of IT value focus on enablement and customer/brand. Metrics are narrow, few, and largely focussed on costs at both project implementation (investment phase) and in-use. There are indicators of a hidden assumption that value is created from IT regardless, and that costs are the primary focus of IT value management. IT-enabled business products are now heavily cost-managed as well as being linked to their revenue generation results.

CASE FIRM: BIGBANK

a) Bigbank's Foundations (Table 5.1B)

"If I think back to some of the larger global institutional players, their spend has been significant prior to the last couple of years building up, they have spent a lot on infrastructure refresh and they were able to batten the hatches down quite significantly over the last two years without it affecting their future enablement and because they built such a lot in early on, yes, they have looked five years out and tried to guess."

Bigbank's history of low IT spend has impacted the way the firm sees its capabilities in the competitive market regarding IT and this is affecting a new and very considered approach to IT investment, particularly in the investment bank. The focus is to leverage existing IT for better capabilities and to improve responses to customers by drawing more effectively on current and huge data sets. Because the firm sees itself as below par in leveraging IT for business capability in the investment bank, the firm's philosophies favour targeting business-IT alignment, revenue quality, and taking an anticipatory approach to IT-enabling the business rather than restricting concerns about investment and change to costs. A key management philosophy is that the firm's strategies and activities can be split into two main groupings, operational, every-day (run-the-business), and transformation, transition, and strategic management approaches (change the business). Costs and opportunities are viewed according to this split.

Table 5.1B: Case Firm – BIGBANK
Foundations Informing the Firm's Approach to IT Value Management

INVEST	IN-USE	IMPACT
Foundation III: ROLE OF IT *- Operational* **OP** *Strategic* **ST**		
ST Must keep up with competitors, but also respond to a market looking for more IT-enablement or new products **OP** Business managers often still think in terms of processing	**ST** IT is so integral to the products **OP** IT group seen as service provider operating to zero profit/loss **OP** Firm treats IT with different management structures and approaches	**ST** More than a set of tools because it is actually what the business is **OP** The arbitrage ability as a result of IT has almost dissolved
Foundation II: FIRM 'PHILOSOPHIES'		
Investing in business unit and enterprise functions will ***improve alignment*** on business needs and leverage capabilities	Constantly look to ***improve interactions with the market***, relative quality of income and lowering of overall cost base	Business ***revenue increase*** from IT-enabled initiatives precludes CFO view of 'success'
- The firm can't be focused just on here and now because it will get caught out, so ***managers must anticipate*** - Costs and opportunities split into ***run-the-business, change-the-business***, and include discretionary span		
Foundation I: COMPETITIVE ENVIRONMENT AND IT		
SPEND HISTORY IMPACTS FUTURE Past IT spend of larger players positioned for downturn and also for future capability. Managers uncomfortable with changeover costs of moving towards more e-business	FOCUS ON IMPROVED RESPONSE Value could be created through better use of currently captured customer data for understanding them and increase share of 'wallet'	BELOW PAR IN LEVERAGING IT FOR CAPABILITY Competitors' strategic action on IT have better cost:income and productivity outcomes

The role of IT in the firm is viewed as heavily operational, sustained by a traditional bankers' view of IT being equated to processing, by the firm's treatment of the IT organisation as a service provider and differently than the rest of the business in management arrangements, and that IT does not supply a competitive differentiation. On the other hand, IT is clearly integral to many of the investment bank's products and keeping up with the market is, at the least, a competitive necessity.

b) Bigbank's Emphasis (Table 5.2B)

"(It) requires strong push back upfront, hence the comment from the head of the bank which is the tail is wagging the dog at the moment because I said, I am sorry, I will not buy that system. You have given me $5 million I will not buy it because I don't think it is the right thing to do because you are not looking strategically to see where you are going and is this the right investor. All it will do is put you in the same position in two years time, you will have the same issues we have got today and we just a newer system. It created a hell of a fight I must say. But actually - looking back that was about two months ago, it actually made us all progress significantly. ... We are trying to decide where we want to go and what we want to do, and what the price is and do we actually want to still stay in that business or not."

The investment and in-use phases are given almost equal emphasis by Bigbank. Relatively recent philosophical changes toward an anticipatory approach to IT have also brought the impact phase into scope, through more measurement of the overall impact of initiatives and better visibility of IT costs, and through the emphasis on creating a foundation for future strategic positioning enablement.

Keys to IT value exploitation include communication, understanding that IT value is manifested in multiple ways, learning from a history of architecture issues, and recognising and leveraging the likely life of an IT investment to avoid blips in capital spend. An overt principle here is to reduce run-the-bank cost to increase discretionary spend for IT investments as a 'refresh capability'. Long-term changes in play include evolving the IT group's structure to fit more closely with the business functions and shifting responsibility for IT decision-making to business, the latter so that the CIO is more clearly responsible only for the IT components in terms of technical function and delivery.

Table 5.2B: Case Firm – BIGBANK
Key Aspects of the Firm's Approach to IT Value Management

FOCUS	INVEST	IN-USE	IMPACT
EXPLOITATION Process Focus	***Case value analysis*** for whole project, and tightness of case matches the narrowing of funding ***Ask what business need*** this is really trying to solve and what makes a difference	***Piloting*** allows the business to learn lessons for the whole organisation Compares ***IT investment portfolio*** against existing industry and decides what needs to be done differently	***Foundation layer built under the principle of strategic positioning enablement*** to ensure capability for future items IT group beginning to ***mirror business' functional pipes***
	- ***Rolling three year strategy cycle*** looks at major initiatives to resource however a large part of IT is a variable in the development resource and it is all under cases made by the business - Advisors in specific business areas are on the business management committee and ***act as conduits***		
EXPLOITATION Principles	- Focussing narrowly on whether results or ***returns are 'spot on' is missing the point*** - ***Project management is very strong***, and cannot simply be given lip service - ***Likely life of an IT investment*** should be estimated and managed so business sees value in having flexibility and a very enabled environment and avoid large surprises or 'massive blips' in capital spend - Business people are ***managing a whole ecosystem*** and need flexibility - The firm can learn from the ***history of architecture issues*** - ***IT should not view business as customers*** because the IT group is not just a service group, but focussed towards leveraging business opportunities and improving operational approaches - ***Communication is key***, whether a formal committee or one on one between various IT and business heads - ***CIOs are responsible*** for delivery of the IT component of IT-enabled initiatives and infrastructure - Shifts towards IT decisions and use being ***part of business responsibility*** are a long term change - ***Governance*** must be clear to guard against problems in scoping up front and over a long implementation - Objective to reduce run-the-bank costs to increase available discretionary spend; and to use this discretionary spend effectively as ***a refresh capability***		
MEASUREMENT Process & Principles	All ***IT in business terms*** to aid in decisions for devising strategy and how they want to deliver it Metrics now to ***include subjective measures***, like strategic fit, client's architecture	***Balanced Scorecard*** now driven across operations and IT, and approached top down ***Annual user surveys***; some focus on success of IT delivery value proposition from the specific business perspective ***Benefits realisation reviews*** at six months and becoming more systematic	Reviews of IT-enabled initiatives done ***in terms of business product*** and embedded into P&L performance Business has ***full visibility of IT costs***
	- Approach to ***benefits identification and realisation*** is becoming more systematic through plans, and this also assigns greater ownership and also accountability, which has been a problem in the past - Business are justified in ***minimising measures for IT*** because of complex interdependencies		
IT VALUE PERCEPTIONS	Adding something to a process, and ***purely an enabler*** A way of creating an overall ***comparative advantage***	***Senior business split on IT value***, with half quite comfortable and others see it as not good enough Business sees ***IT as a cost***; separate from doing business and its processes	***Willingness-to-pay,*** but how to get to the value is difficult Enhancement by some ***impact of IT on management*** of any of revenue, expense, risk or capital
	- Value for money from IT doesn't mean being bleeding edge, but does mean ***business should be clear on how they are treating it***, a commodity or essential to business, and take responsibility for that		

Two of the processes facilitating exploitation at the invest phase involve asking pointed questions about real business solutions before the business case stage and using advisors as conduits between specific business areas and the IT group. The practice of piloting in sections of the bank facilitates learning towards implementation improvements and also helps develop value creation in-use. Another practice followed during the in-use phase is managing the IT investment portfolio by comparing the firm's functional and intended investments with what Bigbank sees is necessary to compete, based on industry intelligence.

Measurement principles boost the firm's evolution in exploitation by expressing IT in business terms, including more subjective measures for investments, and chiefly by taking a broad grasp of the Balanced Scorecard framework across all operations and IT for the investment bank. IT delivery as an IT group function is measured separately to the success of IT-enabled business initiatives. Evidence of value creation (and what can be done to improve it) is being gathered though improvements to benefits realisation reviews, particularly as business accountability is now more clearly assigned through the business planning and execution processes. Whether managers see IT as an enabler, supporting competitive advantage, or only as a cost, their willingness-to-pay is indicative of how they perceive IT value and how it is measured.

"Well value is a very simple metric in the sense of something that people would pay for and if there is an increase in value, is where they would pay more for it. So how you get to the value is another matter. You can do it through some increase in revenue. You can do it by lowering the risk of that revenue stream. You can do it by lowering your cost base against which that revenue is earned. You can do it by not using as much capital as you otherwise would have had to, so there is a whole heap of ways to get there. But nonetheless, value in our mind is pretty much what someone will pay for it. … Now in terms of the IT value it is the extent to which that overall value is enhanced by some intervention of IT so if I implement some change to my activities through IT which lead to an overall increase in the value of something or the extent, the management of any of those four limitations, revenue, expense, risk or capital, that's how I would express the overall value of the IT in that regard."

c) Bigbank's Synergy

Bigbank's approaches to measurement and exploitation of IT value are clearly resonant with the firm's philosophies around IT and its competitive environment. This is driven by the view that the organisation must improve its response to customers, as well as how it leverages IT for greater capabilities internally to compete more effectively. The use of various tools such as the Balanced Scorecard and the portfolio approach to IT are balanced with culture change around, firstly, accountability and responsibility for IT decisions and performance (both for technical and business aspects of systems) and, secondly, the approaches taken to increase the amount and quality of communication between business people and the IT group. Although there is considerable

emphasis on IT at an operational level, executives note that the inherent and pervasive nature of IT in the business products and client interactions means that IT-enabled business initiatives are often 'strategic'. Approaches to IT value exploitation designed to have effect over the short and long term include making more anticipatory responses, clarity about IT expectations, and ensuring investments deliver value well beyond the investment phase. These show that the business is adopting a mix of operational and strategic changes for the role of IT in contributing to competitive impact.

Interim Findings: Upshots from the approach taken by Bigbank

– In recognition of its investment history, the resulting impact of awkward architecture, and other operational issues arising from a long period of low investment levels in IT upgrade and evolution, Bigbank is now making major changes in its approach to standard support IT and IT-enabled business initiatives in order to avoid huge and disruptive capital investments in IT.

– The investment bank business has relative autonomy but cohesive principles are applied from the enterprise level under a federal model of IT governance.

– There has been a relatively recent major change in strategic thinking regarding management of operations and the strategic role of IT for the firm in the investment banking/wholesale finance competitive landscape. This is partially catalysed by a business acknowledgement of the impact of IT on the firm's position.

– The firm is in the process of shifting emphasis and building a new culture regarding IT value management. This is demonstrated through changes in the way accountability and responsibility for IT is assigned and managed, changes in the IT organisation structure and IT-business decision-making processes to facilitate communication and collaboration between business and IT people, and the instigation of monitoring and feedback mechanisms which are not restricted to 'after the fact', but have almost continuous affect.

CASE FIRM: CONTINENTAL

a) Continental's Foundations (Table 5.1C)

"It's justified on the basis as before: breaking down, compatibility with other software, and putting us on the leading edge to take advantage of new development tools – to get to the market quicker and there's opportunity cost of not doing this. In this, we want to be seen at the leading edge of technology. It's an important statement to the business in investment banking. It seriously is."

Continental is extremely aware of their customer base and power. Consequently, the firm must maintain its responsiveness in a very fast market where clients expect the firm to have the

capability to execute across information provision and transactions, before they even know they need it. Firm philosophies supporting these market pressures focus on flexible and robust core architecture to keep it in the forefront of responsiveness, so investments are targeted here, but staunch risk management is also fundamental to market reputation and other impact points. Primarily, the strategic role of IT for Continental in-use and at impact is that it has to be fast – in daily response, in getting to new market first, in winning new opportunities. The strategic voice for investment IT is to do more with less, that is, to spend less on IT and reduce IT costs. Overall the strategic role for IT is limited, yet absolutely critical to competitiveness. The operational IT roles show a clear connection to the risk management and client-focussed philosophies and through to the market circumstances. Management of IT is under the umbrella firm philosophy of splitting business activity and principles into 'change-the-firm' and 'run-the-firm' (similar to Bigbank). Cost is of major import for run-the-firm, but meeting the market and the clients' needs is more so.

Table 5.1C: Case Firm – CONTINENTAL
Foundations Informing the Firm's Approach to IT Value Management

INVEST	IN-USE	IMPACT
Foundation III: ROLE OF IT *- Operational* **OP** *Strategic* **ST**		
ST More from IT with same or less money **OP** Streamline management for P&L / risk **OP** Do not want 'Roll Royce' systems and expect vendors to relate better to customer realities of IT funding	**ST** It has to be fast **OP** Helps clients achieve their goals **OP** Stable infrastructure for operations **OP** IT critical to some transactions not relationships and knowledge	**ST** Winning new opportunities, or into new markets quickly **OP** IT does not have to justify itself independently of the P&L as it is integral to the business
Foundation II: FIRM 'PHILOSOPHIES'		
A key strategic principle is ***remaining responsive to market needs*** as they change	Flexibility and robustness of ***core architecture*** is key to competitiveness in a changing landscape	***Prepared to close*** down lines of business or systems to reduce further losses or reputation risk
- ***Activity split into change-the-firm*** (new markets and products, new functionality of systems) and ***run-the-firm*** (efficiencies, cost reduction, stability and reliability). Work and budgets are also segmented like this		
Foundation I: COMPETITIVE ENVIRONMENT AND IT		
HIGH CLIENT POWER Must be seen on the leading edge and get to the market more quickly - the firm is very aware of the opportunity cost of not doing that	EFFECTIVE RESPONSE Systems show high control principles and efficiency, but no better than local globally-based competitors. State-of-the-art technology in the global organisation	HIGH CAPABILITY TO MEET MARKET Perform better than competitors in our ability to respond to customers and in quality and efficiency of data

b) Continental's Emphasis (Table 5.2C)

"It is quite hard and you will get to the stage where there is a lot of spend up front and you won't actually see any immediate benefits, in a market place which says well, costs have gone up, you have not performed. The only way you can sort of mitigate it is actually at the same time start pulling out costs in other areas and make that more efficient. It's challenging. It has enormous attraction for the business."

Controlling costs is a forte of Continental over all phases of the business life of an IT investment. Upholding technological prowess is considered an expense, rather than really adding value, and the

'cost value' of business systems is more appreciated. Continental's main concern for IT in-use is measurement through cost analysis. In particular, this facilitates chargeback to the businesses and explains the impact of costs because of the detail available to do so. The invest phase attracts measurement based upon both historical experience and forecasting, however the impact phase gets little attention with scant review of initiatives against the predicted targets and performance over time.

Table 5.2C: Case Firm – CONTINENTAL
Key Aspects of the Firm's Approach to IT Value Management

FOCUS	INVEST	IN-USE	IMPACT
EXPLOITATION Process Focus	An ***appraisal form*** makes the approach structured / consistent A '***new business initiatives' committee*** looks at every initiative The ***project management*** is strong, effective and controlled	Business and IT work together to achieve and show considerable ***collegiality***, except in areas expecting immediate problem resolution Committee's management reporting uses local and global ***tracking systems***	***Cost analysis*** approach demystifies the IT 'maze' because it allows detailed explanation of IT costs
	- ***Accountability*** for IT decisions has shifted to the business and away from the IT group who made decisions they probably should not have had to - Business is clearly reminded about their requests by evidence in ***better documentation of IT decisions***		
EXPLOITATION Principles	- Technological and investment decisions are made at a global level and ***business groups run vertically*** with intimate local IT support for each business group - Business defines direction and focus; global heads of operations, IT, and financial control, ***drive IT decisions*** - Business lines are accountable for capital spend and operating costs assessed via targets and incorporate ***IT value management 'up and down the line'***. IT accountability is in daily business management - Accountability for decisions and value delivery is ***about how the money is spent***, not success of delivery - ***Incentives for business accountability*** for ROI-IT include rewards on revenue increases and profitability. Accountability for IT decisions lies with business project managers, but delivery lies with IT - The ability of individuals to ***commit the firm to expenditure*** is strictly controlled with a series of signatures - Strategy talk is around ***speed, risk management*** and ensuring transactions flow through as few human hands as possible, but also ensuring problems are highlighted as soon as possible - ***IT strategy is minimal*** and focuses on consistency and efficiency within the IT group - Internal ***production infrastructure is wholly outsourced*** but optimise costs through better human resource allocation and the location of base IT activities		
MEASUREMENT Process & Principles	***Business estimates potential outcomes***, and IT estimates costs against a historical base ***Project reporting*** includes the impact of current business environments Timely rolling business budgets ***facilitate forecasting***	IT infrastructure is a shared asset and service so it is under the IT group's balance sheet but ***allocated to business based on use*** Cost analysis tools give ***sophisticated IT billing*** so all costs for particular revenue production are allocated to business or only at a global level	***No comprehensive review*** against business case objectives to assess reality against predicted over time Specific metrics show ***early created value*** and also highlight areas for improvement
	- ***Program committee*** looks at design and business functions across the firm, and assesses impact		
IT VALUE PERCEPTIONS	***Keeping up with technology*** requirements to enable capacity and operating speed is one kind of value not viewed as adding value but as an expense	The ***upside of using IT*** to help better perform an operational function ***Provide customers more ability*** to interface easily with the firm	Finance sees ***value as low costs*** ***Position firm*** to create revenue generating opportunities
	- Most value is perhaps ***not via IT*** but derived through process reengineering or enhancements - The new cost analysis approach acts as a ***feedback mechanism to cost value*** from business systems		

Exploitation principles indicate a strong emphasis at investment, managed via a vertical business governance structure but including across firm checks through a 'new business initiatives' committee. Global IT governance is centred on the global CFO, COO, and CIO, who jointly drive

IT decisions; global direction for the regional groups is significant. There are very tight financial controls in place. IT strategy is minimal, with strategy talk centred on speed and risk management. IT value delivery is about how the money is spent, not success. The exploitation emphasis in-use is largely on IT operation, and as the service efficiency and consistency demonstrated by the IT group. A further principle is to encourage business management's accountability for value creation and capture from IT-enabled business initiatives by rewards for revenue increases and profitability (called ROI-IT).

Processes ensuring IT value exploitation include business making more IT decisions than in the past and better documentation of these decisions and the process itself. The firm has shown that these approaches encourage business accountability for IT associated with their business lines. The relationship between the IT group and the business at Continental not only supports value creation but minimises value 'destruction' in-use and at impact. Except for the trading room players whose tolerance limits for IT inadequacies are lower, the relationship is considered collegial.

"I think our IT guys are very client service orientated and you know really help. It is very obvious if there are problems that they are actually distressed if they can't help us. So it is, it is a really positive sort of working environment. But that's here. The Trading Floor is completely different, just by the nature of the different sort of set up and different types of people up there. From their perspective if the system is down or they don't have access, they could not be making money. Or lose money…I think we are a lot more collegiate. It is much more supportive. I mean it is just a thing that from their perspective, that is what the business is and let's not worry about all the people underneath who are actually supporting them so that they can do their business, but the attitude is, well the PCs should just work. No one is really interested in understanding if there are issues, it has just got to be resolved."

c) Continental's Synergy

Continental's IT value perceptions, and the firm's principles and processes for IT value measurement and exploitation, are clearly aligned with its foundations. Tight control, efficiency, and stability are paramount in meeting market interactions and matched by the actions the firm takes to manage its value from IT. The only disparate feature is that although the firm believes its clients expect leading edge technologically supported response, Continental does not show evidence of a value-creating response in its approach. Indeed, the firm sees itself as no better than other local globally-based competitors in this regard, whilst its global group has state-of-the-art technologies.

Interim Findings: Upshots from the approach taken by Continental

– Sophisticated cost analysis is creating value through much better understanding of all costs. It also directly supports recognition of IT value, and is used as a measurement tool for value.

– IT value exploitation is largely through cost management and less through direct value creation principles and processes. The firm is extremely focussed on cost control in areas other than client interface and trading where, although the revenues are raised for the firm, the working environment is more driven by individuals than the firm because of the personal incentives.

– Governance of IT is heavily focused on the investment phase and the structure favours a service view of IT. The governance mechanism and involvement of personnel are lean in both these areas.

– There is limited focus on IT value management at the impact phase, including a lack of revisiting business case objectives over time and deep differences in the state of the relationships between the IT organisation and the business across the firm. This latter is indicated by the operating parts of the business (financial control etc.) being more responsive to IT group efforts and working together than other major business areas.

– The necessity to be seen by clients as leading in technological provision for business execution is apparently in tension with the firm's cost focus. Nevertheless, executives are comfortable that operational effectiveness is currently close to optimal.

CASE FIRM: DUET

a) Duet's Foundations (Table 5.1D)

"We will only get the business if the ideas that our people put in front of them are the best... That's our differentiator, it has to be a different, in this industry, investment banking, it has to be the different, the people have to be the primary differentiator. Having said that, if you don't have the technology you don't get the business - if you can't execute. I look at the technology in a lot of cases as being the enabler of the execution. If we can't connect that client in Helsinki well we don't get the business. But we are not going to get the business, we are not actually going to get to base one unless we know the client, we've got some good ideas, the client wants to deal with us. So we get the relationship and we are going to do all this business for you, and they take for granted that we can execute."

Duet's global and local clients expect the market's best systems. Although the firm is concerned at the slow payback on new technology developments, the clients clearly have a lot of demand and expectation for these. The firm has traditionally viewed itself as an extremely capable profit-maker through direct revenues, and its philosophies still put revenue creation above other targets and therefore revenue generation initiatives ahead of cost savers. Duet works on the premise that low operational risk can be maintained as a foundation for focus on market returns. Although the firm

has a high revenue generating capability based on the 'right and personal' relationships, its executives believe it is only middle of the pack relative to competitors in its IT capability and not yet at its best in its ability to leverage IT value. Duet sees the role of IT as largely operational and a way to improve business processes, but certainly not a candidate for firm competitive differentiation. However, executives do value IT's small strategic role, in revenue generating deals and in tying-in client confidence through the way IT is used, to the extent that they are convinced it's not simply a utility to be outsourced.

Table 5.1D: Case Firm – DUET
Foundations Informing the Firm's Approach to IT Value Management

INVEST	IN-USE	IMPACT
Foundation III: ROLE OF IT *- Operational* **OP** *Strategic* **ST**		
ST New business products **OP** Execution enabler **OP** Not a utility to be fully outsourced	**ST** Absolutely necessary for revenue generating deals **OP/ST** Improving business processes **OP** Supporting existing business	**ST** Clients confirm the right IT activities **OP** IT not a candidate for driving firm differentiation
Foundation II: FIRM 'PHILOSOPHIES'		
Potential revenue initiatives more important than cost savers	The ***right and personal relationships*** determine business success	Historically viewed itself as a ***strong profit maker***
- ***Develop flexibility*** to meet challenges of changing business environment - ***Keep low operational risk*** so focus on returns to market rather than efficiencies		
Foundation I: COMPETITIVE ENVIRONMENT AND IT		
HIGH CLIENT POWER Must respond to client needs for connectivity. Clients expect market's best systems.	QUICK RESPONSE BUSINESS Clients assume firm can execute. Must have right technologies to capture business but IT payback slow	HIGH REVENUE GENERATION CAPABILITY but NOT OPTIMAL in leveraging IT value; Middle of the pack in IT capability.

b) Duet's Emphasis (Table 5.2D)

"Well if you are creating value, that's what I am saying, that on our sort of wholesale business you see the value there straight away. IT is creating. If you've got a direct-to-market pipe, we open up a whole - and especially with our merger -we open up a whole new market for us in terms of dealing with us. So that creates extreme value. I mean you can see it, it just rains to the bottom line, you know. I mean in terms of whether it is blowing through to the bottom line, are we achieving the benefits that we need to, that we proposed to."

Duet's executives hold a fundamental opinion that it is 'fatal' to look at IT in isolation of the business. This view is based on the understanding that IT value is intertwined with the way business and IT people work together. They also see IT clearly connected to value creation and capture when the revenues roll in through a strongly IT-enabled business initiative, and that kind of impact occurs often. The emphasis of most activity is on the investment and in-use phases with little process focus on the impact phase. Relationships between business and IT people get

significant attention falling out of strong guiding principles and the state of these relationships affects how IT value is created and helps ensure its capture over time.

Table 5.2D: Case Firm – DUET
Key Aspects of the Firm's Approach to IT Value Management

FOCUS	INVEST	IN-USE	IMPACT
EXPLOITATION Process Focus	***BU heads cooperate*** to manage conflicting IT agenda IT is mostly under CIO budget and **under the nose of CFO**	BU heads extremely ***focussed on P&L*** monitoring ***IT chargeback*** includes granular detail in billing if required	The firm is **prepared to pull out of a business case** execution if the viability becomes untenable
	- Managers ***discuss delivery of IT value proposition***; role of IT, business outputs/outcomes and IT group operation - ***IT-savvy business development managers*** sit within business units, liaise between IT and business and work on understanding the business and its IT needs - The ***CIO talks to many business managers often***; hearing about issues quickly enhances problem management		
EXPLOITATION Principles	- Decision-making responsibility and business case development for IT is now ***shifted to the business managers*** - ***CIO's opinion influences*** prioritisation but business makes those decisions based on their views of relative importance and decides high level deployment of available IT resource - ***Public and transparent process*** makes business managers accept own decisions and the impact on others - Strategic role of IT is reflected in ***composition of IT Steering Committee***; CFO as chair, business managers, and CIO as invited guest; and focus as a business forum - Changing the firm's culture so ***business managers pressed to discuss real business IT costs***, as well as revenue and other benefits and the need to identify and share overhead - The quality of communication is important in maintaining ***a no-surprises approach*** - The IT group is shifting its behaviours towards ***positive and pleasant responsiveness*** to business people - A ***CIO with senior leadership experience*** was vital to improve the IT situation under a growing IT team		
MEASUREMENT Process & Principles	***Standard business cases*** for all 'capex' (strict payback hurdle); NPV used with detailed P&L IT Steering Committee tracks ***project monthly progress*** though a traffic light indicator system	***Chargeback mechanisms*** allow visibility of IT 'consumption' by business ***Warranty period*** for completed IT projects, but post-implementation reviews technical and functional only	***Payback measure*** is business benefit ***Costs are managed and monitored*** but benefits get little attention
	- Monitoring returns on capital spend for ***IT is treated differently*** to rest of the business - Framework for IT value management includes ***portfolio analysis*** - In a quiet market, the focus moves to ***operational reliability, quality, and costs***		
IT VALUE PERCEPTIONS	IT value is connected to business value through ***the way IT and business people work*** on projects and measure performance	Business is generated through ***ideas of people*** using the IT IT value is in ***reducing operational risk***	Value easy to see where ***direct market connects*** bring flows through to the bottom line
	- ***Reliability, risk management, and managing scalability*** are vital to the firm - ***Fatal to look at IT in isolation*** of the business		

Duet's emphasis is largely centred on principles, rather than detailed method, and over a range affecting all phases of the business life of IT initiatives. A key principle for driving IT value involves the CIO's self-defined role. He provides advice, but a committee of business executives make all the decisions, including prioritisation. This structure also catalyses a culture of business understanding and accountability for IT costs and value creation and for sharing of infrastructure overheads. A public and transparent process ensures high quality communication. IT value is also exploited through communication and outputs handled by IT-savvy business development

managers. To further a principle of 'a no-surprise approach', the CIO walks the floor to keep connected with senior management and with his antennae up for potential problems.

A series of measurement and exploitation mechanisms are used at both the investment and in-use phases. Standard investment business cases use a strict payback hurdle rate for capital expenditure, NPV, and a detailed profit and loss (P&L) statement. The business' IT steering committee review and prioritise cases, and members cooperate to manage their sometimes conflicting agendas for IT in their business areas. This same committee monitors the projects. These business unit heads are heavily focussed on their P&L outcomes so other mechanisms such as detailed IT chargeback and IT-business portfolio analysis keeps their interest fervent. Duet ensures that IT is not pushed to the background. Business executives believe that a key to Duet's IT value management capability is their choice of a CIO with senior leadership experience and who has now promoted significant culture change through working closely with the business unit heads.

"As that came on board there needed to be, ooh, hold on! Rather than the tail wagging the dog, we needed – let's take control of this here! Let's set a bit of strategy for our IT bent, and we got the CIO in. You know, that was a very important decision to make to get someone very senior in to give that sort of leadership that was required for a team that was growing significantly."

c) Duet's Synergy

The role of IT in Duet is extremely clear to its executives and focussed on revenue generation and the client. This is manifested in the high level of synergy between the firm's foundations and its overall approach to IT value management. Duet perceives IT value and measures it in a manner reflecting the revenue and operational focus of the foundations, albeit IT value is less explicitly measured at the impact phase. Principles guiding both IT value measurement and exploitation are well-linked responses to a global competitive environment where clients expect sophisticated, reliable, enablement. The client-focussed philosophy means business managers are prepared to take absolute responsibility for revenues and hence the IT needed to get them. IT value exploitation processes facilitate realisation of business managers' requirements and their daily confidence in managing clients so they can maintain revenue generation as the priority. Exploitation principles also support establishment of greater flexibility in the firm in order to meet future requirements particularly through Duet's modelling of its IT steering committee as a business forum.

Interim Findings: Upshots from the approach taken by Duet

– Duet holds a deliberate focus on IT as a business strength, but not a source of differentiation. IT value has become more important under the current competitive environment where costs

and effective IT leverage have shifted from being purely background to P&L revenues to being part of it.

– The principles and processes adopted for IT value exploitation puts business managers in a position to leverage business value from IT because it is so much in their control.

– The CIO is rolling out change for better ways of leveraging IT for value. Change targets include more capability within the IT group and shared capability with the business, business involvement, ownership, and accountability for IT used in their business area, and increased transparency of decision-making about IT at the business management level.

– Duet portrays a very different thinking to the other case firms. This thinking centres on the principle of IT being integral to so much of the business and expressly extends to the governance model the firm uses. Essentially, this rests on executive and senior business management actively taking the business IT value proposition on board, simultaneously treating the CIO as an advisor and true business colleague (not a support leader), and accepting that he is totally accountable only for technical delivery and viability.

CASE FIRM: EDIFICE

a) Edifice's Foundations (Table 5.1E)

"The industry is generally not technologically aware.... We'd like to think that a lot of what we do is done on a very productive basis, from design - design is computer aided and that information is easily updatable and easily dispersed and easily transferred to construction sites, the feedback is easy, so all of those things have contributed to us being a leader in the industry rather than a follower. Having said that it's an industry where, as I said, they still put bricks one on top of the other so as an industry they still have a long way to go."

Edifice is not a finance company, it is involved in the construction industry. The firm is a responsive business in a competitive environment where much of the supply-side of the industry lags in IT adoption and sees IT as little value to their 'small' supplier operations. For both managing the multiple players and to enable fast, comprehensible, client management, Edifice notes that its IT use adds strength to its reputation for good information, efficiency, and effective outcomes. The firm leans on IT supported market capability against its direct competitors and where its philosophy of competition centres on cost and expertise. Another key philosophy is that reliable and well-planned approaches to doing business convey consistency but also catalyse development of better ways of doing things to maximise time management and outputs. In-use, a key philosophy about the way the firm runs is based on information and expertise brought through

to the market and the focus is on these rather than on the vehicle of IT. Not only is the firm seen as innovative in the market regarding its IT supported market capability, particularly through proprietary project management systems and other client systems, but Edifice also views itself as innovative in IT use within the industry.

Edifice's strategic role for IT is confined to facilitating global reach and efficacy for new deals and to the specialised and innovative systems mentioned above. The largely operational emphasis is tied to communication, information access, and reduction of overhead cost, as well as specifically playing out the philosophy of consistency and reliability. One element of the firm's future is leading industry change, and part of that includes an uptake of IT-enablement. The challenge is that the nature of the industry inhibits any such revolution.

Table 5.1E: Case Firm – EDIFICE
Foundations Informing the Firm's Approach to IT Value Management

INVEST	IN-USE	IMPACT
Foundation III: ROLE OF IT - *Operational* **OP** *Strategic* **ST**		
OP Communication, information access, speed to decision-making and market **OP** Operating efficiency creates capability to run other parts of the firm better	**ST** Firm's project systems facilitate collaboration and efficient interaction **OP/ST** Brings geographically spread skills to the table to win work	**ST** Incredible global reach **OP** Operating consistently, efficiently, and reducing overheads
Foundation II: FIRM 'PHILOSOPHIES'		
Develop platforms to ***minimise frustration time and maximise outputs*** Look for ***better ways*** to do things	The firm is not a transaction processing shop, it's a ***collaboration and knowledge shop*** which IT facilitates	This firm is ***very innovative*** Competitive ***capability is about cost and expertise***
- ***Consistent approaches*** to doing business and managing risk, supported by systems and behaviours - Thinking strongly driven by civil engineering where building occurs one direction so requires ***thorough planning***		
Foundation I: COMPETITIVE ENVIRONMENT AND IT		
INDUSTRY POWER Industry involves huge negotiation, problem management, and compromise Industry very fragmented with high barrier and risks to overall practice change with IT	RESPONSIVE BUSINESS Firm's businesses seen as astute users of IT that reinforces efficient operation and ability to harness expertise globally	IT SUPPORTED MARKET CAPABILITY Leader in this market Proprietary system won awards for innovation; best practice

b) Edifice's Emphasis (Table 5.2E)

"So when we actually sat down and talked through our strategies it was very much, One - client-focussed; i.e. could we use IT in the client perspective, and we thought that 'yes', and Two - we thought ' could we make our people more productive?' and that was down the knowledge management route. Three - Reducing our people numbers, and that's by internal productivity. We have spent time and energy in developing those three streams for success."

Driven by a range of perceptions of IT value from cost saver, service, a trap for time and a money-pit, through to IT value as fundamental to the firm's command of construction processes,

components and outcomes, Edifice mainly measures its IT value through a cost lens. This is borne out in investment phase business cases based on changes in full operating costs and supported in-use by operating cost analysis. Other monitoring and feedback mechanisms support costs management but also input to identification of in-use perceptions of value. Although the firm expects to leverage its systems better for value, it emphasises 'contraction mode', reconsidering the viability of its IT portfolio. Other than costs, Edifice is more interested in strategies and tactics to exploit value from IT rather than in measurement of created or captured value.

Table 5.2E: Case Firm – EDIFICE
Key Aspects of the Firm's Approach to IT Value Management

FOCUS	INVEST	IN-USE	IMPACT
EXPLOITATION Process Focus	***Research identifies points initiatives will add value***, then piloted and if no value we drop it ***Rigour in business cases*** initially embeds IT within business and ties it to day-to-day objectives	***IT spend charged back*** to businesses All locations get advice and IT support by ***people who understand the local context*** Reputation for investing in IT supported by ***up-skilling people in IT use***	Global CIO works with business to ***ensure comfort with value received*** and how to further leverage value Business people decide on discretion; ***no 'hollow logs'***
	- ***Regional CIOs cover several operational groups*** and must act as IT manager them all - ***CIO meets separately with CEOs and CFOs*** of each business monthly to give them progress overviews		
EXPLOITATION Principles	- Sign-off limit very low to ***avoid creeping expenditures***; people can't commit firm to long term involvements - Finance people sit within IT-business group to ***moderate technical responses*** and work together on cases - Strategy is to ***invest less IT but more in training*** to develop knowledge and use of systems - ***IT direction was determined*** by how business believed it would fit in business strategies, in streams: by supporting the client-focus; increasing personal productivity (down KM route); and reducing people numbers - ***Business case rigor*** being improved with better articulation of the pros and cons of different strategies - A real ***strength of in-house IT*** is that the development team care as much as business about how it runs - ***IT performance*** includes focus on direct help for business people rather than being reactive and directive - Business ***executives' accountability for IT plans*** within business plans helps close the IT-business gap - Conscious ***shifting of responsibility*** for driving IT decisions and direction back to the business - Very ***senior people do a range of activities across the firm*** including working with other people around the world to try and ensure that the firm uses its IT expertise and its development effectively - Each operating business has an IT steering and strategic group made up of management team key ***executives who are motivated or passionate about IT in the business*** - IT team organisation includes ***a business layer of 'value extractors'*** within the IT group, to provide a business interface and involves people with finance, engineering, or architecture skills		
MEASUREMENT Process & Principles	Cases use 3-5 year projections on ***changes in full operating costs***, cost allocation, full ROI; also use alternatives, ***opportunity cost*** concept, and annual operating cost on business change	Little untapped potential in systems so ***encouraging fuller use of systems*** Monitoring and feedback includes costs, SLAs, service satisfaction surveys, and formal ***feedback mechanisms***	***Value impact subjective*** to a large extent ***and by comparing the numbers of people*** needed to do jobs today with what was needed for the same jobs in the past
	- Fundamental ***operating cost analysis has reduced costs*** and given better understanding of services - Firm is in contraction mode, ***querying the portfolio*** to both consolidate value and reduce costs		
IT VALUE PERCEPTIONS	Business case is for ***cost saving*** The IT section of a business plan for ***changing behaviours around IT use*** to extract more value from a good product	IT is ***critical to communication*** for an international company ***Perception of service***, and IT value, is in how your help desk responds, and how long it takes to get a solution	We ***don't use many IT tools well***, spend is too high, and the firm is in the upgrade cycle Many senior managers feel ***IT is travelling comfortably***
	- ***Depends on who you talk to***, customers, services, risk reduction, operating cost, are all targets for IT value - Real value in ***firm's role as manager of all components*** of construction and the collective solution		

Edifice has realigned its principles for IT value management to fit better with its business strategies under three key target outcomes: client focus; increased personal productivity; and, reduction in the number of employees. These principles underpin IT across all phases. An established principle of group executive engagement across the firm to enhance business synergy was broadened to include a global focus on how the firm manages IT business value. The emphasis is on two main groups of principles to guide exploitation of IT value: IT governance and development of good business-IT relationships. Governance is fundamentally driven by the responsibility for IT decisions being held by business and it is managed in a somewhat distributed structure where each operating business has an IT steering/strategic group of key executives who are motivated about IT in their area. A key strategy introduced by these executives is to invest less in IT systems and more in training, which ties personal productivity to IT value. The emphasis on relationships involves the business-side responsibility for IT decisions, executive accountability for IT plans within business plans, and a business-person layer of 'value extractors' who work with IT. Keeping the IT team mostly in-house has resulted in IT-people who care as much as the business about keeping the place running well, and they focus on helping business people directly.

Specific IT value exploitation processes include strong investment phase research for added IT value across business processes, business case rigour to bind it to in-use value and to achievability, executives actively working to ensure advice and support meets the real needs, and close communication between global and regional CIOs and business CEOs and CFOs. This communication is vital to the firm's leverage of IT value at the impact phase, partly because it increases transparency of IT-enabled business processes, IT decision-making, and recognition of value created in local contexts. These processes, and the principles, show the firm treats all three phases with respect and tailors its approach to the kind of value outcomes it has articulated.

"It's under a joint governance I would say right now. The current (global) CIO, is on the Executive Committee globally. I think that is very good. That allows it to be a bit more transparent. He is working with the business managers to make sure they're comfortable with the value they're getting and where they need to go forward with more value from IT, and those plans are being put in place."

c) Edifice's Synergy

Edifice has made some very clear-cut decisions about the role of IT in the firm and how it reacts to the competitive environment. After a strong foray into IT-delivered knowledge management, in recent times the firm has confirmed its philosophies and now concentrates IT value management around leveraging existing systems better and ensuring IT does not 'take away' time or focus from the expertise and 'can do' the firm is known for. The approaches taken to exploit IT value are well aligned with this thinking, facilitating a smooth, lean, low cost role for IT where the few key

strategic IT-enabled initiatives are still tied to the firm's innovative developments in doing their business.

Interim Findings: Upshots from key aspects of the approach taken by Edifice

- IT management is tightly tied to a clear business strategy and this connection is well articulated. Thorough planning for new initiatives is based on engineering planning concepts used to avoid rework or embedded mistakes. However, once the initiative is running, most business cases are not revisited down the track to ensure the proposed outcomes are met.
- The emphasis is chiefly on principles driving IT value exploitation and less on specifying processes or on measurement of benefits. Nevertheless, the IT portfolio is queried to weed out low value contributors.
- Understanding costs of IT (through full operating cost analyses for each business) is used as an indicator of the worth of systems. The chargeback mechanism encourages business heads to seek and identify IT value creation to balance the P&L effect of costs.
- A federal IT governance structure allows regional CIOs to work closely with all the businesses. Many senior executives are heavily involved in key IT decision-making or in maintaining cohesiveness across the global firm. Responsibility and accountability for IT decisions is still shifting to the business for all phases.
- Relationships work both ways, with IT group responsiveness to business individuals and significant business involvement as day-to-day interfaces for operational smoothness as well as for new ideas. Communication and recognition of needs in local contexts are deemed vital. These relationships affect all phases but also mitigate value destruction and ensure IT value capture in the business at the impact phase.
- The synergy between foundations and the IT value management approach is apparently very good. Edifice is remarkably comfortable with its choices for IT and with the way business and IT are jointly working to get more value out of what they use.

5.2.2 A collective snapshot of *Key Aspects* of IT value management practice

What does IT value management 'look' like across this collection of leading firms? Characteristics of IT value management can be recognised at the higher order level, as indicated by outstanding similarities and distinctions in their approaches. The manifestation of these higher order aspects of IT value management is developed in the detail of an individual firm's approach, largely because the circumstances of each firm are different enough to indicate multiple aetiology. This section presents 'key aspects' of the firms' practices, what they do to manage value from IT, issues aside. A précis of what seems to matter for approaches in practice is presented here.

Key aspects of IT value management evidently relevant across three or more case firms:

Foundations

- Clarity of the firm's explicit knowledge of its foundations and the extent to which this is common understanding within the firm's management;
- Explicit recognition and articulation of the level of synergy between the firm's approach to IT value management and its foundations.

Putting the business in a position to leverage IT for value

- Managements' knowledge of business processes and rules across the firm, its strategic intent, and how IT might enable relevant operations and strategic initiatives;
- Inseparable IT and business strategies and plans;
- Responsibility and accountability for non-technical value aspects of IT-enabled initiatives are with the business managers;
- Overall control of IT lies with the business at the executive level.

Measurement

- IT is part of the P&L of the firm's businesses, partially driven by an IT chargeback mechanism;
- Operating cost analysis facilitates understanding and management of IT costs to businesses and doubles as an IT value measurement tool;
- Monitoring and feedback mechanisms are employed for continuous effect, particularly targeting in-use and impact phases for IT value creation and capture.

Strategies and tactics for IT value exploitation

- This is given emphasis over measurement;
- Cohesive principles for exploitation apply across the firm;
- Guiding principles are clearly articulated and communicated;
- Exploitation targets all phases in the life of IT-enabled business initiatives.

Relationships

- Communication and collaboration are highly regarded and rest on common goals for both business and IT people;
- The IT organisation is 'blended' with the business organisation;
- The influence of the IT-business relationship on IT value in-use and at the impact phase is recognised and managed.

IT governance

- Executives concur on outcomes they expect from their chosen approach to IT governance;
- Decision-making principles and processes are delineated;
- The way accountability and responsibility for IT is managed is clearly determined and implemented.

IT governance is tackled differently across the firms, not only by the structure facilitating it but also in philosophy and principle. This area is important enough to be discussed separately because it evidently has a bearing on IT value management. As many of the IT value problems raised by some firms centre on the theme of IT governance this topic is discussed separately in section 5.5.2.

Section 5.2 has presented descriptions of practice in leading firms, however, there are issues around IT value measurement and exploitation in tandem with that practice which necessarily influence the efficacy of the approaches taken by the firms. The participating executives raised these issues and also noted many improvements they would like to see regarding management of IT value in their firms. The next sections cover the first of these two major areas, issues for IT value management.

5.3 Acknowledged Issues for IT Value Management

This section is centred on current issues the firms believe impede their progress in managing IT value. These issues are considered separately as *challenges* and *problems* and further divided into two groups to reflect the two major sets of thematic concepts, *viz.* measurement (IT Value Perception and Measurement) and exploitation (Approaches to Managing IT Value). 'Challenges' refer to issues the firms see as inhibiting their progress but which do not negatively affect the organisation. 'Problems', on the other hand, are issues that impair management of IT for value and for which there is a risk of some degree of damage in outcomes for the firm if not solved.

5.3.1 Challenges for managing measurement and perception of IT value (Table 5.3.1)

> "I think it goes back to really understanding what you are trying to do, what is the business problem, the real business problem, and how will this solution actually enhance the business. Now, then you put all the other tools in and you put in all the analysis and all that but that's the very first thing, and we've got a project in here at the moment ... we've got all these guys running around in the business doing this stuff. ... I sent a note back the other day to the executive who runs that department ... let's do a sanity check. What's the business problem we are trying to resolve? Let's go back and if you can articulate that, just make sure it is the same thing we started off a while ago." *An Executive General Manager*

The first thing one notices is that Bigbank is the only firm to raise challenges for IT value perception and measurement across all phases. This could be a reflection of its relatively recently renewed attention to IT value. Bigbank finds challenges in managing IT-business strategy links, benefits tracking, management views of IT-business alignment, and how to incorporate IT value principles into P&L performance. Similar P&L concerns arise for Continental in the need to link IT to revenues and for Edifice, where the nature of the layers in their global organisation makes it more difficult to define the costs of particular IT service in-use. Like Bigbank, IT value perceptions are a challenge for Duet who finds it difficult to reduce the expectation gap and to speed up the maturity of its IT value management so it can see the beneficial impact better. Augmenter identifies a quite different challenge in assessing directions and speed for system capability investment in line with client capability.

Table 5.3.1: IT Value Perception and Measurement - *Challenges*

Firm Legend: A = AUGMENTER; B = BIGBANK; C = CONTINENTAL; D = DUET; E = EDIFICE

FIRM	INVEST	IN-USE	IMPACT
A	In developing and growing businesses, the complexity of the system should be grown along with your customers' understanding of the system capabilities	**O**ften it is difficult to assess delivery of value because the measurement point is too removed from the actual IT system. It is out in the business processes and operation	*No relevant challenges raised*
B	**A** strategy that sits on a shelf is only as good as the last time you visited it, so we try to look at how many deviations occur from that strategy and their implications, including the possibility that the strategy was misinformed	**T**here is a lot of debate internally as to how to track benefits subsequently **B**alanced Scorecard development is a challenge, particularly with specific measures for architecture and defining what it's about	**T**he central program office attempts to track benefits, but can only estimate, and needs to build some correlation between principles and overall P&L performance - to give some confidence that the exercise was worth it
	The fundamental change to be made is in realising that IT can be a real strategic asset, yet people tend to view it through a cost lens and not as an opportunity **E**ven at an executive level, there is little understanding that the complexity and duplicated systems is reflecting the way the businesses are run so functions are also duplicated in the business **I**T is changing so much that the system you put in place two years ago may no longer be adequate		
C	**B**ecause there is a complexity through many variables, it is difficult to determine what the IT-enabled part of the initiative has really contributed so it is hard to justify IT unless it is generating revenues almost stand-alone	*No relevant challenges raised*	**I**dentifying captured IT value is difficult. It is easy to see spend, but there is poor identification of savings or revenues generated through the initiative – there is not the same transparency as with costs
D	**M**easuring payback on IT spend required to stay in business or to keep with the competitive pack is more difficult than for new products, often because the payback is longer than two years	*No relevant challenges raised*	**T**his firm is not at the level of maturity of IT value management that allows it to ensure it has captured and embedded benefits
	The expectation gap is an IT value perception issue The view that IT is free so making the most noise gets you what you want is a culture difficult to change		
E	**E**asy business cases focus on reducing IT spend, but 'upside' ones, eg increasing opportunity with clients or mitigation of potential project failure, bring the problem of quantifying opportunity cost. **M**ore difficult analyses involve the risk in the value of 'optionality' in trading short-term financial sense with cutting off options over the long term	**A**nnual operating cost, or defining the cost of a particular service, is very difficult to do correctly because of the many facets of operating costs around a system, and the multiple layers in a global company	*No relevant challenges raised*

The firms' measurement challenges lie mostly in the investment phase. Challenges are greatest when investments are not cost focussed, such as identifying a clear connection with revenue creation (Continental), credible assessment of payback on IT investments to stay within the competitive pack (Duet), and clarifying risks and their mitigation, opportunity cost, or assessing tradeoffs to provide 'optionality' for the future (Edifice). Some of the broad range of challenges in this area could be categorised as nuisances rather than real issues and others, particularly IT value perceptions, most likely have more bearing on the quality of IT value management.

5.3.2 Problems in the current practices for IT value measurement (Table 5.3.2)

> "The original question was 'do I think we could do it better' and that's where I would struggle, on how you actually capture that. In an organisation like this, we find it quite hard to capture lots of things. If we were just worried about how we captured that value, we probably have more things that would take priority. I am not sure it's realistic but I'd love to do know how people do it, how much time they spend. Even if they say they do it, whether or not they are really capturing value, because I would question that – I'm not sure that you can."
>
> *A Chief Information Officer*

All firms have some IT value measurement problems during the investment phase and, other than Edifice, the firms also experience measurement problems in the in-use and impact phases. Most firms are concerned about finding an appropriate set measures and metrics for business cases and IT value monitoring, however their foci differ.

Edifice sees the simple metric tools commonly used as insufficient to reflect firm risk (exposure) and believes that the impact can never be really assessed since it cannot identify the real costs of IT. Augmenter also believes inadequate business case criteria are a problem but also suffers from a lack of continuous improvement monitoring ultimately never really measuring realised value. Optimistic expression of potential benefits is a problem for Bigbank and more so because it is underpinned by some uncertainty in the delineation of business strategy. Bigbank struggles to determine the real sources of value creation and to identify all the portfolio effects of any one initiative. In contrast to the other firms, Continental uses cost as a major value indicator however assessing value has become problematic through too much cost data requiring extensive analysis. This firm's other prime concern is metrics for returns on infrastructure investments for which the business lines want to see clear benefits to their P&L. Another investment type for which Duet finds return metrics very difficult is compulsory spend such as regulatory requirements. Duet has too few monitoring metrics for value creation but is concerned about being paralysed by too many. Two other areas of concern raised by Duet are: (i) how to address underlying principles for IT value measurement and (ii) the difficulties of not only producing a clear IT value proposition for an investment, but also matching it with the business' appreciation of their own willingness-to-pay.

Table 5.3.2: IT Value Perception and Measurement - *Problems*

Firm Legend: A = AUGMENTER; B = BIGBANK; C = CONTINENTAL; D = DUET; E = EDIFICE

FIRM	INVEST	IN-USE	IMPACT
A	**T**here are virtually no continuous improvement monitoring and feedback systems around IT management and IT initiatives **B**usiness cases use poor criteria for justifications and for assumptions, and neither the criteria nor many assumptions are always made explicit	**P**roject escalation occurs as a result of sunk costs created through particular business managers' commitment to a concept of potential client value **B**usiness cases are not revisited as a monitoring tool after implementation	**R**ealised value is never really measured to ensure they are accomplished, although the business owners are responsible for that benefit realisation
B	**U**nderstanding of IT as a strategic asset from the perspective of opportunity cost **U**nrealistic **e**xpression of potential benefits in business cases **B**usiness case criteria appear to encourage internal competition for scarce resources	**B**usiness managers still think of life in terms of processing **D**etermining the real sources of value creation; through particular systems, or something else **R**eport generation is from a jungle of fragmented systems	**A**bility to 'see' all impacts and portfolio effects of an initiative
	Lack of absolute clarity of business strategy **T**he firm has run business, operations, and IT as discreet functions, but they are all interconnected		
C	**L**ine management allows for some monitoring of business unit initiatives where there is more business buy-in but infrastructure spend creates a lot of complaint because it is harder to prove value returns	Cost analysis is very detailed and gives too much data so it is difficult to get full value out of the process	**M**itigating risks of business expectations for immediate value from an IT-enabled initiative, particularly if IT costs have increased
D	**C**larity of the IT value proposition and matching with business appreciation of willingness-to-pay **V**aluing compulsory spend is perpetually difficult **U**nattractive paybacks on legacy systems encourage continual deferment, yet defensive spend and the opportunity cost of not fixing them might be a competitive risk	**F**ew metrics for monitoring IT value creation - but too many metrics can be problematic	**P**ayback is measured by business benefit, however, IT projects always seem to cost more than budgeted for, even with contingencies
	The time lag on results from IT investments means the function tends to be treated as a cost centre		
E	**B**usiness case risk metrics often use ROI or just DCF to see if it's positive PV, based on the weighted average cost of capital threshold - yet WACC is exactly that, and has an inherent risk factor	*No relevant problems raised*	**R**arely can the firm identify real costs for IT, although it is attempted every couple of years

5.3.3 Challenges for current IT value management practice (Table 5.3.3)

> "The last chairman I had said … – "I want IT off the radar." I said – "What do you mean? You don't want to know about it?" He said – "No, I don't want to hear about it as being an issue from the business perspective. I want it to be just the same as all the other business units that are working. I don't want it sticking out, I don't want a blip on a radar IT, IT, IT, IT, IT, either you saying give me more money, give me more money, give me more money, or the business saying it is stopping me, it is hurting me, it is not good, it is useless. I want it off the radar" ".
>
> *A Chief Information Officer*

Compared with the measurement facet of IT value, Continental and Duet see relatively few current challenges for their approaches to managing value from IT, however they are quite different, whilst Continental is challenged by ascertaining whether they actually need to improve it at all they are also aware that their full understanding of the firms business processes has not been achieved and that this is important as a basis for IT value. Duet sees challenges in each of the three phases, identifying benefits in the investment phase, building flexible infrastructure as to meet changing business needs, and recognise that it is difficult to create and sustain the continuous processes for value delivery that impact the firm. In contrast to these two firms, the legacies of its past IT decisions still haunt Bigbank, as do the strongly divided business views about the role of IT in the firm, on one hand as only a commodity and on the other as strategic. These exacerbate the challenges in balancing operational needs in-use with strategic development and the firm's view of the importance of investing toward strategic intent, rather than simply shoring up what exists. In-use, the greatest challenge is developing the firm's capacity to manage large-scale change across all dimensions of the business, again a result of widespread legacy systems. Yet Bigbank is keen on meeting the challenges it finds with benefits realisation and with its learning from projects.

Edifice finds invest phase challenges in helping managers to see better business case rigour as 'an opportunity' rather than a nuisance, and also in that the ability to assess real value is constrained by the amount of time senior management can spend being involved. Better business-IT alignment and avoiding negative impacts of IT use on people's behaviour and productivity are challenges for IT value in-use. Impact phase challenges focus on responding to the expectation for leading edge IT put to them by newer employees and on anticipating changes in the operating and competitive environment. Augmenter noted a raft of current challenges for its approach to IT value management. Some of these challenges are associated with the firm's foundations and to do with the business culture, the business functional structure, and the way it sees its suppliers in the IT industry. As for the other case firms, Augmenter finds challenges during the invest phase related to business cases and decision-making around them. In addition, it finds it challenging to deal with

the project management methods commonly used by the IT industry, often lacking several of the features of other forms of project management such as those used by engineers.

Table 5.3.3: Approaches to IT Value Management - *Challenges*

Firm Legend: A = AUGMENTER; B = BIGBANK; C = CONTINENTAL; D = DUET; E = EDIFICE

FIRM	INVEST	IN-USE	IMPACT
A	**B**usiness unit inefficient decision-making processes and lack of specificity could negatively affect optimal IT development **C**urrent IT industry project management methods don't work well **I**dentifying future 'added value' where customers are required to alter the way they do things to ultimately benefit them **R**ationalising the firm's internal views of what will create value with those of the customers	**Y**ounger managers are intent on learning all the old lessons themselves rather than learning from others experiences **B**usiness-savvy IT entrepreneurs can be seen as rogues, and as loose canons who need to be managed tightly since they are often viewed as carrying secrets	**T**ransactions in the upstairs market tend to have a higher margins, reflecting the less efficient dealing environment so have no incentive to make it more efficient through IT and this may be a missed opportunity for value creation through IT
	A traditionally risk averse delivery approach ensures robustness, but it is a business cultural issue that affects IT innovation and the capability of the firm to leverage it's IT better for value **H**ow one views building a single culture depends on where you sit in the executive chain and behaviours in the silo business structure **T**he IT industry and community's view of itself needs to shift to seeing the business perspective and being business-driven, and until that happens IT governance will not fit well		
B	**M**anaging strategic forward thinking by business to facilitate better IT planning so the result is not just the same mess just with a newer system, but rather lays a foundation for the future	**B**alancing more urgent day-to-day operational needs with developing the strategic side **T**he firm's capacity to manage large scale change across businesses in all dimensions	**B**enefits realisation for infrastructure **H**ow to improve upon learning from projects
	Managing legacies of function and cost duplication and mismatches between business and systems architecture **R**econciling extreme business views of the role of IT as simultaneously strategic and commodity		
C	**B**eing able to answer the question 'Do we actually need to improve our IT value management?' **T**he firm struggles with mapping out its process model in a way that shows the architecture and provides a foundation for future directions		
D	**B**enefits estimating is the most difficult part of business cases	**B**uilding flexible infrastructure is vital to meet changing business needs	**N**eed for continuous approaches towards value delivery, including innovation
E	**B**usiness cases are a discipline but it is difficult to get people to view them as opportunities rather than a negative impact on them as resources **I**t is complex to assess real value without including input from a strong business group with someone senior.	**I**T-business alignment has not been as good as we'd like **F**inding the balance and remodelling use of IT to exploit its good bits and yet avoid the negative effects of software-driven procedural environment	**N**ew employees have increased internal pressure for the latest software and expect the firm to be a competitive workplace in this regard **A** changing business environment can invalidate a business case, depending upon the horizon and pace of the global economy
	Increasing the whole IT awareness in the firm and bridging that awareness gap between 'older' and 'newer' employees		

5.3.4 Problems in current practice for IT value exploitation management (Table 5.3.4)

All case firms identified important problems confronting their capability for IT value exploitation. Problems raised by the executives at Augmenter include IT governance and decision-making principles and processes at investment and in-use. These are manifested in issues for project prioritisation, unclear ownership and accountability for IT value, and in drawn out disappointments with some initiatives at impact. The firm has an unclear IT governance approach, some decision difficulties with resourcing, and inconsistencies arising out of business unit autonomy. There are strong creative business visions, but a disconnect between some managers regarding the IT management capability and what should be done to tackle perceived new requirements.

Table 5.3.4: Approaches to IT Value Management - *Problems*

Firm Legend: A = AUGMENTER; B = BIGBANK

FIRM	INVEST	IN-USE	IMPACT
A	**L**ack of clarity of management's mutual interest around IT initiatives and decisions **D**ecision-making principles and processes are not tight enough at the IT investment stage. **T**here are flaws in the project prioritisation process. **F**ew activities for active collaboration to ensure economies of scale, realisation of opportunities, architectural compatibilities, or even sharing of resources based on skills to fill gaps	**D**isconnection between the businesses and the IT groups in their processes, philosophies and structures such that fragmentation of decision-making is occurring as committees fail to work **R**evisiting business cases for goal suitability and achievement is not done and projects are simply ticked off and focus moves to the next project **D**ecision-making processes are split so that ownership is not clear and accountability for decisions does not remain with people who can see across the firm	**R**elative urgency of project requests and the reality of the outcome often don't match **P**roduct failures have repeatedly been treated as pilots but then supported over too long a time, finally terminated well down the track
	No apparent single clear IT governance methodology yet complacent about our knowledge of internal IT management approaches **T**he marriage between theory, strategic thinking and pragmatism is poor, with a chasm between great ideas and reality **I**nefficiencies have been created by the business and IT organisational structures and the business unit autonomy – inconsistencies in many areas and duplication of resources and systems **T**here are embedded difficulties in deciding the best use of available resources **A** new efficiency/effectiveness initiative appears narrowly tactically targeted at operational changes to control costs through productivity measures but demonstrates little strategic foundation and is thus reactive rather than proactive or preventative		
B	**P**roject teams need better understanding of business because it is frustrating to repeatedly explain **B**usiness units need better support in getting the right, and timely, resources for IT-enabled business initiatives **T**ransferring ideas about what business wants and what it understands to be the desired outcomes is often difficult	**B**enefits realisation on all projects is not done well because people implement and then shift focus to the next thing, leaving nobody ensuring benefit capture **B**usiness people have not got time to learn a lot about IT; IT is not their business, just a support	**G**ood system support is essential yet so dependent on a good person on the IT team and more so on the desktop SLA, where poor daily response is a serious frustration for business managers
	Business architecture is fundamental to functions but neglect of the end-to-end view of business process, what our business is about, has created fragmented experience **I**t's like engineers talking to doctors; the communication gap between people who can actually talk about financial markets and IT-driven people, with a need for technical explanations both ways **T**hrough neglect, there is now a need for episodic infrastructure replacement, which is a very disruptive requirement		

The emphases for Bigbank are on the need for business support for resources to help them understand and communicate business requirements at the investment phase, and for good IT support response where it impacts business achievement. The executives realise that the firm is not realising IT-enabled benefits very well and that business people are not necessarily accountable for ensuring benefits capture. However they also posit that business people don't understand the IT enough to do that properly because it is viewed as a form of provision, not as their job. Fundamental problems noted include the 'communication gap', past neglect of responding to the end-to-end view of business processes, and the negative influence of its IT spend history.

The next part of Table 5.3.4 shows problems in the current approaches to IT value management reported by Continental, Duet and Edifice.

Continental's invest phase problems are not related to business cases. Some are a function of legacy systems and the integration difficulties associated with them. Value destruction is another issue and is perceived to arise because of difficulties in finding the best approach to development and implementation for the different projects, and for IT service. The sunk cost of emotional and political behaviours also results in value destruction for some initiatives. The firm does no formal reviews of IT impacts and the responsibility for developing these is unclear. There are other problems with establishing and guaranteeing accountability for value attainment. Both Duet and Edifice also have some issues with IT governance. For Duet there is insufficient ongoing financial and benefits review, some lack of business clarity about its needs, and lack of a singular focus on outcomes by both business and IT people. The ability of the firm to ensure future value is impeded by individuals having little accountability to learn and change the way they approach IT value. The firm has many issues activated by the business expectation gap and also those triggered by business emotion that is driven by the need to perform. This then fuels stiff internal competition for IT resources. Edifice's IT governance problems begin in the invest phase with parts of business abdicating duty for IT decisions, perhaps under the assumption that the IT will cope, and also not developing clarity of alternatives and trade-offs in business cases. This can also result in parts of the business doing projects without full cognisance of the strategic impacts and the firm's potential commitment. Unclear business accountability for value in-use means inefficiencies and negative consequences for the ways of doing business seen to be fundamental to Edifice's competitive effectiveness.

Table 5.3.4: Approaches to IT Value Management – *Problems* (CONTINUED)

Firm Legend: C = CONTINENTAL; D = DUET; E = EDIFICE

FIRM	INVEST	IN-USE	IMPACT
C	**T**he issue with in-house delivery is in defining the relative value of different possible approaches to projects and service and the efficiency of implementations **T**raditionally systems were created independently and then attached to existing systems. This has resulted in a myriad of integration problems and overlapping functionality costing time and money to streamline **I**nitiative value that is lost early because of emotional and political sunk cost	**I**nsufficient rigour in setting and following up accountability for value achievement, irrespective of the extraneous factors involved **N**o formal review of IT impacts (some time after implementation) is provided to the local management and this indicates that perhaps these are not ever done	**R**esponsibility for initiative reviews is unclear and particularly over the long term, except that business revenues generation is monitored by business unit heads
	Local developments need global authority but the juxtaposition of local needs with global rules is an issue for the local operations **M**anaging the behaviours and expectations of the key revenue makers is a joint business-IT problem because IT systems are key connectors in exchanges and the traders see themselves as the firm's 'heroes'		
D	**C**onflict between effects of the performance measurement system and budget spread encourages internal competition. **P**roject creep needs clear controls and guidelines for project ends. **T**he IT Steering Committee addresses prioritisation yet tension still exists around actual project delivery, sometimes against agreed priority order. **I**n slow markets, the business spends less on IT but units make their own feral IT developments and purchases	**C**ompetitive tension upholds business expectations for short times to benefits delivery no matter how involved in the decisions. **I**nsufficient ongoing financial and benefits review post-implementation, even for large strategically valuable IT-enabled projects. High and low performance areas within the IT group creates internal conflict, with an aura around exceptional value delivery but otherwise frustrated business demands action against IT	**B**usiness-IT 'go betweens' have no real power with either business or the IT group. **L**ack of business clarity on their systems needs and lack of a singular focus on outcomes by both business and the IT group
	Individuals are not yet accountable to learn and change behaviours for the delivery of future value **I**T people seeing insufficient business buy-in and businesses viewing the IT group as inefficient **B**usiness and the IT group are becoming more interactive but that hasn't closed the expectation gap		
E	Potential trade-offs are not fully included or well articulated in business cases. Some business people abdicate duty of care regarding responsibilities for making thorough business cases, completing projects and realising potential value, because they assume IT people have it in hand	**E**ffective use of systems is somewhat confused in both direction and activity The increased focus on working with IT systems is de-skilling the workforce in a sense and not necessarily making them good engineers and decision-makers, partly because there is less face-to-face discussion and negotiation around an issue	Projects done in isolation of other systems or businesses may generate problems with costs, technology, and affect the firm's real commitment and the strategic impacts; it is like the 'pick-up-sticks' game
	The biggest issue is the possibility of a development in some part of this global firm that negatively impacts the way we sell and how the firm is seen, our reputation, even although controls are in place to prevent this. Companies acquired in different regions and have different platforms which need changing for better fit to the rest of the firm		

5.4 Potential Improvements in Approaches to IT Value Management

Executives provided a list of improvements to advance IT value measurement and, more so, IT value exploitation and which they either suggested or which are already planned. Grouping used for discussion of these improvements reflect the executives' views of firm capabilities and culture, underlying principles requiring attention, and structures and processes.

5.4.1 Improvements to capabilities and culture supporting IT value management (Table 5.4.1)

Bigbank provided the longest wish list. Much of the executives' interests relate to firm foundations, particularly the IT and the competitive environment and their business model. The firm would also like to see valuable improvements in competencies such as discipline around IT support and costs and consistent quality in the IT group performance. Bigbank also looks to improving the business knowledge of the IT group and also develop a culture of engagement between business and IT in which business accepts the consequences of its own IT decisions.

Augmenter is most interested in improving relationships and culture, including better communication of principles and processes. In this case, the firm would like to see knowledge development, of business objectives and drivers by IT people and for business managers to be more IT savvy. Duet is also interested in improving this sharing of knowledge, and in maturity of trust, in order to improve the IT-business relationship. Targeting suggested improvements at managing IT value in the impact phase, Duet wants more learning around the opportunity cost of project commitment and risk mitigation. To develop its IT value management during the in-use phase, Continental is most attracted to competencies and capabilities to develop IT and architecture robustness and flexibility and gives no indication that it wishes to change its culture around IT value management. Edifice also appears comfortable with its culture in this area but does expect some improvements, such as increased rigour in investment business cases.

Table 5.4.1: Future IT Value Management - CAPABILITIES AND CULTURE

Legend: A = AUGMENTER; B = BIGBANK; C = CONTINENTAL; D = DUET; E = EDIFICE

FIRM	*FOCUS OF IMPROVEMENT OR 'WISH'*	*PHASE*
	ABOUT THE COMPETITIVE SPACE AND THE ROLE OF IT IN THE FIRM	
B	Uptake business model opportunity for trading markets and respond to risks in globalisation	ALL
B	Ensure business model is right, or IT architecture will never be right and preclude alignment	ALL
B	Rethink the business model to run IT effectively in the longer term, integral to business	ALL
B	Spend more money on IT to get us back up to scratch against our competitors	ALL
B	The future of IT value should be in the same frame as a revenue generation unit	ALL
B	Competition is also about internal performance and starts with how IT helps fast delivery	IN-USE
	COMPETENCIES and CAPABILITIES	
B	Develop more discipline around IT support and costs	ALL
B	Business clarity about direction as a foundation for building a robust and flexible architecture	ALL
B	Extract value more effectively by reducing unit costs of processing including paper intensity	INVEST
B	Develop capability of IT group to a maturity - defined, repeatable, documented process	IN-USE
B	Develop capability to include significant quality levels so it is not 'normal' for systems to fall over	IN-USE
C	Act upon high IT usage and data storage as a risk driver to improve upon risk mitigation through IT resource management	IN-USE
C	Make core architecture even more robust to allow for flexibility and complete its consolidation over all businesses	IN-USE
C	More attention to improving value of core business management systems by rationalising, simplifying, and improving its IT robustness	IN-USE
C	External benchmarking of IT team would show if services are better than competitors	IMPACT
D	Manage risk at the business back end by implementing and using risk systems properly	IMPACT
D	Developing learning around opportunity cost of remaining committed to some projects	IMPACT
D	Focus on IT costs management impacts on firm performance and identify revenue links	IMPACT
E	Use knowledge management to shift this firm and industry away from reinventing the wheel	ALL
E	Take advantage of scale through group purchasing around the world	ALL
E	Bed down business management techniques for improved rigor around both the initial business case and detailed review of outcomes	INVEST
	RELATIONSHIPS, KNOWLEDGE, and CULTURE	
A	Develop good communication and transparency of principles and processes as part of organisational culture	ALL
A	See building business-IT relationships as an art involving tact	ALL
A	Improve business-IT relationship through a team dynamic to develop a more compelling, robust, and profitable view of the future together rather than separately	ALL
A	IT management becomes sufficiently attuned to business objectives as drivers of the outcomes for IT investments and IT assets	INVEST
A	Key business managers sufficiently IT savvy to think about it in collaboration with IT people	INVEST
B	IT engaged with the business and business accepting of its own decision consequences	ALL
B	IT group savvy about global business and advise business where value can be created or captured and, together, look at the business with more completeness	ALL
B	Understanding business needs at lower cost, using analysis of firm data, and as effective as high-touch relationship managers	INVEST
D	Trust between business and IT group built through mechanisms to ensure common goals and reduce 'wasted time' and frustration	IMPACT

5.4.2 Improvements to underlying principles guiding IT value management (Table 5.4.2)

Findings regarding key aspects of IT value management (5.2) highlighted principles as reference points or guiding behaviour in the firms' approaches. These underlying drivers of IT value management involve a range of principles, strategies and tactics, with the most prominent theme for improvements cited by four of the firms being IT governance. Edifice and Augmenter's governance suggestions are largely of the type to influence all the phases of IT-enabled initiatives. However, Continental wants to follow up capture at the impact phase and Duet looks to executive commitment at investment, criteria and performance links for value in–use and better links between costs and impact. Augmenter would like to reconsider some fundamental principles and develop

its learning focus. The other four firms would also like to improve their inclusion of specific areas of learning in their approach IT value management.

Table 5.4.2: Future IT Value Management - UNDERLYING PRINCIPLES

Legend: A = AUGMENTER; B = BIGBANK; C = CONTINENTAL; D = DUET; E = EDIFICE

FIRM	*FOCUS OF IMPROVEMENT OR 'WISH'*	*PHASE*
	TACTICS, and INTENTIONS	
	General	
A	Shift away from a business focus on short term costs and efficiencies towards 'smartness' in principles ongoing	ALL
A	Leverage scope for value right through IT lifecycle management process, not just costs	ALL
A	The E3 process is looking to improve cross-divisional problem solving	ALL
A	Gut feeling and pragmatism have their place with methodologies in decision-making	INVEST
	Learning Focus	
A	Value experience and avoid having to relearn what others see as old lessons	ALL
A	Use the history of successful experimentation and innovation by pulling those experiences apart to learn from them	INVEST
A	Develop entrepreneurs within IT area who tie IT together without issues of ownership or preconceived ideas about best solutions but match it all with the business direction	INVEST
A	Continuously improve right at the IT investment decision stage by actively noting and applying the learning from all project experiences	INVEST
B	Business executives are now becoming more aware that systems fall over today because of past decisions and now take a better approach to decision-making forward	INVEST
C	Learn about managing IT value from both the intelligence of the people and informal communication lines about how it has been done in the past	IN-USE
D	Take more from hindsight and use it to learn and question why the firm is making certain decisions so that it does not adopt new systems because they look good	INVEST
E	Learned not to automate something that can't be done manually first and not to build systems and hope that they will come	INVEST
	GUIDELINES	
	IT Governance	
A	Make IT-business relationship seamless and trusting before building IT governance	ALL
A	IT governance model can be built from getting the basic questions right rather than designing the model and then expecting to synthesise suitable output	ALL
A	Champion well-tuned IT governance as a business exercise, so it can be achieved	ALL
A	Governance approaches should be thought about prior to the tools which help execute it	ALL
A	Need to decide how to approach IT governance better but the executive need to recognise the problem first, then play a major role	ALL
A	Firm silos created process problems and inefficiencies but now rethinking IT governance and internal processes between the business groups and the IT organisation	ALL
C	Focus on IT value is still outstanding but we would like to know how it is done	IMPACT
C	Understanding our capture of IT value may not be realistic and perhaps we may not be able to follow up whether people are capturing the value they say they are	IMPACT
D	Ensure executives commit more carefully and thoroughly to IT-enabled initiatives via incentives which impact their performance	INVEST
D	Link future value delivery to individual performance metrics and business metrics	IN-USE
D	Ask the right questions all along in a more formal way (questions such as, did we do what we said, and how do we know it is delivering value)	IN-USE
D	Incentives based on overall organisation performance so individuals are disassociated from calculations of IT costs. Incentives for IT value creation now tied closer to peoples' roles	IMPACT
E	Strong business-IT alignment will happen when the business executives, are responsible (and accountable) for both their business strategy and their support strategy, including IT	ALL
E	Realign IT to a more reasonable level which suits an organisation of our size and complexity	ALL
E	Leverage cost management across all internal business groups not at full IT advantage yet	ALL
E	Ensure level of risk impacts the viability of a business case by understanding risk of a particular project compared with the WACC and risk for cash flows further out in time	INVEST

5.4.3 Improvements to structures and processes facilitating IT value management (Table 5.4.3)

Managerial action involves organisational structures and processes, and the definition of roles to be taken by managerial positions. All the case firms found some of these areas to be deficient, particularly processes. Again, IT governance features prominently but with specific processes at specific phases targeted for progress.

Table 5.4.3: Future IT Value Management - STRUCTURES AND PROCESSES

Legend: A = AUGMENTER; B = BIGBANK; C = CONTINENTAL; D = DUET; E = EDIFICE

FIRM	*FOCUS OF IMPROVEMENT OR 'WISH'*	*PHASE*
	STRUCTURES and ROLES	
B	There will always be IT specialists but as IT becomes ubiquitous there may be no CIO and that is a healthy trend	ALL
B	The firm is currently negotiating to disengage parts of an IT outsourcing contract and it is going to cost us a fortune to get out, but with the shift back to in-sourcing there will reduce costs ongoing	IN-USE
D	Fit IT organisation better to business structure/function by sitting IT people in the business	ALL
E	New breed of CIO is business-based and understands how to assess the strategic value of IT on the organisation, not just do the operations	ALL
	PROCESSES	
	General	
A	IT vendors need to develop understanding of firms' business before they can begin to address issues and problems they purport to have solutions for	INVEST
A	The industry tends to focus on complexity and complex solutions yet simpler approaches may be the most effective and would result in more business, and fewer IT, solutions	INVEST
C	The cost of contributions of third party suppliers are now more transparent through our IT billing systems, particularly for infrastructure –we can drill down to specific cost components	IMPACT
E	Use IT to change old decision-making process designs to slick, transparent, and accessible	INVEST
	IT Governance	
A	The more analysis you do for an investment decision, the better the result	INVEST
A	Start investment proposals by really understanding the real business problem, and how this solution will actually enhance the business	INVEST
A	Articulation of the initial business problem should be revisited as you are trying to resolve it	INVEST
A	Improve rigour at investment stage with more focus on identifying its business contribution	INVEST
A	Change request management for IT systems improved through less power in the hands of business analysts and a by introducing a clear, if small, hurdle for rational justification	INVEST
A	New systems and innovations require multiple development paradigms to fit the nature of the business situation, rather than via mission critical needs or sometimes skunk works	INVEST
A	Get the basic questions right and answered at investment stage	INVEST
A	Treat value potential of operational and strategic initiatives differently with analytical effort	INVEST
A	Focus on prevention tactics supported by developing IT governance skills more across the organisation but in a manner which won't interfere with running the business	IN-USE
A	E3 is about Effectiveness, Efficiency and Economy, delivering value to the customer, efficient use of resources, and the economics of delivery and it targets business development and IT spend, particularly whether IT investment value is maximised	IMPACT
B	Focus on better benefits realisation approaches rather than simply move to the next project	IN-USE
B	Benefits realisation approaches to be cemented in plans so that PIRs within 9 months to 12 months after the project is closed focus a heavily on the benefits realisation.	IN-USE
C	Deriving the true problem and targeting solutions creates half the value and then provides the basis for tracking value creation	INVEST
C	Tracking value over time is a challenge because if you don't think about how to do that you never really know what the value is	IN-USE
C	Analysis 1-5 years out would be useful to give insight to the effectiveness of the decisions	IMPACT
D	Consider adopting an options approach to IT decision-making	INVEST
D	Approach IT investment decisions through better business case rigour	INVEST
D	Ensure business-led processes of IT investment and responsibility for IT impact on the P&L.	IMPACT
E	Fully cost new systems to increase transparency and indicate costs providing marginal value	INVEST
E	Value of alternatives to be included explicitly in decision-making criteria of the business case	INVEST

The investment phase is heavily targeted for improvements by Augmenter, particularly in IT governance processes and criteria for investment, and the entire approach to business cases. This firm also challenges the IT industry to improve the way providers approach 'solutions' to organisations' business-IT problems and opportunities. Bigbank's IT governance suggestions centre on fulfilling promised benefits in-use, whilst Continental wants to get to the true problem at investment and develop better ways to track value creation. Duet begins with business case rigour and would like to see the inclusion of 'options' concepts in the approach to position the firm better for future decisions and alternatives. Business case processes are also in Edifice's interests along with better approaches for costs transparency.

5.4.4 A summary of improvement areas by firm

All the firms recognise that their current approach to IT value management is not ideal and they have noted many challenges and problems. Although they clearly would like to solve their problems and meet the challenges, they have other improvements in mind as well. It is interesting to pull these suggested improvements together for the set of firms as it reflects key aspects of their current approaches and their areas of issue. This compilation is shown in Table 5.4.4 where the number of 'X's in each checkbox indicates the number of improvements suggested relating to specific topics (one 'X' for a mention, 'XX' for a few suggestions, and more for many suggestions).

Table 5.4.4: A Summary of Improvement Areas by Firm

IMPROVEMENTS CHECKBOX	**Firm ID - First Letter**				
Focus of Suggested Improvements	**A**	**B**	**C**	**D**	**E**
CAPABILITIES AND CULTURE					
Competitive space and role of IT in the firm	-	XXX	-	-	-
Competencies and capabilities	-	XXX	XX	XX	XX
Relationships, knowledge, and culture	XXX	XXX	-	X	-
UNDERLYING PRINCIPLES					
General	XXX	-	-	-	-
Learning focus	XXX	X	X	X	X
IT governance	XXX	-	X	XXX	XXX
STRUCTURES AND PROCESSES					
Structures and roles	-	X	-	X	X
General processes	X	-	X	-	X
IT governance processes	XXXX	X	XX	XX	X

All firms highlighted some facets for improvement in their governance of IT however Augmenter places greater emphasis on its desire to improve in this particular area, both in principle and process. Another major area for improvement is the competencies and capabilities required to deliver to IT value to the bottom line (although Augmenter believes it has these capabilities, the firm has more difficulty organising its approach to IT to ensure that value delivery), developing better learning for sustained change. Relationships, knowledge and culture around IT value and its

delivery are also very important to develop for Bigbank, Augmenter, and somewhat for Duet. It is clear that Bigbank is seeking a rethink of its competitive space, the role of IT-supported response, and how it can best IT leverage for value in that purpose.

5.5 Further Interpretation of Field Findings

5.5.1 Firm harmony

Firm harmony refers to the strength of agreement between executives of a firm regarding firstly, key aspects of IT value management and, secondly, areas of concern in the issues raised regarding their approach. The harmony between executives appears to be important in managing several aspects of IT value management. This is illustrated in aspects of the firms' approaches such as IT governance, the alignment of firm foundations and its IT value management, and the relationships between the IT group and the business. Convergence in perception and management must be viewed only as an indicator of firm harmony. Interpretations of firm harmony are briefly described for each firm.

Edifice: – Executives illustrate a deep and shared understanding about the role of IT in the firm and other firm foundations. This understanding apparently drives the very harmonious view of IT value management demonstrated by the four executives interviewed.

Duet: – Executives are extremely aware of each other's perspectives and, although they highlight some differences they know exist, the CIO, the COO and the CFO consistently describe the key aspects of this firm's IT value management and the issues they face.

Continental: – Although they are clearly appreciative of the possibility of other perspectives the views of the CFO, the COO and the CIO tend to be more narrowly focussed on their specific needs rather than across the firm. Nevertheless, their ideas about IT value management largely coincide.

Bigbank: – The CIO, CTO and CFO show consistency in their perspectives. The views of a business line manager diverge in some areas but show an acute awareness of other perspectives, particularly that of the CIO with whom he has had more communication.

Augmenter: – Executive perceptions show some inconsistency, particularly about issues. Key aspects are described similarly by two executives however the other two, one in business and the other in IT, give quite different pictures around aspects such as IT governance.

5.5.2 Idiosyncrasies - Notable distinctions across the collection of firms

Exploitation and measurement

This section highlights outstanding differences in the foci of 'concern' and the foci of key activity in the firm's approaches to IT value management. It provides an intense picture of distinctions and illustrates some contextual manifestations of higher order IT value concepts.

Augmenter

- Current developments are driven by a central dogma of convergence of IT organisation and function with the business. The deeply distributed approach to IT is notable.
- IT investment is customer-centric and innovative but IT value management policies are not clearly linked with foundations and are focussed on costs and risk reduction.
- Major issues lie in project management methods and IT governance.

Bigbank

- A strong interest in business-IT alignment is articulated. The other firms indicate little overt focus on this as a discreet point.
- The use of the Balanced Scorecard for monitoring and measuring IT value is also a continuous feedback mechanism. No other firms use this degree of approach.
- Major issues lie in managing large-scale change, business understanding of and reference to its own end-to-end processes.

Continental

- The firm is focussed on detailed cost analysis, cost control, speed, and risk management. IT value is firstly seen as the cost-value to the business.
- The synergy between foundations and IT value management approach is tight for the firm's goals but not fully responsive to client desires for leading-edge technologies.

Duet

- IT value management is centred on principles rather than detailed method and adopted to drive IT value exploitation. These are designed to put managers in a position to leverage business value because it is very much in their control and intrinsic to their P&L.

Edifice

- The firm has made a strategic choice to invest less in IT itself and to direct more investment to training in the blend of systems and work practices.
- A few group executives work across the global firm to support management of IT business value as part of their focus on business synergy.

Accents on IT governance

IT governance is not the specific focus of this dissertation but it clearly contributes to IT value management. At the simplest level, IT governance structures used by these firms are diverse. Augmenter has no CIO as a result of converging IT and business. The silos of business function are reflected in the highly distributed IT organisational structure and also much of the decision-making. Bigbank has a clear hierarchy with a Group CIO then a CIO for each of the three business divisions. These divisional CIOs are relatively autonomous. It runs on a more federal form of governance and relies on developing and maintaining high levels of transparency, accountability, and communication. Continental also uses a hierarchy on business lines but their autonomy is restricted and the business line CIOs defer to the global heads of business and operations. Duet's position allows the CIO in Australia to be independent of the USA firm. The CIO acts as an advisor on most IT but, except for IT infrastructure, the investment and other decisions are made by business. Edifice's regional CIOs cover all the business lines in their region but also report locally and globally and work closely with group executives who manage across the firm.

IT governance structures are important in the way a firm's governance affects IT value management but the principles, process and 'interactions' described by executives more strongly shape the outcomes. These clearly differ across the case firms, as illustrated by the key aspects of IT value management (section 5.2.1) and in the issues they face (section 5.3). The specific variance is not always easy to identify, particularly what firms expect to achieve from IT governance (that is, what outcomes do they want) and whether these are explicit or tacit within the firm. All the firms described IT governance in more detail at the investment phase, citing business cases and decision-making processes and committees. Most firms admitted to insufficient follow-up of initiatives and unclear accountability for value in the in-use and impact phases except for measurements of costs and of some outputs. The IT governance issues raised in the study and the desire for improvements to IT governance principles, structures and processes (summarised in section 5.4.4) indicate the relative importance assigned to IT governance by the case firms.

The keystone effect of relationships

Across the case firms, we see differing approaches to decision-making, principles and processes, and differing structural arrangements for the IT and business organisations which affect all the three phases of the business life of an IT-enabled initiative. However, no matter how the IT value management is organised, the relative ability to exploit IT value over all these phases (and particularly the impact phase) is shaped by relationships between business and IT people and within these groups. The case firms show notable differences in these relationships. For example, Duet actively engineers the IT-business relationship and the business-business relationships in the context of IT prioritisation and other IT governance. This creates more contentment, evident in the convergence in the executives' views of expected outcomes. Duet's relationships are nurtured

through strong guiding principles for IT governance, including a 'no surprises' approach of transparency and immediacy, and close communication between the CIO and business heads. On the other hand, for Augmenter the relationship between business and IT is less harmonious and harbours differing perceptions about what needs to be done for IT management capability. This firm recognises it has many issues with IT governance and lack of clarity in common goals for all groups. Continental's internal relationships largely verge on collegiality and Edifice's IT-business relationships show a high level of responsiveness and communication. Bigbank recognises it still has a large communication and expectation gap between some groups of IT and business people. Its developing new culture is designed to improve relationships in IT-business decision-making processes by involving increased collaboration and communication. The firms with clearer IT governance principles and processes for accountability and transparency also appear to have better relationships. The keystone effect of relationships arises because the congeniality and understanding needed for effective agreement and problem solving can determine how well IT value is created and captured and may also mitigate value destruction at the impact phase.

The genre of IT value management at this time

When taken together, a particular firm's key aspects of its approach to IT value management, its issues, and its suggestions for improvements all indicate an overall status or 'genre' of IT value management. What these findings point to is that the individuality of firms is confirmed. This means that a detailed generic framework is evidently not applicable across all the firms.

A notable inference is that features key to IT value management (that is, things that drive, define, or are attributes of the complete approach) can be described using a high level concept and then applied to the context and detail of any organisation. But, it is also notable that key 'higher order' facets of IT value management are independent of the current status and genre of IT value management for these firms. Table 5.5 (on the next page) provides a précis of each firm's current genre of IT value management as evident from the field findings.

These distinctive and distilled descriptions of IT value management approaches are pertinent to the case particular firms but, of course, may not be applicable to other firms outside this study. This is not the point. The approaches indicate that these case firms are undergoing quite distinct periods of reassessment, reinvention, consolidation, comprehensiveness or cohesiveness. Yet, even with such diversity amongst these case firms, the genres help stress an important finding from the field research; that there are higher order IT value management concepts common to them all, albeit demonstrated differently.

Table 5.5: A Précis of the Current Genre of IT Value Management by Firm

FIRM	NATURE OF ACTIONS TARGETED TO IT VALUE MANAGEMENT	GENRE OF IT VALUE MANAGEMENT
Augmenter	Evaluation of approach; rethinking fit with business foundations; changing placement of IT goalposts	REASSESSMENT
Bigbank	Rethinking competitive approach and need for strategic changes within the firm to refresh, restore, and transform it	REINVENTION
Continental	Focus on strengthening current approach and particularly further development of cost management	CONSOLIDATION
Duet	Continue approach that is thorough, meticulous and across the board. Revenues creation is the prime target	COMPREHENSIVENESS
Edifice	Maintenance and further development of consistency and reliability in IT function and delivery. Better leverage of existing IT for value whilst maintaining firm philosophies	COHESIVENESS

5.5.3 Models and frameworks used for IT value management

What models, frameworks or tools are used for IT value management in the case firms? The answer is 'very few' and it varies significantly across the case firms. Whilst all firms list a few measurement tools, they allude to others not clearly defined by a published method, such as their own project prioritisation framework. The identifiable tools are primarily financially driven and include cost analysis/management models. Investment measures are mostly financial but some firms endeavour to include more recognition of traditionally 'soft' measures for benefits and also opportunity cost and options analysis for investment decisions. They also use these in decision-making and project prioritisation after the investment is formally accepted to go forward. Value creation in-use is poorly measured. The Balanced Scorecard is the only defined monitoring and feedback mechanism being used for value creation in-use and also for evaluation and measurement reporting of captured value from IT. Impact management is often focussed singly on IT costs and there is often difficulty in tying IT value to the bottom line. The firms have no tools to specifically manage or measure the process of IT value impact management. All firms are primarily interested in indicators of value capture rather than absolute measurement. Other than modifications of strategic alignment models and the Balanced Scorecard (both used by Bigbank), no other identifiable models are being used for exploitation of IT value. Finally, choice and use of models, tools or frameworks for IT value management in practice is an aspect of IT governance but this is not acknowledged as such except by Duet and Bigbank.

5.5.4 Gaps in practice

Apparent or acknowledged gaps in IT value management practice include:

- Lack of explicit recognition of how firm foundations (role of IT in the firm, firm philosophies and the competitive environment and IT's role in that) shape IT value management.
- Lack of explicit identification of, and agreement for, expected outcomes from the current approach to management of IT or IT governance, that is, its *raison d'être*.
- For some firms, there is also some lack of explicit recognition of, or decision-making about, IT governance style, including structure and processes and, importantly, guiding and driving principles. Some firms do recognise that they are not tying IT governance to business strategy and tactics in a clear and sustainable manner.
- Lack of useful tools (models or frameworks) for IT value management, particularly for measurement in the in-use and impact phases and for underlying principles and processes across all phases and which target IT value creation and capture. There are many tools available for the invest phase but very few are actually employed.
- All the firms noted insufficient or total lack of revisiting strategic and other IT-enabled initiatives well after they have been implemented. They observe significant room for IT value management during in-use and impact phases in order to ensure value exploitation and also to reassess, and perhaps alter course, in the light of the original business cases.
- The 'communication gap' and some 'disconnection' between IT and business understanding and goals both affect the relationship between IT and business people and therefore impede full IT value realisation from current IT value management practices.

5.5.5 Is there an industry benchmark for IT value management – What might be learned?

At the outset of this research, one of the background queries was whether this set of cases might show up an industry benchmark for IT value management. The methodology included the requirement that one case site provide a comparative base between industries. This field research shows that there are significant differences amongst firms even in the same industry sector of wholesale financial services – equities. However the fifth case, Edifice, is a firm involved in developing, trading and managing property and shows key aspects of their IT value management similar to the financial services firms, but also as much distinctiveness! The only outstanding aspect of real difference is in project management. This is very likely influenced by the engineering backgrounds of many senior management and also by the firm's business requirement for reliable and well planned project management in nearly everything they do due to the cost or impossibility of re-work for many business projects. Edifice has developed IT project management

practices based on 'engineering' project management, not on long-held IT industry project management practices. There are no other outstanding differences in concept or detail feasibly attributable to industry as opposed to firm.

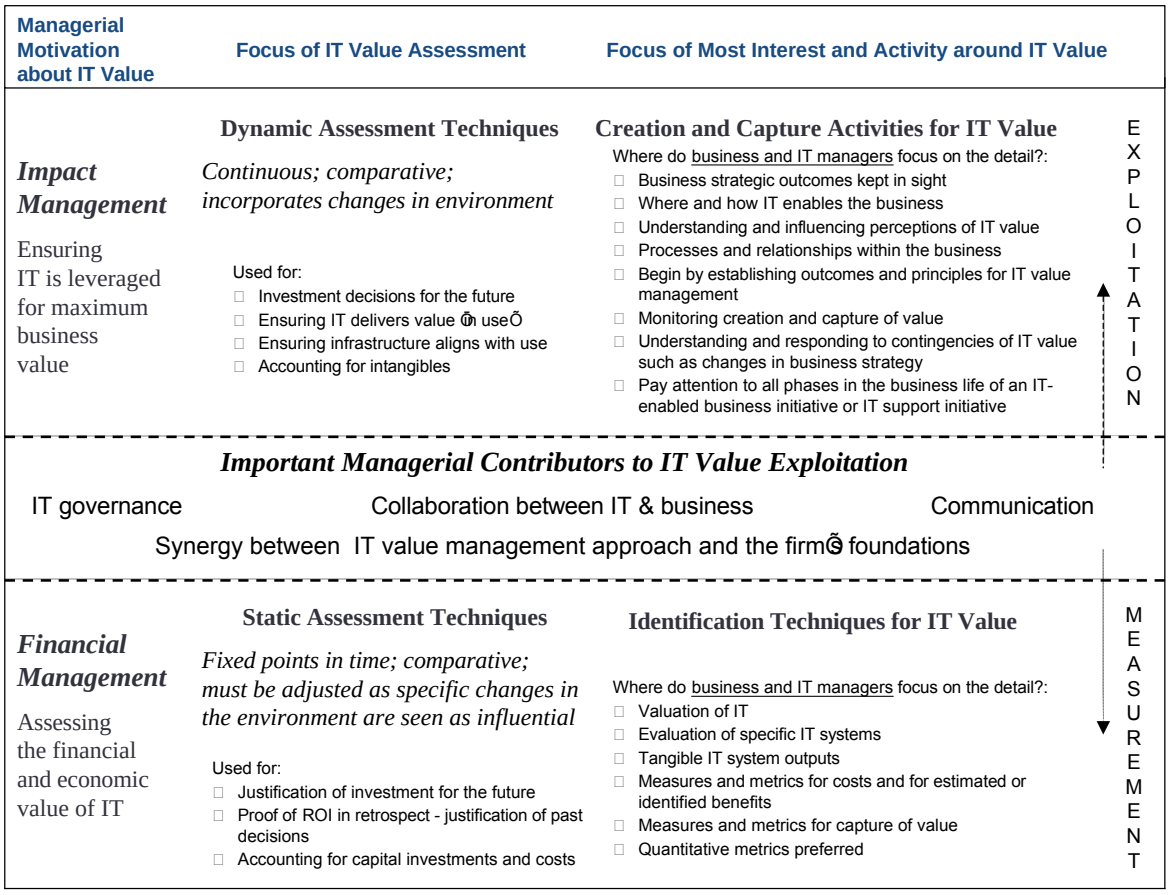
One can surmise that comparison of four Australian and global wholesale financial services against a global leader in the construction industry indicates no cause to suppose that wholesale financial services - equities, provides any industry benchmark for IT value management. However the original intent of the empirical research is upheld. In part, that intent is to look at IT value management practice in firms which conduct inter-organisational electronically mediated business transactions and which are among the leaders in implementation of B2B e-business within their industry or that are players in a leading industry.

5.5.6 Managerial motivation, IT value focus, and management action: A synopsis

The professional literature indicates key points of interest regarding IT value. The points associated with 'Financial Management', shown in Figure 5.1, are developed from a broad analysis of these articles. Financial management of IT and the assessment of IT value in financial terms are obviously important and there is always pressure to focus this. For some organisations described in the professional literature, financial management is almost the singular focus. This is in contrast to the interest and activity around IT value and its management exemplified by the case firms in this research.

Case firm executives certainly maintain financial management of IT as a basic necessity, with Augmenter and Continental both strongly emphasising costs. All the firms do some form of static measurement of IT value, but some also use more dynamic forms of IT value assessment to monitor created value and use this as a feedback mechanism to learn and create more value (for example, the Balance Scorecard approach taken by Bigbank). It is also clear that these firms are interested in impact management, although to differing degrees. Bigbank, Duet, and Edifice put considerably more emphasis on the full range of activities for IT impact management than the other two firms. In addition, the firms' representations highlight four further managerial contributors to measurement and exploitation of IT value: IT governance; collaboration between IT and business groups; communication; and, synergy between the approach to IT value management and the firm's foundations. One of the less surprising outcomes is that the full business lives of IT investments are not commonly taken into account. However, the findings also indicate that firms are moving to IT value management across all the three phases (invest, in-use, impact) and place importance on approaches specifically designed to facilitate value exploitation. These field research discoveries complement and extend the descriptions of practice indicated by professional literature and are represented in Figure 5.1.

Figure 5.1: Managerial Motivation, IT Value Focus, and Management Action - A Synopsis



5.6 Salient Conclusions from the Field Findings

The experiences of these five leading firms inform what we already know about IT value management practice. Through descriptions of practice, the executives reveal principles guiding their firms in IT value management, processes that reflect how they actually 'do' it, frameworks or models they use to facilitate the processes, and the firm foundations which serve as contextual drivers for their specific approach. In addition, the field research has uncovered issues faced by these firms as they look to become even better at managing value from IT, and particularly from strategic IT spend.

The Key Aspects of IT value management highlighted in section 5.2.2 are established as relevant and important through the issues raised (challenges and problems) and the improvements suggested by the executives of the case firms. Further analysis also revealed several other key findings. Together, conclusions from the field findings form a set of concepts which reflect not only the overall approach to IT value management by leading firms, but show where the approaches have insufficiencies.

A. ***Understanding and leveraging firm foundations underpins IT value management***. The foundations cover competitive environment and IT (the external environment and the state of business IT relative to competitors), the firm's philosophies (pervasive and underlying attitudes which shape the thinking about IT in the business), and the role of IT in the organisation (i.e. how significant is IT in strategic and operational positioning and performance). The extent to which these are common understanding within the firm's management and the level of synergy between the firm's approach to IT value management and its foundations will shape the value outcomes.

B. ***Measurement and exploitation of IT value ideally target all phases of the life of an IT-enabled initiative, with the emphasis on strategies and tactics for IT value exploitation.*** In addition, cohesive principles for exploitation apply across the firm and guiding principles are clearly articulated and communicated. Monitoring and feedback mechanisms are used for continuous effect, targeting in-use and impact phases for IT value creation and capture.

C. ***Very few models, frameworks, or tools for IT value management are evident in practice. This is seen as a limitation for practice outcomes because firms would like to know how to do it better.***

D. ***Firm harmony is an indicator of relationships and the extent of collaboration and communication.*** Harmony is at its most comfortable when there is a deep and shared understanding of the role of IT in the firm and firm foundations and where views coincide and show awareness of other executives' perspectives.

E. ***Relationships between business and IT people are keystones of IT value management and shape the genre of a firm's approach.*** Communication and collaboration are highly regarded and rest on common goals for both business and IT people. The influence of the IT-business relationship on IT value in-use and at the impact phase is recognised and managed and results in fewer issues if IT governance is well-defined for the firm.

F. ***IT governance is a key influence on IT value management but depends more on principles and processes tailored to the firm's foundations rather than on any particular method.*** In addition, IT governance can put the business in a position to leverage IT for value through managements' knowledge of business processes and rules across the firm, its strategic intent, and how IT might enable relevant operations and strategic initiatives, through inseparable IT and business strategies and plans and through responsibility and accountability for non-technical value aspects of IT-enabled initiatives being with the business managers.

G. ***IT value management relies upon some fundamental IT governance attributes***. These include executive accord on outcomes they expect from their chosen approach, that decision-making principles and processes are delineated, that the way accountability and responsibility for IT is managed is clearly determined and implemented, and that overall control of IT lies with the business at the executive level.

H. ***Gaps in IT value management practice, whilst recognised, need to be acted on***. These gaps are found in the fit of current practice with the firm's foundations and changing business goals, a lack of useful tools (models or frameworks) for the purposes of IT value creation and capture, the level of maturity of IT governance, and difficulties with communication, collaboration and IT-business relationships. Firms raise these as issues or as desired improvements but are not necessarily acting upon them.

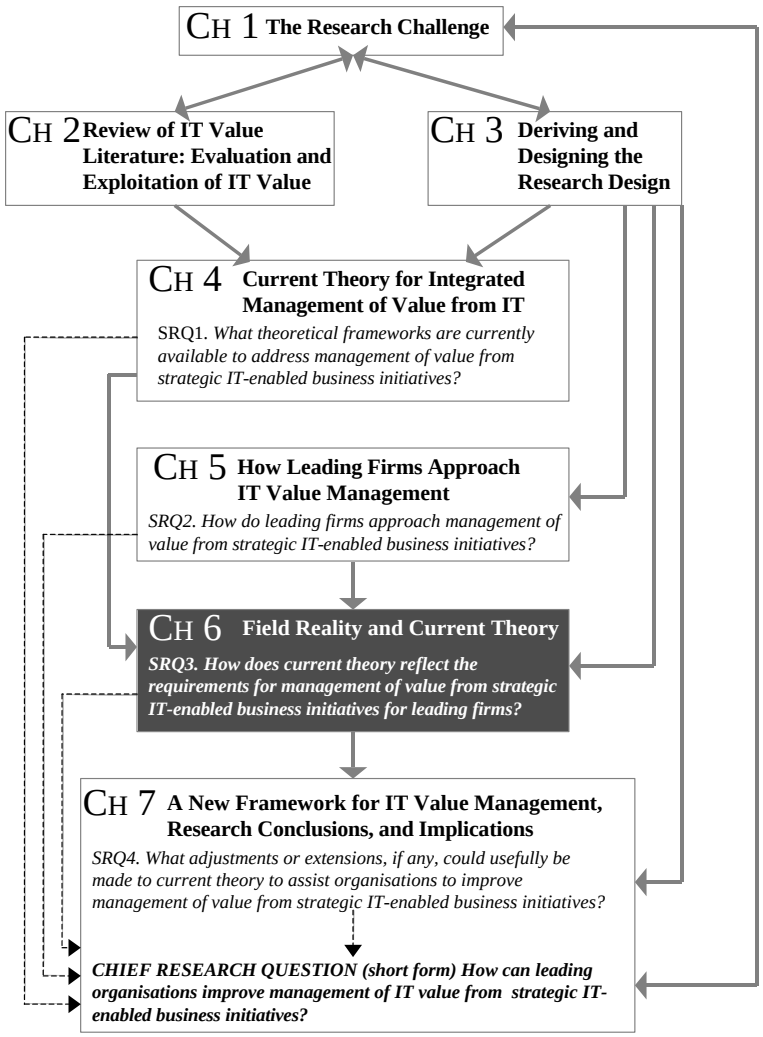
I. ***IT value management involves application of a set of higher-order concepts in a manner reflecting the individuality of the firm.*** These include all the above-mentioned points A-H.

A rich representation of leading firms' approaches to IT value management has resulted from these findings. The complex raw data have been synthesised through careful coding and reduction to discern the key elements of IT value management. Linked together, these elements form a useful and communicable response to the key Supporting Research Question #2: *How do firms leading in the business-to-business context approach management of value from strategic IT-enabled business initiatives?* What we find is that the detail in all the five firms is different, yet significant common concepts can be identified. It follows that the answer is comprised of a set of very clear high-level concepts for approaching IT value management and that these concepts can be acted upon in a manner which fits an organisation's foundations, whether for value from support IT or from strategic IT-enabled initiatives.

These insights to how leading firms conduct their IT value management form a challenge for academics. The theoretical contribution from the academic world was identified in models for management of value described in Chapter Two through an extensive literature review and, more specifically, through identification and critique of theoretical frameworks for *inclusive* management of value from IT in Chapter Four. Now that an investigation of field practice has been fully analysed, interpreted, and described, it is time to ask the question, 'Does theory reflect reality?' This question is addressed as part of the overall research design, which also provides for the possibility that theory is not fully reflected in practice. It is presented more formally in the next chapter.

CHAPTER SIX

FIELD REALITY AND CURRENT THEORY



6.1 Expressions of Theory and Field Reality

6.1.1 Purpose and chapter structure

The chapter deals with how the current theories are reflected in practice (sections 6.2 and 6.3) and addresses the third supporting research question.

Key Supporting Research Question #3:
How does current theory reflect the requirements for management of value from strategic IT-enabled business initiatives for firms leading in the business-to-business context?

The chapter begins with a clarification of the perspectives of the practice investigation undertaken as part of this dissertation and the perspectives taken by the theorists in their models. The two theoretical models are analysed in the light of practice. A précis of findings shows how theory reflects field reality and the gaps in the theory, where there is little or no reflection of practice.

6.1.2 Approach

The field investigation into how firms approach IT value management resulted in findings centred on how firms perceive IT value, how they make decisions, and the various processes and principles they use to help them exploit value from IT. Findings highlight key aspects in each firm's approach and the foundations driving the approach. Issues and targets for improvement uncover and confirm key high-level facets of IT value management that appear to be independent of a firm's individuality. Further analysis shows how a joint perspective on goals and approaches, and collaboration and communication form a key-stone of IT-business relationships, and also how IT governance emerges as a major consideration requiring firms' attention, particularly the fundamentals of its objectives for the individual firm. This field research has established current leading practice and its substantive components. Two theoretical models for integrated IT value management have also been identified through a literature analysis (Soh and Markus 1995 Model; Peppard and Ward 2004 Model). Now it is appropriate to look at how field reality is reflected in current theory.

The two theoretical models are examined to see whether their components have any association with the major facets of practice identified previously. Evidence for association begins with the major facets of practice in IT value management and is further analysed through reference to the case study data in Chapter Five. Four levels of association are considered: Distinct Association, where the connection is clear and obvious in concept and description; Discernable Association, where the connection is less clear and there are some elements, but not all, of the facet of practice that can be identified in the theoretical component; Distant Association, where there is merely a hint or trace of identified practice in the theoretical component; and, None, where there is no

association identifiable. This process also serves to highlight gaps where practice is not reflected in current theory.

6.2 How Current Theories for Integrated IT Value Management Reflect Practice

6.2.1 Perspectives of practice

The perspective in practice takes a different view of IT value management compared with the two theoretical models. It is concentrated on *how the firms actually approach IT value management*, the associated aspects within the firm and the aspects of its environment being used to inform the approach. There is little emphasis on inputs or outputs for IT value management rather, each firm concentrates on principles and processes. In contrast, the theoretical models largely utilise concepts and principles involving specified outcomes being generated from defined input components (refer to Table 4.4, Chapter Four). Some parts of the models also show actions leading to the desired outcomes.

This study was not designed to test current theoretical models but to look at practice without pre-definition of how practice should be. Accordingly, the data collection focussed on firms' descriptions of how they approach IT value management rather than seeking confirmation of specific components of existing theoretical models. As a consequence of these differences in perspective, the basis for looking at how the practice is reflected in current theory rests on the main components of the respective theories relative to the main 'components' or facets of the approaches taken in the field. Business value of IT is a common interim outcome or goal, however the theories assign an ultimate outcome of organisational performance and the practice investigation does not. Determination of how the business value of IT directly affects organisational performance lies outside the scope of this study which focuses on the *management* of value from IT and how it might be improved. The following sections summarise the major facets of IT value management highlighted through the study of practice and use this to analyse how each of the two theoretical models reflect practice.

6.2.2 A synthesis of practice in IT value management

The higher level concepts identified in the firms constitute key facets of IT value management in practice. In order to consider how practice is reflected in theory, the 'essence' of these key facets is summarised in Figure 6.1. As these key facets emerged through analysis, the findings also indicated whether each facet requires recognition and to be taken into account for decision-making about IT or whether the facet requires management. Key facets are the basis for analysis of how practice is reflected in each of the two models (Soh and Markus, 1995; Peppard and Ward 2004).

Figure 6.1: A Summary of Key Facets Forming Approaches to IT Value Management in Practice

High-level Facets of IT Value Management in Firms	Action in the Firms' Approaches	Description
FIRM FOUNDATIONS	Recognise and respond	Competitive Environment and IT - the external environment and the state of business IT relative to competitors; Firm Philosophies – pervasive and underlying attitudes which shape the thinking about IT in the business; the Role of IT - how significant is IT in strategic and operational positioning and performance.
SYNERGY	Recognise and respond	Alignment between a firm's foundations and its principles and processes for IT value management
IT-BUSINESS RELATIONSHIP	Shape through management of other facets	How IT and business people view each others' performance and also perceptions of trust and collegiality
COLLABORATION AND COMMUNICATION	Manage	Preparedness to work together and whether there are common goals regarding IT. Sharing of information and transparency of decision-making and its outcomes.
PROCESSES: IT VALUE EXPLOITATION AND MEASUREMENT	Manage	Processes supporting the exploitation of value from IT and the value measurement across the full business-life of an IT-enabled initiative.
PRINCIPLES: IT VALUE EXPLOITATION AND MEASUREMENT	Manage	Principles guiding or controlling the processes for exploitation of value from IT and its measurement, including decision-making processes. These apply to one or more of the phases of the full business-life of an IT-enabled initiative.
IT GOVERNANCE	Establish and manage	Decision-making principles and processes are delineated; the way accountability and responsibility for IT is managed is determined and implemented; expected outcomes from IT governance should be clear. IT governance is different across firms, in facilitating structures, in philosophy and in principle. A key influence on IT value management, it depends more on principles and processes tailored to a firm's foundations rather than on any particular method.
IT VALUE PERCEPTIONS	Recognise and shape	IT Value Perceptions are implied in measurement approaches and rules. Perceptions of IT value are derived from what executives perceive as the meaning of 'IT value' (or 'the value of IT') in the context of the firm.

Practice examples indicate where practice is reflected in the models and whether it is a distinct, discernable, or a distant association. The illustrations are taken from the tables showing firm's foundations and key aspects of IT value management in Chapter Five. For ease of reading only the table reference is used (i.e. Table 5.1A is Augmenter's Firm Foundations but simply '5.1A' will be noted). Practice that shows no reflection in the components is also noted for each model. These non-reflective facets of practice, and also where theoretical reflection is distant, represent the gaps in theoretical support for requirements in the field. A diagrammatic summary of how each of the models reflects and supports practice is given after analysis of the individual models and the combined gaps from the two sets of reflections are highlighted.

6.2.3 Reflections of the Soh and Markus (1995) Model in practice

Figure 6.2 summarises the main components of the Soh and Markus model with expansion or explanation as described by the authors. These descriptions help in identifying how it supports

practice. Explanatory details to help compare the model with practice are drawn from the paper itself.

Figure 6.2: Soh and Markus (1995) Model – Expansion and Explanation of Components (as described by Soh and Markus)

Soh & Markus Model Component	**Expansion / Explanation**
Improved Organisational Performance	*Ultimate outcome (taken as the goal-focussed perspective which subsumes 'systems resource' and 'strategic constituencies' perspectives of organisational performance)* Performance is a multi-dimensional construct with the major perspectives 'simultaneously valid in most organisations'. 'A process theory for this set of outcomes must explicitly acknowledge that favourable outcomes do not always occur' (p36). This outcome requires more refinement
The Competitive Process	*The First Process Model* Relies on an achieved state of one or more IT impacts. Involves competitive processes to influence improved organisational performance
Competitive Dynamics and Position	*Probabilistic Processes* External forces influence these processes. '…the recipe that connects the necessary ingredient of IT impacts with the uncertain outcome of enhanced organisational effectiveness includes' competition (p38).
IT Impacts	*Necessary but not sufficient condition for competitive 'tournament' & intermediate outcome of IT Use* Four types of IT Impacts possible - after Sambamurthy and Zmud). New products / services; redesigned business processes; better decision-making; improved coordination flexibility (also see second column Figure 4.2).
The IT Use Process	*The Second Process Model* Involves IT use processes to achieve IT Impacts from IT Assets
Appropriate / Inappropriate Use	*Probabilistic Processes - the nature depends upon the type of IT impact* Requires a threshold level of use; some use may have negative impacts. IT use and its contribution to IT Impacts needs attention.
IT Assets	*Necessary but not sufficient condition for IT Use & the intermediate outcome of IT Conversion* Comprise the applications portfolio, IT infrastructure and user skill and vary in quality.
The IT Conversion Process	*The Third Process Model* IT Expenditure is subject to the effectiveness of IT management processes to create IT Assets
IT Management / Conversion Activities	*Probabilistic Processes (four areas implicated in conversion effectiveness)* IT management in the conversion process includes: formulating IT strategy; selecting appropriate structures to execute; selecting the right IT projects; effective project management. It is 'a complex reaction to the 'special circumstances facing' the organisation and involves stakeholder politics.
IT Expenditure	*Necessary but not sufficient condition for IT Conversion* IT Expenditure is necessary but insufficient alone in producing IT Assets

Distinct associations between practice and Soh and Markus' Model

There are no areas of distinct association however some areas of the model do show lesser association with practice findings.

Discernable associations between practice and Soh and Markus' Model

Soh and Markus' *Competitive Process, competitive dynamics and position*, has some discernable association with Firm Foundations, particularly the competitive environment and IT. Illustrative examples of this include Augmenter as a responsive business where the brand's reputation is synonymous with 'always up' (5.1A) and Bigbank's realisation that the past spend of competitors positioned them better for the downturn and for future capability (5.1B). Continental (5.1C) has a

high capability to meet the market in performing better than competitors by producing quality and efficiency of data at the impact phase. Duet notes the high client power where they expect the best systems and the firm responds in its consideration of IT investments (5.1D). Edifice has also developed IT supported market capability through its proprietary systems for project management with clients (5.1E).

Processes for IT Value Exploitation are reflected in the model's *IT Impacts* and *appropriate use* in its In-use Process. There is also some discernable association of these value exploitation processes with Soh and Markus' *IT management and conversion activities*. The model's *IT Impacts* are associated with processes such as how Bigbank's does its reviews of IT-enabled initiatives in terms of business product and embedded into P&L performance (5.2B). Other reflections of *IT Impacts* are Continental's cost analysis approach 'demystifies the IT maze' in the impact phase (5.2C) and Duet's chargeback mechanisms which allow visibility of IT 'consumption' by the business (5.2D). Processes for exploitation and measurement which reflect *appropriate use* include the way Bigbank has driven the Balanced Scorecard across operations and IT and approached it top down (5.2B), the incentives for business accountability for ROI-IT used by Continental and which involve rewards on revenue increases and profitability (5.2C), Duet's IT chargeback with granular billing detail (5.2D), and the way Edifice invests in IT support by up-skilling people in IT use as well as using several feedback mechanisms to gauge value in-use(5.2E). Processes for Exploitation and Measurement reflected by *IT management/ conversion activities* include Continental's project reporting accounting for the impact of current business environments (5.2C), that Duet's business managers discuss the nature and delivery of the IT value proposition (5.2D), and the process where the CIO of Edifice meets with the CEOs and CFOs of each business at least monthly for progress overviews (5.2E).

Distant associations between practice and Soh and Markus' Model

A small and unclear reflection of practice appears in several components of the model. These distant associations are hinted at in the theoretical model description and apply to the practice facets of IT Governance, Principles for Exploitation and Measurement, Collaboration and Communication and IT-Business Relationships. There are more of these loose associations between the model and practice than there are tighter associations.

The association between IT Governance and *IT Expenditure* is hinted at in the following examples: Augmenter's approval by line executive manager or council for a standard business case for investment (5.2A); Bigbank's method of comparing its IT investment portfolio against existing industry and deciding what needs to be done differently (5.2B); and, Edifice's use of projections on changes in full operating costs, looking at alternatives on an opportunity cost concept to help make its IT investment decisions (5.2E). Soh and Markus' only hint at IT Governance is in information politics and policies as an influence on the outcomes of the *IT Conversion Process*. The field

findings regarding IT governance are somewhat associated with the model's *IT management/ conversion activities* which describe investment phase activities only. This is exemplified in the following practice: Augmenter's business unit managers control their IT spend (5.2A); Bigbank asserts that project management is very strong in the bank and cannot simply be given lip service (5.2B); Continental ensures business is reminded of their requests for IT by evidence in the better documentation of IT decisions (5.2C); and, Duet's decision-making responsibility and business case development is now shifted to the business managers (5.2D).

Principles for Exploitation and Measurement are also hinted at in *IT management/ conversion activities* such as approaching technological change by making gradual but continuous improvements, thus avoiding a need for large change and IT education of the CEO and all senior executives in order to aid understanding of the real issues (Augmenter - 5.2A). Other examples include taking a more systematic approach benefits identification and realisation developed through plans to also assign greater ownership and accountability (Bigbank - 5.2B), and developing principles around strategies for speed and risk management by reducing human involvement and to ensure problems are highlighted as soon as possible (Continental - 5.2C).

Collaboration and Communication are reflected by *appropriate use* in the model's *IT Use Process*. *Appropriate use* is indicated in the value proposition of the IT groups in Augmenter that includes their knowledge of the business and how to serve it (5.2A). Communication is key in Bigbank, whether a formal committee or one on one between various IT and business heads. Collaboration is also viewed as important in seeing the IT group not only as a service group but focussed on improving operational approaches and leveraging business opportunities (5.2B). Continental finds that business and IT work together and usually show considerable collegiality (5.2C), but Duet stresses that the quality of communication is important in maintaining a no-surprises approach (5.2D). A distant association with IT-Business Relationships could be through *IT Impacts* as outcomes of the ways in which the relationship might influence processes and principles. Continental's relationships depend heavily on the business group with most being collegial but some very tense. In Edifice, business executive accountability for IT plans, within their business plans, helps close the IT-business gap (5.2E).

Finally, the Synergy between the firm's foundations and its approach to IT value management has a distant association with Soh and Markus' *competitive dynamics and position*. Bigbank's approaches to IT value exploitation are designed to effect short and long term. Continental's approach of tight control, stability and efficiency is seen in its approach to markets as well as to IT value. Duet's synergy is partially demonstrated by principles guiding both IT value measurement and exploitation supporting clients who expect sophisticated, reliable enablement in a globally competitive market.

No association between practice and Soh and Markus' Model

The most outstanding point is that there is no reflection of Soh and Markus' model component *IT Assets* in practice. *IT Assets* are an intermediate outcome generated through the *IT Conversion Process* and then become an input for the *IT Use Process*. This is not at all explicit in the practice descriptions. In addition, the 'ultimate outcome of improved organisational performance' is only obliquely reflected through the perspectives expressed in the firms' IT Value Perceptions.

Summary of association between practice and Soh and Markus' Model

The Soh and Markus Model does not visibly reflect practice described in this dissertation. There are discernable connections to practice Processes for IT Value Exploitation and Measurement, through the *IT management/ conversion process, appropriate use/ inappropriate use* and *IT Impacts*. There is also a connection between Soh and Markus' *competitive dynamics and position* and the Firm Foundations of practice. Soh and Markus place a heavy emphasis on components of input, processing and outputs, but inputs and outputs are not directly reflected in the approaches to IT value management evident in practice. Overall, the model reflects the process nature of much of practice but the input-output components are not very well associated.

6.2.4 Reflections of the Peppard and Ward (2004) Model in practice

Figure 6.3 provides a summary of the components of Peppard and Ward's Model with some expansion or explanation as a reference for analysis of how the model reflects practice.

Distinct associations between practice and Peppard and Ward's Model

Principles and Processes for IT Value Exploitation and Measurement are distinctly associated with the set of *IS competencies* outlined by Peppard and Ward although these competencies refer to 'abilities' rather than driving principles and supporting processes. Many of the twenty-six *IS competences* listed in Peppard and Ward's paper are reflected throughout the firms' key aspects of IT value management (see Figure 4.3 for a summary list), however IT governance is less distinct and others of the high-level facets of IT value management found in the firms do not appear to be reflected in the *IS competencies* at all. The more prescriptive *IS competencies* describing IT function management in the complete list reflect some detail of the firms' descriptions.

Discernable associations between practice and Peppard and Ward's Model

Firm Foundations are noticeably reflected in Peppard and Ward's brief mention of *Strategy* at the *Enterprise Level* of their model where the authors refer to it, along with investment decisions, as determining "whether the IS Capability is a source of competitive advantage or merely a necessity for competitive parity, or is causing the organisation to be at a competitive disadvantage" (p182, Peppard and Ward 2004). The authors link these two components to IT targeted in innovation and other strategies. This implies the role of IT has been accounted for. Examples of this are

Augmenter's view of the role of IT as 'seriously strategic' IT-enabled business initiatives or products (5.1A) and Bigbank's view of IT's role being 'more than a set of tools because it is actually what the business is' (5.1B). The strategic role of IT is emphasised by Continental for winning new opportunities or getting into new markets quickly (5.1C), by Duet as absolutely necessary for revenue generating deals (5.1D), and by Edifice in how the firm's project systems facilitate business collaboration and efficient interactions (5.1E) which they see also gives them some competitive advantage.

Figure 6.3: Peppard and Ward (2004) Model – Expansion and Explanation of Components (as described by Peppard and Ward)

Peppard & Ward Model Component	**Expansion / Explanation**
Resources	Taken in the context of IS management: Skills and Knowledge (critical resources) residing in the employees or those of a third party
Resource Level: Roles	Resource level "denotes the resource components that are key ingredients of the IS competencies" (p179). Roles are made up of skills, knowledge, and behaviours and attitudes.
Organising Level: Processes	Organising level is about how these resources are 'mobilised and marshalled' to create IS Competencies. Processes to derive value from IT investments and applications and which involve collective knowledge and synchronised interdependent behaviours. Include: strategy formulation, decision-making, managing business change, accountabilities for realising benefits.
Organising Level: Structure	Structure of organisation – not expanded further
IS Competencies	Do not exist in one functional area. 26 defined by the authors (p178/9) Can be used in "an assessment of an organisation's abilities to deploy IS/IT successfully" (p177).
Strategy	Affected by underlying philosophy of strategic decision-making.
Investment Allocation	Affected by underlying philosophy of strategic decision-making.
Enterprise Level: IS Capability	Enterprise level: where the 'capability 'manifests itself'. Has three inter-related attributes: fusion of business knowledge with IS knowledge; flexible and reusable IT platform; effective use process. IS capability is the manifestation of the 26 IS Competencies influenced by Strategy and Investment Decisions. IS Capability is underpinned by the IS Competencies.
The New IS/IT Alignment	Shows that IS capability affects four major organisational areas influencing organisational performance: IS/IT Strategy; Business Strategy; Business Operations; IT Operations/Services
Organisational Performance	A reflection of IS Capability. Sustainable and attainment of continuous value through IT. A weakness in any IS competence directly impacts business operation and ultimately affects business performance.

Principles for Exploitation and Measurement are reflected to some extent in the model's *Investment Allocation* at the *Enterprise Level*. Evidence of this in practice is shown by Bigbank's objective to reduce run-the-bank costs to increase available discretionary spend and use that as an IT refresh capability (5.2B) and how Edifice queries the IT systems portfolio to consolidate value and reduce costs as a measurement principle and also consciously drives investment decisions back to the business as an IT value exploitation principle (5.2E). Further examples include Continental's principle that business defines direction and focus, but global heads of operations and financial control drive IT decisions (5.2C) and Duet's fundament exploitation principle that the steering

committee has a strategic role as a business forum with the CFO as chair and the CIO as an advisor (5.2D).

IT Governance has a discernable association with one of the theoretical model's *IS Competencies*. *IS Competence 1.4 Information Governance* is described under the macro competence of *Formulate Strategy* as "the ability to define information management policies for the organization and the roles and responsibilities of general management and the IS/IT function" (p178 Table 1, Peppard and Ward 2004). This is a generalised description of information governance and implies some similarity with the IT governance concept but is obviously limited compared with current IT governance frameworks such as those described by Peterson (2004) and Weill (2004).

Distant associations between practice and Peppard and Ward's Model

Elements of Peppard and Ward's Model also hint at a distant association with IT Governance as well as with IT Value Perceptions and Synergy.

By inference, IT Governance can be loosely associated with the *Organising Level* of the theoretical model through *Structure, Processes and Roles*. The loose link of *Structure* with IT Governance in practice is illustrated by Augmenters' structure where IT governance is a deeply distributed model with no CIO role (5.2A), Continental's structure where technological and investment decisions are made at the global level and the vertical business groups have intimate local IT support (5.2C), Duet's structure where IT savvy development managers sit within the business units to liaise and work on understanding the business and its needs (5.2D), and the structure used by Edifice where the regional CIOs cover several operational groups (5.2E). Practice links with Peppard and Ward's *Processes* at the *Organising Level* are suggested by Augmenter's investment phase steering committee for progress, business, legal and IT issues (5.2A) and the use of chargeback for IT spend by Edifice (5.2E). The *Roles* component in the theoretical model is somewhat reflected in practice where CIOs are responsible for delivery of the IT component of initiatives and for IT infrastructure (Bigbank 5.2B), where accountability for IT decisions during implementation lies with business project managers but delivery lies with IT (Continental, 5.2C), and where the IT team organisation includes a business layer of value extractors as an interface (Edifice, 5.2E).

A distant association between the theoretical model's component *Behaviour and Attitude* at the *Resource Level* and IT Value Perceptions can be garnered through all the following examples. For instance, one of Augmenter's IT Value Perceptions is that effective operation is critical to enable added value to other parts of the firm (5.2A) but Bigbank's perception of IT value is the business willingness-to-pay, yet they see that how to attain the value is difficult (5.2B). The other three firms offer even more variety on value perceptions which could possibly be linked with Peppard and Ward's *Behaviour and Attitude*. These perceptions of IT value include the case where the finance group sees value as low costs (Continental, 5.2C), that it is 'fatal to look at IT in isolation

of the business' (Duet, 5.2D), or that IT value perception depends upon who is generating or receiving the value and in what form (Edifice, 5.2E).

Synergy can possibly be associated *The New IS/IT Alignment*. This component of Peppard and Ward's model suggests complex interaction with several other established components of operation and strategy for the business and IT. A tenuous link can be made with Bigbank's resonance between foundation's strategic role of IT and their approach to IT value management. Another possible link is demonstrated by Duet's exploitation principles, particularly that the steering committee must be a business forum, and also how the firm supports establishment of greater flexibility in order to meet future requirements. The association is also partially reflected in Edifice's Synergy, where the firm has a few key strategic IT initiatives but sticks to a low cost and simple approach to IT which fits its foundations.

No association between practice and Peppard and Ward's Model

Similarly, as noted in the Soh and Markus Model, the Peppard and Ward Model component of *organisational performance* is only obliquely reflected through the perspectives expressed in the firms' IT Value Perceptions. Also, since the *IS Capability* is built by having all the *IS competencies* described by Peppard and Ward, there is no direct association of *IS Capability* with the firms' practice. *Business and Technical skills, knowledge and experience*, described as resources, are not at all associated with practice derived from the field findings. Although these 'resources' may have some influence upon IT-Business Relationships, they are not specifically identified in the practice findings.

Summary of association between practice and Peppard and Ward's Model

Peppard and Ward's Model shows some instances of distinct and discernable association, and several distant associations, between its components and the practice findings. The most associated component is *IS Competencies*, which is comprised of many subsets of competencies and described in relative detail. There is no evidence that certain parts of the model reflect practice, certainly not in terms of the resourced-based view of the firm and competitive advantage, which underpins the model, and not any clear association with the three levels of the *IS Capability* part of the model, *Resource Level, Organising Level*, and *Enterprise Level*. Overall, the facets of practice from the field findings are not very well reflected by the components of the theoretical model.

6.3 The Extent to which Current Theory Reflects the Requirements of Field Reality

6.3.1 A summary of reflections between current theory and practice

Certain associations have emerged from the analysis of the way practice is reflected in current theory. Although there are few distinct associations notable between the components of the models and the elements of practice, there are several discernable associations. Most of these more clear

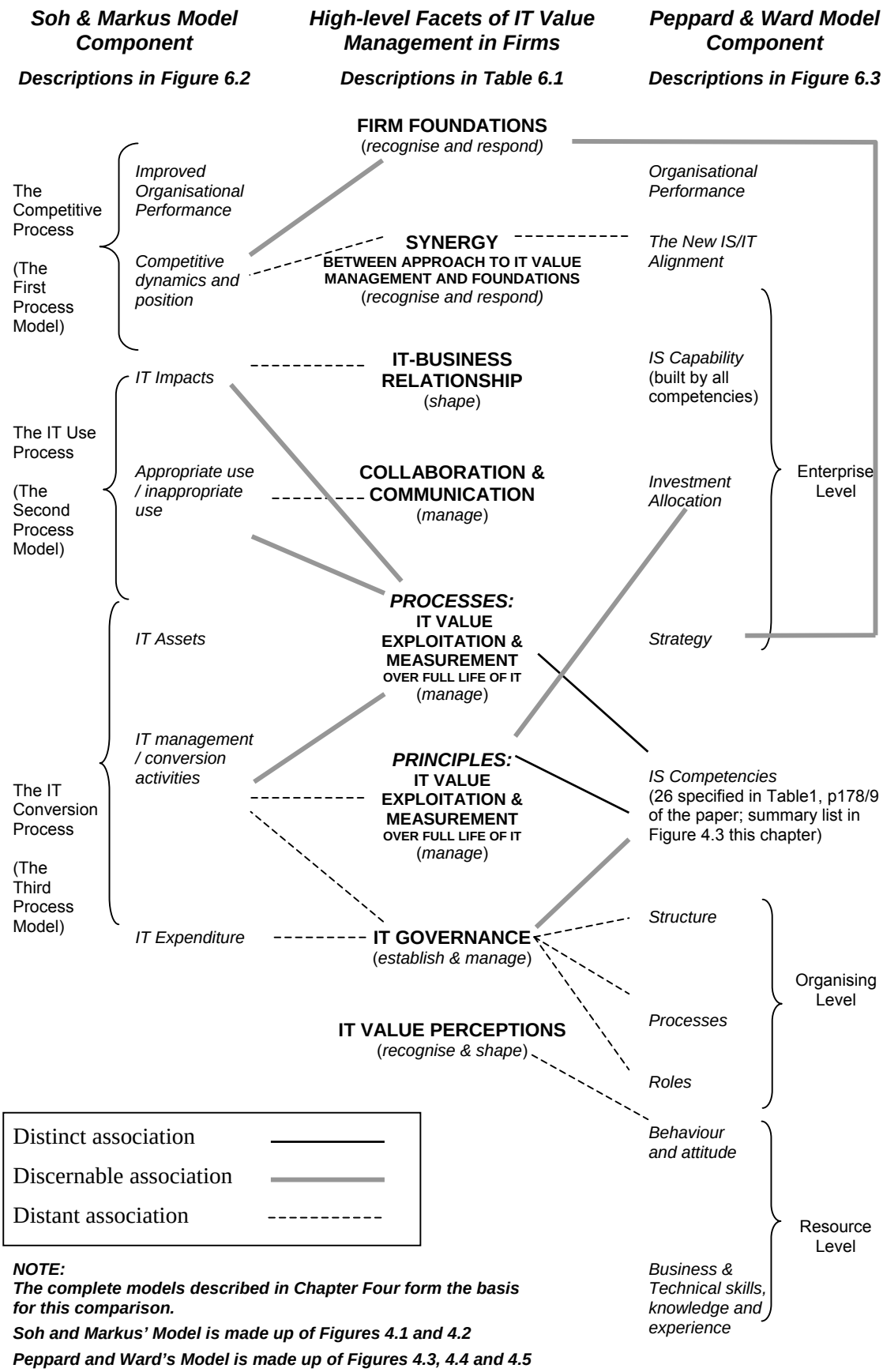
associations are stemming from the Principles and Processes for IT value exploitations and measurement. The competitive environment, and the firm's position within it, is supported by business *Strategy* consideration (Peppard and Ward) and *Competitive Dynamics and Position* (Soh and Markus). These are the discernable reflections of some of the elements of firm foundations highlighted in practice. All of the distant associations of current theory are with the novel facets of IT value management emerging from the practice investigation: IT Value Perceptions, IT Governance, Collaboration and Communication, IT-Business Relationship, and the Synergy between the approach to IT value management and the Firm's Foundations.

Figure 6.4 shows a summary of how these current theories for extensive IT value management reflect practice. Both the Soh and Markus Model and the Peppard and Ward Model are simultaneously presented with the key facets of practice.

The high-level facets of IT value management in the firms' practice is listed in an order to manage the states of reflection for the diagrammatic representation, but these are not intended as an order of application. However, the components of each of the models are listed in the order defined by the authors. In the Soh and Markus Model, although this order does suggest application from the bottom up, the authors suggest thinking about the competitive process as the beginning of tackling IT value management. The order of components in the Peppard and Ward Model is also defined from the bottom up in this diagram but the components of the model described by the authors are essentially an order of operations.

By association, the theory can provide some support practice in the practice areas of Firm Foundations, Processes and Principles for IT Value Exploitation and Measurement, and marginally for IT Governance (both models). Consideration of Firm Foundations is supported through understanding the firm's *Competitive Position* and the business environment's *Competitive Dynamics* (Soh and Markus Model) and the firm's business *Strategy* (Peppard and Ward Model). Processes and Principles for IT Value Exploitation and Measurement are supported through the *IT Conversion Process* and the *IT Use Process* (Soh and Markus Model) as well as through many of the *IS Competencies* and the firm's *Investment Allocation* approach found in the Peppard and Ward Model. The level of association observed between these theoretical models and practice indicates that neither model alone can completely assist practice.

Figure 6.4: A Summary of Practice 'Reflected' in the Models



NOTE:
The complete models described in Chapter Four form the basis for this comparison.
Soh and Markus' Model is made up of Figures 4.1 and 4.2
Peppard and Ward's Model is made up of Figures 4.3, 4.4 and 4.5

6.3.2 Gaps between current theory and practice

The degree of reflection has highlighted many associated areas but most of these are distant associations. There are many facets of practice not distinctly associated. The other major observation is that even if there is association, it is not applicable across all phases of the business life of an IT investment, according to the theoretical models. There is incomplete association between the theory and Principles for IT Value Exploitation and Measurement. Theory shows the most association with Processes for IT Value Exploitation and Measurement, and with Firm Foundations, however this latter facet is incomplete compared with practice. These findings indicate the gaps in current theory for integrated IT value management with respect to this practice.

The gaps between theory and practice, that is, they are seen in practice but not fully included in theory, are:

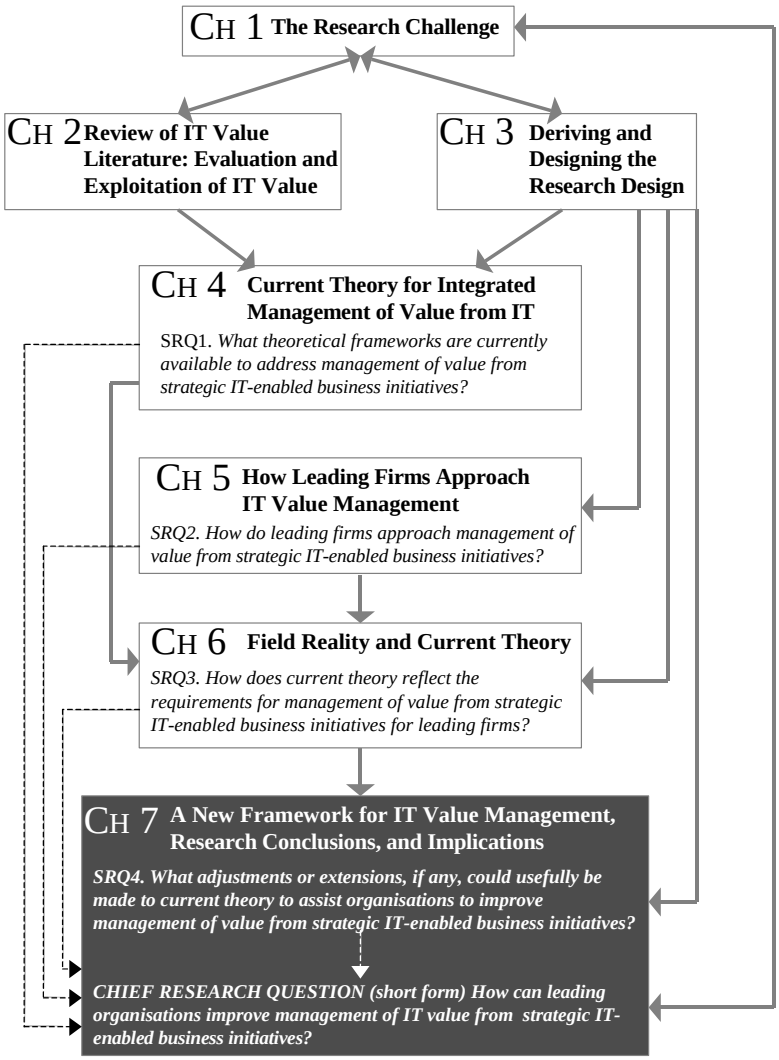
- IT Value Perceptions
- IT Governance
- Collaboration and Communication
- IT-Business Relationships
- Synergy between the approach to IT value management and the Firm Foundations

6.3.3 Conclusions

This section of the research has shown that current theoretical models for integrated IT value management do not fully reflect the requirements of practice. Although there are some obvious areas of association, the components of the models and their particular perspectives on IT in organisations are not clearly evident in the practice of firms leading in business-to-business e-business, either in a strategic or an operational sense. The IT value management approaches put forward by the models are not emulated in the field and also reveal several significant gaps between the theory and practice. These gaps would necessarily need addressing within a framework or model of IT value management to assist organisations in improving their approaches to IT value management.

CHAPTER SEVEN

A NEW FRAMEWORK FOR IT VALUE MANAGEMENT, RESEARCH CONCLUSIONS, AND IMPLICATIONS



7.1 Purpose and Chapter Structure

This final chapter concludes the research activities outlined in the research design of Chapter Three. It also proposes a new framework for IT value management. Conclusions are drawn initially on the research plan and process and then regarding the research questions. It considers the limitations and implications of this work. Implications relate to business practice as well as research in IT value management. The first part of the chapter identifies the requirements for a model or framework to address the gaps noted between the theories and practice in Chapter Six (section 7.2.2). A practice framework is proposed to assist firms in improving IT value management (section 7.2.3). Section 7.3 presents the key conclusions about the research design and about theory or models to assist firms in improving IT value management practice. Section 7.4 addresses limitations of the research and implications of the dissertation for practice with suggestions for a future research agenda. The chapter closes with concluding statements reconnecting the research outcomes and the initial problem statements.

7.2 Concluding Research Activities

7.2.1 Extension of current theory in support of practice

The analysis and conclusions of Chapter Six established a) that current theory does not reflect the requirements of field reality, and b) the need to develop and extend current theory to incorporate the requirements identified in the field research and which can be applied in practice. These requirements form the foundation for addressing the last of the four supporting research questions,

Key Supporting Research Question #4:

What adjustments or extensions, if any, could usefully be made to current theory to assist organisations to improve management of value from strategic IT-enabled business initiatives?

The extension to be made to current theory is the proposal of a new ***Integrated Framework for Improved IT Value Management***. This specific output is a significant contribution to addressing the chief research question.

7.2.2 Requirements for a framework to support practice improvement

Criteria for useful theory or framework to assist firms in improving IT value management are derived from both the analysis of practice and analysis of reflection of that practice in current theory. The source of these requirements are the outcomes from addressing research question #2, regarding how leading firms approach IT value management, and research question #3 regarding how current theory reflects the requirements for management of value from IT in leading firms.

The outcomes suggest that useful criteria to be fulfilled by a model for IT value management practice would incorporate the attributes in Table 7.1.

Table 7.1: Characteristics of a Practice Framework for Integrated IT Value Management

Characteristics of a Practice Framework for Integrated IT Value Management	Substantiation Reference in this Thesis
I. The framework addresses the gaps highlighted in the reflections and the facets of practice for which there are distinct or discernable associations in current theory.	6.3 – reflections and gaps between theory and practice
II. The full life of an IT or IT-enabled business initiative is addressed.	2.10 – literature review conclusions 5.2; 5.3; 5.4 practice cases – key aspects; issues; improvements
III. Strategic IT-enabled business initiatives are clearly supported.	2.10 – conclusions – literature review 4.4 – conclusions: theoretical frameworks for integrated IT value management 5.2.1 – firm case practice descriptions
IV. The approach to IT value management is integrated with business requirements and opportunities.	2.7.1; 2.7.2; 2.7.3 – role of IT in the firm; competencies in planning and decision-making; and, IT-business alignment - investment phase 5.2.2 – firm idiosyncrasies
V. It is adaptable to the firm's specific business attributes and competitive circumstances.	5.2.1 - firm case practice descriptions 5.2.2 – firm idiosyncrasies
VI. It is easily translatable to practice so is neither too narrowly prescriptive (to accommodate the individuality of the firms) nor too abstract in concept (so that it can be logically connected to practice through principles and processes).	5.5.3 – models and frameworks firms use for IT value management 5.5.4 – gaps in practice
VII. Practice requires guidance on how to improve IT value management suggesting that guiding or controlling concepts and principles are necessary	5.3 – firms' acknowledged issues for IT value management
VIII. Application of principles through high-level processes directs their translation to management actions.	5.2.1 – firm case practice descriptions
IX. The exploitation of IT for value and the measurement of IT value are explicitly incorporated through guiding principles and through processes	5.2.1 – firm case practice descriptions
X. The firm's foundations provide an 'anchor point', to begin, and to determine whether the approach to IT value management is improving.	5.2.1 - firm case practice descriptions; Synergy 5.2.2 - summary of key aspects of approaches to IT value management in practice 5.3 - firms' acknowledged issues for IT value management

7.2.3 A proposed framework for Integrated IT Value Management

The proposed framework is theoretically informed, substantiated by evidence from practice, and intended to guide practice. The framework is heavily based upon the practice observed in this research and so is empirically supported to the extent that it is a representation of the key facets of IT value management in practice. It also reflects both operational and strategic IT-enabled business initiatives or pure IT support initiatives as evident in the field findings in Chapter Five. Significant components of the framework are drawn from Figure 6.4, which shows the associations and gaps between current theory and practice. The proposed framework also reflects some of the major theoretical areas arising from the literature review and particularly reflects the relatively new

theory and frameworks for IT governance. The purpose of this practice framework is to assist firms to improve their IT value management so it is important that it also conforms to all the criteria for a useful framework to guide practice as set out in section 7.2.2.

The framework is presented here in three stages:

1. Delineation of the framework's components.
2. Presentation of a conceptual diagram.
3. Outline of the approach to implementation and use of the framework.

1. Integrated IT Value Management Framework: Components

The design components of the practice framework are a reflection of the way leading firms describe their approaches to IT value management and are informed by the outcomes of the literature review. The field findings highlighted the importance of the business-life of an IT-enabled initiative in consideration of IT value management.

The components of the Integrated IT Value Management Framework are described in Figure 7.1, showing how they fit with the criteria for the framework outlined in Table 7.1. Figure 7.1 is an expansion of Figure 6.1, which summarised key facets of the firms' approaches to IT value management.

2. The Conceptual Framework

Incorporation of the key components of the Integrated IT Value Management Framework is shown in Figure 7.2. This figure is highlights the components of IT value management that are key to its improvement and that these should be given attention against critical consideration of the Firm's Foundations. The words in brackets indicate that some of the components can be managed, but others cannot be directly managed and either must be recognised and acted upon or can be shaped by other management actions. Rather than components being considered in isolation, the figure emphasises that the *interrelationships between the components* are absolutely essential to this approach to IT value management.

Firm Foundations need to be recognised and connected to every IT initiative. For example, the strategic nature of some IT-enabled business initiatives and IT infrastructure initiatives would influence the way their value is harnessed so that the Competitive Environment and IT, and the Role of IT in the firm, should influence the decision-making and actions for these types of initiative.

Figure 7.1: Components of the Integrated IT Value Management Framework *

Component of the Framework and Action Required	Description	Fit to Characteristics Required for the Practice Framework (Table 7.1)
IT-BUSINESS RELATIONSHIP (Shape through management of other components)	How IT and business executives view each others' performance and also perceptions of trust and collegiality	This is a gap between current theory and practice (Table 7.1, I)
COLLABORATION AND COMMUNICATION (Manage)	Preparedness to work together and whether there are common goals regarding IT. Sharing of information and transparency of decision-making and its outcomes.	This is a gap between current theory and practice (Table 7.1, I)
INVEST, IN-USE, & IMPACT PHASES	Phases in the business-life of an IT initiative where value from IT can be created and captured. Some of this IT value may also be identified and measured	This addresses the full business-life of an IT enabled initiative (Table 7.1, II)
PROCESSES: IT VALUE EXPLOITATION AND MEASUREMENT (Manage)	Processes supporting the exploitation of value from IT and the value measurement across the full business-life of an IT-enabled initiative.	This addresses both measurement and exploitation of IT for value (Table 7.1, VIII and IX) and ensures the integration of business requirements and opportunities with IT value management (Table 7.1, IV).
PRINCIPLES: IT VALUE EXPLOITATION AND MEASUREMENT (Manage)	Principles guiding or controlling the processes for exploitation of value from IT and its measurement, including decision-making processes. These apply to one or more of the phases of the full business-life of an IT-enabled initiative.	
IT GOVERNANCE (Establish and manage)	Decision-making principles and processes are delineated; the way accountability and responsibility for IT is managed is determined and implemented; expected outcomes from IT governance should be clear. IT governance is different across firms, in facilitating structures, in philosophy and in principle. A key influence on IT value management, it depends more on principles and processes tailored to a firm's foundations rather than on any particular method.	This is a gap between current theory and practice. IT Governance includes guiding or controlling principles for IT value (Table 7.1, VII)
IT VALUE PERCEPTIONS (Recognise and shape)	IT Value Perceptions are implied in measurement approaches and rules. Perceptions of IT value are derived from what executives perceive as the meaning of 'IT value' (or 'the value of IT') in the context of the firm.	This is a gap between current theory and practice (Table 7.1, I)
SYNERGY (Recognise and respond)	Alignment between a firm's foundations and its principles and processes for IT value management	A gap between current theory and practice (Table 7.1, I). It should indicate whether some areas are failing to support its strategic and operational directions as a business and whether or not the desired outcomes from IT value management are likely to be achieved through the firm's current approach (Table 7.1, X).
FIRM FOUNDATIONS (Recognise and respond)	Competitive Environment and IT - the external environment and the state of business IT relative to competitors; Firm Philosophies – pervasive and underlying attitudes which shape the thinking about IT in the business; the Role of IT - how significant is IT in strategic and operational positioning and performance.	Supports strategic IT-enabled business initiatives and guides the integration of business requirements and opportunities with IT value management (Table 7.1, III, IV, and X)

* *NOTE:* **To avoid repetition, characteristics V and VI of Table 7.1 are not addressed in the table but dealt with in the third stage, implementation**.

Figure 7.2: An Integrated IT Value Management Framework

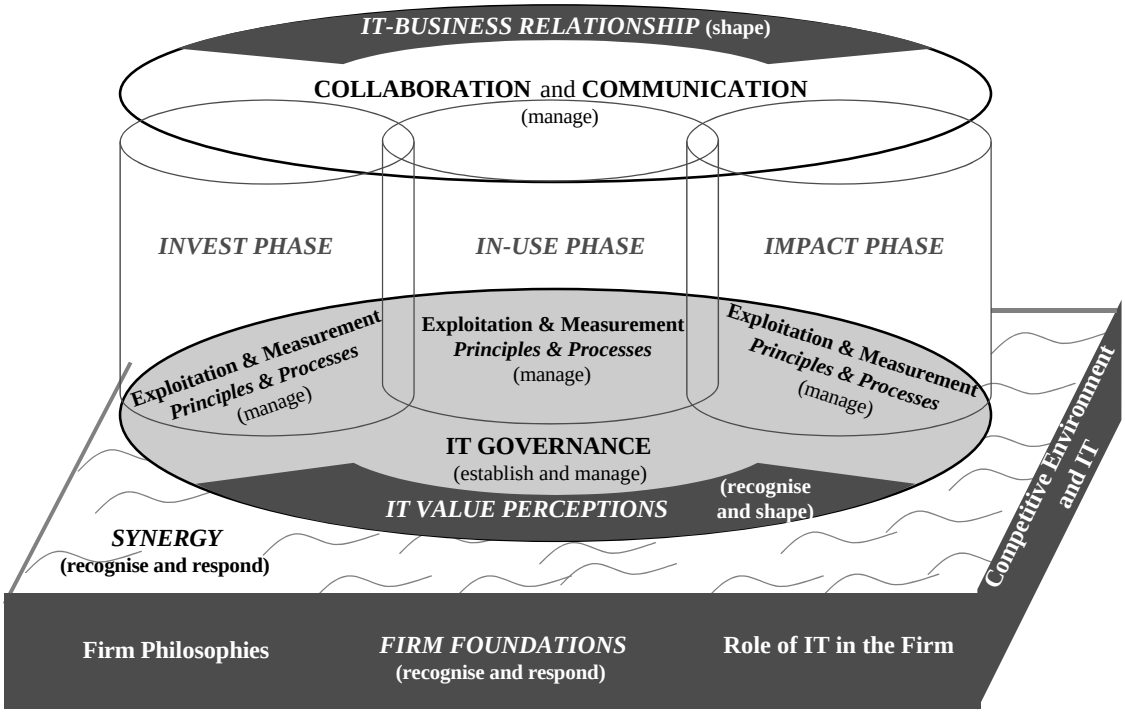


Figure 7.2 also shows how recognising IT Value Perceptions of both business and IT people is part of the IT Governance approach. IT Governance then determines the guiding principles, the tactical processes, and the organisational structures. These principles, processes, and structures help create and identify value from an IT initiative during the Invest Phase and the In-use Phase, and also affect how that value is captured at the Impact Phase. IT Governance is significant because it is a complex and important driver of IT value principles and actions in the framework. The practice findings indicate some fundamental considerations for individual firms wishing to establish and/or improve IT Governance. These considerations are necessary to avoid problems associated with reliance on IT Governance models that simply rest on existing organisational structures, decision-making approaches, and IT-business relationships. Aspects of existing organisational approaches and culture may need to change in order to achieve the IT Governance goals and the desired IT value outcomes. Given that IT investment, use and impact is guided by principles and processes for IT value exploitation and measurement, these must be driven fundamentally by that firm's approach to IT Governance.

As shown in the diagram, not only does IT Governance underpin all phases of the business-life of an IT initiative, Collaboration and Communication overlays all the phases. Collaboration and Communication influence the implementation, and the effects, of principles and processes for IT value Exploitation and Measurement across the three phases. Both the extent of Collaboration and

Communication and the organisation's approach to IT Governance both have some effect in shaping the IT-Business Relationship.

This visual and verbal description of the connections between the framework components gives further clarity to understanding the key components of Integrated IT Value Management. These components, and the relationships between them, can be addressed by organisations in order to improve upon their current approach to IT value management. Current difficulties experienced by firms in realising IT value may be more readily understood and specifically addressed with the incorporation of the components IT-Business Relationships, Collaboration and Communication, IT Value Perceptions, and Synergy. The complex relationships required to derive value from IT investments mean that particular attention to these components is vital, because they are the interfaces between the firm and its IT operations.

3. Implementing the Framework as Practice

Importantly, the framework's components require business-side decisions for all non-technical aspects of IT value management. This is because all components affect the business in some way. The natural assumption is that the CIO should be the initiator and driver of this framework however the field research findings and the academic literature (sections 2.7.4, 2.8.3) indicate that this is not sufficient and that business executives need to be equally involved in driving business-side involvement. A new CIO would therefore rely upon business colleagues to actively and assertively engage in developing each component. The issues and improvements suggested by the case firm interviewees provide evidence that the COO or an equivalent executive is a more logical choice as the main driver of this framework implementation. Another requirement is that this executive works collaboratively with the CIO, the CFO, and business unit heads in order to fully address the business imperatives.

The field findings indicate a logical order to implementing the conceptual framework in practice. It is imperative that each element of implementation is addressed in the order listed. It is important to note that all the framework components necessarily become tailored to the particular organisation when addressed and implemented. There are no specific beginning or end-points in the Figure 7.2, however, the Firm Foundations form its base and thereby indicate a reasonable starting place.

In order to facilitate further understanding of how the framework could be implemented, the approach is described here along with Figure 7.3, which illustrates how each component logically connects.

i. **Firm Foundations** – *identify and prepare to respond* as the key components of the organisation's approach to IT value management are built (or re-built). These may change, not only due to the firm's response to its competitive environment, but the Role of IT in the organisation and the Firm Philosophies regarding IT in its context may be influenced over

time by evolution of the approach to IT value management. IT-Business Relationships and IT Value Perceptions have particular bearing upon these facets of Firm Foundations because they influence how IT is used and expectations regarding IT performance and the impact of IT on firm culture and organisational outcomes.

ii. **IT Value Perceptions** and **IT-Business Relationship** – *recognise* and note what 'shaping' may be required to improve IT value management and outcomes.

iii. **IT value management outcomes** (not represented in the framework diagram) – *Identify, clearly articulate, and agree upon* the expected outcomes that will form the organisation's overall approach to IT value management.

iv. **IT Governance** - *establish or modify, and manage.* Identify the outcomes the organisation wants from its IT Governance and articulate the major driving principles. Articulate: how these principles will be reflected in processes; how accountability for, and transparency in, decision making will be created and managed; and, how the firm will know that its IT Governance is achieving its goals, including improvements in IT value management. Establish and manage governance processes particularly designed to manage IT investment, IT use, and IT impact on the organisation, including the IT operation (i.e. address all phases of the business-life of an IT initiative).

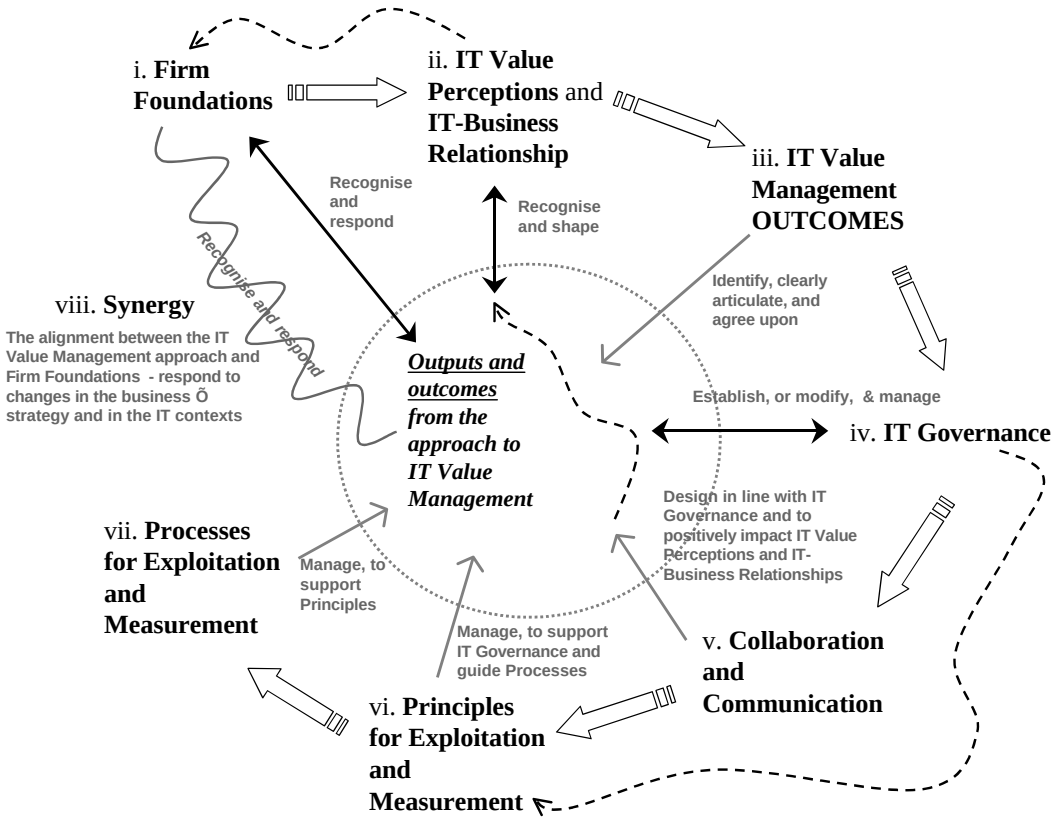
v. **Collaboration and Communication** - *manage* in line with IT Governance. Design these to positively impact IT Value Perceptions and IT-Business Relationships.

vi. **Principles for Exploitation and Measurement** - *manage* these by designing them to guide and control processes and behaviours affecting IT value management. Many of these principles would be part of the IT Governance approach. Some are directly associated with integrating the business and IT across all phases of the business-life of an IT-enabled initiative.

vii. **Processes for Exploitation and Measurement** - *manage* these by designing them to ensure the principles are supported and also to actively promote IT value management to its desired outcomes. Establish feedback mechanisms to monitor, improve and manage IT value management.

viii. **Synergy** – *recognise and respond*. Monitor the alignment between the organisation's approach to IT value management and its Foundations, and ensure that those Foundations are still valid and understood appropriately. Modify the approach to IT value management to respond to changes in the business' strategy and its IT contexts.

Figure 7.3: Implementation of the Integrated IT Value Management Framework



Together, the visual framework and the implementation guide provide an approach that is neither complex nor abstract, is not too prescriptive, and is logically connected to practice through principles and processes (Table 7.1, VI). In addition, the nature of the high level concepts forming the components means that organisations can adapt the detail to their own specific business attributes and competitive circumstances (Table 7.1, V). The Integrated IT Value Management Framework fulfils the requirements for a framework to extend current theory based on research findings and to also assist practice.

7.3 Key Research Conclusions

7.3.1 Tying the research design and outcomes together

The results of this research provide a more detailed understanding of the dynamics of IT value management than has been previously available. Each segment of the research provides a significant piece of insight and knowledge about IT value management, particularly emphasising the integrated nature of IT value management and the need to incorporate the full business life of IT investments in a comprehensive approach. The findings show that improvements in the approach to IT value management necessarily rest upon how the business aspects of an organisation are integrated with the IT context, and also upon the integration and shaping of IT Value Perceptions, IT-business Relationships and several specific facets of management.

The four parts of the research design, targeted at addressing the four supporting research questions, tie the study together in a manner which effectively demonstrates the suitability of the design to the nature of the questions and to the data required to answer them. The research design ensures that the segments build upon each other, firstly through detailed analysis of current theory, secondly through the rigorous data collection and analysis processes of the case studies, thirdly by bringing the results of these two segments together for further and thorough comparison, and finally by drawing upon all these three to identify what is required to improve IT value management. The research outcomes are a logically derived set of key findings that are compiled in effective presentations to emphasise and communicate the study's contribution to knowledge about IT value management practice and theory.

The key outcomes from all four parts of the research are presented next and then brought together to address the Chief Research Question (section 7.3.3).

7.3.2 A summary of key outcomes from all parts of the research

Analysis of current theory

Analysis was conducted through the more general literature review (Chapter Two) and also through specific identification and assessment of theoretical frameworks for integrated management of value from IT (Chapter Four). The results address the first Supporting Research Question, *What theoretical frameworks are currently available to address management of value from strategic IT-enabled business initiatives?*

The key findings are:

- From the large body of literature that addresses aspects of IT value management, only two theoretical frameworks are currently available to provide a relatively comprehensive guide

to understanding and executing IT value management (Soh and Markus 1995, Peppard and Ward 2004). These two models address the business value of IT in the light of an organisation's operational requirements and over the life of an IT-enabled initiative. Most of the IT value literature addresses only a proportion of the business-life of an IT initiative. The models also address the strategic nature of IT in the firms' competitive space. They are theoretical models and there are significant differences between them which could result in quite different outcomes if translated to practice.

- Current models have some gaps, as identified from analysis against the literature review, including a lack of concentration on IT governance as a key contributor to IT value.
- These models are 'available' to address IT value management from strategic initiatives but it is not clear how translatable they are for use by organisations.

How leading firms approach IT value management

The second Supporting Research Question is *How do firms leading in the business-to-business context approach management of value from strategic IT-enabled business initiatives?* Chapter Five details the investigation of IT value management practice.

The key findings are:

- Significant common concepts can be identified which comprise a set of very clear yet high-level concepts for approaching IT value management.
- The individuality of the firm is reflected in the manner that the higher-order concepts for IT value management are applied.
- The higher-order concepts identified are related to several areas of the firm's approaches to IT value management:
  - Understanding and leveraging the firm foundations regarding IT underpins IT value management.
  - Measurement and exploitation of IT value ideally target all phases of the life of an IT-enabled initiative, with the emphasis on strategies and tactics for IT value exploitation.
  - Models, frameworks, or tools for IT value management are largely not evident in practice and this is seen as a limitation for practice outcomes because firms would like to know how to do it better.
  - Firm harmony is an indicator of IT-business relationships and the extent of collaboration and communication.
  - Relationships between business and IT people are keystones of IT value management and shape the genre of a firm's approach.

- IT governance is a key influence on IT value management but depends more on principles and processes tailored to the firm's foundations rather than on any particular method.
- IT value management relies upon some fundamental IT governance attributes.
- Gaps in IT value management practice, whilst recognised, need to be acted on.

Field reality and current theory

The third Supporting Research Question is: *How does current theory reflect the requirements of management of value from strategic IT-enabled business initiatives for firms leading in the business-to-business context?* Chapter Six shows how well practice and current theory are associated with each other, highlighting both the areas of association and the gaps.

The key findings are:

- Current theoretical models for integrated IT value management do not fully reflect the requirements of practice. The IT value management approaches put forward by the models are not emulated in the field.
- There are several significant gaps between the theory and practice. Gaps are evident regarding:
  - IT Value Perceptions
  - IT Governance
  - Collaboration and Communication
  - IT-Business Relationships
  - Synergy between the approach to IT value management and the Firm Foundations.

A practice framework for Integrated IT Value Management

The fourth and final Supporting Research Question is addressed in this chapter (section 7.2). The question - *What adjustments or extensions, if any, could usefully be made to current theory to assist organisations to improve management of value from strategic IT-enabled business initiatives?* – is designed to drive outcomes that assist organisations in IT value management improvements as well as making a contribution to the development of IT value management theory.

The key findings are:

- Essential requirements for a practice framework to support improvement in IT value management include that it must:
  - address the gaps between current theory and practice;
  - ensure the full business-life of IT initiatives is accounted for;

- address the strategic nature of key IT-enabled business initiatives; account for business requirements and opportunities and the organisation's foundations;
- be adaptable to the individual needs of organisations; provide for the development of principles and processes to translate the concepts into practice; and,
- ensure that both IT value measurement and exploitation are addressed at all phases of an initiative's business-life.

- An Integrated IT Value Management Framework, developed from the results of the research, is described as a set of related concepts and in diagram form.
- A logically ordered approach to implementing the Integrated IT Value Management Framework is laid out to facilitate translation of the conceptual framework to practice.

7.3.3 Addressing the Chief Research Question and the main objective

The Chief Research Question is ***How can leading organisations improve the management of IT value, that is, value identification, creation and capture, from strategic IT-enabled business initiatives such as business-to-business e-business?***

The key outcomes are:

I. **The Integrated IT Value Management Framework supports improvement in management of value from IT**

The approach to improving IT value management is encapsulated in the Integrated IT Value Management Framework. The Framework emphasises key elements of IT value management crucial to value identification, creation and capture.

II. **Recognition of and response to Firm Foundations is fundamental**

An organisation's IT value management must reflect its Firm Foundations in order to effectively improve its management of value from strategic IT-enabled business initiatives.

III. **The Framework is theoretically and empirically informed**

The Integrated IT Value Management Framework provides both a guide for practice to improve IT value management in organisations and an empirically informed basis for further theoretical understanding and development in the domain of management of value from IT initiatives. It accommodates the breadth of concerns arising out of practice.

IV. **The Framework is conspicuously different to prior theoretical frameworks**

The Integrated IT Value Management Framework is a new framework - not a refinement of any of the existing frameworks - and it is distinctly different from them. Firstly, its development acknowledges the characteristics of currently available theory for IT value

management, compared with current practice. It uses the distinctions, the similarities and gaps, between them, ensuring that IT value management practice in leading firms is acknowledged as a crucial input. In doing so, the framework incorporates the full business life of an IT investment and emphasises the necessity to also incorporate components beyond the many specific IT management practices commonly described as part of the IT group function and beyond financial control measures. Some of these vital components need to be recognised and shaped, such as IT Value Perceptions, and also managed, such as IT–business Relationships. The development and management of IT Governance and Collaboration and Communication are both key to integrating all components of the approach. Identifying and understanding the Firm Foundations is fundamental to the approach, with the synergy between these and the rest of the approach a reference for improvements in IT value management process and outcomes. Firm Foundations may also evolve in a feedback response to the organisation's approach to IT value management overtime, particularly the Role of IT in the firm and Firm Philosophies for IT. In concert, these aspects of the framework differentiate it from other currently available frameworks.

The outcomes at each stage of the research design cumulatively support the overall objective which is to assist firms to improve IT value management from strategic IT–enabled business initiatives by comparing and critiquing how practice in leading firms aligns with current theory and, if required, revising or extending current theory. The research objective has been met with a tangible response through the creation of a well-substantiated and actionable practice framework, the Integrated IT Value Management Framework.

7.3.4 The major theoretical contribution of this research: An Integrated IT Value Management Framework

This study is designed to address the research problem that firms are concerned about what value they are realising from IT investments and how any returns could be improved. Among the most significant contributions to knowledge and understanding about IT value management arising from the study are the chief findings from the analysis of current theory against practice: (i) The models in current theory do not reflect the complexities of current practice; and, (ii) There are clearly identifiable gaps between current theory and practice. These gaps are also precursors to the new framework.

In addressing this research problem, this work provides a significant contribution to current theory in the form of the Integrated IT Value Management Framework (section 7.2.3). These are three elements to the framework: a list and description of key components; a visual format to show the connections between components; and an implementation outline to ensure the components are addressed in a logical order for improving upon an organisation's current approach to IT value

management and also to help them meet their goals for management of value from IT. The framework provides a significant contribution to theoretical understanding of how IT value management can be improved.

The framework's principal attributes (incorporating the characteristics from Table 7.1) are that it:

- accounts for gaps between current theory and practice

  The Soh and Markus Model (1995) and the Peppard and Ward Model (2004) do not demonstrate strong incorporation of the key components arising from the investigation of practice in leading firms. IT Value Perceptions, IT-business Relationships, IT Governance, Collaboration and Communication, and Synergy are lacking clear association or absent.

- addresses the full business-life of an IT enabled initiative

  Most theoretical frameworks currently available for IT value management only address one or two of the phases in the business life of an IT investment, most commonly the investment phase. The In-use and Impact phases are less notably addressed.

- supports strategic IT-enabled business initiatives

  The reliance on identifying and understanding the Firm Foundations ensures that the competitive position and condition of the firm is accounted for in how its IT is managed for value.

- integrates business requirements and opportunities within IT value management

  The strategic and operational requirements of the business are balanced through the Principles and Processes it designs to create, deliver, and measure IT value. These are profoundly influenced by the organisation's approach to IT Governance.

- is designed with high level concepts

  The conceptual framework is presented in a visual format as well as by description of its components (section 7.2.3). These emphasise the need to develop organisation-specific guiding principles and processes and the importance of the integrated nature of the components to improving IT value management and its outcomes.

- is adaptable to the specific business needs and competitive circumstances of any organisation, and based on foundations regarding IT and its role in competition

  The use of high-level concepts allows the detail of the tactics and methods to be determined by the organisation, so befitting its specific requirements, rather than providing a prescriptive model to which the organisation has to conform to make it workable.

- addresses both measurement and exploitation of IT for value

  Measurement of IT value provides indicators of whether and to what extent IT value is created and captured but measurement is not a form of IT value management in itself (Chapter Two). The theoretical literature and the evidence from the case studies of practice in leading firms both highlight IT value exploitation. These are principles and processes that drive the creation of value through IT investment, implementation and use, and the capture of that value into the fabric of the organisation.

- provides an actionable framework via a specific order of implementation, so it is translatable to practice

  An outline for implementation with a guiding diagram is described at the end of section 7.2.3. Another vital part of this implementation is that business-side executives not only drive the development but also fully engage with it. It should not be left to the CIO to lead alone because it is the business value of IT that is being sought.

In summary, the new practice framework extends upon current theory by addressing requirements for practice identified through empirical research, so filling the identified gaps between current theory and practice. It is also founded on the results of systematic analysis of literature on IT value management and of current theories which best fit criteria for integrated IT value management. The IT Value Management practices investigated in the field contribute significantly to this framework and, as described in Chapter Three, four of the case study firms represent a heavily electronic BtoB environment where high margin/high value 'IT-enabled products' are the business of the firms. This supports the framework's validity in that IT is central and vital to doing business and to the firms' key 'products'. Although Edifice is in a different industry, it is also a leader in BtoB e-business within its own business environment. Consequently, many of these firms' IT investments are also strategic IT-enables business initiatives. The evidence from practice, combined with current theory, provides strong support for the new practice framework described in this chapter. Not only does the new framework extend current theory, it is designed to be translatable to action and so to assist organisations to improve their approach to IT value management in both operational and strategic contexts. The Integrated IT Value Management Framework has potential for development into a more theoretically informed model and for confirmation of its validity in practice.

7.3.5 Other contributions to knowledge and understanding about IT value management

In addition to providing support for improvement to IT value management in organisations, other contributions to knowledge about IT value management arise from the analysis of available theory and of practice.

a) A synthesis of literature on IT value management.

The results of this synthesis confirms the usefulness of thematic groupings for *measurement* and *exploitation* of IT value (Figure 2.1), and the use of the concept of the business-life of an IT initiative consisting of three phases, *Investment, In-use*, and *Impact* to make sense of the literature (Figure 2.2). The spread of the literature over these themes is also described (Figure 2.3). A further contribution is articulation of the research areas that surround and inform IT value management research (Figure 2.4).

b) Promising theoretical support for integrated IT value management: Identification and analysis.

The analysis in Chapter Four brings together a set of theoretical frameworks supporting many aspects of the integrated view (Table 4.1). These address the phases of an IT initiative and integrate IT management with business value and business requirements. The most comprehensive models are compared and contrasted (Table 4.4), providing a basis for further research on these or similar input-output type models (that is, where the output is organisational performance based upon IT value creation and capture).

c) Cases as illustrations of IT value management practice.

Five cases illustrate practice in detail, showing *how* leading firms currently approach IT value management, their issues and suggested improvements. The cases represent two industries, four in wholesale financial services and one in construction management, and also represent a range of origin and reach in firms' global activity. The parent firms are based in Europe, USA, and Australia and the electronic global reach and physical global presence varies. These cases could be developed as a vehicle for communicating the Integrated IT Value Management Framework.

d) A concise demonstration of the gaps between theory and practice in IT value management.

The analysis of how theory and practice are associated illustrates the gaps between these IT value management perspectives very vividly (Figure 6.4). The gaps show that practice concentrates on how to manage IT for value by working with guiding principles and concepts. In contrast, theory tends to concentrate on inputs and outputs at various levels and in models which may be either too abstract or too prescriptive and complex for translation to practice.

7.4 Limitations and Implications of the Research

7.4.1 Limitations

The results of this research should be interpreted through the limitations of the study. The scope of the research is limited to theory and practice focussed on how IT value management is approached and how it could be improved. Although a logical implication of improvements in managing IT for value is improved organisational performance, the framework does not pursue any measure of organisational performance as it lies outside the scope of the research. The research process involved both theoretical and field research but shows some limitations in depth and breadth. Only firms leading in business-to-business e-business in their industries were investigated for their IT value management approach. Differences in approach are likely in firms which are not currently leaders in business-to-business e-business. Investigating firms which perform very little BtoB e-business might also give different results because, for these firms, IT may not be considered a critical value factor in the conduct of BtoB business, let alone strategic. Interviewee roles were limited to CIO, COO, CFO, and executive line business managers. This means the views and actions of other users and decision-makers in the organisations are not accounted for. The findings may be limited in their generalisability. The number of firms involved, the industry contexts and the locale of the firms were necessarily limited. All firms have Australian offices (the locations for interviews) but three of the firms either originated, or have significant holdings, in other parts of the world while the other two have expanding global reach. Nevertheless, because the findings have resulted in a framework that uses higher-order concepts that are not specific to organisational size, market or location, it may be applied to and tested in a diversity of organisation.

7.4.2 Implications for practice

The outcomes of this research have clear implications for practice and provide an opportunity for organisations to improve upon their current approach to IT value management. This aims to achieve a better net outcome from their IT investments over time and also help them mitigate the risk of costly mistakes. Hitherto, many organisations have not used any particular IT value management frameworks and the few tools used are either financial measurement or process management, commonly at the IT Investment Phase. The framework gives them the opportunity to address the entire business-life of an IT investment and to exploit value from that investment at every stage. Although firms may have addressed some or all of the components already, they need to assess their current approach to IT value management to more comprehensively identify areas for improvement.

There are four immediate management requirements for the outcomes to have any impact on existing practice:

1. *The current status of IT value management must be established and communicated amongst executive management.*

   Business and IT managers should discuss and communicate what they think is the state of 'IT value management' in their firms, the symptoms of any problems regarding IT value that they perceive exist, and the issues the organisation faces in creating and capturing value from their IT investments. This establishes the base for comparison after adopting the framework, but more importantly, it articulates the rationale for doing it.

2. *Executive management should drive the organisation's improvements in IT value management.*

   Executive management drive the adoption of the Integrated Framework for IT Value Management. A 'hands-on' approach by business management is critical to achieving improvements in IT value management. The integrated nature of the Framework means that it is essential for many key business personnel to be involved and to make, and be accountable for, decisions within the framework. The advice and guidance of IT executive managers is essential and the CIO should be accepted as an equal colleague and hunter in capturing business value from IT. Restricting the responsibility to CIOs would be contrary to the findings where the evidence is that business and IT must work in tandem to ensure business value from IT-enabled business initiatives.

3. *It is essential that the integrated nature of the Framework's components be recognised and accounted for when addressing each component.*

   Addressing components in isolation *may* lead to improvements in IT value management however this is largely what is already prescribed by some existing frameworks which focus only on one area of IT value management or are limited in a similar way to the Soh and Markus (1995) and Peppard and Ward (2004) models, in that they are not well associated with current practice in leading firms. This practice shows that these components need to be addressed in recognition of their effects on each other and how they connect to affect improvement in IT value management.

4. *The Framework should be fully implemented as a permanent change in how the organisation manages IT value.*

   The Integrated IT Value Management Framework should be the adopted fully as described, and the elements addressed in a logical order consistent with the current status and requirements of each firm. It involves high level concepts informed by systematic analysis of practice and theory and is well substantiated, yet supports the individuality of organisations. The detail of the implementation can be adapted to an organisation's specific needs. The framework includes: (i) a description of the components (ii) a visual representation of how they are connected, and, (iii) an implementation outline and supporting diagram. Further

implementation guidance could include the research firm cases as vehicles to illustrate the conceptual framework in practice to be used in workshops or personal communication.

7.4.3 An agenda for future research

Testing and confirmation of the Integrated IT Value Management Framework

The proposed framework extends upon past theoretical frameworks for IT value management. The next step would be to test the Framework through comprehensive industry-based research. As raised in section 7.4.1, the research design could be extended to: a) include different industries, and b) to include a broader range of executive and management input, as well as non-manager input.

Impact of the Integrated IT Value Management Framework.

One potential impact of the framework's application could be tangible or identifiable outcome improvements in organisational performance that are directly attributable to the way IT value is managed. To test this, one could investigate whether improvements in IT value management actually result in better outcomes for strategic IT-enabled business initiatives. The effect of implementation of the framework also warrants investigation. How is the organisation changed by its use? What performance improvements attributable to IT value management are observable? Are there any 'surprises' from the framework's use? These questions would best be researched through observation of the implementation process, investigation of its impact on the 'performance' of IT value management, and investigation of its impact on the organisation's processes and culture. El Sawy et al (1999) provide an example of this type of research into IT-intensive value innovation in the electronic economy in their classic paper showcasing Marshall Industries.

Components of the framework that are also issues organisations may find difficult to address

There are many issues in how firms approach IT value management that would benefit from further investigation of theory and practice and that were outside the scope of this research. The most outstanding are Firm Foundations, IT-Business Relationships, and just how prescriptive IT Governance should be to be effective for IT value management. The findings indicate that:

- Firm Foundations are often not explicitly recognised by executives as being important to IT value management, nor are they always clearly identifiable.
- IT-Business Relationships are the keystone to IT value management but seem to be a perpetual problem and often exacerbated by what is known as the 'expectation gap'.
- IT Governance is variable across firms but there is not necessarily a 'best' way to do it.

7.5 Concluding Statements

The research problem examined in this study is that firms are uncertain what value they are getting from IT investments, particularly from e-business. A symptom of this problem is that organisations may not be able to clearly identify financial IT payoff nor can they ensure all the value from potential benefits is identified and realised.

Previous academic research highlights several related research themes which confirm the problem and also provide the rationale for the focus of the dissertation: (i) Firms are unable to identify the full potential for value creation from strategic IT–enabled business initiatives; (ii) e-Business business-to-business initiatives are examples of strategic IT-enabled business initiatives and may have the potential to be strategic differentiators; (iii) There are a variety of metrics in use for IT value, applied at various levels of organisation, and the suitability of metrics to measure the nature and extent of IT value creation or capture is apparently variable; and, (iv) Research on IT value has largely focussed on quantitative metrics for IT payoff, return on investment, productivity, efficiency or overall firm performance.

There is a large body of research on how to create business value through IT but limited research on how to improve IT value identification, creation, and capture in concert. These research themes and the field problem together form a strong rationale for research into *how* organisations can improve IT value management, particularly for IT-enabled business initiatives. The thesis targets this predicament by combining practical and theoretical perspectives.

The research discerns theoretical models and other frameworks currently available in the academic literature to advise firms on IT value management throughout the business-life of an IT investment. It then compares these with perceptions and practice in the field regarding measurement of IT value and particularly the approaches to its exploitation, as exemplified by firms leading IT-enabled business-to-business practice in their industries. The research objectives are to assist firms to improve management of value from their IT, and specifically to contribute to the development of theoretical considerations and frameworks in academic research targeting IT value exploitation. The resulting Integrated IT Value Management Framework is proposed to assist firms to improve IT value management from strategic IT-enabled business initiatives.

The potential generalisability of the Integrated IT Value Management Framework is supported by several factors:

- The framework applies to all five firms investigated. In consequence, it is already demonstrated that it applies to more than one industry and industry sector;
- One of the framework's major attributes is its conceptually high level, and that its parts embrace concepts that can conceivably be applied in many organisations. This suggestion

is also supported by the range of current literature demonstrated through the extensive literature review that shows a more narrow focus on each of these concepts;

- The framework is heavily theoretically informed and not based upon the field findings in isolation.

Although it requires further research to test and confirm its robustness in theory and practice, the framework is a distinct contribution to knowledge about IT value management. The Integrated IT Value Management Framework provides a significant development upon prior theoretical understanding of how IT value management can be improved.

"The last chairman I had said … – "I want IT off the radar." I said – "What do you mean? You don't want to know about it?" He said – "No, I don't want to hear about it as being an issue from the business perspective. I want it to be just the same as all the other business units that are working. I don't want it sticking out, I don't want a blip on a radar IT, IT, IT, IT, IT, either you saying give me more money, give me more money, give me more money, or the business saying it is stopping me, it is hurting me, it is not good, it is useless. I want it off the radar" ".

A Chief Information Officer

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APPENDICES

Appendix A. Semi-structured Interview Guide

Appendix B. Verification of Interview Transcript - Example of Email

Appendix C. Coding Scheme for Interview Transcript Analysis

Appendix D. Example of Audit Trail through the Data Reduction and Analysis of Field Data

Appendix E. Interviewee List

Appendix A. Semi-structured Interview Guide

A Guide for a Semi-structured Interview

IT Value Management - Practice and Perception

- The aim of this research is to,

  firstly, understand IT value management in practice

  secondly, to establish how leading firms attack the perpetual problem of getting value from their IT investments,

and

  thirdly, to identify how firms might improve IT value management.

There are, of course, a range of academic goals in tandem with these, mostly relating to theory development.

- The interview has four major parts:
  PART A - Competitive Strategy and IT
  PART B - Perceptions and Measurement of the Value of IT
  PART C - Current Approaches to Management of Value from IT
  PART D - Improving Management of Value from IT

- There may appear to be some overlap but this is essentially 'drilling down'

- Please also input where you feel there are gaps in my questioning

- The upshot of this is field interview to establish an understanding of
  - how IT value is managed in your firm
  - why you do it that way
  - where you see opportunity for improvement
  - and also, you may elucidate barriers to improvement of management of value from IT.

- Establishing the interview base

  Clarify the role of the interviewee in the firm and the level of involvement with IT

PART A - Competitive Strategy and IT (* ask if need to for clarification)

Strategic Role of IT

1. What role do you believe IT-enabled initiatives play in the firm's competitive strategy?
2. How do does the firm differentiate strategic IT-enabled business initiatives from those that are non-strategic?

    2* What are the targets and objectives of strategic IT-enabled business initiatives (established, currently in execution, planned)? How do organisations describe the level of attention they pay to IT-business alignment?

    2** How do they approach IT-business alignment? How do they assess the outcomes?

Firm's Processes and Value Chain

3. Where and how is value is created and captured in the firm's value chain(s)? (Why do you believe this?)

    3* How do your managers articulate the end-to-end processes in the firm related to specific strategic IT-business initiatives?

Industry Value Chain

4. Where and how do you believe value is created and captured in your industry value chain(s) where IT currently plays a role? Why do you believe this?
5. Do you believe strategic use of IT-enabled business initiatives will change the industry value chain? Why?

eBusiness

6. How does the current treatment of e-business (or strategic) initiatives compare with when the organisation first developed and executed an e-business initiative?
   (*Does the organisation now treat e-business initiatives differently from non-e initiatives? Why? How is the treatment different?)

PART B - Perceptions and Measurement of the Value from IT

Understanding of Value in the Context of the Firm

1. What do you and your managers understand to be 'value' in the firm?
2. How does the organisation define or identify subjective and objective notions of value?
3. Do managers perceive investment value differently from created value (eg cost or expense versus benefits)?

Measurement of Value from IT

4. What metrics does the firm use for measuring value from IT and how do they validate them as 'good' metrics?
5. Where are those metrics used? (At what point of impact in the firm?) Are they surrogate or direct (real) metrics?

6. For a given IT initiative, is the approach taken to arrive at a stated investment value different to that taken to arrive at a stated created value? Are the metrics used the same - what are they? (Is the time frame the same?)

    6* Is investment value measured differently to created value (eg cost versus benefits)?

    6** Are the approaches taken to arrive at a stated investment value and a stated created value comparably similar when

    (i) used by different management groups (eg accounting compared with line management)
    (ii) when described as 'predicted' or 'expected' versus 'actual' or 'real'

    6***Are these metrics and their application any different for strategic IT-enabled business initiatives than for non-strategic initiatives?

7. Does the firm focus differently on how it ensures financial pay-off is made on IT investments compared with value creation from these same investments? Y/N Why? How do managers demonstrate this?

Drivers of the Value Outcome

8. What do you believe are the drivers of the value outcome from IT?

    8* What are the incentives/disincentives for employees to facilitate value creation and/or capture from strategic IT-enabled initiatives?

    8**What are the opportunity costs of engaging in strategic IT-enables business initiatives?

9. How does the firm demonstrate to the board (and then shareholders) that strategic IT-enabled business initiatives have created (sustainable) value?

PART C - Current Approaches to Management of Value from IT

Identifying, Creating and Capturing Value from IT

1. How does the firm recognise or identify value from IT; Ditto - created value and value to be captured?
2. What are the processes, activities, or frameworks the firm uses to identify, create and capture value from IT?
3. Are these approaches any different for strategic IT-enabled business initiatives than for non-strategic initiatives? How?
4. Is it important that organisations recognise created value specifically from the strategic IT-enabled initiatives if they can identify all the value to be captured, no matter what the source? Why or why not ?
5. Does the firm aggregate value capture from different sources related to the strategic IT-enabled business initiatives? If it does - how? Does it need to? Why or why not?

Decision-making about IT

6. How does the firm make decisions about strategic IT -enabled business initiatives?
7. How does the firm approach governance of IT?

8. What are the outcomes expected from this approach to governance of IT, and how does the firm know they are being achieved?
9. Does the firm explicitly include management of value from IT under governance of IT? Why or why not?

PART D - Improving Management of Value from IT

Approaches to Improvement

1. What frameworks, principles, concepts, structures, mechanisms, processes and relationships do organisations use to improve management of value from IT?
2. Are the systems static or dynamic – how would we know? What are the major drivers of these systems?
3. Do you believe the firm has measurably improved management of value from IT?
4. How has the firm, or will it, sustain this achievement?

    4* Does the firm believe they have improved their demonstration of (i) the financial pay-off (ii) the creation of (sustainable) value, from strategic IT-enabled business initiatives, and if so, how did they go about it?

Measurement and Evidence of Improvement

5. How does the firm know they have improved in this regard? What is the ultimate outcome they are looking for and how will they know when they have achieved it?
6. Does the firm change their management of value from IT initiatives in response to changes in the competitive or regulatory environment? Why or why not?
7. How is improvement in management of value from strategic IT-enabled business initiatives evident to the internal organisation?
8. How is improvement in management of value from strategic IT-enabled business initiatives evident to the board and shareholders?

The Future of Management of Value from IT

9. How do you believe the firm can improve demonstration of value from strategic IT-enabled business initiatives?
10. What does the organisation intend to do about managing value from strategic IT-enabled business initiatives in the future and why have they chosen this path?
11. What are the perceptions about competitor behaviour in this regard and the effect on the industry?

Finishing the Interview

- Are there any other facets of IT value management you think should be included, or is there any topic which you feel I should have asked about but which I did not?
- Finally, what do you think is the real key to IT value management in your firm?

END – *Thank interviewee in context and remind of next steps and feedback.*

Appendix B. Verification of Interview Transcript - Example of Email

Microsoft Outlook Web Access https://outlook.econ.usyd.edu.au/Exchange/

Outlook
Web Access

Inbox
Calendar
Contacts
Folders
Options
Log Off

From: Susan Keyes-Pearce Sent: Wed 6/23/2004 1:07 PM
To:
Cc: Susan Keyes-Pearce
Subject: research transcript - Improving management of value from IT
Attachments: Attachments may contain viruses that are harmful to your computer. Attachments may not display correctly.
SKP research value IT.doc075KB) SKP doc011KB)

View As Web Page

Some time ago, you kindly gave an interview regarding management of value from IT in This field study plays an important role in this research into how firms can improve their management of value from IT-enabled business initiatives, and forms a significant contribution to the research outcomes. The participation of your organisation, and particularly your involvement, is very much appreciated and key to addressing the research problem.

The interview transcript: Your interview transcript is attached to this email. It is a raw transcription with no analysis.

Confidentiality: As explained in the interviewee information sheet which outlined this phase of the research, full confidentiality will be maintained and so nothing will be attributed to you in published or presented work. The identities of all the firms involved will also be disguised. A copy of that introductory document is also attached to this email.

The transcript feedback process: If you have any comments or feedback you would like to make please either email or call me on my mobile (see below) by 15 July. After that time, 1 will assume that you accept the transcript's veracity and it can then be formally incorporated as 'data'. 1 will be going ahead with coding and analysis in the meantime but 1 am aware that you may wish to comment further.

Even if you have no comments, 1 would be grateful if you could email a reply acknowledging receipt of the transcript and your acceptance of its veracity for the purposes of the research. This is, of course, on the understanding that its use is restricted to the research and that confidentiality applies as mentioned above.

Later feedback out of the research:
a) As part of a multimethod approach to analysis, after July 15, the interviews from all your organisation's interviewees will be reduced to a simple aggregate of dot-points. Absolutely no direct quotes will be shown! This aggregate will represent a very distilled version of the collective views, categorised by topic. This short report' will not include any further interpretation or judgement - so you may discuss it or not as you wish. !!! Please note that only the interviewees will receive this aggregate.
b) Future results arising out of the full findings will certainly be passed back to you as the research is completed.

Once again, your time and involvement is very much appreciated.

With my thanks,

Susan

Susan Keyes-Pearce
M: 0402 474 100
s.keyes-pearce@econ.usyd.edu.au

Discipline of Accounting, Business Law and Business Information Systems
Faculty of Economics and Business
University of Sydney

Outlook
Web Access

From: [redacted] Sent: Thu 6/24/2004 6:59 PM
To: Susan Keyes-Pearce
Inbox
cc:
Subject: Re: research transcript - Improving management of value from IT
Calendar Attachments: Attachments may contain viruses that are harmful to your computer. Attachments may not display correctly.
SKP research value IT.doc(239KB) SKP [redacted].doc(152KB)
View As Web Page
Contacts

Susan:

1 have reviewed the transcript and have no issues.

regards,

[redacted]
Chief Financial Officer
[redacted]
Sydney NSW 2000
Phone: (
Fax: (0
Mobile:
email:

"Susan Keyes-Pearce"

<S.KeyesP
earce@eco
n.u To: [redacted]

syd.edu.au> cc: "Susan Keyes-Pearce"
<S.Keyes-Pearce@econ.usyd.edu.au>

Appendix C. Coding Scheme for Interview Transcript Analysis

FIRST LEVEL DATA REDUCTION of IT VALUE MANAGEMENT INTERVIEW TRANSCRIPTS

HIGH LEVEL CODES with EXPLANATIONS

Notes: (a) As these codes are applied to the interview transcripts, a descriptor in a word or phrase may be added to any of the codes below to clarify meaning. (b) The codes are grouped under domains of interest which are designed to concentrate statements about the firm into key areas during data analysis. These domains of interest include: context, the aspect of IT value being considered, principles and activities or processes the firm uses to manage value from IT, issues the firm faces or that it expects will arise, and improvements currently under way or suggested towards enhanced IT value management.

CODE	FEATURES
The Firm's External Context	
EC-BE / CE IVC	The firm's external context and operating environment: general business (BE); competitive business (CE); the industry value chain
The Firm's Internal Context regarding IT and its Value	
PHIL	A concept or idea which is part of the 'philosophy' of the firm
RIT	The role of IT in the firm and within the firm's internal value chain
STIT OPIT	IT-enabled business initiatives or IT projects which support the strategic IT domain (eg 'change the bank') or the operational IT domain (eg 'run the bank')
VCON-SELF/OTHERS VCON- PIPE	Perception or definitions of the concept of IT value, held by the interviewee themselves and how they think others (colleagues) see IT value; The pipe is the communication route of IT value concepts (eg to the Board)
Concept or Activity Focussed on Measurement of IT Value (VM) This code group indicates what aspect of IT value is the focus of measurement and also when the activity or concept applies in the business life of an I T initiative.	
VM-POT	Measuring potential value at investment
VM-MON	Measurement plus a monitoring and feedback mechanism
VM-CRE / CAP- INV / USE / END	Measuring value being created (CRE), realised or captured (CAP) during investment (INV), in-use (USE), or at the impact phase (END)
Concept or Activity Focussed on Exploitation of Value from IT (VE) This code group indicates whether the exploitation IT value is focussed on its creation or capture, and also when the activity or concept applies in the business life of an IT initiative.	
VE-CRE / CAP- INV / USE / END	Exploitation of IT value through value creation, value realisation or capture. This could occur during the investment phase, the in-use phase, or through embedding value at impact phase.
Approaches to IT Value Measurement and Exploitation These describe principles, processes, or relationships that illustrate how approaches to managing IT value are undertaken by the firm.	
FW 'descriptor' / NONE	Frameworks or tools used for IT value measurement or as part of the approach to exploiting value from IT. These are qualified with a descriptor, or show where the interviewee indicates that no tools or frameworks used.

CODE	FEATURES
STRAT-PRIN / PROC	Designates strategies or tactics for exploiting value from IT, qualifying them as either a principle (PRIN) or process (PROC).
STRAT-BORG/ITORG	Strategies or tactics for value measurement or exploitation, but undertaken by the business (BORG) or the IT organization (ITORG). It may also describe structure of either business or IT.
DM- PRIN / PROC	Identifies decision-making principles and guidelines (PRIN), or the decision-making process (PROC).
DM-PROC-RESP-POS /COMM	Describes where the responsibility for the decision process lies whether at a position (POS) or with a committee (COMM).
DM-OUT-RESP-POS /COMM	Describes where the responsibility for the outcome of decisions lies, at a position or with a committee.
DM-AUTY-BU / ITORG	Describes the relative level of autonomy for decision-making held by the Business Unit or IT organisation (none, little, lot, qualified).
DM-DRIV-BUS / ITORG	Indicates the drivers of the decisions (business or IT organisation).
REL-BUS /IT	Describes something of the relationship between IT and business from the business perspective (BUS) or from the IT organisation's perspective (IT).
Capabilities of the Business Organisation or the IT Organisation Capabilities supporting IT value management in the firm and which are focussed on IT value measurement, exploitation, or both.	
CPB-BUS / ITORG	The capability is attributed to business or the IT organisation. The capability focus is also described (eg flexibility, alignment, strategic information system planning, infrastructure).
Improvements to IT Value Management – Current or Future Includes suggestions for improvements as well as describing current activities or decisions which are expected to support improvements or enhancements to IT value management.	
IMP – VE / VM – 'descriptor'	Improvements related to IT value management (begun, intended, or a suggestion). The focus of the improvement is also attached.
Issues the Firm Faces Regarding Aspects of IT Value Management An issue may be current or it may be forecast or contemplated for the future. Some issues are described as problems but others are seen as challenges.	
ISS-CU / FU -CHALL / PROB	Issues are highlighted as current or future and as a challenge (CHALL) or a problem (PROB).
Other Contributors to IT Value Management	
OTHER - 'descriptor'	Use this if the statement or concept does not fit well with the above categories yet it clearly has a role the context of IT value management. Examples are: organisational learning, and, the influence of historical experience and data on current thought, judgements, and activities.

LEVEL 1 - 2 TRANSITION and LEVEL 2 DATA REDUCTION

INTERVIEW TOPIC CODES with EXPLANATIONS

CODE	MAIN INTERVIEW TOPIC
CS	COMPETITIVE STRATEGY AND IT
VPM	IT VALUE PERCEPTIONS, MEASUREMENT, AND METRICS
AMV	APPROACHES TO IT VALUE MANAGEMENT
FMV	THE FUTURE OF IT VALUE MANAGEMENT
ISS-VPM	Issues for IT value concepts and measurement– problems and challenges
ISS-AMV	Issues and challenges in how the firm approaches IT value management
ISS-CS	Other issues in the competitive domain

Appendix D. Example of Audit Trail through the Data Reduction and Analysis of Field Data

Notes on following the data audit trail

This example of the audit trail shows how a 'result' in the tables in chapter five can be tracked back through each level of code analysis to the original interview sentences. Figure 3.2 provides the guide for this example of a point in Duet's approach to IT value management.

At each level, an extract of the real data is used rather than the entire documents. These are up to 40 pages long when all coded transcripts are collated for a single firm. The initials of the interviewees are used in the actual coding files but only XX, YY, ZZ are used here to disguise them for confidentiality.

This initial interviewee comment…

"So that has in turn caused a conversation about what's the business worth…. the IT cost piece has actually had to drive a whole lot of those conversations around revenue and benefits and share of overheads and those sorts of issues. Now luckily I had CFO who was of a like mind who had arrived a while before me but who was also struggling with this conundrum that this was an organisation that really didn't want to have these conversations." [XX] DUET

… is connected to the shaded point in the results table via stages of thematic coding. The trail is demonstrated by working backwards, beginning with this results table.

Level 4 - Table of Results in Chapter Five

TABLE 5.2D: Case Firm – DUET
Some Key Aspects of the Firm's Approach to IT Value Management

FOCUS	INVEST	IN-USE	IMPACT
EXPLOITATION Process Focus	***BU heads cooperate*** to manage conflicting IT agenda. IT is mostly under CIO budget and the nose of CFO	BU heads extremely ***focussed on P&L*** monitoring. ***IT chargeback*** includes granular detail in billing if required.	If business case viability becomes untenable, the firm is prepared to pull out
	- Managers ***discuss delivery of IT value proposition*** - role of IT, business outputs/outcomes and IT group operation - ***IT-savvy business development managers*** sit within business units, liaise between IT and business and work on understanding the business and its IT needs - The ***CIO talks to many business managers often***; hearing about issues quickly enhances problem management		
EXPLOITATION Principles	- Decision-making responsibility and business case development for IT is now ***shifted to the business managers*** - ***CIO's opinion influences*** prioritisation but business makes those decisions based on their views of relative importance and decides high level deployment of available IT resource - ***Public and transparent process*** makes business managers accept own decisions and the impact on others - Strategic role of IT is reflected in ***composition of IT Steering Committee***; CFO as chair, business managers, and CIO as invited guest; and focus as a business forum - Changing the firm's culture so ***business managers pressed to discuss real business IT costs***, as well as revenue and other benefits and the need to identify and share overhead - The quality of communication is important in maintaining ***a no-surprises approach*** - The IT group is shifting its behaviours towards ***positive and pleasant responsiveness*** to business people - A ***CIO with senior leadership experience*** was vital to improve the IT situation under a growing IT team		
MEASUREMENT Process & Principles	***Standard business cases*** for all 'capex' (strict payback hurdle); NPV used with detailed P&L. IT Steering Committee tracks ***project monthly progress*** though a traffic light indicator system.	***Chargeback mechanisms*** allow visibility of IT 'consumption' by business. ***Warranty period*** for completed IT projects, but post-implementation reviews technical and functional only	***Payback measure*** is business benefit. ***Costs are managed and monitored*** but benefits get little attention
	- Monitoring returns on capital spend for ***IT is treated differently*** to rest of the business - Framework for IT value management includes ***portfolio analysis*** - In a quiet market, the focus moves to ***operational reliability, quality, and costs***		
IT VALUE PERCEPTIONS	IT value is connected to business value through ***the way IT and business people work*** on projects and measure performance	Business is generated through ***ideas of people*** using the IT. IT value is in ***reducing operational risk***	Value easy to see where ***direct market connects*** bring flows through to the bottom line
	- ***Reliability, risk management, and managing scalability*** are vital to the firm - ***Fatal to look at IT in isolation*** of the business		

Level 3 to Level 4 Transition

EXTRACT

DUET CASE RESULTS –THIRD LEVEL (L3) TRANSITION TO FOURTH LEVEL (L4)

SORTED by PHASE; VM-VE; ASPECT within topic groupings
Topic coded (major interview topic and sub-code) dot points + PHASE + VE/VM + CRE/CAP

***WHAT IS HAPPENING*:**
Value Measurement (VM) or Value Exploitation (VE)
Value aspect: Potential – for VM only (POT); value creation CRE; value capture (CAP)

***WHEN IS IT HAPPENING*: PHASE – investment (INV); in-use (USE); impact (END) or fundamental (FUN) – ie does not fit with the 'phase' concept**

	VM / VE	ASPECT	PHASE
APPROACHES TO IT VALUE MANAGEMENT			
Strategies and tactics used by business and the IT organisation			
Structures			
• The strategic role of IT in the firm is reflected in the composition of the IT Steering Committee - business managers with the CIO an invited guest	VE	CRE	FUN
• The CFO is the head of the IT Steering Committee.	VE	CRE	FUN
• IT people visit the committee to present.	VE	CRE	FUN
• IT-savvy business development managers sit within business units, report to the CIO, but dotted line report to the BU head. They liaise with both IT and business and work on understanding the business and its IT needs.	VE	CRE	FUN
Principles underlying the strategies and tactics for IT value Management			
• We are changing the firm's culture of business managers not wanting to discuss the real costs of IT against their businesses, as well as the revenue and other benefits and the need to identify and share overhead	VE	CAP	END
• Although project overruns could be a business issue, caused by scope change for example, it is usually a technical problem or an IT project management problem	VE	CAP	END
• Although a business case can initially stand up to scrutiny, the cost-to-market might evolve into something untenable over time and the firm must be prepared to pull out	VE	CAP	END
• BU heads are extremely focussed on their P&L monitoring and on charges for IT affecting it.	VM	CAP	END
• IT is not controlled by the business managers in the way that they control travel and the salary bill, because the projects involve intense IT group control. The business managers focus heavily on it since it affects their P&L	VM	CAP	END
• The IT group has little budgetary freedom	-	-	FUN
• The IT steering committee is a business forum not an IT forum	VE	CRE	FUN
• Taking on a CIO with senior leadership experience was an important decision to improve the firm's IT situation under a growing IT team	VE	CRE	FUN
• Public and transparent process makes the business managers accept their decisions and the impact on others	VE	CRE	FUN
• IT governance and approaches to managing IT value are absolutely woven together	VE	CRE	FUN

Level 3 Firm Statement By Interview Topic

EXTRACT

DUET CASE RESULTS THIRD LEVEL (L3) - FIRM STATEMENT
- BY MAJOR INTERVIEW TOPIC and sub-code

APPROACHES TO IT VALUE MANAGEMENT

Strategies and tactics used by business and the IT organisation

Structures

- The strategic role of IT in the firm is reflected in the composition of the IT Steering Committee - business managers with the CIO an invited guest
- The CFO is the head of the IT Steering Committee.
- IT people visit the committee to present.
- IT-savvy business development managers sit within business units, report to the CIO, but dotted line report to the BU head. They liaise with both IT and business and work on understanding the business and its IT needs.

Principles underlying the strategies and tactics for IT value Management

- The IT steering committee is a business forum not an IT forum
- BU heads are extremely focussed on their P&L monitoring and on charges for IT affecting it.
- Taking on a CIO with senior leadership experience was an important decision to improve the firm's IT situation under a growing IT team
- Public and transparent process makes the business managers accept their decisions and the impact on others
- IT governance and approaches to managing IT value are absolutely woven together
- Decision-making responsibility and business case development for IT is now shifted to the business managers
- Responsibility for prioritisation of business-IT projects is with the business.
- Business-IT go-betweens provide an effective liaison. They understand business and IT as well as being analytically capable
- Business managers are beginning to understand their charges from IT and how that reflects their IT systems and use in the business
- We are changing the firm's culture of business managers not wanting to discuss the real costs of IT against their businesses, as well as the revenue and other benefits and the need to identify and share overhead
- Much of IT is under the CIO budget and that is a also strong focus of the CFO
- The IT group has little budgetary freedom
- Discussions around IT value and the business model can be used to connect the value of IT through to the business

Level 2

EXTRACT

DUET - CASE RESULTS –SECOND LEVEL (L2) plus POSITION
Topic coded + focus codes, dot points + interviewee position – sorted on {Topic 1, 2, code}

TOPIC	FOCUS CODES AND DISTILLED POINTS	POS
AMV	ISS-CU-PROB- *incentives to ensure value delivery* IMP-CU • Moving to a regime where an individual's performance incentives are tied to value delivery, including learning, innovation, and respect for others, has caused polarised views • Targets and KPIs that are clearly on the table need to be matched with a clarity of connection with the processes to achieve them.	CXX
AMV	ISS-CU-PROB *lack of business clarity on what they want from their IT systems*; REL-BUS; ISS-CU-PROB *trust between IT and business*; IMP-FU-suggestion – *need a more singular focus*; • There is still lack of business clarity on what they want from their IT systems and lack of a singular focus on outcomes by both business and the IT group • Trust between the business and the IT group could be built through mechanisms to ensure common goals	CZZ
AMV	ISS-CU-PROB/CHALL- *managing the expectation gap* • Competitive tension between business managers and also between business and the IT group creates a further expectation gap through pressure on managers P&L translating into pressure to deliver IT • Business managers and the IT group are becoming more interactive but that hasn't closed the expectation gap	CYY
AMV	REL-BUS; • Business knows that IT systems don't just plug in a work, however, competitive tension and the expectation gap is still being upheld by business expecting short times to benefits delivery although the business managers were responsible for making the project decision • Business responsibility for IT has still not got business managers away from putting the blame for their project non-delivery on IT for not working fast enough	CYY
AMV	REL-BUS; IMP-CU- *business-IT relationship go-betweens* • Business-IT go-betweens provide an effective liaison. They understand business and IT as well as being analytically capable • The danger for business-IT go betweens is that they have no real power with either business or the IT group	CZZ
AMV	REL-IT; STRAT-ITORG; STRAT-PROC – *developing behaviours towards business*; • The IT group is shifting its behaviours towards positive and pleasant responsiveness to business people who need help	CXX
AMV	REL-IT; STRAT-PROC (ITORG); • Business managers are beginning to understand their charges from IT and how that reflect their IT systems and use in the business • We are changing the firm's culture of business managers not wanting to discuss the real costs of IT against their businesses, as well as the revenue and other benefits and the need to identify and share overhead	CXX

Level 1 to Level 2 Transition

EXTRACT

DUET - CASE RESULTS – FIRST LEVEL (L1) sorted, and SECOND LEVEL (L2) Topic coded + focus codes, dot points + interviewee position

TOPIC	**FOCUS CODES AND DISTILLED POINTS**	POS	**INTERVIEW EXTRACTS (+interviewee tag)**
AMV	REL-IT; STRAT-PROC (ITORG); • Business managers are beginning to understand their charges from IT and how that reflect their IT systems and use in the business • We are changing the firm's culture of business managers not wanting to discuss the real costs of IT against their businesses, as well as the revenue and other benefits and the need to identify and share overhead	CXX	REL-IT; STRAT-PROC (ITORG); So we very quickly come back to - now I am beginning to understand what's in all of this charge that comes from IT. But it still doesn't help me answer the question how much value am I getting for it? So now we go into conversations about - right, let's talk about the revenue or the risk reduction or the cost saving that you generate by doing these pieces of either software or hardware implementation, relation development change, whatever they might be. So that has in turn caused a conversation about what's the business worth…. the IT cost piece has actually had to drive a whole lot of those conversations around revenue and benefits and share of overheads and those sorts of issues. Now luckily I had CFO who was of a like mind who had arrived a while before me but who was also struggling with this conundrum that this was an organisation that really didn't want to have these conversations. [XX]
CS	RIT; EC-CE; STRAT-PRIN; • The organisation has to assess what it wants to be in terms communicable to the executive or board, and recognise that the major strategic goal and the nature of the business drive the role of IT	CXX	RIT; EC-CE; STRAT-PRIN; In a lot of cases the conversations, again with this organisation and with others, also had to go back to so what is it the organisation wants to be? Because that has to drive what IT does…. at that stage it was at the high of the dot.com boom and they were trying to sort out why some organisations were market leaders and others were not and what made the difference and again trying to describe that in terms that you could play back to a management committee or a board. And what they said was that there were three things that were going along in organisations, three broad things, there is a terrible generalisation, but they were saying they were trying to be either operationally excellent, customer intimate, or product innovators. [XX]
CS	RIT; • IT may not be a candidate for providing competitive differentiation • IT enabling capability is taken for granted but it is not likely to win business because we are a people-to-people firm	CZZ	RIT; I'm a little bit sceptical about IT as a competitive differentiator, I must admit. And the only reason I say that, it depends on the business you're in, our business is very much a people-to-people business and we take for granted that we have to be enabled with basic technology, but technology per se is unlikely to win us the business. [ZZ].

Appendix E. Interviewee List

FIRM CODE	*POSITION*	*Date of Interview*	*POSITION NAME*
Augmenter	EGM	23/09/03	National Manager, Market Information
Augmenter	GM	18/09/03	National Manager, Market Support
Augmenter	MD	26/09/03	Executive General Manager – Production
Augmenter	PM	23/09/03	National Manager Technology Solutions
Bigbank	CFO	24/02/04	Chief Financial Officer - Institutional Bank
Bigbank	CIO	18/03/04	Chief Information Officer - Institutional Bank
Bigbank	CTO	27/11/03	Chief Technology Officer
Bigbank	GM	06/04/04	Head of Offshore Structured Investments – Institutional Bank
Continental	CFO	29/10/03	Executive Director Financial Control
Continental	CIO	31/07/03	Executive Director; Head of IT-Australia and New Zealand - CIO Investment Bank
Continental	COO	31/10/03	Managing Director and Chief Operating Officer Australia/NZ
Duet	CFO	14/05/04	Managing Director and Chief Financial Officer
Duet	CIO	12/12/03	Chief Information Officer
Duet	COO	01/04/04	Managing Director and Co-Chief Operating Officer
Edifice	CIO	23/09/03	Chief Information Officer – Asia-Pacific
Edifice	EGM	10/09/03	Senior Business Executive
Edifice	GM	30/05/03	General Manager – Strategic Global Systems, CIO Corporate Office
Edifice	MD	06/08/03	Group Executive