

**TOWARDS UNDERSTANDING DISSATISFACTION WITH  
EXPLANATIONS OF IT VALUE**

by

**Dirk Cornelis le Roux**

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**Doctor Commercii (Informatics)**

in the

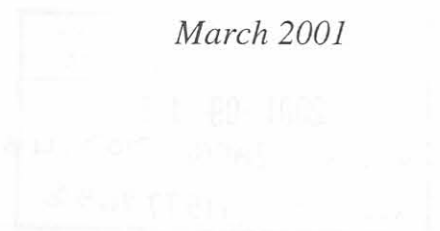
**Faculty of Economics and Management Sciences**

at the

**University of Pretoria**

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I declare that

I would like to express my appreciation to all who have supported and encouraged me through the study, especially Professor J.D. ...

### **Towards understanding dissatisfaction with explanations of IT value**

Ek wil graag my dankbetekings bevestig aan al my tydens hierdie ...

is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

**DC le Roux**



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## Abstract

### Towards understanding dissatisfaction with explanations of IT value

CANDIDATE: DC le Roux  
PROMOTER: Prof JD Roode  
DEPARTMENT: Informatics  
DEGREE: D Com (Informatics)

The research focused on dissatisfaction with explanations of Information Technology (IT) value. IT's business potential and the high levels of IT investment have put IT under the management spotlight. Management typically asks: "What is the contribution of our IT investments to improving our corporate strategy and business leverage?" or "How can we monitor the progress and performance of investments, in order to identify improvement actions?"

Managers are, however, dissatisfied with explanations of IT value, because attempts to demonstrate the link between IT investments and business performance have produced mixed results. The research objective required the development of a framework as a step towards understanding dissatisfaction with IT value. Three case studies were used that resulted in a concluding theory consisting of a framework, a set of hypotheses describing the relationships between the elements of the framework and a pattern of conditions under which there is dissatisfaction with explanations of IT value. The theory clarifies dissatisfaction with explanations of IT value:

*IT is on management's agenda due to its track record; high spending on IT; the need to exploit IT and dissatisfaction with*

*available explanations of IT value. An outcome of this is a concern about IT's value.*

*Management's concern is conditioned by factors such as their levels of comfort with IT; the business/IT relationship and management's mindset about IT as a business resource. The concern becomes a need to control IT which requires an effective IT evaluation process in turn. Steps to ensure an effective IT evaluation process need to address the availability of alternative IT evaluation methods; the mindset about IT evaluation; flaws in IT evaluation methods; problems with defining IT value as well as IT benefits and costs complications. As a result, explanations of IT value may not be satisfactory. IT will then remain on the management agenda and management will continue to be concerned about IT value.*

The theory indicates two broad strategies to overcome or avoid dissatisfaction with explanations of IT value. The first strategy is to fully understand the reasons for management's concern about IT value as well as to recognise those conditions that could influence concerns about the value of IT. The second strategy is to ensure an effective IT evaluation process by specifically addressing those factors or conditions that could impact on the effectiveness of the IT evaluation process.



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## Opsomming

### Towards understanding dissatisfaction with explanations of IT value

KANIDAAT: DC le Roux

PROMOTOR: Prof JD Roode

DEPARTEMENT: Informatika

GRAAD: D Com (Informatika)

Die studie het op bestuurders se ontevredenheid met verduidelikings van IT se waarde gefokus. IT se potensiaal as 'n besigheidshulpbron en die hoë investering daarin, plaas IT in bestuur se soeklig. Senior bestuurders het tipies vrae soos: "Wat is die bydrae van ons investerings tot 'n verbeterde korporatiewe strategie?" of "Hoe kan ons die vordering en resultate van ons IT investerings bepaal, ten einde verbeteringsaksies te identifiseer?" Bestuurders is egter ontevrede met verduidelikings van IT se waarde, want pogings om dit te demonstreer lewer slegs gemengde resultate op.

Die navorsingsdoelwit vereis die ontwikkeling van 'n raamwerk om beter te verstaan waarom bestuurders ontevrede is met verduidelikings van IT se waarde. Drie gevallestudies is gebruik om 'n samevattende raamwerk te ontwikkel tesame met 'n stel hipoteses wat die verhoudinge tussen die elemente van die raamwerk beskryf, asook 'n stel toestande waaronder daar ontevredenheid is met verduidelikings van IT se waarde.

Die raamwerk lig ontevredenheid met verduidelikings van IT se waarde op die volgende wyse toe:

*IT is op die bestuursagenda weens IT se prestasie rekord; hoë uitgawes op IT; die behoefte om IT te eksploteer en onbevredigende verduidelikings van IT se waarde. Bestuur is, derhalwe, bekommerd oor IT en wil graag IT beter beheer. Bestuur se kommer word gekondisioneer deur faktore soos hulle gemaksvlakke met IT; die besigheid/IT verhouding, asook bestuur se siening van IT as 'n besigheidshulpbron.*

*Verbeterde kontrole oor IT vereis onder andere dat IT effektief ge-evalueer moet word. Stappe om 'n effektiewe evalueringproses te verseker, moet kwessies aanspreek soos die beskikbaarheid van alternatiewe evalueringmetodes; die organisasie se houding jeens evaluering; beperkinge/foute in bykans alle evalueringmetodes; probleme om IT se waarde te definieer; en komplikasies rondom IT voordele en IT kostes.*

*As die IT evalueringproses se effektiwiteit nie verbeter nie, sal verduidelikings van IT se waarde steeds onbevredigend wees. IT sal dus op die bestuursagenda bly en bestuur se kommer oor IT se waarde sal voortduur.*

Die raamwerk toon twee breë benaderings om ontevredenheid met verduidelikings van IT se waarde te voorkom. Die eerste benadering is om die redes vir bestuur se kommer oor IT se waarde deeglik te verstaan sowel as om die toestande wat dit kan beïnvloed te eien. Die tweede benadering is om 'n effektiewe IT evalueringproses te verseker wat behels dat 'n stel onderling verwante IT evalueringkwessies aangespreek moet word.

## IT VALUE IN CONTEXT

### 1. Introduction

The business environment of the late 20<sup>th</sup> century and the start of the 21<sup>st</sup> century is highly competitive and turbulent. Advances in Information Technology (IT) is one of the key drivers for this turbulence and competitiveness. IT also has the potential to enable companies to successfully survive and compete in this environment. As a result, investment levels in IT have increased significantly.

The combination of IT's potential as a competitive resource and the high levels of IT investment, have put IT under the management spotlight. Senior executives want to know the payback of their investments in IT and they want to link new IT investments to improved business performance.

Attempts to prove or demonstrate the link between IT investment and business performance have produced mixed results. Many of these managers are, consequently, dissatisfied with explanations of IT value. This is emerging as a key issue for managers for mainly two reasons. Firstly due to their need to know how effective they are in leveraging their existing IT investments and secondly because they need to make decisions about further investments in IT.

The purpose of Chapter One is to introduce this study about the issue of IT value. The chapter starts with an overview of the business environment, followed by advances in IT as a primary driver of the turbulence and competitiveness of the business environment and then a description of IT's role in contemporary organisations. These discussions will provide a



context for the research problem to be presented and discussed in Chapter Two. Chapter One will conclude with an outline of the overall structure of this research document.

## 2. The business environment today is characterised by turbulence and intense competition

A quotation by Stewart Thomas in *Fortune* of 13 December 1993 illustrates the turbulence and competitiveness of the business environment:

*“We sense that the changes surrounding us are not mere trends but the workings of large, unruly forces: the globalisation of markets; the spread of information technology and computer networks; the dismantling of hierarchy, the structure that has essentially organized work since the mid-19<sup>th</sup> century. Growing up around these is a new information-age economy, whose fundamental sources of wealth are knowledge and communication rather than natural resources and physical labor.”*

Manning (1998: 50 - 51) refers to the Industrial Age giving way to the Information Age. Knowledge workers are in the ascendance and most executives are unsure about how to move from the past to the future. Business managers face many challenges: socio-political and economic uncertainties; escalating competition with many of the new players being more aggressive and innovative. Another challenge is the increase in the rate, scope and complexity of changes. The power of consumers, workers and other stakeholders (e.g. environmentalists) are further rising. Lastly, technology is transforming the way products and services are created, delivered and bought as well as the way in which organisations work.

Scott Morton outlines basically the same perspective, i.e., the business environment is and will remain chaotic (Scott Morton, 1991: 3). Organisations need to contend with social, political and technological changes which are compelling organisations to transform. Madnick (1991: 29-30) continues along the same line, by stating that four business forces impact on organisations in the 1990s. There is the increased growth in globalisation where the scope of businesses will expand beyond their traditional geographical boundaries. Multi-national firms will have a heightened need to closely coordinate their various parts for maximum impact. As a result of globalisation, worldwide competition is on the rise. The number of competitors a business must face in each market place and geographic region, have increased substantially. Established businesses thus face increased pressure. To seize globalisation opportunities and to cope with heightened competition, companies are pursuing higher levels of productivity. Efforts to improve productivity are, however, constrained by the volatile and unpredictable environment. The latter is not only the result of globalisation and competition, but also of governmental, social and legal changes.

Gibson (1997: 1-13) remarks that the world of business is characterised by intense competition and rapid changes. This presents a serious challenge to business management.

*“Essentially, competing for the future means maintaining continuity by ensuring that the company is constantly creating new sources of profit. ... It is about creating a virtuous cycle in the organisation, where you are continuously inventing new businesses, new sources of profit, and you are also continuously increasing the capacity for*

*leverage and profitability within existing businesses ...” Prahalad (1997: 63-64).*

Senge (1997: 129) observes: *“The first step is to realise that everything is interrelated. That the world is becoming more inter-connected and inter-dependent, and that business is becoming more complex and dynamic.”*

Gibson (1997: 6) states also ... *“As our world becomes more complex and interdependent, change becomes increasingly non-linear, discontinuous and unpredictable.”*

Pellissier (2000, 22) mentions a number of drivers for the turbulence and competitiveness in the business environment. The drivers include changes in the global market (mainly through new technology), government-driven changes in the form of deregulation and privatisation in the South African context, the changing face of competition, and the changing pattern of employment. A further driver is the rise of knowledge as the key economic resource (mainly through technology). Pellissier (2000: 22) states, however, that the real engine that drives the digital era is technology. The impact of technological changes will be considered next.

### **3. Advances in IT are a major cause of the turbulent and competitive business environment**

Information technology has been singled out as one of the major drivers of the turbulent and competitive business environment. Scott Morton (1991: 4) predicted that in the 1990s, organisations will experience the effects of the integration and evolution of a set of elements collectively termed IT. Scott Morton maintains that IT is made up from six elements, namely, (computer) hardware, software, networks, workstations, robotics and smart chips.



Technological progress, maintains Senge (1997: 125), adds to complexity and causes the process of change to speed up, while Davidson *et al* (1997: 29) observe that technology is changing the way we do business. Computer technology is incorporated more and more into all aspects of business, for instance, processes are reviewed and refined to take advantage of the technology, to eliminate redundancies and inefficiencies and to create new capabilities. Davenport and Short (1990: 11) refer to IT, i.e. the capabilities offered by computers, software applications and telecommunications, as one of two new tools for transforming organisations in the 1990s. Barret *et al* (1996: 42) comment that it is widely accepted that IT is a key factor in the major social transformation taking place in the late 20<sup>th</sup> century.

The technological environment has undergone some major changes and a number of key issues have emerged from these changes. The issues are: a distributed computing environment (in contrast to a largely centralised mainframe environment); new software development methods; the emergence of new technologies like object orientation, image processing, multi-media, wireless communication and the World Wide Web (WWW). The IT industry has expanded to include not only suppliers of hardware and software, but also systems integration; facilities management and information brokers. The IT industry is characterised, almost daily, by new product announcements and breakthroughs, new entrants and new alliances. A last issue flowing from the changed IT industry is the availability of external IT suppliers. Outsourcing is on the mind of many executives who want to cut costs or who want to change the IT function (Rockart *et al*, 1996: 45 – 46).

These impacts of technological advances are largely due to the economics of IT. The economics of IT have changed both absolutely and rapidly. Absolutely, in the sense that IT's cost-performance ratios continue to change by between 20 and 30% per year. The economics of IT is changing relatively in the sense that the cost of IT relative to the cost of other types of investment is widening. It is therefore relatively cheaper to invest in IT than in other forms of capital (Scott Morton, 1991: 9) as demonstrated in Table 1.1 below.

<b>Table 1.1 Computing Cost-Performance Trends</b>			
<b>Constant Functionality</b>	<b>4.5 MIPS*</b>	<b>4.5 MIPS</b>	<b>4.5 MIPS</b>
<i>Cost</i>			
Original projection (1981)	\$4.5 m	\$300,00	
Modified projection (1988)	--	\$100,00	\$10,000
<i>Number of people of equivalent cost</i>			
Original projection (1981)	210	6	
Modified projection (1988)	--	2	0.125

\*MIPS = million instructions per second

The advances in IT have added to the complexity of IT. Parker and Benson (1988: 1-2) mention that twenty years ago, management could define computer costs and benefits with relative ease. Computer systems mostly had the aim to reduce costs. IT (computer) investment decision-makers have thus only to consider questions like: "Will an investment of \$1000 produce savings of more than \$1000?" Nowadays, technological changes and expanded management expectations have made both costs and benefits more difficult to define. IT advances have created more complexity, which makes it more difficult in turn to specify or establish IT costs as well as to identify and track benefits. IT is, however, not only a driver of change. Organisations are using IT to cope with change.



The advances in IT have various *change* implications for organisations, for instance, changes in the skills required of their employees as well as new capabilities and competencies that an organisation must manage. Further implications include altered interfaces between an organisation and its customers and suppliers as well as changes in the production of services and goods (Davidson *et al*, 1997: 90). *“Like the automobile, the computer is not one thing. It has more than one effect. It is transforming your job, your business, your markets and all of society.”* (Davidson *et al*, 1997:15).

As mentioned earlier, IT is more than a driver of the turbulent and competitive business environment. IT is also a key means for organisations to cope with these challenges and changes.

#### 4. IT, today, is a significant business resource

Organisations are finding it difficult to cope with the change and complexity arising from the business environment and advances in IT. There is a whole new class of problems for which organisations are not prepared. Business organisations need to develop fundamentally new capabilities for understanding and re-aligning with complexity (Senge, 1997: 127).

The effective use of IT in today’s competitive business world as an element of a competitive strategy is critical. IT is an essential factor in the capability of a company to respond to other sources of change (Henderson, 1990: 7 and Parker and Benson, 1988: 26). *“As managers experience more volatile marketplaces, global competition, shortened product life cycles, customer pressures for tailored offerings and tighter*

*performance standards, they increasingly depend on new information systems.” (Feeney and Willcocks, 1998: 90).*

Technology has become a significant enabler of business strategies. Swift (1992: 37) states that:

*“You can’t effectively exploit IT without a clear understanding and articulation of the strategies of the business and its organisation and a complete alignment of IS/IT with business strategies.*

*You won’t recognise the potential of opportunities offered by IT without an awareness of its capability, potential application and investment justification in the context of the above and without keeping up-to-date on relevant developments.”*

In view of IT’s significance as a competitive resource, many organisations are already highly dependent on IT (Willcocks, 1994: 2). IT forms the backbone of today’s organisation, where it has the purpose to improve both business performance and the capabilities of the organisation (Davidson *et al*, 1997: 62, 89). Willcocks (1994: 2) maintains that how IT is applied, can have massive implications for an organisation, e.g., how the organisation can function; how it can be structured; and what it can achieve.

The use of IT has, in view of its potential as a business resource, increased substantially. Throughout the second half of the 20<sup>th</sup> century, IT has permeated almost all parts of modern society. It is now nearly impossible to isolate the impact of a computing investment (Davidson *et al*, 1997: 26). Renkema (2000: 3) suggests that we are at the start of a radical digitalisation of business activities. Organisations will become more and more dependent on IT in their search for corporate success and survival.

Long-term and capital-intensive business investments are made to increase effectiveness, to gain and sustain competitive advantage and to transform business processes. IT has become a critical business asset.

Since IT is constantly advancing and the demand for IT is constantly growing, organisations must regularly assess new technologies and ways to implement them (Davidson *et al*, 1997: 25). “*Nowadays, it is not so much the question of whether to invest, but more the question of how and where to invest in order to get maximum business value and to increase return on investment.*” (Renkema, 2000: 4).

The importance of IT as a competitive business resource has increased even further with the advent of the Internet. For instance, Patel and McCarthy (2000: 6) say that the Internet has different implications for companies that plan to engage in business-to-consumer marketing and sales than it does for those who use it for business-to-business purposes. All companies share, nonetheless, the Internet’s inclination for keeping communication and transaction costs low. The value of the Internet (also referred to as the Web) lies in its capacity to provide immediate access to information (Shapiro and Varian, 1999: 9).

CSC (2000: 2-3) states that history is rife with disruptive technologies that have completely changed marketplaces and refers to the Internet as a rapidly changing disruptive technology. The Internet and in particular the World Wide Web, has far-reaching implications that include:

- Enabling organisations to operate in ‘ultra-real time’, i.e., the business knows to the second exactly where it stands;
- Initiating the ‘extended’ enterprise’, an enterprise of enterprises that makes markets more efficient;



- Fostering a wide range of business strategies that leverage information assets and capabilities;
- Creating a new and fully interactive channel for business-to-consumer and business-to-business commerce;
- Re-defining customer service and enabling shifts in the customer-supplier relationship and what it means to get closer to the customer; as well as
- Opening the free flow of information within and between organisations.

The influence of the Internet will only get stronger as more organisations and individuals discover novel ways of using it (CSC, 2000: 3). There is often reference to an Internet revolution: *“We are in the midst of an Internet Revolution that will have an impact as big, if not bigger, than the Industrial Revolution. Today’s revolution is leveling the playing field and creating unprecedented opportunities for countries, companies, and individuals around the world. The result is an economy in which agility and the ability to adapt to change, not size, geographic location, or physical assets are the keys to success and survival.*

*In just five years since the introduction of the World Wide Web, the Internet economy already rivals the size of century-old sectors such as energy, automotive and telecommunications. Milestones that took up to 100 years to achieve in the Industrial Age are occurring at a staggering pace in this new economy.*

*It is increasingly evident that the adoption of Internet applications is the key to future growth. The countries and companies that will survive are those that learn to harness the power of the Internet to create competitive*

*advantage.*” (John Chambers, President and CEO, Cisco Systems, Inc. April 2000 in Patel and McCarthy, 2000: ix – x).

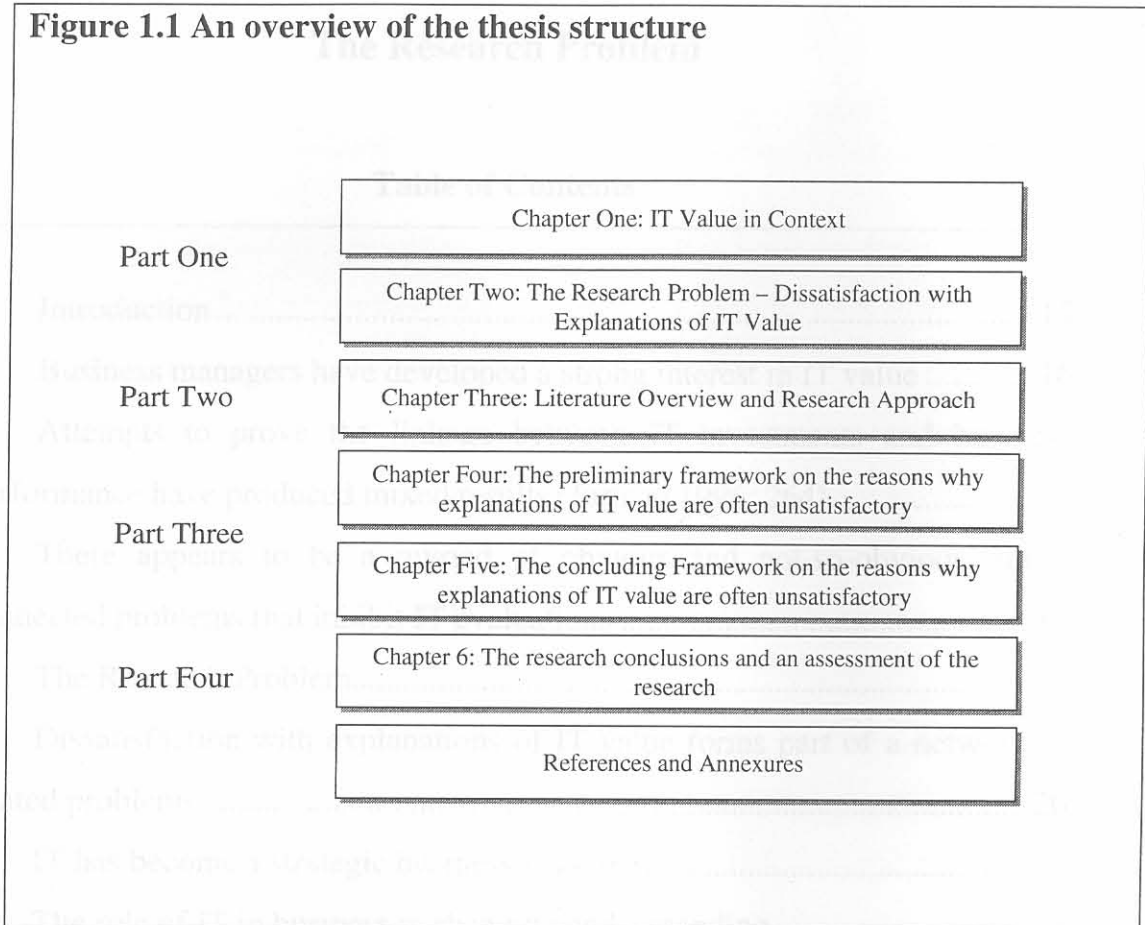
The turbulent and competitive business environment of today was discussed in the preceding part of the chapter. Advances in IT are to a large degree contributing to the turbulence and competitiveness. IT is also proving to be a key business resource for competing and surviving in this business environment. The remainder of Chapter One presents the overall structure of the thesis.

## **5. The structure of the thesis**

The thesis has begun by developing the broad context for the research and proceeds to discuss the research problem in this context. With the research problem defined, a literature study has been conducted to assess approaches relevant to the research problem. This enabled the research objective and a set of more specific research questions to be formulated. The research methodology is then discussed.

The thesis covers two more main areas. The first concerns the application of the research methodology in pursuit of the research objective. The last part of the thesis covers the major findings, conclusions and an assessment of the research results.

An overview of the structure of the thesis is presented in Figure 1.1 on the next page.

**Figure 1.1 An overview of the thesis structure**

The broad phenomenon to be researched, i.e., the value of IT was contextualised in this chapter. The specific research problem will be presented and discussed in detail in Chapter 2. Chapter 2 will also show and discuss how the general problem of dissatisfaction with explanations of IT value is part of a complex and seemingly unstructured network of related issues. Chapter 2 further presents the specific research question that will form the focus of the research.



## Chapter 2

# The Research Problem

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## The Research Problem

### 1. Introduction

Chapter 1 discussed the turbulent and competitive business environment of today. The chapter showed that advances in IT are, to a large degree, contributing to the turbulence and competitiveness. IT is also proving to be a key business resource for competing and surviving in this business environment. IT has been, and is still permeating virtually every part of modern society with far-reaching and profound consequences. *“It seems we are only at the start of a radical digitization of business activities, which will have a profound effect on virtually every organisation, both in the private and public sectors. Organisations have become increasingly dependent on IT in their search for corporate success and survival.”* Renkema (2000:3). The demand for IT is on the increase and as a result, companies are set to increase their already high investments in IT.

The purpose of Chapter 2 is to present the specific research problem and starts with a literature overview. There are various uses for literature in the Grounded Theory Method: the literature can be used for stimulating theoretical sensitivity; it can also be used as secondary sources of data or it can stimulate questions. The use of literature can direct theoretical sampling or act as supplementary validation (Strauss and Corbin, 1990: 51-52). The overview of literature about IT value has a dual purpose in this research. The first part, presented in Chapter 2, is to explore the phenomenon of dissatisfaction with explanations of IT value. The aim is to stimulate theoretical sensitivity and questions that will, in turn, facilitate the formulation of the research problem. The next part of the literature overview, described in Chapter 3, has the purpose to examine available

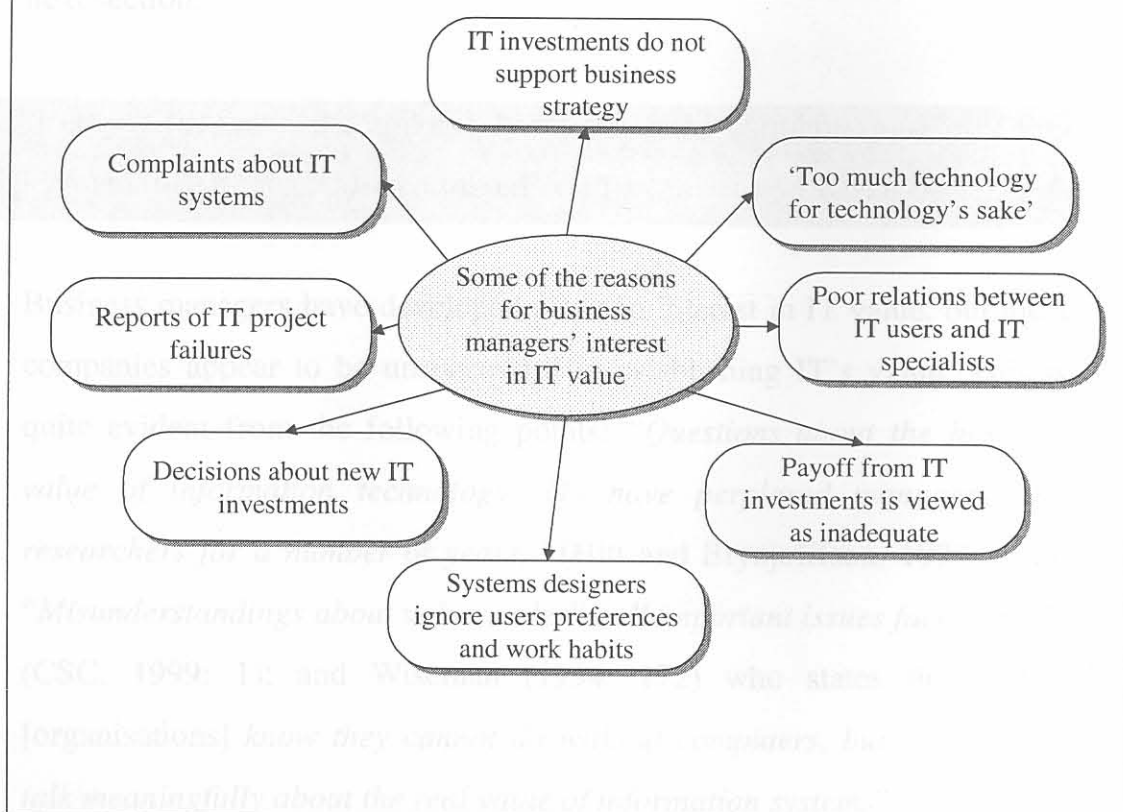


research and approaches that are relevant to the research problem. Once the literature overview has been completed, the research question will be posed and discussed in more detail.

## 2. Business managers have developed a strong interest in IT value

Business managers have a strong interest in IT value: *“Nowadays, it is not so much the question of whether to invest, but more the question of how and where to invest in order to get maximum business value and to increase return on investment.”* (Renkema, 2000: 4). There could be various reasons for managers’ interest in IT value as shown in Figure 2.1.

**Figure 2.1 Why business managers are interested in IT value** (sourced from Hochstrasser & Griffiths, 1991 and Bensaou & Earl, 1998)



In addition to the above reasons, Renkema (2000: 8) points out that senior managers are expecting more explicit responses to key questions like:

- How can we evaluate the business benefits of proposed IT investments?
- What is the contribution of our IT investments to improving our corporate strategy and business leverage?
- How can we monitor the progress and performance of investments, in order to identify improvement actions?
- How can we get evidence of adequate returns on the funds invested?

Business managers' interests in IT value have been confirmed and elaborated upon. The question can be asked though: "How successful have they been in establishing IT value?" This question will be addressed in the next section.

### **3. Attempts to prove the linkage between IT investments and business performance have produced mixed results (Jurison, 1996: 264)**

Business managers have developed a strong interest in IT value, but most companies appear to be unsuccessful in establishing IT's value. This is quite evident from the following points: "*Questions about the business value of information technology (IT) have perplexed managers and researchers for a number of years.*" (Hitt and Brynjolffson, 1996: 121); "*Misunderstandings about value underlie all important issues faced by IS*" (CSC, 1999: 1); and Wiseman (1994: 172) who states that "*They [organisations] know they cannot do without computers, but they cannot talk meaningfully about the real value of information systems*".

The troublesome history of demonstrating the return on and value of IT investments (IT investments have repeatedly been the subject of disappointed expectations) as well as the evaluation of IT raise many questions (Renkema, 2000: 7-8). Willcocks (1994: 3-4) state that the success in controlling and measuring IS investments has not been impressive and Axson (1992: 19) adds that achieving tangible benefits in terms of added value remains one of the major management challenges.

Since the evaluation and control of IT investments have become a vital task for management, the inability to effectively assess IT's value is a critical management issue (Willcocks, 1994: 2). The next section shows that the effective evaluation of IT forms part of a very complicated set of problems.

There are, however, further potential problems and complications

#### **4. There appears to be a myriad of obvious and not-so-obvious, interconnected problems that inhibit IT evaluations**

Remenyi *et al* (1995: 23) state that *“The evaluation of IT is at best a difficult process which in certain circumstances may be quite costly and therefore it should be made clear to everyone why this process is being undertaken.”*

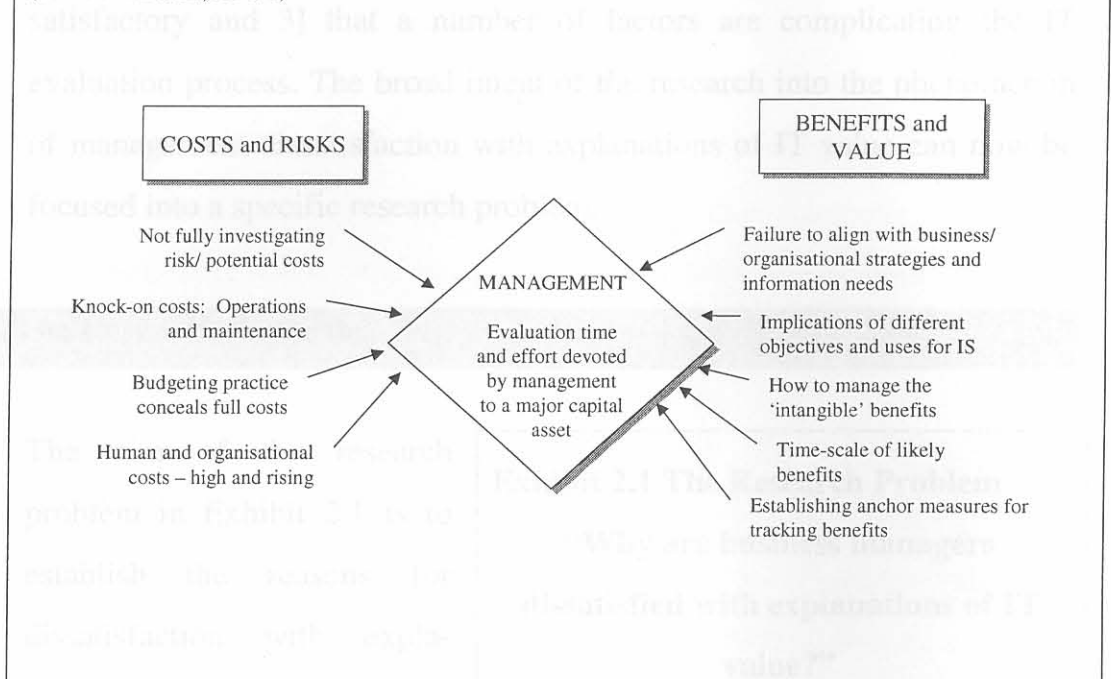
Many reasons have already been identified for the inability to effectively evaluate IT investments. In Figure 2.2, Willcocks highlights some emerging problems in evaluating IT. The problems center around three points: IT costs and risks, IT benefits and management's involvement in such evaluations.

The preceding discussions confirmed that 1) business managers have developed a strong interest in IT's value, 2) the IT evaluation process



**Figure 2.2: Emerging problems in the evaluation of the IS contribution**

(Source: Willcocks, 1994: 5)



There are, however, further potential problems and complications. Renkema (2000: 28-33) shows in Table 2.1 why investment evaluations are complex and also why investment evaluations are critical.

<b>Investment evaluation: why critical?</b>	<b>Investment evaluation: why complex?</b>
<ul style="list-style-type: none"> <li>• Preventing the misallocation of financial resources</li> </ul>	<ul style="list-style-type: none"> <li>• Benefits are difficult to assess, measure and manage</li> </ul>
<ul style="list-style-type: none"> <li>• Improving business performance</li> </ul>	<ul style="list-style-type: none"> <li>• Costs are high and difficult to predict</li> </ul>
<ul style="list-style-type: none"> <li>• Creating a shared investment vision and capturing learning opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Large uncertainties and major risks</li> </ul>
<ul style="list-style-type: none"> <li>• Allowing profitable exploitation of IT-based infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Communication problems and stakeholder politics</li> </ul>

The preceding discussions confirmed that 1] business managers have developed a strong interest in IT's value, 2] that IT evaluations are

producing mixed results, i.e., explanations of IT value are not fully satisfactory and 3] that a number of factors are complicating the IT evaluation process. The broad intent of the research into the phenomenon of management dissatisfaction with explanations of IT value can now be focused into a specific research problem.

## 5. The Research Problem

The aim of the research problem in Exhibit 2.1 is to establish the reasons for dissatisfaction with explanations of IT value. This approach is considered quite

### Exhibit 2.1 The Research Problem

**“Why are business managers  
dissatisfied with explanations of IT  
value?”**

appropriate, because real progress with the issue of dissatisfaction with explanations of IT value will depend on a better understanding of this apparently very complex problem. In order to progress with this issue, we need to appreciate which factors complicate explanations of IT value, how these factors could influence the issue and also how they relate to each other. The remainder of Chapter 2 will further examine the issues that possibly relate to the phenomenon of management’s dissatisfaction with explanations of IT value.

## 6. Dissatisfaction with explanations of IT value forms part of a network of related problems

Certain factors associated with the dissatisfaction with IT value explanations have already been discussed in the previous sections. There

are additional factors pertinent to why managers could be dissatisfied with explanations of IT value.

For instance, determining business managers' role in managing IT vs the role of the IT manager; changes in performance measures (including measures of IT value); the many and often diverse IT evaluation methods and the views business managers have of IT are some of the factors. It would appear that these factors are quite inter-related and seem to form a complex network of related problems.

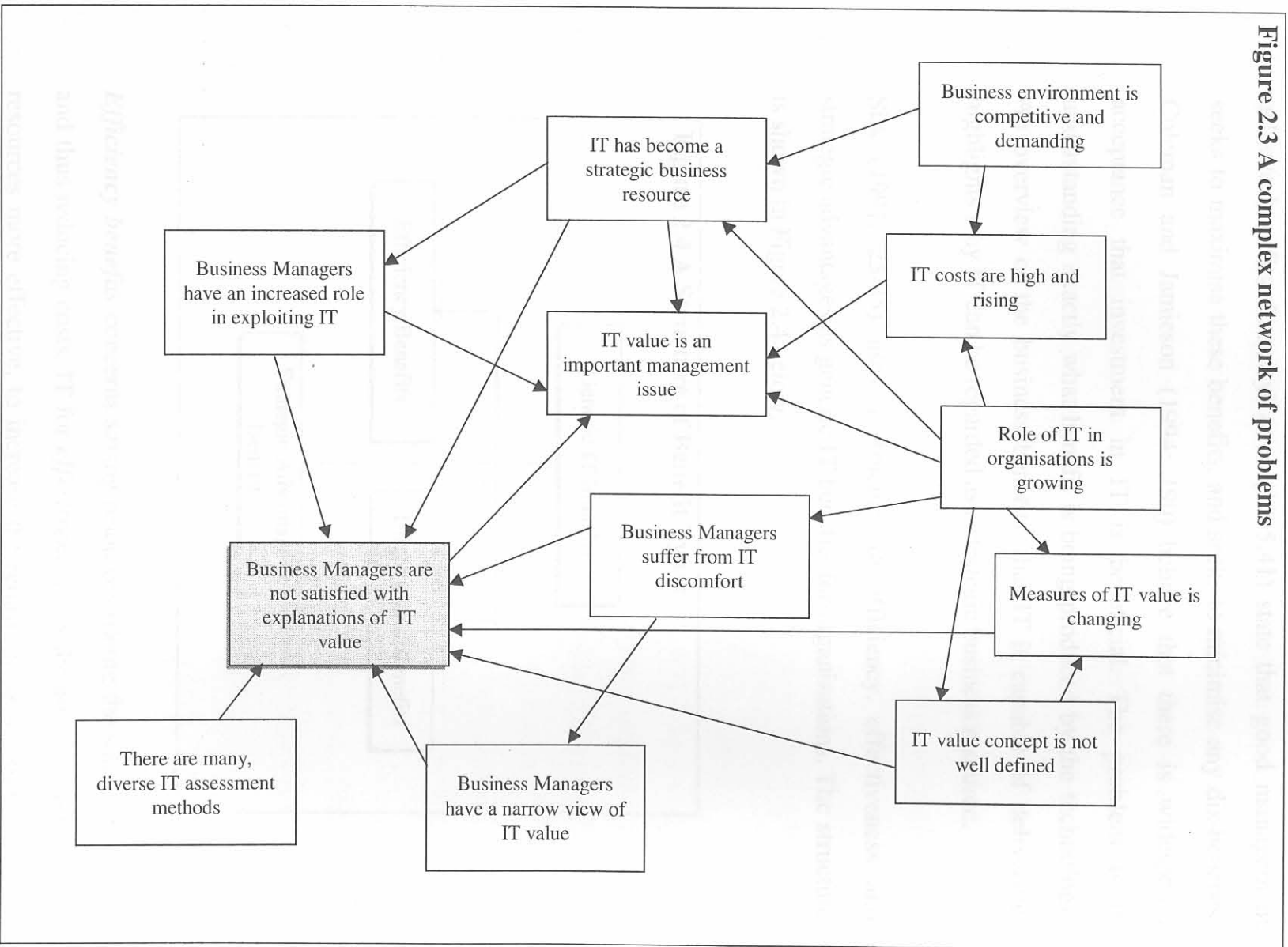
This network of issues is shown in Figure 2.3 (This figure has primarily been derived from Renkema, 2000; Jurison, 1996; Strassman, 1997; Remenyi *et al*, 1995; Willcocks, 1994; Axson, 1992; and Hochstrasser and Griffiths, 1991).

The turbulent and competitive business environment was already discussed in Chapter 1. Each of the other issues will now be discussed in more detail in the following sections.

## 7. IT has become a strategic business resource

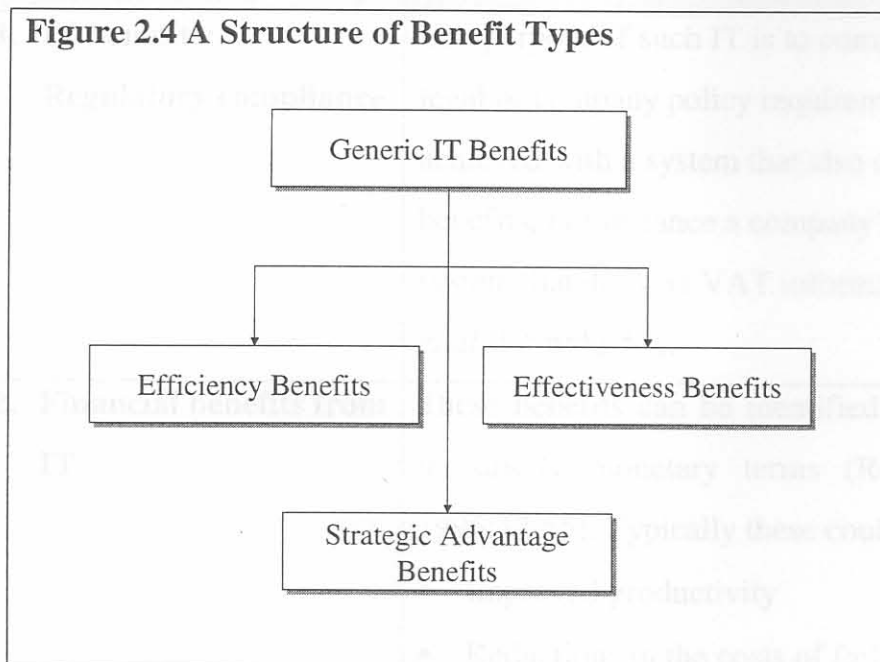
Although the strategic importance of IT as business resource was described in Chapter 1, the purpose of this section is to illustrate the spectrum of benefits that makes IT of strategic importance. The wide range of benefits from IT also complicates the evaluation of IT. Remenyi *et al* (1995:40) adopted the following as a definition of an IT benefit: '*An IT benefit is an advantage or good, something produced with the assistance of computers and communications for which a firm would be prepared to pay.*'





The implementation of computers systems in an organisation is meant to achieve benefits. Remenyi *et al* (1995:41) state that good management seeks to maximise these benefits, and seeks to minimise any dis-benefits. Coleman and Jamieson (1994: 190) believe that there is widespread acceptance that investment in IT is beneficial. The problem is in understanding exactly what benefit is being produced by the technology. An overview of the business benefits, that IT is capable of delivering, highlights why IT can be regarded as a strategic business resource.

Silk (1991: 25-35) uses a structure of efficiency, effectiveness and strategic advantages as generic IT benefits for organizations. The structure is shown in Figure 2.4 below.



*Efficiency benefits* concerns saving resources (doing the same job better) and thus reducing costs. IT for *effectiveness* has the aim of making other resources more effective, to increase the return on these assets, it is not about immediate cost savings. It also aims to not only do the same job



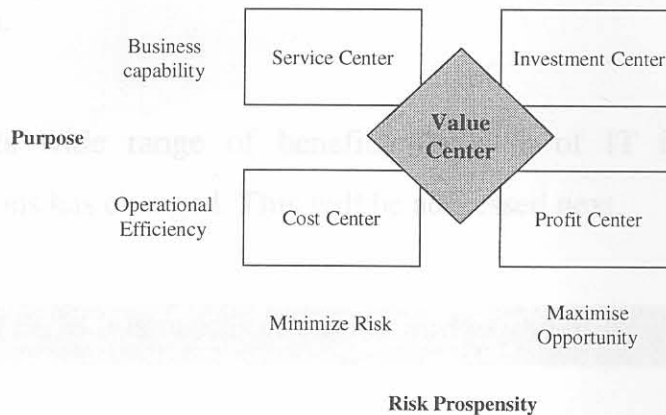
better, but doing a better job overall. This benefit may provide scope for growing or improving the business. The third generic IT benefit is about *improving the business* through using IT to add value to products or to deliver or support products. This type of benefit concerns new ways of doing new business. The resources referred to include people, money, material, energy, time and information.

Remenyi *et al* (1995:42-55) discuss five classes of benefits. Table 2.2 provides a brief description of each of the benefit categories according to Remenyi *et al*:

<b>Benefit Category</b>	<b>Description</b>
<b>1. IT benefits: Regulatory compliance</b>	The purpose of such IT is to comply with some legal or company policy requirement. It may be achieved with a system that also delivers other benefits. For instance a company's accounting system that delivers VAT information (Remenyi <i>et al</i> , 1995:42-55).
<b>2. Financial benefits from IT</b>	These benefits can be identified and measured in strictly monetary terms (Remenyi <i>et al</i> , 1995:42-55). Typically these could be ... <ul style="list-style-type: none"> <li>• Improved productivity</li> <li>• Reductions in the costs of failure</li> <li>• Improved cash flow and reduced bad debts</li> <li>• Reduced computer costs</li> <li>• Reduced overhead costs</li> </ul>

<p><b>3. Quality of service benefits from IT</b></p>	<p>These benefits affect customers directly. A financial value can often be attached to them (Remenyi <i>et al</i>, 1995:42-55). Examples of such benefits are:</p> <ul style="list-style-type: none"> <li>• Improved response times</li> <li>• Improved interface with clients</li> <li>• Improved resource utilisation</li> </ul>
<p><b>4. Internal management benefits from IT</b></p>	<p>These intangible benefits include better decision making or improving management productivity (Remenyi <i>et al</i>, 1995:42-55)</p>
<p><b>5. Benefits from IT infrastructure</b></p>	<p>Because of the enabling nature and shared nature of IT infrastructure, its benefits are more diffuse and difficult to measure than the benefits of more traditional systems. The real value of IT infrastructure comes from its flexibility - the ability to provide options for leveraging future IT applications (Jurison, 1996: 267)</p>

Silk as well as Remenyi *et al* have used categories to depict the many different benefits that IT is capable of producing. Venkatraman's (1997: 52-53) concept of a Value Center shows yet another way of grouping IT benefits. The Value Center concept is shown in Figure 2.5

**Figure 2.5 The Value Center Concept**

From the Value Center concept, four interdependent sources of value from IT resources are recognised.

- The *cost center* has an operational focus that minimizes risks and emphasises operational efficiency.
- The *service center* (while continuing to minimise risk) aims to create IT-enabled business capabilities in support of strategy.
- The *investment center* has a long term focus to create new IT-enabled business capabilities.
- The *profit center* is lastly, designed to deliver IT services to the external market place. The purpose is incremental revenue and to achieve experience in becoming a world-class IT organisation.

This section has shown that IT is capable of a wide range of benefits that ranges from operational to strategic in nature. This not only confirms IT's potential as a strategic resource, but also provides insight into the difficulties in accounting for the wide range of benefits in an IT evaluation.

Due to its wide range of benefits, the role of IT in business and organisations has changed. This will be addressed next.

## 8. The role of IT in business is changing and expanding

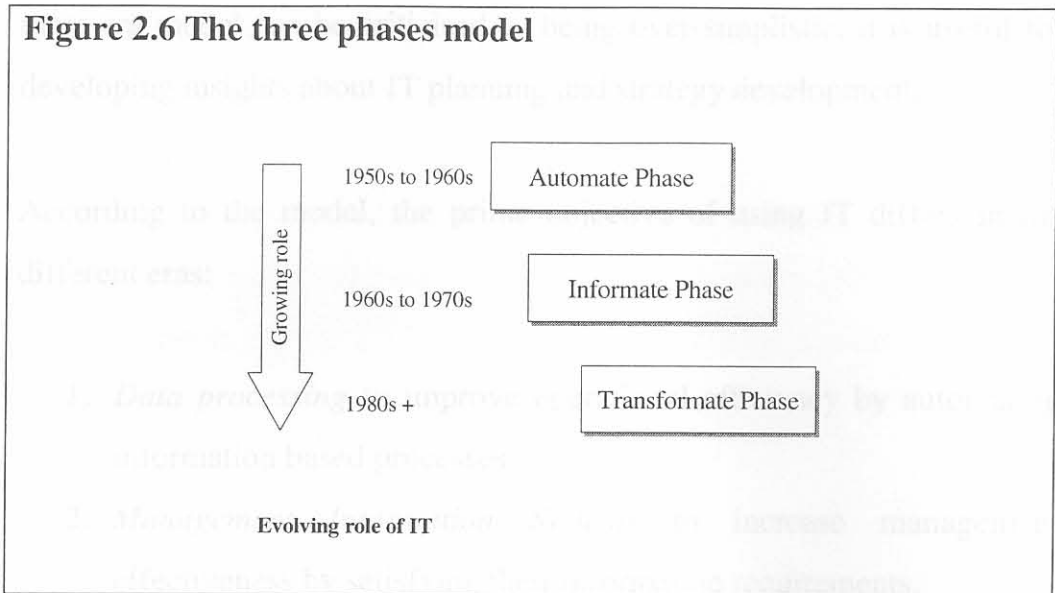
Many new IT systems are no longer introduced for the purpose of improving operational efficiency, but for creating competitive advantage or strategic opportunities in the future. Various models exist to illustrate the resulting changed role of IT in business and in organisations.

A number of these models will now be reviewed. A popular model is the one showing how the role of IT has evolved through three distinctive phases since the introduction of computers in the 1950s (Remenyi *et al*, 1995: 2-4). The model is depicted in Figure 2.6.

The transformate phase started in the late 1980s. It has developed the awareness that IT can be used in a way to radically change the way an organisation does business. The nature of the organisation can even be changed.

Ward and Gillfain (1996: 10-12) discuss the evolving role of IT. Ward and Gillfain (1996: 10-12)





The **automate phase** spanned the late 1950s and 1960s. The emphasis was on reducing routine and tedious work. The primary benefits were greater speed and accuracy as well as cost reductions in certain areas. Increased profit or cash flow or improved ROI or competitive position was not considered as computer-related issues.

The second or **informate phase** stretched from the 1970s to the 1980s. The aim was to facilitate the improved management and control of the organization. More success was however achieved in improving organizational efficiency than in improving effectiveness.

The **transformate phase** started in the early 1980s. It has developed from the awareness that IT can be used in some cases to radically change the way an organization does business. The nature of the organization can even be changed.

Ward and Griffiths (1996: 10-12) use a three-era model to depict the evolving role of IT. Ward and Griffiths maintain, that while a simple

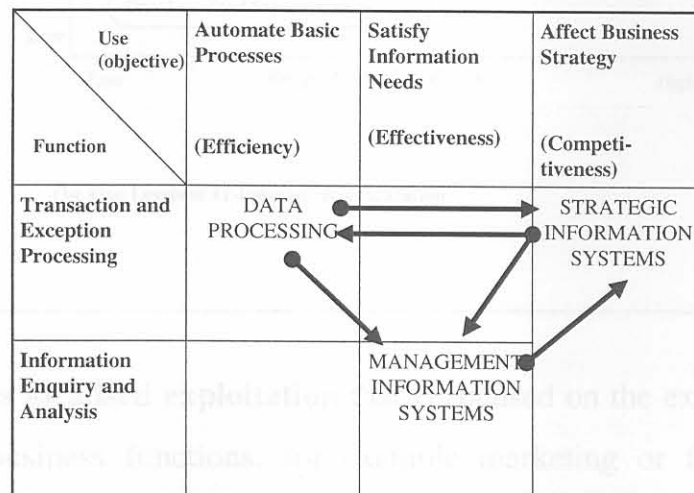
three-era model can be criticised as being over-simplistic, it is useful for developing insights about IT planning and strategy development.

According to the model, the prime objective of using IT differs in the different eras:

1. *Data processing* to improve operational efficiency by automating information based processes.
2. *Management Information Systems* to increase management effectiveness by satisfying their information requirements.
3. *Strategic Information Systems* to improve competitiveness by changing the nature or conduct of business.

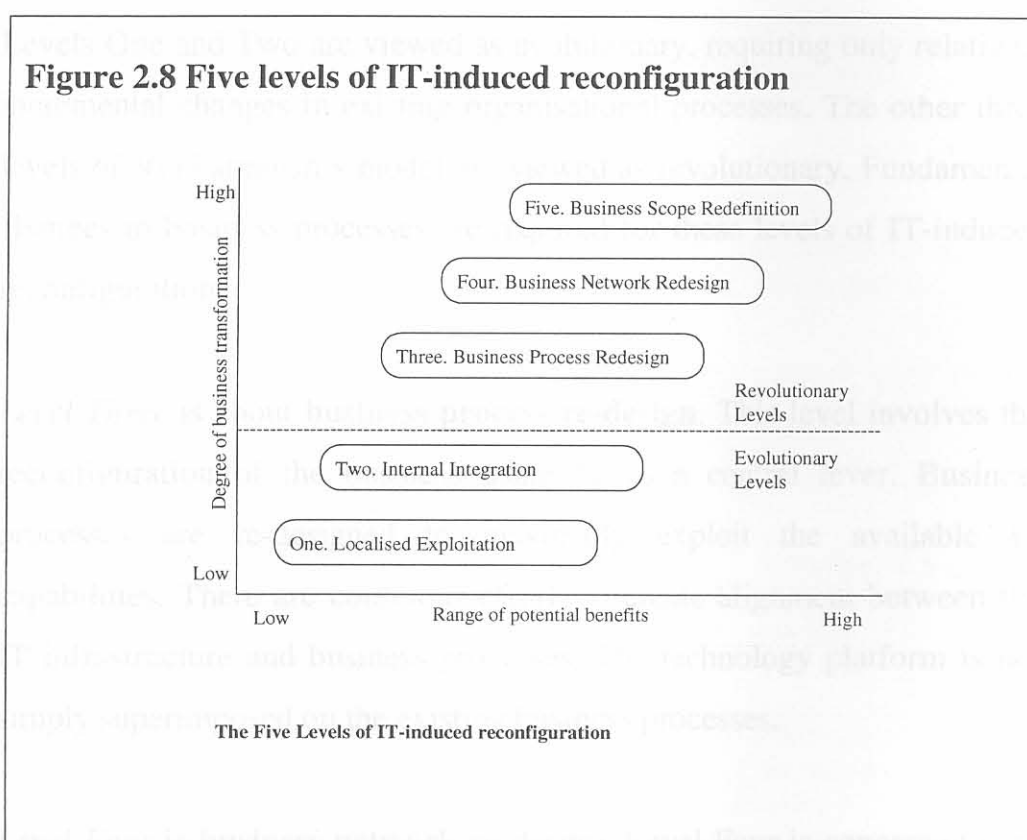
The model is shown in Figure 2.7 (sourced from Ward and Griffiths, 1996: 12).

**Figure 2.7 The three era model**



Ward and Griffiths emphasize that the use of ‘eras’ does not suggest a sequential relationship. Automating basic processes and satisfying information needs are still relevant today.

Venkatraman (1991: 125-150) uses another model to display the changing role of IT. The model is based on five levels of IT-induced reconfiguration and is shown in Figure 2.8. Each of the levels will be discussed in more detail.



*Level One* is **localised exploitation** that is focused on the exploitation of IT within business functions, for example marketing or finance. The objective of deploying IT in this level is to improve the task efficiency of operations. Related areas of operation are not necessarily affected.

*Level Two* is about **internal integration** and is a logical extension of level one. This is achieved through exploiting IT capabilities in all the possible activities within the business process. Firstly technical integration of the different applications and systems using a common IT platform is important. Secondly integrating the roles and responsibilities that exploits the capabilities from the technical integration is important. Both business effectiveness and efficiency are potentially enhanced.

Levels One and Two are viewed as evolutionary, requiring only relatively incremental changes in existing organisational processes. The other three levels of Venkatraman's model are viewed as revolutionary. Fundamental changes in business processes are required for these levels of IT-induced reconfiguration.

*Level Three* is about **business process re-design**. This level involves the reconfiguration of the business using IT as a central lever. Business processes are re-designed to maximally exploit the available IT capabilities. There are conscious efforts to create alignment between the IT infrastructure and business processes. The technology platform is not simply superimposed on the existing business processes.

*Level Four* is **business network re-design**. Level Four is concerned with the reconfiguration of the scope and tasks of the business network involved in the creation and delivery of products and services. This refers to business tasks both within and outside the formal boundaries of a focal organisation. Electronic integration across key partners in the changed business network becomes the dominant strategic management challenge.



**Business scope redefinition** is the fifth and last level. This touches the reason for existence of an organisation. It considers *enlarging* the business mission and scope (through related products and services) as shifting the business scope (through the substitution of traditional capabilities with IT-enabled skills).

The five levels can be summarised as follows (Venkatraman, 1991, 150):

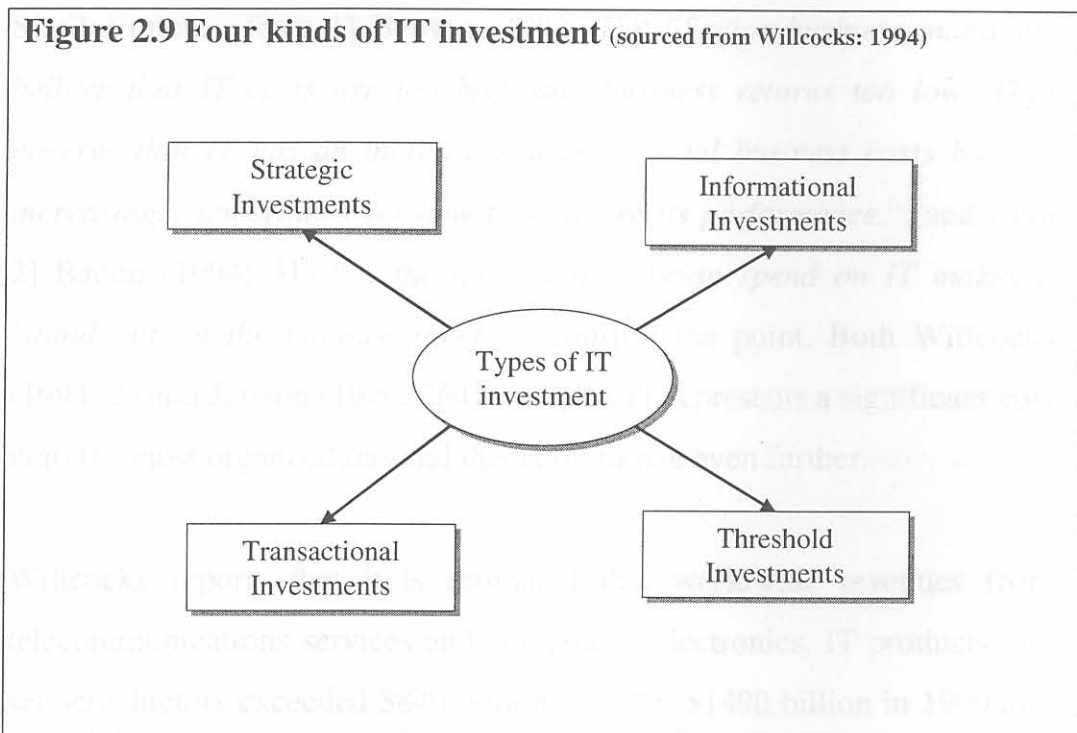
Level	Theme	Potential Impacts	Major Objectives	Management Implications
One	Localised Exploitation	Potentially high savings in narrow areas of business	Reduced costs and/or improved service	Identify firm-specific areas for exploitation
Two	Internal Integration	Integration offers both efficiency and effectiveness	Elevate IT as a strategic resource	Articulate the logic for integration
Three	Business Process Redesign	Powerful in creating differential capabilities in the market place	Re-engineer the business with IT lever	Strategy-IT alignment
Four	Business Network Redesign	Opportunities for creatively exploiting capabilities	Create a virtual organisation and occupy a central position in the network	Articulate the logic of the network redesign for the local firm
Five	Business Scope Redefinition	Altering the business scope both pro-actively and reactively	Identify new business as well as potential threats	Identification of new scope of business

The four kinds of IT investments mentioned by Willcocks (1994: 15-16) demonstrate the present prominent role of IT in business:

- **Strategic investments** have the purpose of longer-term competitive advantage and revenue growth.
- **Informational investments** are associated with medium-term goals of improving management decision-making.

- *Transactional investments* have the aim of reducing the costs of doing business.
- *Threshold investments* may be required in order to compete in a particular industry - they are necessary for the organization's survival.

**Figure 2.9 Four kinds of IT investment** (sourced from Willcocks: 1994)



This section has described how the role of IT has developed from achieving operational efficiencies to the attainment of strategic and competitive advantages. In view of IT's growing role in organisations and their business strategy, it is no surprise that IT investment levels and costs are also on the increase.

## 9. IT investments and costs are high and still increasing

IT costs are a major management concern. Renkema (2000: 10) states that: *"Investments in IT-based infrastructure constitute a major and increasing*

*portion of the capital expenditures of the modern enterprise. These investments not only determine a firm's efficient and effective business operations today, but also to a large extent the ability to improve its future performance. Top management no longer wants to treat the value prospects of proposed investments as articles of blind faith."*

Similar quotes, from 1] Benson (1998: 75): *"Senior business managers believe that IT costs are too high and business returns too low. They observe that IT has an increasing share of total business costs but are increasingly uncertain over how to measure its performance."*; and from 2] Bacon (1994: 31) *"... the amount now being spend on IT makes it 'stand out on the balance sheet' "*, confirm the point. Both Willcocks (1994: 2) and Jurison (1996: 264) state that IT represents a significant cost item for most organizations and this is set to rise even further.

Willcocks reports that it is estimated that worldwide revenues from telecommunications services and equipment, electronics, IT products and semiconductors exceeded \$840 billion in 1985, \$1490 billion in 1990 and are predicted to exceed \$2100 billion in 1995. Some predictions indicate that by the year 2000, the whole IT industry would account for some 10% of world economic activity. There is also a rising trend in IT expenditure (Willcocks, 1994:1-2; Peters, 1994: 99). Renkema (2000: 5) states that IT investment claims a major and increasing part of a firm's financial resources.

The increases in IT investment and cost levels have increased management's interest in the returns and value from IT. This point was already discussed earlier in the chapter.



## 10. Business managers have a growing role in managing IT for value

Traditionally the responsibility for achieving value from IT is regarded as mainly that of the IT department. Business managers have not necessarily seen themselves as being directly responsible for getting value from IT. There is also the implicit assumption in many organisations that IT benefits will accrue automatically (Willcocks, 1994; Remenyi *et al*, 1995, Wang, 1994).

Organizations have realized that IT benefits do not happen automatically. With the emphasis on managing IT for value (i.e., deploying and using it effectively), business managers are assuming a much more direct role in managing the deployment and use of IT, i.e., the process of managing IT for value. The increased business importance of IT is dictating that business managers and not IT managers direct the organization to maximize value from the use of IT (Remenyi *et al*, 1995; Strassman, 1997).

Business managers' interest in IT value was long focused on mainly the decisions about new IT investments. This interest is now shifting to the optimization of benefits from IT assets. It is acknowledged that business managers have a growing role in managing IT for value, in other words ensuring that the targeted IT benefits are realised. Business managers are realising that in the very competitive business world, using IT effectively has become a critical success factor for many organizations (Willcocks, 1994).

Axson (1992) also maintains that business management needs to direct the deployment and use of IT to the best advantage of the organization. King

(1997) notes, in addition that “*Business managers, not technology managers, should take responsibility – and be held accountable – for achieving the financial and strategic goals of IT investments.*”

This has implications for business managers and for IT evaluation. “*Given the large and rising expenditure on IT and its potential critical importance, clearly, the evaluation and control of IT investments becomes a vital management task.*” (Willcocks, 1994: 2). Establishing the value achieved from IT, is for business managers, integral to the process of managing IT for value. Business managers’ interest in new IT investments has expanded. They are now also interested in IT value measurement as an indication of how well or how effective the deployment and use of IT are being managed (Remenyi *et al*, 1995; Jurison, 1996).

## 11. Business managers are not comfortable with IT

One of the complications stemming from managers’ increased role in exploiting IT is that many of them suffer from IT discomfort (Wang, 1994; Silk, 1991). Most executives do not have a clear picture of what IT’s value to the business really is or what it should be (Swift, 1992).

These business managers do not fully understand how to use information technology to create value or to further their business goals (Reimus, 1997). “*One of the most important aspects of selecting a job is to ensure that senior management is willing to commit the dollars required to turn the IT department around. One of the ways I tested this commitment was by examining the senior executives’ personal relationship with technology. If they are unwilling to use computers or to go on-line, or even unwilling to learn about technology, it is very difficult to communicate to them the*

*value of technology.*” (A citation from the Working Council for Chief Information Officers, 1999: 11). Hochstrasser and Griffiths (1991:23) state that, as much as 38% of companies believe that poor understanding of IT potential by senior management is a constraint on optimizing IT.

*Organisations and business managers prefer to see IT value expressed in terms of*

Business managers’ discomfort with IT manifests in various ways. Axson (1992: 22) mentions the poor decisions by senior management about IT investments. These decisions are made with little realistic appraisal of the true benefits to be realised. Willcocks (1994: 5) and Axson (1992: 23) maintain, in addition, that although IT is becoming more important, top management is not devoting enough time and effort to IT issues. (See also Figure 2.1 above.)

*rather than in terms of IT as an asset. This is*

According to McCusker (1992: 25) management is increasingly questioning the value-for-money from IT investments and the business effectiveness of IT. But McCusker then proceeds to pose an important question in this regard: “... *does business management know what they mean when they say they are looking for value-for-money out of IT?*”.

Closely related to management’s discomfort with IT, is the matter of how organisations view IT as a business resource.

## 12. Organisations tend to have a traditional view of IT

Dissatisfaction with IT value explanations could be related to how organisations view IT. In this context ‘view’ is considered to mean: “The manner or mode of looking at things, considering a matter ...” or “to consider, to form a mental impression or judgment of” (Cassell Paperback Dictionary 1998: 1226). ‘View’ is also described by the Oxford Advanced



Learner's Dictionary (1989: 1420) as a "way of understanding or interpreting a subject, series of events, etc."

Traditionally the interest in IT value tends to have a strong financial bias. Organisations and business managers prefer to see IT value expressed in quantified, financial terms. Over-emphasizing these aspects of IT value may cause them to lose sight of other less measurable, but still important IT benefits.

In their discussion of the role of the Corporate Information Officer (CIO) in adding value through IT, Earl and Feeney (1994: 13) refer to the importance of perceptions about IT. Earl and Feeney distinguish between perceptions of IT as a liability and perceptions about IT as an asset. This is elaborated upon in Table 2.3

<b>Issue</b>	<b>IT is a Liability</b>	<b>IT is an Asset</b>
Are we getting value for the money?	ROI is difficult to measure and the organisation is notably unhappy with IT as a whole	ROI is difficult to measure, but the organisation believes IT is making an important contribution
How important is IT?	Stories of strategic use of IT are dismissed as irrelevant to "this" business	Stories of strategic use of IT are seen as interesting and instructive
How do we plan for IT?	IT plans are made by specialists or missionary zealots	IT thinking is subsumed by business thinking

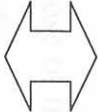
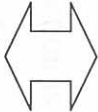
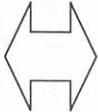
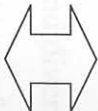

**Table 2.3 Perceptions about IT**

Issue	IT is a Liability	IT is an Asset
Is the IT function doing a good job?	There is general cynicism about the track record of IT	The performance of IT is no longer an agenda item
What is the IT strategy?	Many applications are under development	IT efforts are focused on a few key initiatives
What is the CEO's vision for the role of IT?	The CEO sees a limited role for IT within the business	The CEO sees IT as having a role in the transformation of the business
What do we expect of the CIO?	The CIO is positioned as a specialist functional manager	The CIO is valued as a contributor to business thinking and business operations

In developing a concept called the 'Value Center', (as discussed earlier), Venkatraman describe how organisations could view IT. Venkatraman distinguishes between viewing IT as a commodity and viewing IT as a strategic resource. These views are expanded upon in Figure 2.10. The left column of Figure 2.10 shows the traditional, more narrow view of IT's role (and thus of its value) in business operations. The column on the right reflects a more comprehensive view of IT as a potentially business resource.

A traditional or 'narrow' view of IT value can be questioned in light of the pervasive use of IT in organizations. Furthermore, the diverse range of

Figure 2.10 Organisational views on IT (from Venkatraman, 1997: 59)

Viewing IT as a commodity		Viewing IT as a strategic resource
We deploy IT to overcome weaknesses in our current operations		We view IT as a fundamental driver of future business activity
We see IT as an expense to be managed		We see IT as a resource to be leveraged
We view IT outsourcing as a threat to our operations		Our outsourcing strategy balances insourcing with outsourcing
We use one rigid criterion for assessing value from IT		We adopt multiple criteria for measuring IT value
Our IT operations reflect a captive, internal monopoly		Our IT operations act as a solutions integrator to business requirements



benefits and effects from IT owning, deploying and using IT require that IT's value no longer be thought of in financial terms only. As suggested by the right-hand column of Figure 2.10, a more comprehensive view of IT's value seems necessary (Strassman, 1990; Remenyi *et al*, 1995; Willcocks, 1994).

It can be argued that the way an organisation views IT and its role in business, will influence the approaches and methods being used to assess IT for value and ultimately the answers expected of IT value questions. Some approaches and methods are discussed next.

### 13. A range of methods is available to assess IT's value

The purpose of this section is show the wide and diverse range of methods available for assessing IT's value. The key features of the various types of methods will be discussed. More detailed discussions of some of the methods will be done in Chapter 3. (The perspective on IT evaluation methods, has primarily been sourced from: Renkema, 2000: 98 – 120; Remenyi *et al*, 1995: 63-67; Bacon, 1994: 32 and Willcocks and Lester, 1994:56-74.)

Renkema (2000: 101 – 104) classify IT investment appraisal methods into four basic types: the financial approach, the multi-criteria approach, the ratio approach and the portfolio approach. This classification will be used to illustrate the various types of evaluation methods.

Each of the evaluation types will now be briefly discussed:

**The Financial Approach:** These methods only consider impacts that can be valued from a monetary perspective. These methods have traditionally

been prescribed for decisions about all corporate investment proposals and focus on the incoming and outgoing cash flows resulting from the proposed investment. When appraising a project in financial terms the purpose is to evaluate what the financial returns is, as a consequence of the earnings and expenditures that result from the investment. Financial methods utilise project cash flows based on the time value of money. These are also called DCF (discounted cash flow) techniques. All projected cash outflows and inflows associated with a project are reduced or discounted back to the present. All the cash flows are expressed in present money values. In this way cash flows across different projects and time periods have a common basis for comparison.

***The Multi-Criteria Approach:*** An IT investment will generally have both financial and non-financial impacts. Non-financial impacts include positive and negative impacts that cannot easily be expressed in monetary terms. It is therefore difficult to compare the financial and non-financial impacts on an equal basis. Methods from the multi-criteria approach address this problem by creating one single measure for each investment. Before using a multi-criteria method, a number of decision criteria have to be designed. Scores are then assigned to each criterion for each alternative. Weights are further used to establish the relative importance of the respective alternatives. Multiplying the scores on different decision criteria by the assigned weights and adding or multiplying them calculates the final score of an alternative.

***The Ratio Approach:*** Methods within this approach use ratios to compare organisational effectiveness. Examples of such ratios are: IT expenditure vs total turnover; and all yields that can be attributed to IT investments vs total profits. Other ratios, which are non-financial in nature, are for

instance, IT expenditure vs the total number of employees or IT expenditure in relation to output measures like products or services.

**The Portfolio Approach:** Portfolio methods combine the comprehensiveness of multi-criteria methods with the graphic opportunities of portfolios. The number of evaluation criteria is generally less than in multi-criteria methods, but the result is often more informative.

The key features and examples of each evaluation approach are presented in Table 2.4 (sourced from Renkema, 2000: 101).

**Table 2.4 Summary of IT evaluation approaches**

Characteristics	Type of Method	Financial Methods	Multi-criteria		Ratio methods		Portfolio Investment Methods		
			Information Economics	SIESTA	Return on Management	IT Assessment	Bedell's method	Investment Portfolio	Investment Mapping
Objects of the method	Breadth	Project-level	Project-level	Project-level	Organisation-level	Project- & organisation level	Product- & organisation level	Project-level	Project- and organisation-level
	Type of application area	Business investments	IT investments	IT investments	Business investments	In investments	In investments	In investments	In investments
Evaluation Criteria	Financial	Earnings and expenditures	Earnings and expenditures (average accounting rate of return)	Unclear	Own measures	Yields and costs	Implicit assessment, specification of expenditures required	Earnings and expenditures (NPV)	Earnings and expenditures (IRR)
	Non-financial	None	4 business criteria; 1 technological criterion	7 business criteria 6 technological criteria	Unclear	Different business criteria	Quality and importance	Business domain and It domain separately	3 types of benefits and 3 investment orientations
	Risks	Deduction from expectations or coverage through adjusted discount rate	1 business risk 4 technological risks	4 business risks 8 technological risks	None	None	None	Deductions from expectations, spread can be specified	Spread can be specified
Support of the decision-making process	None	None	Discusses examples and mentions stakeholder groups	None	None	None	Maximal appraisal is once a year	Discusses responsibilities, addresses role of mgmt	None
Measurement scale		Ratio & interval	Ordinal	Ordinal	Interval	Several scales	Ordinal	Ordinal & interval	Ordinal & interval

This brief overview has highlighted the many and diverse methods being used to assess the value of IT. By implication, the diversity of methods



means that diverse explanations of IT value are possible. This could add to management's dissatisfaction with IT value explanations.

#### 14. IT value is a complex concept

IT's business value is not a single question, but is composed of many different questions. It is not only evaluation methods that are diverse and complex. The concept of IT value is fundamental to all these each. From the literature overview, it appears that IT value could be defined or described in various ways. Without a clear and agreed definition of what IT value constitutes, IT evaluations cannot be effective and explanations of IT value will not be acceptable.

But what is meant by the term 'value'? De Bono (1995: 130,149) says that value is relative to need. De Bono also says that there is no such thing as value, unless there are people involved. A value is something that provides benefit or that opens up the possibility of benefit for someone. De Bono (1995: 142) adds: "*A computer may do a lot of wonderful things. But if you are not going to need those wonderful things, what does it matter?*"

Value depends on who is doing the valuing and what is at stake. Perceptions of Information System (IS) value are constantly being formed and re-formed (CSC, 1999: 1,4). Manning (1998: 201) states that value is a question of perception. Value is a combination of price and performance for a particular product or service.

The impact and distribution of IT benefits can vary widely across stakeholder groups. The more IT pervades an organization, the greater the problem becomes of managing the impact and effects that the introduction

of IT will initiate. As a result, these stakeholder groups could have different perceptions and views of IT value (Jurison, 1996: 264-269).

Hitt and Brynjolfsson (1996) make reference to the point that the issue of IT's business value is not a single question, but is composed of several related but quite distinct issues. *IT's business value could look different depending on the vantage point chosen.* This point is well illustrated by Hitt and Brynjolfsson (1996) who, from an organisational perspective, found that IT contributions to organisation output are significant. In contrast, Strassman (1997) shows from an industry level perspective, that there is no correlation between spending on IT and productivity. Both are addressing IT value issues, but from different perspectives.

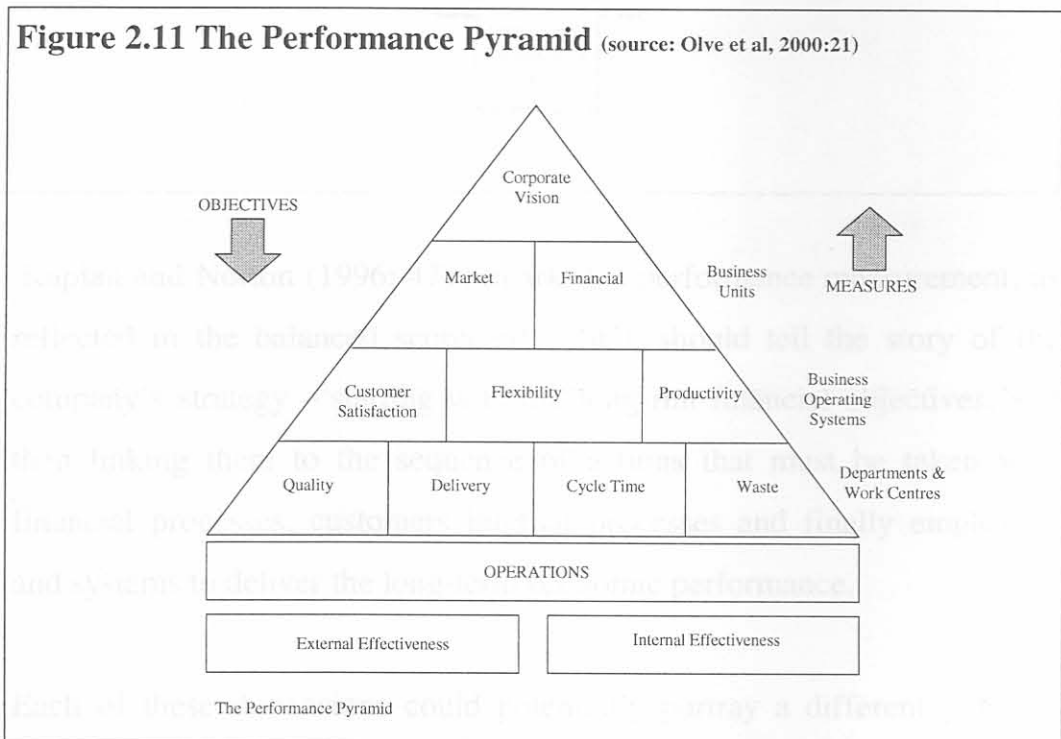
The preceding discussion has highlighted the difficulties inherent to the IT value concept. In summary, IT value is influenced by what is being evaluated and by the perspective of the stakeholder concerned. It is a question of perceptions and can change over time as needs or opportunities change. It would appear that the IT value concept could contribute to difficulties with explanations of IT value. How IT value is measured, is closely linked to how IT value is defined. From a value perspective, IT measures must further correlate to business performance measures.

## 15. Approaches to performance measurement are changing

Key to the evaluation of IT value is to establish links or correlations between business performance and the performance of IT investments. Changes in the way business performance are being measured, must therefore also be accounted for in IT evaluations.

There is a trend towards more comprehensive approaches to performance measurement. This is typically reflected in the balanced scorecard concept introduced by Kaplan and Norton (1996). Olve *et al* (2000: 19 – 23) refer to other some models comparable to the balanced scorecard: The Maisel balanced-scorecard model is quite similar to that of Kaplan and Norton (refer to Figure 2.13). Maisel also defines four perspectives, like Kaplan and Norton, from which the business should be measured. Maisel, however, uses a Human Resources perspective instead of a Learning and Growth perspective. There is also the performance pyramid proposed by McNair, Lynch and Cross. (See Figure 2.11) It is a customer-oriented model, linked to the company's overall strategy.

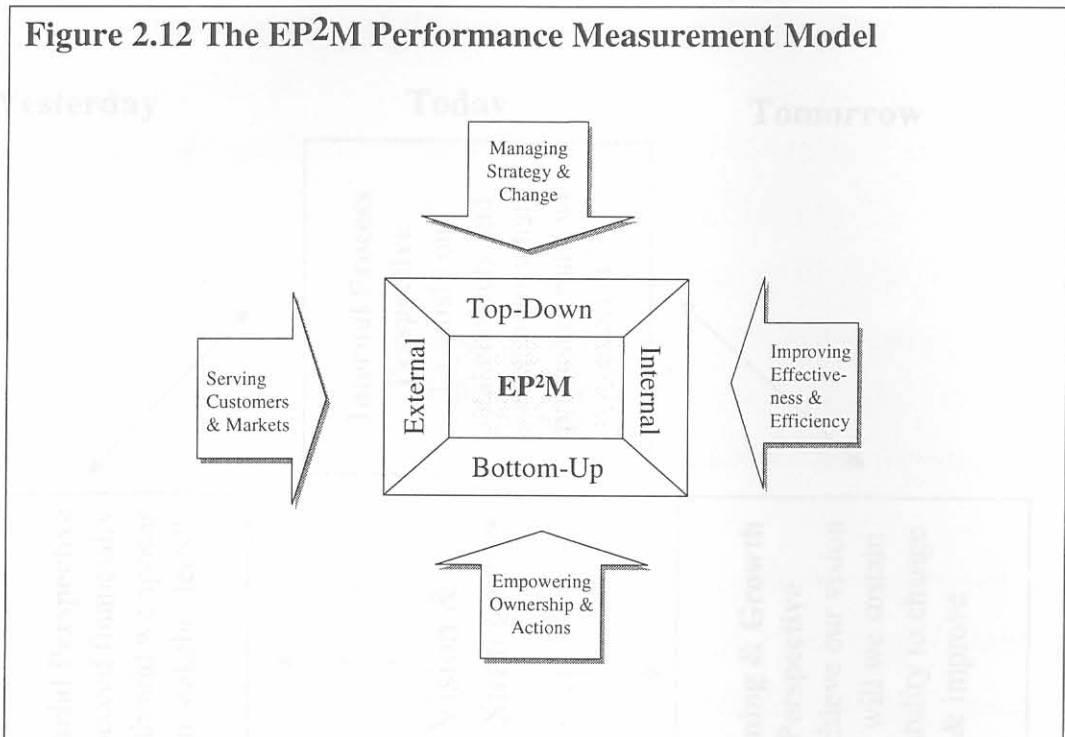
**Figure 2.11 The Performance Pyramid** (source: Olve et al, 2000:21)



The EP<sup>2</sup>M (which stands for effectiveness progress and performance measurement) model advocated by Adams and Roberts provides for external measures, internal measures, top-down measures and bottom-up



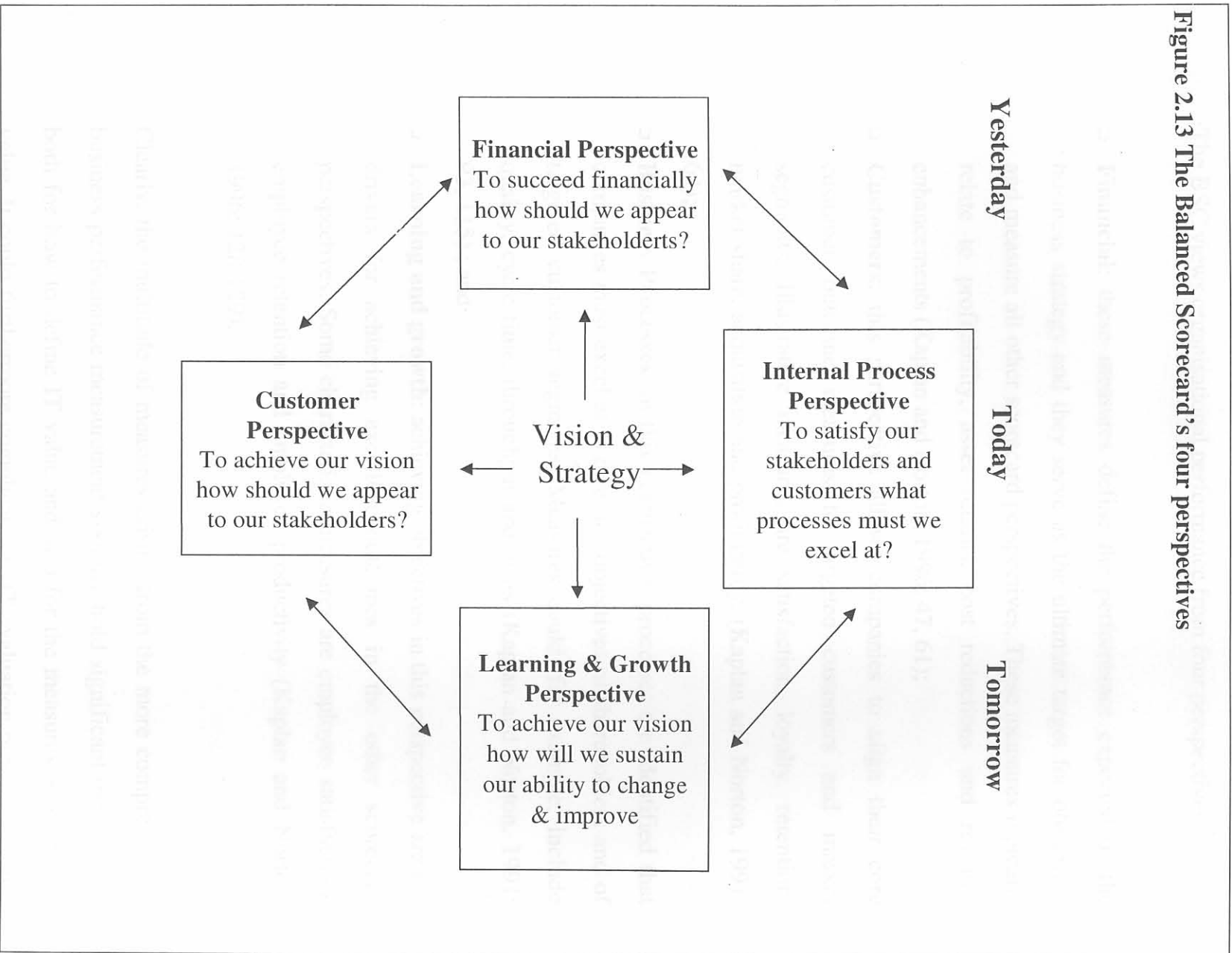
measures. Figure 2.12 shows more detail of the EP<sup>2</sup>M performance measurement model.



Kaplan and Norton (1996: 47) remark that performance measurement, as reflected in the balanced scorecard (BSC), should tell the story of the company's strategy – starting with the long-run financial objectives, and then linking them to the sequence of actions that must be taken with financial processes, customers internal processes and finally employees and systems to deliver the long-term economic performance.

Each of these dimensions could potentially portray a different point of viewing IT value. The four dimensions of the balanced scorecard are shown in Figure 2.13. The focus of each dimension, i.e., yesterday, today, tomorrow is also shown.

Figure 2.13 The Balanced Scorecard's four perspectives



The BSC views organisational performance from four perspectives:

- **Financial:** these measures define the performance expected of the business strategy and they serve as the ultimate target for objectives and measure all other scorecard perspectives. These measures typically relate to profitability, asset returns, cost reductions and revenue enhancements (Kaplan and Norton, 1996: 47, 61);
- **Customers:** this perspective allows companies to align their core customer outcome measures to targeted customers and market segments. Illustrative measures are satisfaction, loyalty, retention, market share, acquisition and profitability. (Kaplan and Norton, 1991: 63);
- **Business Processes:** in this perspective, processes are identified that companies must excel at to meet the objectives of shareholders and of targeted customer segments. Measures could, for example, include quality, cycle time, throughput and costs (Kaplan and Norton, 1991: 93, 115).; and
- **Learning and growth:** achieving objectives in this perspective are the drivers for achieving excellent outcomes in the other scorecard perspectives. Some characteristic measures are employee satisfaction, employee retention and employee productivity (Kaplan and Norton, 1996: 128-129).

Clearly, the multitude of measures arising from the more comprehensive business performance measurement systems, hold significant implications both for how to define IT value and also for the measures depicting IT value. It could furthermore complicate the IT evaluation process and thus also the resulting explanations of IT value.



## 16. Conclusion

Chapter 2 has discussed the growing interest of business managers in IT's value and related issues. Explanations of IT value are not always sufficient. It was shown that problems around unsatisfactory explanations of IT value forms part of a complex network of inter-related problems. As a result, the research problem has been phrased as: **“Why are business managers dissatisfied with explanations of IT value?”** It is believed that this will result in a better understanding of the phenomenon, which will in turn, facilitate the development of more effective approaches.

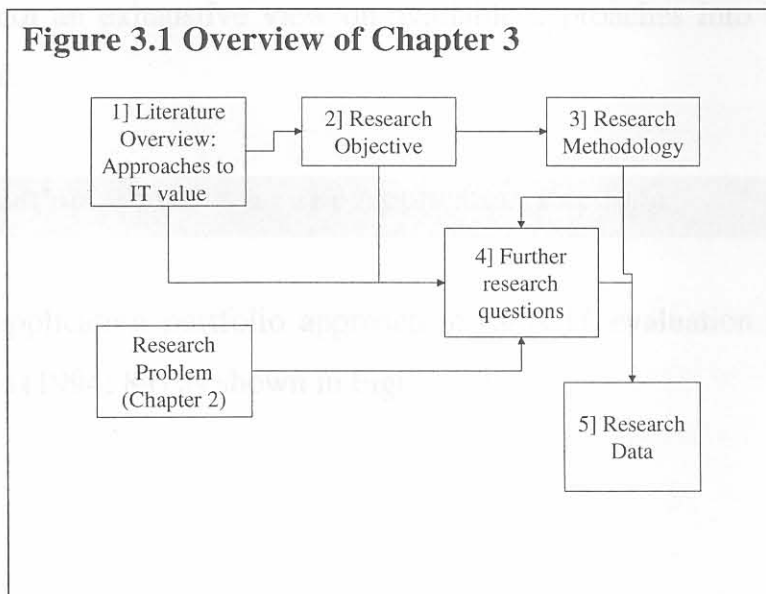
The literature overview will continue in the next chapter and will concentrate on research and approaches aimed at addressing the research problem. Chapter 3 will develop the research objectives and a set of supporting research questions. After discussing the research, the chapter sets out the overall approach to be adopted for the research into the issue of dissatisfaction with explanations of IT value. This overall research approach will lead to specific steps to achieve the research objective.

## The Literature Overview, Research Objective and Research Approach

### 1. Introduction

Chapter 2 presented the research problem as: “Why are business managers dissatisfied with explanations of IT value?” Chapter 2 further outlined, through a literature overview, a complex network of inter-related problems around the issue IT value.

Chapter 3 consists of two distinct parts. In the first part, the literature overview, which has been partially covered in Chapter 2, continues. The emphasis of the literature overview in this chapter is to examine various approaches to resolve difficulties regarding the issue of IT value. Figure 3.1 summarises the structure of Chapter 3.



A statement of the research objective concludes the first part of the chapter. The second part of Chapter 3 addresses the overall research

approach and research methodology. The development of further, more specific research questions which elaborate on and further detail the research problem, is addressed towards the end of Chapter 3. The literature overview that follows starts with an examination of the central issue of IT value.

## **2. IT value has been and still is the subject of much study**

Researchers have employed a range of different approaches to address the issue of IT value. Each of these approaches concentrates on a particular aspect of IT value, for instance, expressing IT value in financial terms, using different measures (by implication acknowledging that there is no universal definition of IT value), developing a variety of IT effectiveness measures and proposing the use of critical success factors.

The approaches considered in this chapter are viewed as a comprehensive but not an exhaustive view on available approaches into the issue of IT value.

## **3. IT evaluation approaches: The Application Portfolio**

An application portfolio approach towards IT evaluation is proposed by Ward (1994: 84) as shown in Figure 3.2.



**Figure 3.2 Application Portfolio approach** (Source: Ward, 1994: 85)

Strategic	High Potential
Applications which are critical to sustaining future business strategy	Applications which may be important in achieving future success
Applications on which the organisation currently depends for success	Applications which are valuable but not critical to success
Key Operational	Support

In essence, this approach involves the classification of IT for investment appraisal purposes. Classification is done according to two key parameters namely 1] the role of IT in the business and 2] the contribution that the IT is expected to make. The framework distinguishes between strategic, high potential, key operational and support investments.

#### 4. IT evaluation approaches: Options-Pricing Models

Options-pricing models are advocated by Dos Santos (1994: 134) for the financial analysis of strategic IT investments. Dos Santos (1994: 137-138) distinguishes between 'now-or-never' IT projects and projects that could be delayed. For the 'now-or-never' projects, the decision to invest must be made immediately, because most of the benefits go to 'early movers'. Such projects have a positive NPV (net present value) only if they are undertaken right away. For 'now-or-never' projects it is appropriate to make decisions using the NPV method.

Using the NPV for projects that can be delayed, may be inappropriate. For such projects, a positive NPV does not necessarily mean for the investment to proceed. Delaying such a project may prevent taking on a 'bad' project. Strategic IT projects may even have a negative NPV. These could turn out to be valuable investments if events turn out favorably. Cost and benefit uncertainties may be reduced by undertaking a preliminary investigation (PI). The aim is to determine under what circumstances would it be profitable to invest in the strategic IT project (SIT). The choice is compared to buying a call option instead of a firm's stock. Conducting a PI provides management with the option to invest in a project at a later date, if it appears to be a profitable investment at that time (Dos Santos, 1994: 139). Dos Santos proposes that the options-pricing model of Black and Scholes be used to determine the value of a Preliminary Investigation.

## 5. IT evaluation approaches: Productivity, Business Profitability and Consumer Surplus

Hitt and Brynjolfsson (1996: 122) maintain that the issue of IT value is not a single question, but is composed of related, but distinct questions. The questions they pose are 'Have investments in IT increased productivity?'; 'Have investments in IT improved business profitability?'; and 'Have investments in IT created value for consumers?'

In context of the three questions, the terms used by Hitt and Brynjolfsson (1996: 121) are defined in the following way:

1. Productivity – this measure is concerned with 'more' output for a given quantity of inputs.

2. Business profitability – this measure considers whether firms are able to gain competitive advantage and earn higher profits through IT.
3. Consumer surplus – this measure is about the size of benefits that have been passed on to consumers.

Hitt and Brynjolfsson find evidence that IT may be increasing productivity and consumer surplus, but not necessarily leading to business profits. *“Our empirical examination confirmed that, like any multidimensional object, IT’s value can look different depending on the vantage point chosen.”*

## 6. IT evaluation approaches: Financial Market Evaluation

The financial market valuation of firms can be used to estimate the intangible costs and benefits of IT according to Brynjolfsson and Yang (1997:147). They explain that the high levels of output associated with company investments, reflect both contributions of computers (IT) and of expensive, unmeasured and intangible assets. Such assets usually coincide with investments in IT. Typically these intangible and invisible assets are knowledge and information.

Brynjolfsson and Yang conclude that the costly investments in software, training and organisational transformation that accompany IT investments can be viewed as creating intangible assets that do not appear on conventional balance sheets. They maintain that the combined asset, consisting of computer capital and the intangible assets, may well earn normal returns (given the total cost). If only computer capital is measured, and then it could appear to be yielding excess returns (Brynjolfsson and Yang, 1997: 161).



## 7. IT evaluation approaches: Productivity of IT spending

Brynjolfsson and Hitt (1993: 47 – 64) use statistical methods to establish whether IS spending is productive. They assessed several econometric models regarding the contribution of IT to firm-level productivity. They base their approach on the standard production theory, where the output of a firm is a function of the inputs it uses:

$Q = f(C, K, S, L, i, t)$  and where the symbols represent the following: Q = quantity of output; f = production function; C = computer capital; K = non-computer capital; S = IS staff labour; L = other labour and expenses; i = industry or sector in which the business operates; and t = the year in which the observation was made. (The output and each of the input variables can be measured in either physical units or dollars).

Their study used firm-level data of IS spending for the period 1987 to 1991. The data set includes 380 large US firms. In contrast to Strassman's industry level analysis, their results show that IS contributions to organisational output is substantial and statistically significant. ROI (return-on-investment) for computer capital averaged 54% in manufacturing and 68% for manufacturing and services combined. They conclude that the productivity paradox has disappeared in the sample of firms they have investigated.

## 8. IT evaluation approaches: IT effectiveness measures

The effectiveness measures developed by Seddon *et al* (1998: 165-167) can contribute towards IT evaluation. They propose a two-dimensional matrix to classify IT effectiveness measures. The matrix was developed in response to the lack of clarity about what measures are appropriate in a particular context. One of the dimensions of the matrix is the type of IT system being studied, the other dimension refers to the stakeholder in whose interests the IT is being evaluated. The dimensions are explained further in Table 3.1 below.

<b>Type of system being assessed</b>	<b>Stakeholders</b>
<ul style="list-style-type: none"> <li>• a single IT application</li> </ul>	<ul style="list-style-type: none"> <li>• an independent observer</li> </ul>
<ul style="list-style-type: none"> <li>• a type of IT or IT application</li> </ul>	<ul style="list-style-type: none"> <li>• an individual user</li> </ul>
<ul style="list-style-type: none"> <li>• all the IT applications used by an organisation or a sub-organisation</li> </ul>	<ul style="list-style-type: none"> <li>• a group of users</li> </ul>
<ul style="list-style-type: none"> <li>• an aspect of a systems development methodology</li> </ul>	<ul style="list-style-type: none"> <li>• the management or owners of an organisation</li> </ul>
<ul style="list-style-type: none"> <li>• the IT function of an organisation or sub-organisation</li> </ul>	<ul style="list-style-type: none"> <li>• a country or mankind</li> </ul>

Seddon *et al* (1997:174) conclude that in a world of conflicting human interests and vastly different IT systems - varied, sharply-focused measures of IT effectiveness are needed for different purposes. Other issues identified are the huge range of measures that is required as well as the importance of identifying the context in which IT effectiveness is being evaluated.

## 9. IT evaluation approaches: Financial Analysis of IT Investments

Research by the Working Council for Chief Information Officers (1997) (Working Council for CIOs) argues that the emerging prescription by academics to abandon financial measurement is inappropriate. It is better to upgrade a firm's cost-benefit "toolkit" with a portfolio of more sophisticated measures. These measures need to reflect the diversity of the projects to be undertaken. ROI assessments should not be imposed upon all projects in a 'one-size-fits-all' way.

The Working Council for CIOs (1997) proposes a 2x2 matrix to categorise investments for the purpose of deciding on a suitable financial evaluation method. The dimensions of the matrix are: 1] the complexity of cash flows and 2] the uncertainty of the cash flows. The matrix is shown in more detail in Figure 3.3 (1997: 8) below.

**Figure 3.3**

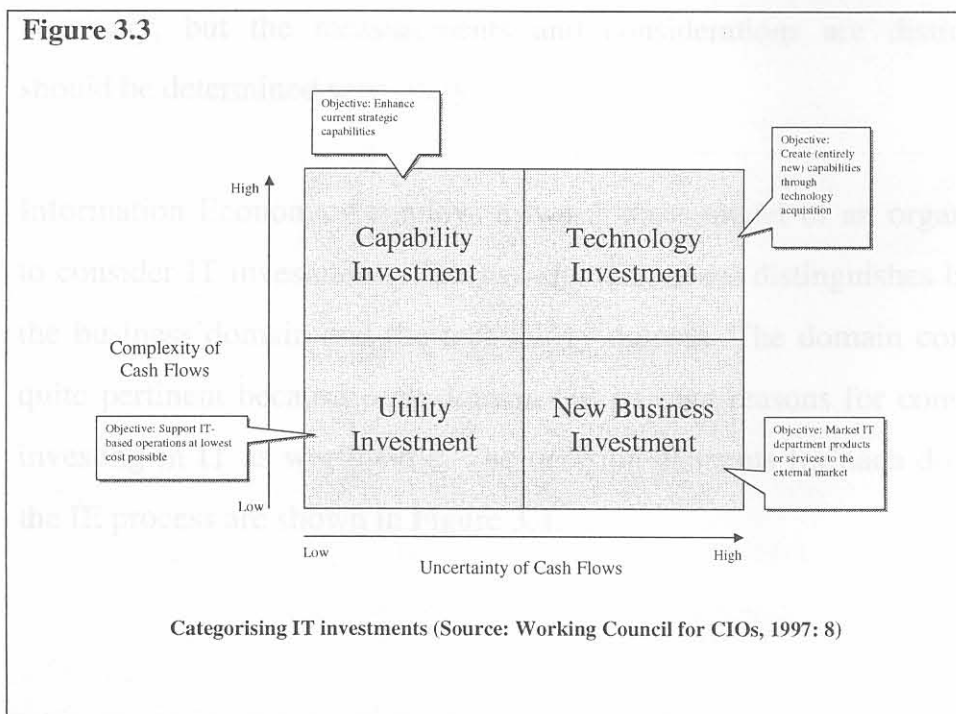


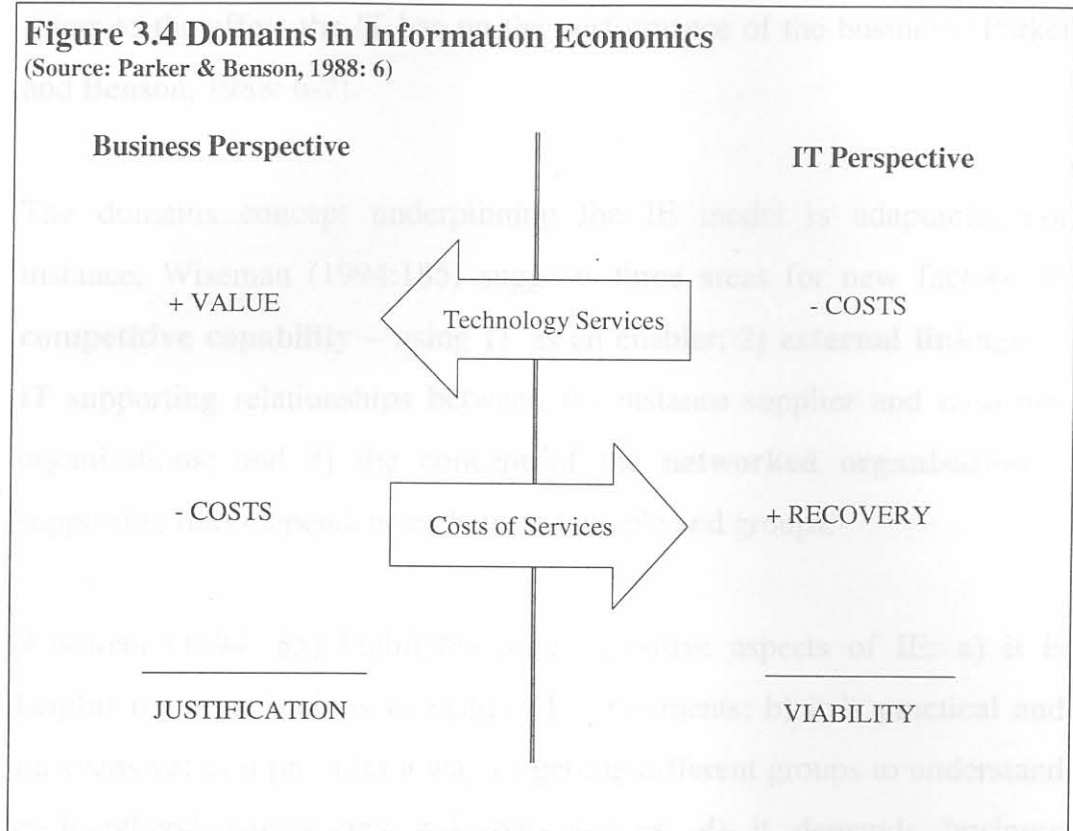


Figure 3.3 shows the four possible types of IT investments, namely: Capability Investment; Technology Investment; Utility Investment and New Business Investment. They propose that the matrix be used as a guide to choose the most suitable method, eg., use ROI/payback methods for Utility IT investments or real options for Technology Investments. The Working Council for CIOs (1997: 10) maintains that earnings must also be attributed to 'intangible' benefits to reveal the true value of IT.

## 10. IT evaluation approaches: Information Economics

Parker and Benson (1988: 5) introduced the concept of Information Economics (IE). They describe IE, at the one level, as a collection of tools for quantifying benefits and costs for IT projects. At another level, IE is a process of decision-making. In this decision-making process, the business justification for IT is separated from the elements of technological viability. Both (i.e., business justification and technological viability) are necessary, but the measurements and considerations are distinct and should be determined separately.

Information Economics employs a two-domain model of an organisation to consider IT investments. The two-domain model distinguishes between the business domain and the technology domain. The domain concept is quite pertinent because each domain has its own reasons for considering investing in IT as worthwhile. The decision elements for each domain in the IE process are shown in Figure 3.4.



In a discussion of IE, Wiseman (1994: 171-187) points out that IE differentiates between benefits and values. Benefits are what one pays for, while value is what one takes risks for. Benefits can be considered using knowledge and logic. Value according to IE is the total positive impact of the information system(s) on the organisation. Negative impacts need also be considered e.g. actual outflow of money or disruptions of work patterns or time taken to learn the new skills.

From a technology perspective, the viability of the investment is based on the project resources available, as compared to the resources needed to successfully develop and implement the project. In cases of charge back to users, this translates into a cost-recovery analogous to a revenue stream for a business unit. To be viable, the cost recovery must be sufficient to cover all potential costs. From a business perspective, the focus is on value. This

refers to the effect the IT has on the performance of the business (Parker and Benson, 1988: 6-7).

The domains concept underpinning the IE model is adaptable. For instance, Wiseman (1994:185) suggests three areas for new factors: 1] **competitive capability** – using IT as an enabler; 2] **external linkages** – IT supporting relationships between for instance supplier and customer organisations; and 3] the concept of the **networked organisation** – supporting inter-dependencies between people and groups.

Wiseman (1994:185) highlights a few positive aspects of IE: a) it is helpful for organisations to justify IT investments; b) it is practical and inexpensive; c) it provides a way of getting different groups to understand each others' values and risk perspectives; d) it demands business management interest and willingness to co-operate; and e) it is flexible and adaptable.

Willcocks and Lester (1994:72), on the other hand, point out some drawbacks concerning IE. The draw-backs are that IE a) could become mechanistic; b) could be time consuming; and c) may lack credibility with senior management because of the subjective nature of its scoring.

They (Willcocks and Lester, 1994) maintain that much depends on the careful interpretation of the results of the IE process. The value for decision makers could come from the heightened awareness of the issues involved. Willcocks and Lester suggest that IE is one of the more comprehensive approaches for assessing the potential of an organisation's IT investments. IE needs, however, to be tailored, developed and extended



to meet the evaluation needs of different organisations. IE is a major contribution for advancing the modern evaluation practice.

### 11. IT evaluation approaches: Return-on-Management

Strassmann (1997: 1-2) developed a diagram of Return-on-Equity vs the corresponding per capita expenditures for computers for 468 major US, European and Canadian firms for the year 1994. From the diagram it appears that IT is not a key to profitability. He states that it is absurd for a Chief Executive Officer (CEO), Chief Operating Officer (COO) or Chief Financial Officer (CFO) to demand that the CIO demonstrates how computers relate to profits simply and directly. Strassman says that the best computerisation can achieve is to make management more effective and employees more productive. Value from information technologies can be extracted only by operating executives who have harmonised their organisations to earn a profit in a competitive market place (Strassmann, 1997: 5).

Strassmann introduced a ratio called 'Return-on-Management' (ROM) or Information Productivity (IP) (Strassmann, 1997: 8-13; Willcocks and Lester: 1994:70). Return-on-Management is defined as Management Value-Added vs. the costs of Management. Management Value-Added is, according to Strassmann, what is left over after absolutely all costs are fully accounted for. The costs of management can be approximated as the Sales, General & Administrative expenses. Strassmann argues that there is ample evidence that firms employing identical land, identical labour, identical computer technology or comparable amounts of capital assets deliver vastly different financial results. The only difference is the skills and capabilities of management. All value creation, in an information-

based enterprise, must be attributed to management who coordinate, motivate, lead and organise resources.

Return-on-Management is thus based on the added value for the organisation that management provides. ROM equals management value added, divided by the costs of management. If ROM is calculated before, and then after, IT is applied to the organisation, then the IT contribution to the business can be assessed (Remenyi et al, 1995: 70).

## 12. IT evaluation approaches: The Six Milestones Approach

Silk (1991: 70) states that a method is required to deal with both the hard and soft benefits of IT. Silk first describes a special case of the so-called ‘**must do**’ projects. Organisations have to do these projects if they are to remain in business. There are no practical alternatives. The method should be aimed at enabling investment decisions.

For projects other than those in the ‘**must do**’ category, Silk is proposing a method that has 6 milestones in building a progressively better case for an IT investment.

The first milestone is called an “**Act of Faith**”. It is an extreme form of intuitive judgment. Senior management believes the project/investment is right for the organisation and takes responsibility for the decision. This is followed by the second milestone, where causal logic type of arguments are used for the investment. A cause-and-effect chain is identified where the provision of an information system is linked with a business benefit. The size of the benefit is, however, not determined.



The third milestone is to monitor the direction of change. This builds on the causal logic argument where an indicator is identified, to measure after implementation whether the organisation has indeed moved in the intended benefit direction. The fourth milestone has to do with monitoring the size of the change. The size of the indicator is estimated upfront and the change is then checked quantitatively when the system is in operation.

The fifth milestone aims to assess the value of the change. Those observable quantities (the indicators) are given a weighting in order to compare different types of benefits with each other. The sixth milestone is to assess the financial impact of the change. Financial values are attached to each of the benefits. These are then compared to each other and their impact on business performance can also be established.

### 13. Some important leads are evident from the examination of IT value related research

The first lead is obtained from Seddon *et al* (1998). They highlight the importance of understanding the **context** of an IT evaluation. One must be clear on the **type of system** being evaluated and also **from which stakeholder perspective** the evaluation is being conducted. Parker and Benson (1988) refer to the two different domains to be considered, namely the business domain and the technology domain.

Hitt and Brynjolfsson (1996) concentrate on the multi-dimensional nature of IT value. They argue the answer one gets, depends on the question being asked. They investigated three related, distinctive questions (business profitability, productivity and consumer surplus). Each of the questions represents an IT value perspective.



The Working Council for Chief Information Officers, Dos Santos, Strassmann as well as Brynjolfsson and Hitt focus on ways to cope with the difficulties and complexities to establish a financial view of IT value. Brynjolfsson and Yang (1997) demonstrate the importance of intangible assets in realising value from IT. Their approach to IT value assessment is also financial in nature. They mention specifically that excluding the costs of intangible assets, may distort or misrepresent IT value, since the evaluation would be based on IT investment costs only.

Any approach to IT evaluation must recognise the different types of IT investment projects. This is pointed out in the work of Ward (1994), Parker and Benson (1988) as well as by the work of the Working Council for CIOs (1997).

Common to all the evaluation approaches, is the complexity associated with the evaluation of IT. This complexity manifests in the various frameworks being proposed, the variety of criteria, the need for multiple measures of IT effectiveness and the need for alternative (and quite diverse) evaluation methods. From Hitt and Brynjolfsson's (1996) work, it is evident that IT value is an intricate concept in itself. Dos Santos (1994) even argues that the value of an IT investment can change over time according to changing circumstances.

The last feature of the evaluation approaches reviewed, is how all endeavour to cope with the difficulties and uncertainties associated with measuring IT benefits. The six milestone methodology of Silk (1991) is a good example.

## 14. The Research Objective

With the literature overview completed and the research problem defined, the research objective can now be defined. The purpose of defining the research objective is to specify the intended outcome of the research study.

The starting point for the formulation of the research objective, is the research problem, formulated as: “Why are business managers dissatisfied with explanations of IT value?”. The literature overview in Chapter 2 has furthermore indicated that this could be part of a complex network of inter-related problems.

The literature overview also indicates that there could be many factors contributing to management’s dissatisfaction with explanations of IT value. How these factors relate to each other and to the research problem is not clear. The research objective has therefore been formulated as follows: **“To develop a framework which clarifies the reasons why business managers are dissatisfied with explanations of IT value.”**

This objective could lead to a greater understanding of the research problem in its bigger context and through this enhanced understanding, contribute towards answering or resolving the research problem. In addition, the framework should provide some guidance to business and IT managers on how to deal with IT value related issues, such as dissatisfaction with explanations of IT value. The framework should also facilitate responses to the more specific research questions presented later in this chapter.

The formulation of the research problem and the corresponding research objective, together with the literature overview, allow the selection of a research approach and methodology. However, before the research methodology is discussed, the literature will be scrutinized for related frameworks.

### 15. A framework developed for the HR function present some guidelines

The overview of the literature also considered the development of similar frameworks for other organisational functions. A comparable framework applicable to the Human Resources (HR) function, was identified. The logic that guided the development of this framework will now be explored.

According to Yeung and Berman (1997:321) the measurement of HR effectiveness (or value) is considered the top priority for HR executives. Conceptual linkages between the HR function and business performance are not well developed. Existing HR measures are furthermore not formulated to capture the impact of HR on business performance.

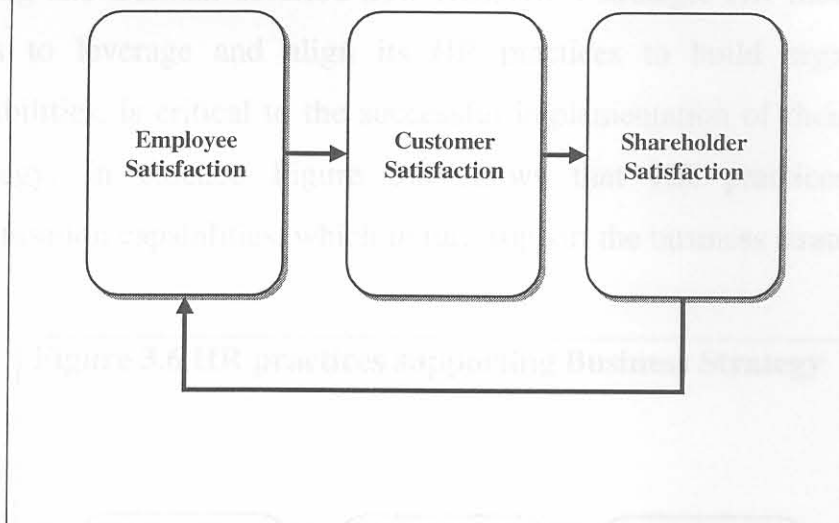
“Does HR make a difference in business results?” is the *fundamental* question. Following on an affirmative answer, i.e., yes HR does make a difference in business results, a framework is needed to indicate how HR practices can impact on business performance.

Yeung and Berman propose an integrative framework that builds on the Balanced Scorecard (BSC) concept and a strategic HR model. The BSC defines *what* should be focused upon, the strategic HR model identifies *how* a firm can leverage its HR practices for business success. Figure 3.5



shows how the BSC could be interpreted from an employee or staff perspective (Yeung and Berman, 1997: 322-324).

**Figure 3.5 From Employee Satisfaction to Shareholder Satisfaction**



The BSC defines what it takes for a company to succeed. Two premises underlie the BSC. The first premise is that for success in the long run, the expectations of three stakeholders (employees, customers and shareholders) must be satisfied. The second premise is that all three stakeholders are inter-related. Employee or staff attitudes and behaviour influence the level of customer satisfaction and retention. In turn, customer attitudes and behaviour influence shareholders satisfaction. This could again affect employee or staff satisfaction.

The BSC was used to guide the development of a framework to indicate how HR practices can impact on business performance. It has basically three purposes:

- To help HR professionals better articulate the value of the HR function;

- To specify ways in which HR can contribute to business performance; and
- To stimulate the development of HR measures that demonstrate the value added by HR.

Yeung and Berman describe how KODAK's strategic HR model, which aims to leverage and align its HR practices to build organisational capabilities, is critical to the successful implementation of their business strategy. In essence Figure 3.6 shows that HR practices support organisation capabilities, which in turn support the business strategy.

**Figure 3.6 HR practices supporting Business Strategy**



The following questions were posed to evaluate the impact of HR practices on business (Yeung and Berman, 1997: 328):

- How can HR practices truly contribute to the critical success factors as outlined in the BSC?
- What are the most viable and effective HR measures to demonstrate HR's value-add?

Yeung and Berman then proceeded to combine the two models into an integrated framework shown in Figure 3.7

**Figure 3.7 Integrative model connecting strategic HR framework to key result areas**



The framework shows 2 key inter-relationships. In the first instance, HR practices are viewed as key drivers in building organisational capabilities, enhancing employee satisfaction and shaping customer satisfaction. Both employee and organisational capability can impact on customer satisfaction. In the second instance, organisational capabilities are the key drivers to implement the business strategy, to impact on customer satisfaction and eventually to contribute to shareholder value.

## 16. Qualitative research is about understanding people and social contexts

This section will commence with an indication of the preferred research approach and the rationale for this preference. It will be followed by a general discussion of the chosen research approach.



An interpretive approach to qualitative research is considered appropriate for the research problem at hand. In the first place, interpretive research has emerged as a valid and important approach to information technology/information systems research (Klein and Myers, 1999: 67). Walsham (1993: 4) maintains that broadly interpretive methods of research provide a way of increasing our understanding of critical issues related to computer based information systems. Walsham (1993: 4) says that the importance of organizational issues with respect to computer-based information systems is well recognized by practitioners.

The research problem is managerial and organisational in nature. In considering some of the top IS issues (identified by IS executives in the USA), it is notable that all of the issues have a strong organizational emphasis, rather than a technical emphasis. These issues include strategic planning, competitive advantage, organizational learning, IS's role and contribution and the alignment of the IS function in the organization (Frenzel, 1992: 23 – 28).

Walsham (1993:4) proceeds by saying that research literature on IS organizational issues reflects a rational-economic interpretation of organizational processes, and a positivist methodology which is based on the view that the world exhibits objective cause-effect relationships which can be discovered, at least partially, by structured observation. Many researchers have noted the limitations of such approaches.

Roode (1993: 62, 64) concluded that progress in IS research can only be made if the fundamental social nature of IS is accepted. If the nature of information systems is fundamentally social, then the spectrum of research philosophies in contemporary social science, for instance interpretivism,

must be taken into account. It is argued that whatever research approach is followed, that approach should heed the fact that information systems are developed by people for people. Moreover, the research approach must be able to cope with the complexity brought about by the inter-disciplinary nature of the IS problem domain. This will always be a matter of complex, unquantifiable trade-offs between the needs of technologists, individuals, organizations and society. This outlook is echoed by Smit (1999: 219) who state that there is a growing interest in the IS field about the use of qualitative research methods. The interest is due to an increasing need to obtain an understanding of IS related issues within its social and institutional context.

Klein and Myers (1999: 67) say that interpretive research can help IS researchers to understand human thought and action in social and organizational contexts; it has the potential to produce deep insights into information systems phenomena including the management of information systems and information systems development.

Fouche and De Vos (1998: 72) state that a qualitative research approach would be suitable for the following situations: research that cannot be done experimentally for practical and/or ethical reasons; research that delves in depth into complexities and processes; research for which the relevant variables have yet to be identified; research that seeks to explore where and why policy and practice do not work; research on unknown societies or innovative systems; research on informal and unstructured linkages and processes in organizations; and research on real, as opposed to stated, organizational goals. Qualitative research will now be discussed in more detail.

Qualitative research deals with data that are principally verbal. In contrast, quantitative research deals with data that are principally numerical (de Vos (ed.), 1998: 15). Strauss and Corbin (1990: 17) consider qualitative research as research that produces findings by means other than statistical procedures or other means of quantification. Some of the data may be quantified, but the analysis is qualitative.

Quantitative research methods were originally developed in the natural sciences to study natural phenomena. Typical quantitative research methods include laboratory experiments, econometrics and mathematical modeling. Qualitative research methods were developed, on the other hand, in the social sciences to enable researchers to study social and cultural phenomena. Action research, case study research and ethnography are typical qualitative research methods. Qualitative data sources include observation, interviews and questionnaires, documents and texts as well as the researcher's impressions and reactions. Qualitative research methods are designed to help researchers understand people and the social and cultural contexts within which they live (Myers, 1997: 2).

Some of the reasons for doing qualitative research concern the nature of the research problem, for instance, research that attempts to uncover the nature of a person's experience with a phenomenon. Qualitative research methods can also be used to uncover and understand what lies behind any phenomenon about which little is yet known. It can further be used to gain novel and fresh viewpoints on things about which much is already known. Qualitative methods can give intricate details of phenomena that are difficult to convey with quantitative methods (Strauss and Corbin, 1990: 19).



Myers (1997: 1) describes qualitative research as involving the use of qualitative data such as interviews, documents and participant observation to understand and explain social phenomena. Myers maintains further that there has been a general shift in IS research away from technological to managerial and organizational issues, hence an increasing interest in the application of qualitative research methods.

Qualitative research may or may not be interpretive, depending upon the underlying philosophical assumptions of the researcher (Klein and Myers, 1999: 69). Qualitative research can be done with a positivist, interpretive or critical stance. Generally speaking, research can be classified as positivist if there is evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from a representative sample to a stated population (Klein and Myers, 1999: 67).

Research would be critical if the main task is seen as being one of social critique, whereby the restrictive and alienating conditions of the status quo are brought to light. Critical research seeks to be emancipatory in that it aims to help eliminate the causes of unwarranted alienation and domination and thereby enhance the opportunities for realizing human potential (Klein and Myers, 1999: 67).

In Table 3.2 below, Schurnik (1998: 242 - 243) compares the underlying philosophical assumptions of qualitative and quantitative research.

Table 3.2 Comparing the underlying philosophical assumptions	
Qualitative Research	Quantitative Research
Uses an <i>inductive</i> form of reasoning: develops concepts, insights and understanding from patterns in the data.	Uses a <i>deductive</i> form of reasoning: collects data to assess preconceived models, hypotheses and theories.
Uses an <i>emic</i> perspective of inquiry – derives meaning from the subjects' perspective	Uses an <i>etic</i> perspective: the meaning is determined by the researcher.
Is <i>idiographic</i> : thus aims to understand the meaning that people attach to everyday life.	Is <i>nomothetic</i> : aims to objectively measure the social world, to test hypotheses, and to predict and control human behavior.
Regards reality as <i>subjective</i> .	Regards reality as <i>objective</i> .
Captures and discovers meaning once the researcher becomes immersed in the data.	Tests <i>hypotheses</i> that the researcher starts off with.
<i>Concepts</i> are in the form of themes, motifs and categories.	<i>Concepts</i> are in the form of distinct variables.
Seeks to <i>understand</i> phenomena.	Seeks to <i>control</i> phenomena.
Observations are determined by information <i>richness</i> of settings, and types of observations used are modified to enrich understanding.	Observations are systematically undertaken in a <i>standardized</i> manner.
Data are presented in the form of <i>words, quotes</i> from documents and <i>transcripts</i> .	Data are presented by means of <i>exact</i> figures gained from precise measurement.
The research design is <i>flexible</i> and unique. It evolves throughout the research process. There are no fixed steps that should be followed. The design cannot be exactly replicated across research studies.	The research design is standardized according to a <i>fixed</i> procedure and can be replicated.
Data are analyzed by extracting <i>themes</i> .	Data analysis is undertaken by means of standardized <i>statistical</i> procedures.
The unit of analysis is <i>holistic</i> , concentrating on the relationships between elements, contexts, etc. The whole is always more than the sum.	The unit of analysis is variables that are <i>atomistic</i> (elements that form part of the whole).

Interpretive methods of research start, according to Walsham (1993: 5), from the position that our knowledge of reality, including the domain of



human action, is a social construction by human actors and that this applies equally to researchers. There is thus no objective reality that can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist science. Interpretivism is thus an epistemological position concerned with approaches to the understanding of reality and asserting that all such knowledge is necessarily a social construction and thus subjective.

Research can be regarded as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools and other artefacts. Interpretive research does not predefine dependent and independent variables, but focuses on the complexity of human sense making as the situation emerges; it attempts to understand phenomena through the meanings that people assign to them (Klein and Myers, 1999: 67; Myers, 1997: 4).

Schurnik (1998: 239) maintains that the quantitative (research) paradigm is based on positivism that takes scientific explanation to be based on universal laws. The main aims are to objectively measure the social world, to test hypotheses and to predict and control human behavior. The *qualitative* paradigm on the other hand, stems from an antipositivistic, interpretative approach. It is holistic in nature and the main aim is to understand social life and the meaning that people attach to everyday life.

Schurnik (1998: 243 - 244) continues by saying that the qualitative research paradigm, in its broadest sense, refers to research that elicits participants' accounts of meaning, experience or perceptions. It also produces descriptive data in the participants' own written or spoken



words. The qualitative researcher embarks upon a voyage of discovery rather than one of verification. The qualitative researcher is concerned with:

- understanding rather than explanation;
- naturalistic observation rather than controlled measurement; and
- the subjective exploration of reality from the perspective of an insider, as opposed to the outsider perspective that is predominant in the quantitative paradigm.

An interpretive approach to qualitative research was discussed in the preceding sections. Since the research problem (i.e., “Why are business managers dissatisfied with explanations of IT value?”) is primarily organisational and managerial in nature, an interpretive approach to qualitative research is considered appropriate. The next step in the research design is to select an appropriate research methodology. This methodology will be discussed next.

### **17. The Grounded Theory Method will be applied to the research problem**

An interpretive approach to qualitative research was motivated as suitable for the research problem and research objective at hand. Interpretive approaches have further been used for research into IT evaluation issues. Farbey *et al* (1999: 193) have used an in-depth, interpretive study to develop a theoretical basis for matching IT projects with evaluation methods. Case studies were the primary research instrument.

This section focuses on the Grounded Theory Method (GTM), a specific application of the interpretive research approach. The Grounded Theory Method is considered an appropriate methodology for the development of

a framework around management's dissatisfaction with explanations of IT value. GTM is a qualitative research strategy that is becoming more popular in IS research (Smit, 1999: 219). Grounded theory will be used to develop the framework or theory to gain better insights and understanding as to why business managers have difficulties with the business value of IT.

De Vos and Van Zyl (1998: 265-266) describe the GTM as the creation of theory based more on observation (and thus induction) than on deduction. It is concerned exclusively with the generation of theory rather than the testing thereof; and GTM is using research to develop theory systematically.

A grounded theory is a theory that is inductively derived from the study of the phenomenon it represents. A grounded theory is discovered, developed and provisionally verified through systematic data collection and the analysis of data pertaining to that phenomenon (Strauss and Corbin, 1990: 23). De Búrca and Mc Loughlin (1996: 6) describe it as a general methodology for developing theory that is grounded in data, which have systematically been gathered and analysed.

The building blocks in grounded theory research are the 'seed concepts', often from the researcher's own experiential background. The initial, basic elements of the emerging theory are the 'categories of facts' derived from the data and the 'properties' of each of the categories. The process of developing the theory consists of a series of coding activities, where facts are constantly compared and conceptualised in order to find the underlying structures and linkages. A set of 'relations' binds the categories together into a first theory. The first theory, also called a 'Substantive Theory', is

a framework around management's dissatisfaction with explanations of IT value. GTM is a qualitative research strategy that is becoming more popular in IS research (Smit, 1999: 219). Grounded theory will be used to develop the framework or theory to gain better insights and understanding as to why business managers have difficulties with the business value of IT.

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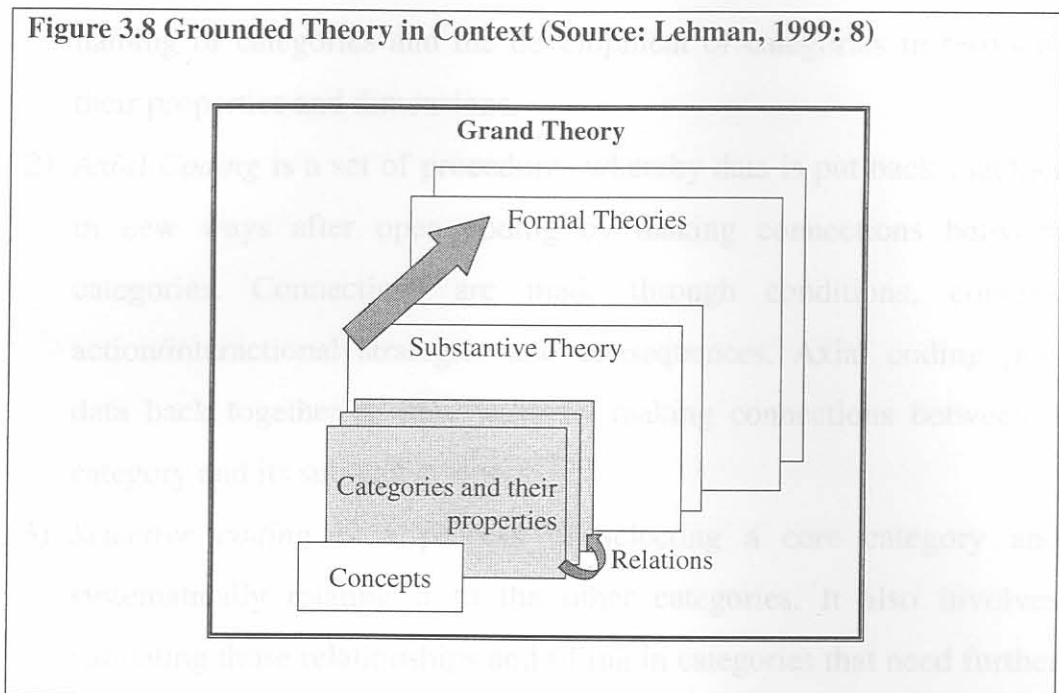
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initially linked to only the immediate research environment. Strauss and Corbin (1990, 174 –175) state that a Substantive Theory evolves from the study of a phenomenon situated in a particular situational context. This Substantive Theory can subsequently be enhanced and extended into a Formal Theory, by considering an extended research environment. “A *formal theory*, on the other hand, emerges from a study of a phenomenon examined under **many different types of situations.**” (Strauss and Corbin, 1990: 174). Such a ‘Formal Theory’ may eventually link up to a ‘Grand Theory’ (Lehman, 1999: 8).

This research aims to establish a Substantive Theory, because it is focusing on a specific phenomenon (i.e., “Why are business managers dissatisfied with explanations of IT value?”) to be found in a particular situational context as indicated by the two Empirical Cases.

The taxonomy of the grounded theory research elements is shown in Figure 3.8.



Data may be collected in the GTM from interviews, observations or documents, or from a combination of these. Grounded theorists start with a set of experiences they wish to explore. General research questions are begun with, rather than tightly framed pre-conceived hypotheses. In using the grounded theory approach, the problem is allowed to emerge from the data and is thus defined by the actors in the situations (De Búrca and Mc Loughlin, 1996: 6).

Analysis in GTM consists of three major types of coding according to De Vos and Van Zyl (1998: 271-272). The major types of coding are open coding, axial coding and selective coding:

- 1) *Open Coding* is about the naming and categorising of phenomena through close examination of data. Data are broken down into discrete parts, scrutinised and compared for similarities and differences. Questions are asked about the phenomena as reflected in the data. Specific activities include the labeling of data, discovering categories,

- naming of categories and the development of categories in terms of their properties and dimensions.
- 2) *Axial Coding* is a set of procedures whereby data is put back together in new ways after open coding by making connections between categories. Connections are made through conditions, context, action/interactional strategies and consequences. Axial coding puts data back together in new ways by making connections between a category and its sub-categories.
  - 3) *Selective coding* is a process of selecting a core category and systematically relating it to the other categories. It also involves validating those relationships and filling in categories that need further refinement and development.

The effective application of the GTM should produce a grounded theory, i.e., a result that is grounded in and discovered from the data. It must be a theory that has fit and relevance, the theory must work and must be readily modifiable (Smit, 1999: 221; Strauss & Corbin, 1990: 252-258). The detailed action steps required for the application of the GTM are discussed in Chapter 4.

### **18. The research problem is supported by a set of specific questions**

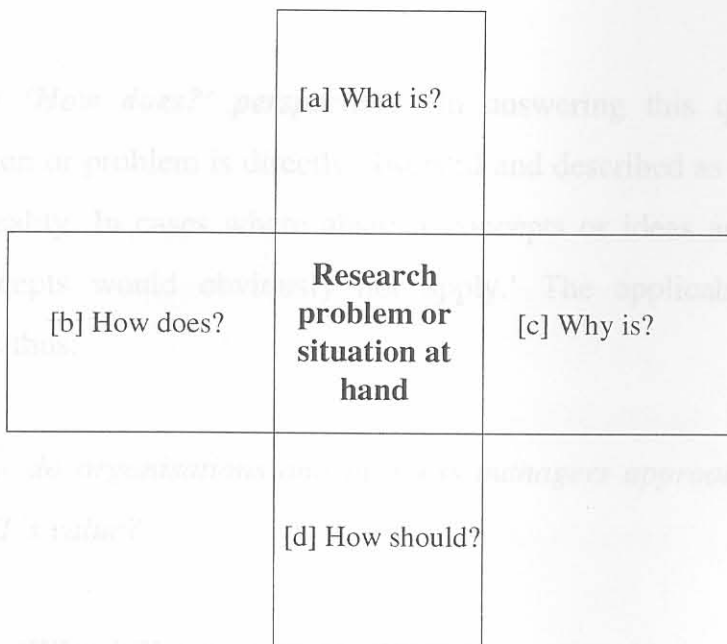
The main purpose for using the GTM is to develop theory or a framework. To do this, a research question(s) is required that will give flexibility and freedom to explore a phenomenon in depth. Grounded theory questions tend to be oriented towards action and process (Strauss and Corbin, 1990: 37-38).



Research projects always start with a problem or issue, usually expressed as a question. Strauss and Corbin (1990: 39) maintain that the research question gets a researcher started and helps to keep the focus throughout the research project.

These research questions typically inquire about the ontological, phenomenological, epistemological and normative nature of the problem or issue at hand (Roode, 1993: 71 - 72). Roode discussed a meta-framework for helping the researcher to pose different questions in order to explore different aspects of the problem or situation at hand. Figure 3.9 shows this meta-framework.

**Figure 3.9: Framework for generic research questions**



Questions in support of the basic research question will now be identified by considering the research problem from the various perspectives contained in Figure 3.9 above (Roode, 1993: 72 - 74).

The basic research questions are:

***From the ‘What is?’ perspective:*** ‘With this question the fundamental nature or essence of the research problem is first explored. The question intends exposing the structure of the problem or the meaning of the underlying concepts or ideas. The purpose is to inquire radically and critically about the problem domain and its accompanying paradigm(s) in order to be able to describe the problem precisely and unambiguously.’ This is underpinned by a fundamental assumption that such universally accepted descriptions for the concepts, ideas and problems do exist. The applicable research question is thus:

*What are the concerns that prompt business managers to inquire about the value of IT?*

***From the ‘How does?’ perspective:*** ‘In answering this question the phenomenon or problem is directly observed and described as it manifests itself in reality. In cases where abstract concepts or ideas are explored, these concepts would obviously not apply.’ The applicable research question is thus:

*How do organisations and business managers approach the issue of IT’s value?*

***From the ‘Why is?’ perspective:*** ‘The purpose of this question is to explain the real-life behavior or characteristics of the phenomenon or problem. In doing so, the focus is on determining relationships between aspects of and/or variables within the problem domain. There is a fundamental assumption underlying this question namely that these

relationships can be used to generalize about the problem domain and causal consequences.’ The applicable research question is thus:

*Why is the concept of IT’s value so problematic for business managers?*

**From the ‘How should?’ perspective:** ‘This question focuses on the conclusions, implications and normative aspects of the research results. It is an evaluation of the results or new insights obtained during the research. In some cases it might lead to prescriptive conclusions regarding the problem domain - in other cases it might enhance the understanding of the problem domain or redefine it.’ The applicable research question is thus:

*How should business managers approach the issue of IT’s value?*

The four basic research questions can be summarised as:

1. What are the concerns that prompt business managers to inquire about the value of IT?
2. How do organisations and business managers approach the issue of IT’s value?
3. Why is the concept of IT’s value so problematic for business managers?
4. How should business managers approach the issue of IT’s value?

The above research questions can each be developed into a number of more specific questions. The development of these more specific questions builds on the literature overview presented in Chapter 2 and in the first part of Chapter 3. The development of further research questions is outlined in Table 3.3 below, questions have been developed by



considering the rationale for the original research questions as well as the applicable perspective from the meta-framework presented in Figure 3.6 above.

**Table 3.3 Further development of the basic research questions**

Basic research question	Rationale for question	Supporting questions
<i>What are the concerns that prompt business managers to inquire about the value of IT?</i>	The question has relevance because an understanding of the reasons why business managers inquire about IT value is required.	<ul style="list-style-type: none"> <li>• What questions do managers ask about IT value?</li> <li>• What events, actions, incidents are triggering these questions?</li> <li>• Under what circumstances are these questions asked?</li> <li>• For what purpose do managers want to use explanations of IT value for?</li> <li>• To whom do managers address their inquiries?</li> </ul>
<i>How do organisations or business managers approach the issue of IT's value?</i>	The purpose of this question is to get a perspective of the methods being used to respond to managers' inquiries about IT value.	<ul style="list-style-type: none"> <li>• How is IT value assessed?</li> <li>• What techniques and methods are being used? What is the rationale for each method?</li> <li>• Where do IT value assessments fit into an</li> </ul>

<b>Table 3.3 Further development of the basic research questions</b>		
<b>Basic research question</b>	<b>Rationale for question</b>	<b>Supporting questions</b>
		organisation's management processes?
<i>Why is the concept of IT's value so problematic for business managers?</i>	This question aims to establish the reasons business managers are finding the IT value concept so problematic.	<ul style="list-style-type: none"> <li>• What are the difficulties business managers have with IT value assessments?</li> <li>• How do these difficulties manifest in practice?</li> <li>• What could be causing these difficulties?</li> </ul>
<i>How should business managers approach the issue of IT's value?</i>	This question explores the findings of the research	<ul style="list-style-type: none"> <li>• How can the intended framework assist business managers in approaching the issue of IT value?</li> </ul>

The above set of questions will guide the application of the GTM, specifically with regard to data collection and data analysis through the GTM coding activities.

### **19. Data will be collected from a variety of sources**

The overall research approach was described previously as an interpretive approach to qualitative research and Grounded Theory was selected as the specific methodology. This is quite significant, because the choice of a research method influences the way in which the researcher collects data.

The research methodology is, in essence, a strategy of inquiry which moves from the underlying philosophical assumptions to research design and data collection (Myers, 1997: 5).

The overall research approach exploits a key feature of the GTM. Data collection and data analysis are done iteratively in grounded theory. As a result, the overall research approach includes the initial development of a preliminary framework. The purpose is to leverage the material and insights gained from the literature overview and, in addition, to enhance the theoretical sensitivity around the issue of IT value. Subsequently further data need to be collected and analysed in order to adjust and refine the preliminary framework into a concluding framework.

Data for the research will be organised into case studies. Myers (1999: 2) mentions that case study research is an example of a qualitative research method. Myers remarks also that observation; interviews and questionnaires; documents and texts; as well as the researcher's impressions and reactions are all sources of qualitative data. The use of case studies is a common qualitative method in IS research. Yin (1994:13) defines a case study as follows:

*“A case study is an empirical inquiry that:*

- *Investigates a contemporary phenomenon within its real-life context, especially when ...*
- *the boundaries between the phenomenon and context are not clearly evident.”*

Mitchell in Smith (1990: 128) gives the following simple definition of the case study: *“the basic descriptive material an observer has assembled by whatever means available about some particular phenomenon or set of*



*events.*” This definition characterizes a case study as a detailed examination of an event or series of related events that the analyst believes exhibits the operation of some identified general theoretical principle (Smith, 1990: 128). Selecting a case study is determined by its explanatory power. The presentation of the case will, in addition, be limited to that material which most effectively reveals the theoretical principle being investigated (Smith, 1990: 129).

Case studies can use one or more techniques for collecting data. These could include interviews, observational techniques like participant observation and fieldwork, or archival research. Written data sources refer to published and unpublished documents, company reports, memos, letters, reports, e-mail messages, faxes and newspaper articles. Primary and secondary sources of data need to be further distinguished. Primary sources of data are those data which are unpublished and which the researcher has gathered from the people or organization directly. Secondary sources refer to any materials (books, articles etc) that have been previously published (Myers, 1997: 7).

The research data is organised to facilitate the research approach, in other words, to enable the development of a preliminary framework and then to adjust and refine it into a concluding framework. The research data have therefore been structured into three case studies. The research focus, in all three case studies, is primarily on IT at business unit or company level. The perspective is that of a senior business executive or business managers (typically in charge of the business unit or company).

The first case study consists of literature on the topic of ‘IT value’. It will be referred to as the ‘Literature Case’. This case study will be used for the

development of the preliminary framework. Two further case studies will be employed to adjust and refine the preliminary framework. These case studies will consist of empirical information about the topic of IT value in two organisations. The latter case studies will be referred to as ‘Empirical Cases’. The respective case studies will be discussed in more detail in Chapters 4 and 5.

The method of data collection, in order to compile the case studies or cases, is a key activity in the research process. A number of data collection methods are relevant to qualitative research approaches (De Vos and Fouchè, 1998: 90). These data collection methods include:

- Participant observation;
- Interpretation of documents and records;
- In-depth, face-to-face interviews;
- Focus group interviewing; and
- Audio-visual material.

Empirical Case 1 consists primarily of documents and records. Some interviews were also conducted in Empirical Case 1. The purpose of these interviews was to supplement the documentation used in this case study. The primary means of data collection, in Empirical Case 2, is in-depth, face-to-face interviews. Such interviews are regarded as a pipeline for extracting and transmitting information from the interviewee to the interviewer (Schurnik, 1998: 297). In-depth, face-to-face interviews, as a data collection method, will now be briefly examined.

A style of interviewing often employed by qualitative researchers, is termed “in-depth interviewing”. Other terms for this kind of interview include “unstructured interviewing”; “free (attitude) interviewing”;

“conversational interviewing”; narrative interviewing”; “the active interview”; and “the non-directive interview”. The term “in-depth interviewing” will be used. In-depth interviewing can be described as a social interaction between equals in order to obtain research relevant information. The purpose is to understand the interviewee’s life experience or situation as expressed in his own words (Schurnik, 1998: 298 - 299).

In-depth interviews with a “schedule” will be used in both of the empirical cases. The “schedule” refers to a guideline for the interviewer and contains questions and themes that are important to the research. The themes or questions are not meant to be asked in any particular sequence, but rather to ensure that all relevant points are covered (Schurnik, 1998: 298,299).

The research design was covered in this section. In essence the research design comprises an interpretive approach to qualitative research and Grounded Theory is the particular research method. The research data will consist of three case studies (one literature case and two empirical cases). The development of the framework will proceed in two steps. A preliminary framework will be build through the Literature case and a concluding framework will be achieved through the two Empirical cases.

## 20. Conclusion

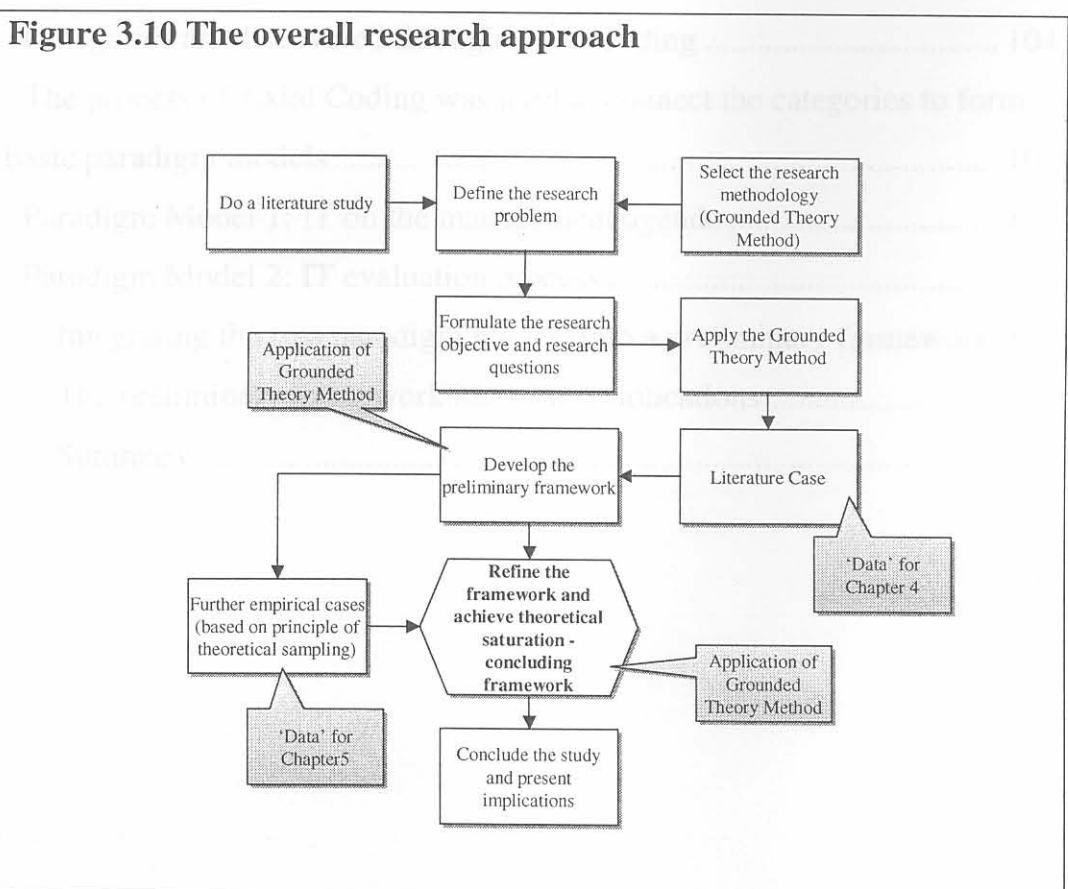
Chapter 3 dealt firstly with available approaches to the issue of IT value. From the examination of available literature, it would appear that the research question is not yet sufficiently answered. The chapter then proceeds to consider different research approaches and motivate why an interpretive approach to qualitative research is appropriate for the study.



An overview of GTM, as the specific methodology to be used, was dealt with last.

Chapter 4 will deal with the development of a preliminary framework based on the Literature Case. The chapter will describe the application of the GTM coding processes towards the accomplishment of its objective, the preliminary framework. These coding processes, aimed at the analysis, interpretation and synthesis of data contained in the Literature Case, consists of open coding, axial coding and selective coding. Chapter 4 will lastly consider the initial management implications of the preliminary framework.

The overall research approach is depicted in Figure 3.10.



## Chapter 4

### DEVELOPING THE PRELIMINARY FRAMEWORK

## Developing the Preliminary Framework

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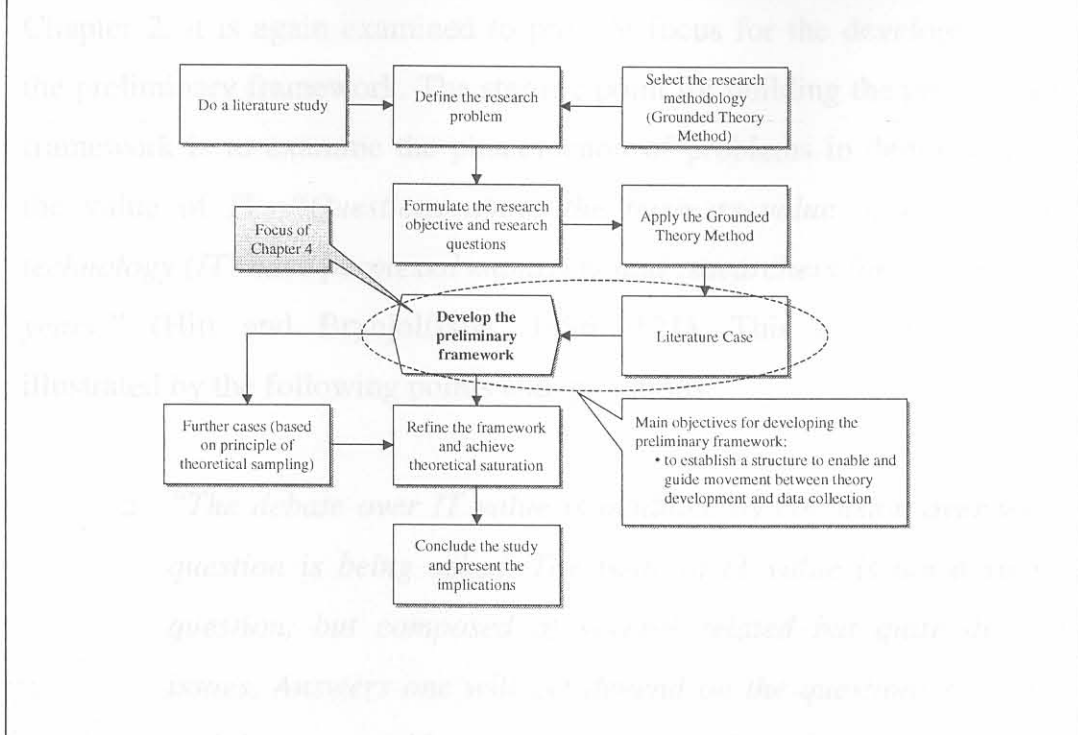
## DEVELOPING THE PRELIMINARY FRAMEWORK

### 1. Background

This chapter deals with the process of developing a preliminary framework. The purpose of this framework is to indicate the many, inter-related reasons why companies may not be satisfied with explanations of IT's value to the business.

As explained in Chapter 3, the rationale for developing such a framework is to improve the understanding of the problem where management is dissatisfied with explanations of IT's value. The preliminary framework is a first step in the research approach adopted for this study, as outlined in Figure 4.1 below.

**Figure 4.1 A diagrammatic Overview of the Research Approach**





The chapter starts with a confirmation that companies are not satisfied with explanations of IT value. It then proceeds by setting out how the GTM will be applied to develop the preliminary framework. This is followed by a description of the literature case data.

The development of the preliminary framework through the GTM processes of coding is described next. This description is followed by a presentation of the resulting preliminary framework and a narrative description of the problem situation, namely, where business managers are not satisfied with explanations of IT value. The preliminary framework has some management implications, these are discussed next. The chapter concludes with a review of what has been achieved and outlines the next steps contained in Chapter 5.

## 2. Companies are not satisfied with explanations of IT's value

Although dissatisfaction with explanations of IT value was addressed in Chapter 2, it is again examined to provide focus for the development of the preliminary framework. The starting point for building the preliminary framework is to examine the phenomenon of problems in demonstrating the value of IT. *“Questions about the business value of information technology (IT) have perplexed managers and researchers for a number of years.”* (Hitt and Brynjolffson, 1996: 121). This problem is well illustrated by the following points and quotations:

- *“The debate over IT value is muddled by confusion over what question is being asked. The issue of IT value is not a single question, but composed of several related but quite distinct issues. Answers one will get depend on the questions one asks and how one addresses them, even when the same data are*

*used. The question of IT value is far from settled.” (Hitt and Brynjolfsson, 1996)*

- Most executives don't have a clear picture of what IT's value to the business really is (Swift, 1992)
- *“I still worry enormously, both about the amount we spend on IT and the increasing difficulty of justifying that expense in terms of the bottom line. In the end, I think that this will work to the disadvantage of the suppliers of hardware, software and systems because simply to say ‘can you afford not to spend when you look at your competitors?’, or alternatively, ‘there is hidden commercial advantage that is unquantifiable’ will quite frankly not be enough in the future.” (Quotation from McCusker 1992: 25)*
- Attempts to prove the linkage between IT investments and business performance have produced mixed results (Jurison 1996: 264)
- Many business executives know that they cannot do without IT, but they cannot at the same time, talk meaningfully about its real value (Wiseman, 1994: 172)
- Brousell (1993: 100) states that the computer industry has been struggling for years to demonstrate the business payoff of information technology
- The assessment of IT business value is complex and will remain a major management challenge for the foreseeable future (Jurison 1996: 272)
- *“What is striking in the organisations we have studied is that nearly all have found it difficult, when challenged, to formally assess the value they get from the money that goes to IT.” (Earl and Feeny, 1994: 13)*

- CEOs often don't know how to evaluate the IS function's performance and the CIO's contribution (Earl and Feeny 1994: 11)

The dissatisfaction of managers in general with explanations of IT value is the starting point for developing the preliminary framework. In other words, it addresses the reasons why IT's value is not well understood and thus not satisfactorily explained.

### 3. The Grounded Theory Method guided the development of the preliminary framework

The Grounded Theory Method was used for the development of the preliminary framework, where cases are considered as the principal units of data (Pandit, 1997:3-4). Theoretical sampling is furthermore fundamental to the Grounded Theory Method. According to Pandit (1996: 4) theoretical sampling translates, in practical terms, into two sampling events. An initial case is selected and on the basis of the data analysis pertaining to that case (and thus the emerging theory), additional empirical cases are selected.

A first *case* for developing the targeted theory or framework was thus selected once the research has been focused (Chapters 2 and 3) and the research questions have been generated (Chapter 3).

The development of the preliminary framework starts with the identification of the core category. (It has been stated earlier that categories are the basic building blocks of a framework or theory in the Grounded Theory Method.) The core category (in other words the idea,



event or happening central to the study) is according to Pandit (1996: 8) defined as the phenomenon that the study or research is all about.

In this instance, the core category is determined as: “Explanations of IT value are not satisfactory (to business managers)”. Other categories, which will be discussed later in the chapter, are then related to this core category to form the preliminary framework.

A Grounded Theory consists of three basic elements namely concepts, categories and propositions (Pandit, 1996: 1-2; Strauss and Corbin, 1990: 57-74). The Cassel Paperback Dictionary (1998: 226) defines a concept as follows: “a general notion or idea comprising all the attributes common to a class of things.” The Oxford Advanced Learner’s Dictionary (1993:240) describes a concept as an idea underlying something. In context of the GTM, concepts are identified through the comparison of incidents and naming like phenomena with the same term.

Categories are determined through comparing concepts for similarities and differences. A category represents a particular grouping of concepts. Categories are the cornerstones of developing a theory (the framework).

Propositions or hypotheses represent the third element of a Grounded Theory. Propositions or hypotheses indicate generalised relationships between a category and its concepts and also between a category and other categories.

The Grounded Theory Method contains *inter-related* processes of data collection, data ordering and data analysis to build a Grounded Theory (Pandit, 1996: 7). Strauss and Corbin (1990: 59) say that data collection

and data analysis are tightly inter-woven processes and must occur alternately, because the analysis of data directs the sampling of data.

#### 4. The initial case of the study consists of literature on the subject of IT value

The first or initial case for this study consists of literature on the central phenomenon of the study, namely the problems companies have in getting satisfactory explanations of IT's value. This first case will be called the Literature Case and comprises of technical literature, i.e., reports of research studies and theoretical or philosophical papers characteristic of professional and disciplinary writing.

Strauss and Corbin (1990: 48) define technical literature as reports of research studies and theoretical or philosophical papers characteristic of professional and disciplinary writing. These can serve as background materials against which one compares findings from actual data gathered in grounded studies. Non-technical literature is defined as biographies, diaries, documents, manuscripts, records, reports, catalogues and other material that can be used as primary data or to supplement interviews and field observations in grounded theory studies.

Technical literature has various uses in grounded theory research (Strauss and Corbin 1990: 50-53):

- The literature can be used to stimulate theoretical sensitivity by providing concepts and relationships that are checked out against actual data
- The literature could be used as a secondary source of data

- It can stimulate questions, where the literature is used to derive a list of questions for interviews or observations
- It can direct theoretical sampling, for instance, the literature can give ideas about where important phenomena can be uncovered
- It can be used as supplementary validation. In this case references to the literature can give validation to the accuracy of research findings.

The grounded analysis of the Literature Case, resulted in the development of an initial or preliminary framework. The framework has the purpose to explain or show the reasons why companies have problems in getting satisfactory explanations of IT's value. In the following chapters, additional empirical cases will be used to test, refine and extend this preliminary framework. Pandit (1996: 5) refers to empirical cases after a literature case.

The empirical cases have a dual purpose:

- To fill theoretical categories in order to extend the emerging framework
- To replicate previous cases in order to test the emerging framework.

A broad coverage of the data is required during initial data collection because the main categories of the framework are emerging (Pandit, 1996: 4). As a result, the Literature Case includes a range of pertinent publications and papers about the central phenomenon of the study. The publications and papers are:

1. Computer Sciences Corporation, 1999. *Valuing the IS Contribution to the Business*. Foundation Operational Excellence Report. Flexiprint Ltd., Lancing, Sussex, UK



2. Currie, W. 1995. *Management Strategy for IT. An International Perspective*. Pitman Publishing, UK
3. Earl, M.J. and Feeny, D.F. 1994. *Is Your CIO Adding Value?* Sloan Management Review, Volume 35, Number 3
4. Hitt, L.M. and Brynjolfsson, E. 1996. *Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value*. MIS Quarterly, June 1996, Volume 20, Number 2
5. Hochstrasser, B. and Griffiths, C. 1991. *Controlling IT investment. Strategy and Management*. Chapman & Hall, London
6. Jurison, J. 1996 *Toward more effective management of information technology benefits* Journal of Strategic Information Systems Volume 5 Number 4 December 1996
7. McCusker, I.C. 1992. *IT Effectiveness – What does management need to know?* The EDP Auditor Journal, Vol III, 1992
8. Remenyi, D. Money, A. and Twite, A. 1995. *Effective Measurement and Management of IT Costs and Benefits*. Butterworth-Heinemann Ltd, Oxford, UK
9. Strassman, P.A. 1990. *The Business Value Of Computers*. The Information Economics Press, New Canaan, Connecticut
10. Symons, V. 1994. *Evaluation of information systems investments: towards multiple perspectives*. In Willcocks (ed.) 1994: 253 – 268
11. Venkatraman, V. 1997. *Beyond outsourcing: Managing IT Resources as a Value Center*. Sloan Management Review, Spring 1997, pp 51-64
12. Willcocks, L. 1994. *Introduction: of capital importance*. In Willcocks (ed.) 1994: 1 - 27
13. Working Council for Chief Information Officers 1997. *Valuing IT Investments. In defense of Quantitative Analysis*. Working Council for Chief Information Officers, Executive Inquiry, October 1997

These publications and papers were collated into a mainly qualitative database for analysis through the GTM. This qualitative database was the focus of the GTM coding processes to be explained in the remainder of the chapter.

## 5. The data from the Literature Case was analysed through a process of coding

Analysis of data in Grounded Theory involves processes of coding to generate concepts, as well as to identify and develop categories (Pandit, 1996: 7-8; Strauss and Corbin, 1990: 57-74). Strauss and Corbin (1990: 61) defines coding as a process of analysing data.

As discussed in Chapter 3, there are three types of coding processes: 1] Open Coding, 2] Axial Coding and 3] Selective Coding. *Open coding* was used for the analysis of the data material. Open coding is about labeling and categorising phenomena as indicated by the data. *Axial Coding* is a set of procedures through which data are put back together in new ways after Open Coding. This is done by making connections between categories using a coding paradigm involving conditions, context, actions strategies and consequences. *Selective Coding* was used to integrate the categories into the preliminary framework. Strauss and Corbin (1990: 58) emphasize that the lines between the three types of coding are only artificial. The coding processes do not necessarily take place in sequential stages.

The application of the three coding processes to ultimately develop the preliminary framework is discussed in the next sections.



## 6. Categories are discovered through Open Coding

Asking questions is one of the two analytical procedures basic to the coding process of grounded theory research. The other analytical procedure concerns the use of comparisons. These two analytical procedures help to give concepts, in grounded theory, precision and specificity (Strauss and Corbin, 1990: 38-40). Asking questions and making comparisons are key activities in the Open Coding process.

The discovery of categories was therefore guided by the set of primary and secondary research questions discussed in Chapter 3. Strauss and Corbin (1990: 37) state that the main purpose of using the Grounded Theory Method is to develop theory. Research questions are, however, necessary to give flexibility to explore a phenomenon in depth. They (Strauss and Corbin) continue by saying that grounded theory questions also tend to have an action or process orientation. The original research question gets the researcher started and ensures focus throughout the research project.

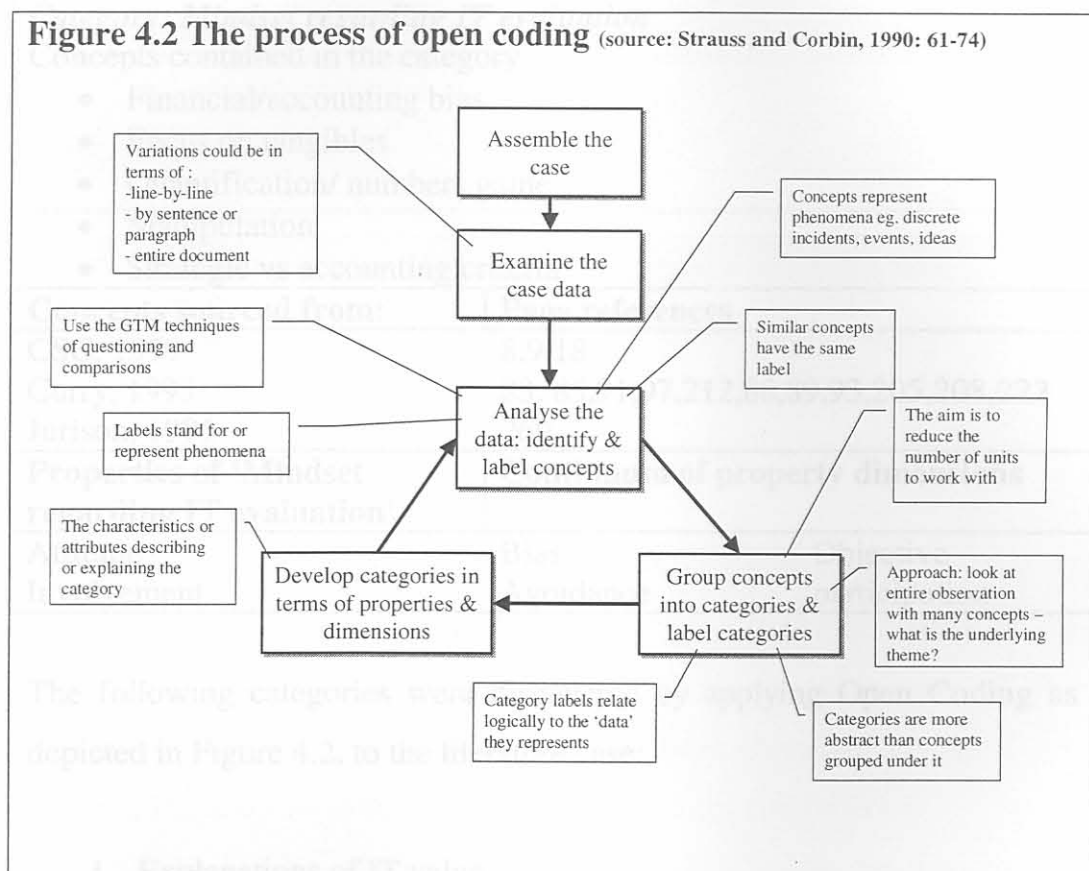
The process of grouping concepts that relate to the same phenomenon is called categorising (Strauss & Corbin, 1990: 65). The phenomenon represented by a category is given a conceptual name at a level more abstract than the concepts grouped under it. Categories have conceptual power, because they can consolidate groups of concepts or sub-categories. A total of 17 categories were discovered through Open Coding.

The Open Coding activities are graphically explained in Figure 4.2. From this figure it is clear that the process is iterative. Concepts flowing from the data analysis lead to the identification of categories. Development of



the categories in turn, could enlighten data analysis and new concepts could be identified. This could again result in new or changed categories.

**Figure 4.2 The process of open coding** (source: Strauss and Corbin, 1990: 61-74)



Analysis worksheets have been designed to facilitate the process of Open Coding explained in Figure 4.2 above. The three case studies, together with the coding worksheets for each case study, are contained in Annexures<sup>1)</sup> to the thesis. An example of such a worksheet is shown in Exhibit 4.1 below.

<sup>1)</sup> Further information about the case studies is available from the author

**Exhibit 4.1** (Example of an analysis worksheet extracted from Annexure 1)

### Literature Case: Open Coding

*Category: Mindset regarding IT evaluation*

Concepts contained in the category

- Financial/accounting bias
- Focus on tangibles
- Quantification/ numbers game
- Manipulation
- Strategic vs accounting criteria

Concepts sourced from:	Page references	
CSC, 1999	8,9,18	
Curry, 1995	83, 85,91,97,212,88,89,93,205,208,222	
Jurison, 1996	269	
Properties of 'Mindset regarding IT evaluation'	Continuum of property dimensions	
Attitude	Bias	Objective
Involvement	Avoidance	participation

The following categories were discovered by applying Open Coding as depicted in Figure 4.2, to the literature case:

1. Explanations of IT value
2. Management's comfort with IT
3. IT on the management agenda
4. Organisational spending on IT
5. IT track record
6. Need to exploit IT as a business resource
7. Business/IT relationship
8. Management's mindset about IT as a business resource
9. Management concerns about IT value
10. IT evaluation process
11. Definition of IT value
12. Flaws in IT evaluation methods

13. Complications around IT benefits and costs
14. Steps to enhance IT evaluation
15. Evaluation stakeholder dynamics
16. Alternatives in IT evaluation
17. Mindset about IT evaluation

According to the Open Coding process steps shown in Figure 4.2, each of the above categories had to be specified in terms of its properties. These properties were, in turn, developed in terms of the dimensions they could assume (Strauss and Corbin, 1990: 69-70). More complete details of the above categories are shown in Analysis Worksheets in the Annexures.

In this section, Open Coding was used to identify and develop a set of categories. These categories will form the basic building blocks of the preliminary framework. The next step in the development of the preliminary framework, is to relate the categories identified through Open Coding. The process of Axial Coding was used for this purpose.

## **7. The process of Axial Coding was used to connect the categories to form the basic paradigm models**

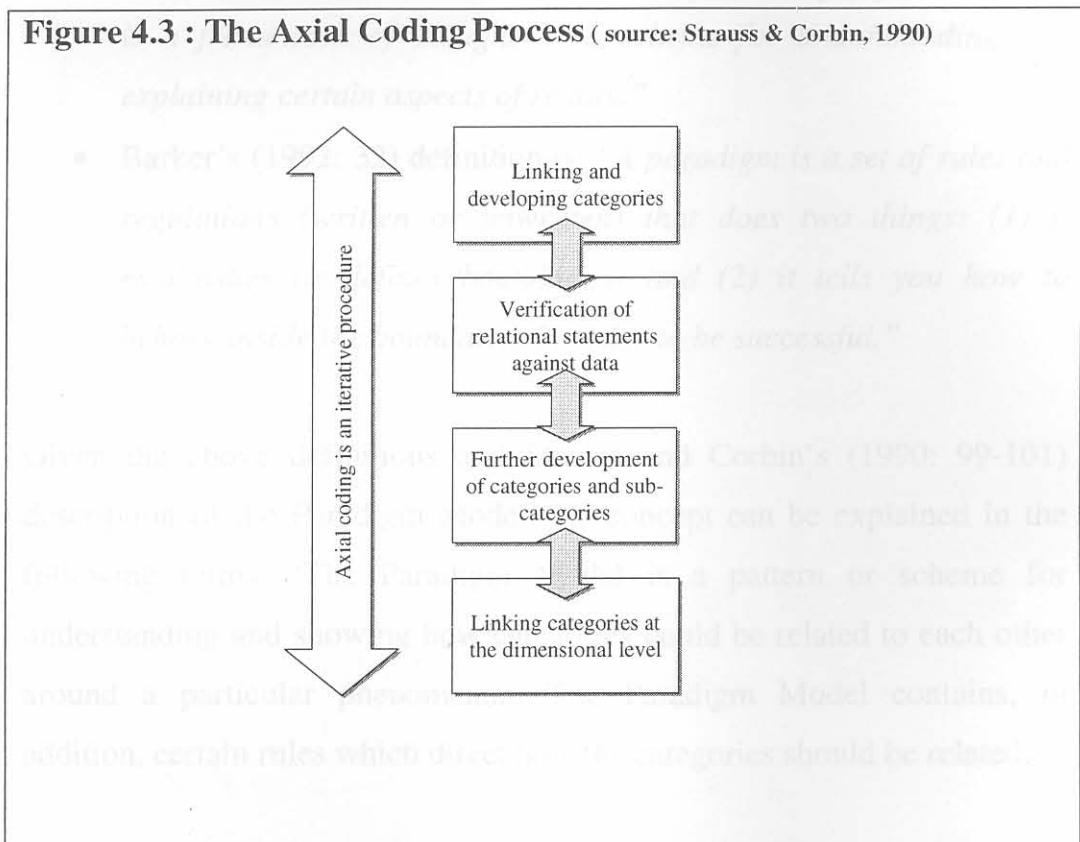
The aim of the section is to take the GTM coding a step further from the set of categories discovered in Open Coding. In this section, through the process of Axial Coding, these categories are ordered and arranged in terms of their relationships with each other. Axial Coding is described as “A set of procedures whereby data are put back together in new ways after Open Coding, by making connections between categories.”

In Axial Coding, the emphasis is on specifying a category (a phenomenon) in terms of the conditions that give rise to it; the context in which it is



embedded; the action/interaction strategies by which the phenomenon is handled or managed or carried out; and the consequence of those strategies (Strauss & Corbin, 1990: 96). Figure 4.3 illustrates the basic steps of the axial coding process.

**Figure 4.3 : The Axial Coding Process** ( source: Strauss & Corbin, 1990)



A Paradigm Model is used for relating these categories to each other in a systematic way. The use of the Paradigm Model by Strauss and Corbin in the Grounded Theory Method is at the core of the Axial Coding Process. It is therefore important to have a good understanding of what is meant by the Paradigm Model.

The Cassell Paperback Dictionary (1998: 790) and the Oxford Advanced Learners Dictionary (1989: 894) defines a paradigm as a pattern or an example or a model. Other definitions or descriptions of a paradigm include:

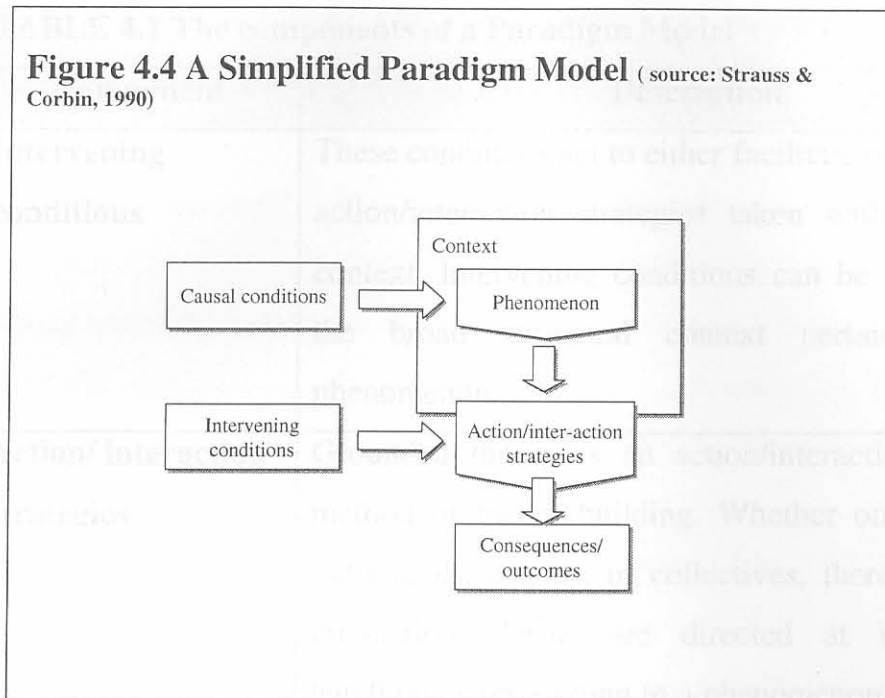
- Kuhn (1970: 10) states that scientific paradigms are “*accepted examples of actual scientific practice, ... [that] provide models from which spring particular coherent traditions of scientific research.*”
- Ferguson (1980: 26) describes a paradigm as follows: “*A paradigm is a framework of thought ... a scheme for understanding and explaining certain aspects of reality.*”
- Barker’s (1992: 32) definition is: “*A paradigm is a set of rules and regulations (written or unwritten) that does two things: (1) it establishes or defines boundaries; and (2) it tells you how to behave inside the boundaries in order to be successful.*”

Given the above definitions and Strauss and Corbin’s (1990: 99-101) description of the Paradigm Model, the concept can be explained in the following terms: ‘The Paradigm Model is a pattern or scheme for understanding and showing how categories could be related to each other around a particular phenomenon. The Paradigm Model contains, in addition, certain rules which direct how the categories should be related.’

By making use of the Paradigm Model, the grounded theory analysis will have *density* and *precision*. (As discussed earlier, categories are *specified* through their properties) (Strauss & Corbin, 1990: 98-99). The general form of a Paradigm Model, as used in GTM, is shown in Figure 4.4.



**Figure 4.4 A Simplified Paradigm Model** (source: Strauss & Corbin, 1990)



Since the Paradigm Model is essential for the eventual development of the preliminary framework, it is necessary to describe each of its components in more detail (Strauss & Corbin, 1990: 100-107). The components are described in Table 4.1 below.

<b>TABLE 4.1 The components of a Paradigm Model</b>	
<b>Component</b>	<b>Description</b>
<b>Phenomenon</b>	The central event, idea, happening, incident about which, a set of actions or interactions are directed at managing or handling, or to which the set of actions is related
<b>Causal Condition</b>	Refers to the events or incidents that lead to the occurrence or development of a phenomenon
<b>Context</b>	This represents a specific set of properties that pertains to a phenomenon. At the same time it is also the particular set of conditions within which the action/inter-action strategies are taking place.



<b>TABLE 4.1 The components of a Paradigm Model</b>	
<b>Component</b>	<b>Description</b>
<b>Intervening conditions</b>	These conditions act to either facilitate or constrain the action/interaction strategies taken within a specific context. Intervening conditions can be thought of as the broad structural context pertaining to the phenomenon.
<b>Action/ interaction strategies</b>	Grounded theory is an action/interactional oriented method of theory building. Whether one is studying individuals, groups, or collectives, there is action or interaction. These are directed at managing or handling or responding to a phenomenon as it exists in context or under a specific set of perceived conditions.
<b>Consequences</b>	The actions or interactions taken in response to or to manage a phenomenon, have certain consequences or outcomes. These might not always be predictable or what was intended. The failure to take action or interaction also has outcomes or consequences. Consequences may be events or happenings, or they may take the form of responsive actions or interactions. Consequences may further be actual or potential, they may happen in the present or in the future.

The GTM procedures of “making comparisons” and “asking questions” were used to establish whether any of the categories is a phenomenon, a causal condition for the phenomenon or describing the context of the phenomenon. Categories are also considered for being an action/interaction strategy, an intervening condition for an action strategy or the

consequence of an action strategy. Identifying the central event or idea (called the core category) is essential for developing a paradigm model.

From the application of the Axial Coding process, two core categories emerged. The first core category is the category labeled **“IT on the management agenda”**. The second core category to emerge from Axial Coding is the category labeled **“IT evaluation process”**. The process of identifying these phenomena will be described in the following sections.

These two core categories allowed all the other categories, identified through Open Coding, to be related to each other and to be placed relative to these two core categories. As a result, two related but distinctive Paradigm Models emerged. Paradigm Model 1 deals with the core category labeled **“IT on the management agenda”** and Paradigm Model 2 deals with the core category labeled **“IT evaluation process”**. As with the identification of the two core categories, the development of these models will be discussed in more detail in the ensuing sections.

## 8. Paradigm Model 1: IT on the management agenda

The development of a specific paradigm model around the key phenomenon or core category, identified as ‘IT on the management agenda’ is dealt with in this section.

The detailed steps in process of developing such a paradigm model is best described through an example:

The process starts, for instance, with the category labeled **‘IT track record’**. The question is asked of where this category will best fit the paradigm model: “Is it a cause or a consequence? Is it action

oriented or is it mediating an action? Is it being caused by another category?”. Based on these questions the category **‘IT track record’** was placed as a causal condition. The question is now asked: “Of what is **‘IT track record’** a causal condition?” Through considering all the categories, the category **‘IT track record’** was believed to be a causal condition for the category **‘IT on the management agenda’**. The next set of questions focus on establishing which other categories could be causal conditions for **‘IT on the management agenda’**. Three more categories were identified namely: **‘Explanations of IT value’**, **‘Organisational spending on IT’** and **‘Need to exploit IT as a business resource’**.

With the focus still on the category **‘IT on the management agenda’**, questions are subsequently asked about which categories could be viewed as a relevant action/inter-action strategies. The category labeled **‘Concern about IT value’** was selected. A further question is then asked: “Which categories could intervene or mediate this action/inter-action strategies?”. This question resulted in **‘Management’s mindset about IT’**; **‘Business/IT relationships’**; and **‘Management’s comfort with IT’** being identified as intervening conditions. Lastly the question was asked: “Which categories denote the consequence of outcome of the action/inter-action strategies?”. This was established as the category entitled **‘IT evaluation process’**.

In summary, the steps in the process of Axial Coding resulted in the grouping of a number of categories identified through Open Coding. The process is highly iterative. The steps are repeated until the categories all fit the Paradigm Model and relate to each other in a logical way. This was only achieved after a number of iterations. The logic of the placement of

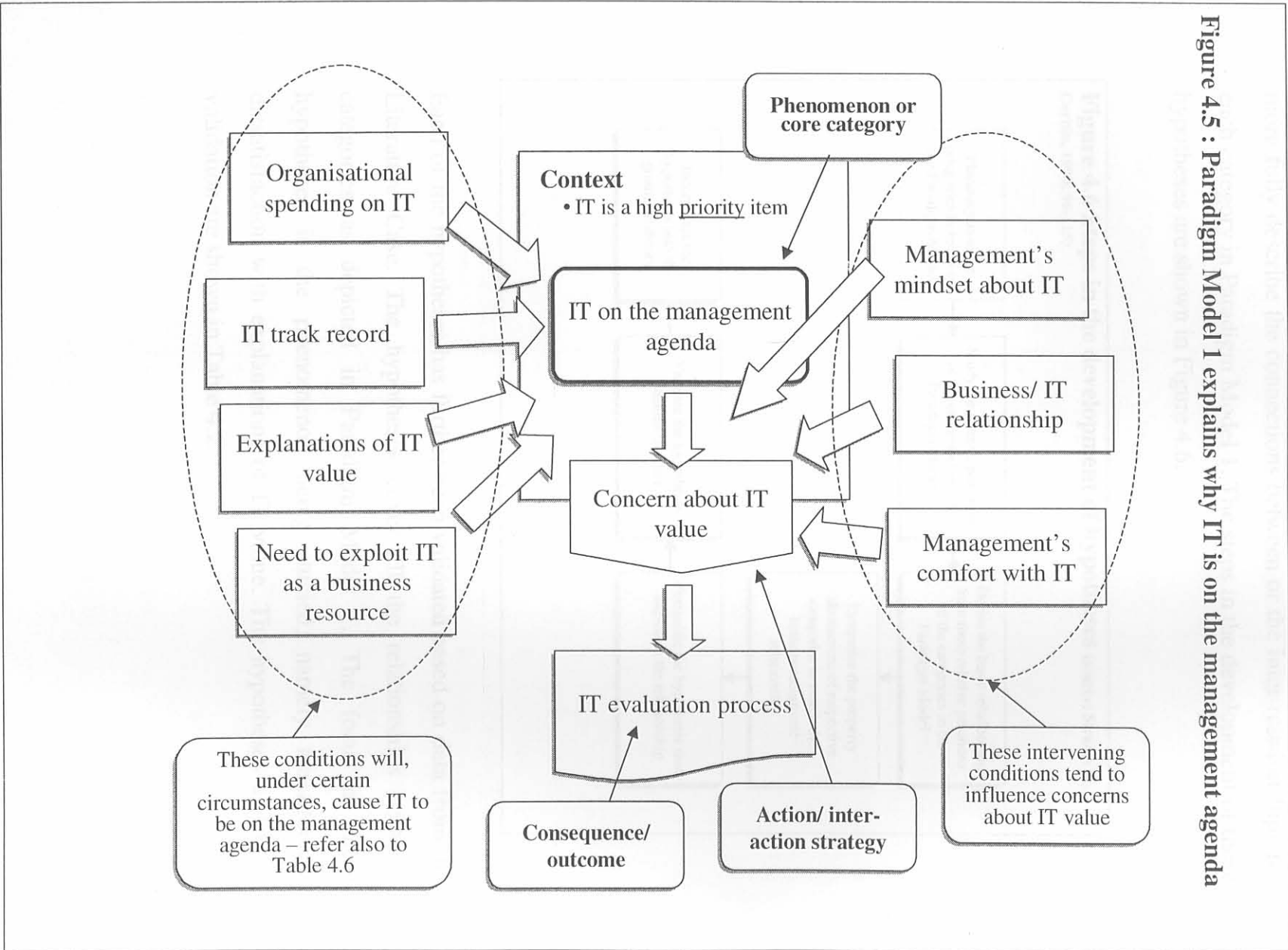


the categories and their connections are further 'tested' during the formulation of hypotheses which is discussed next.

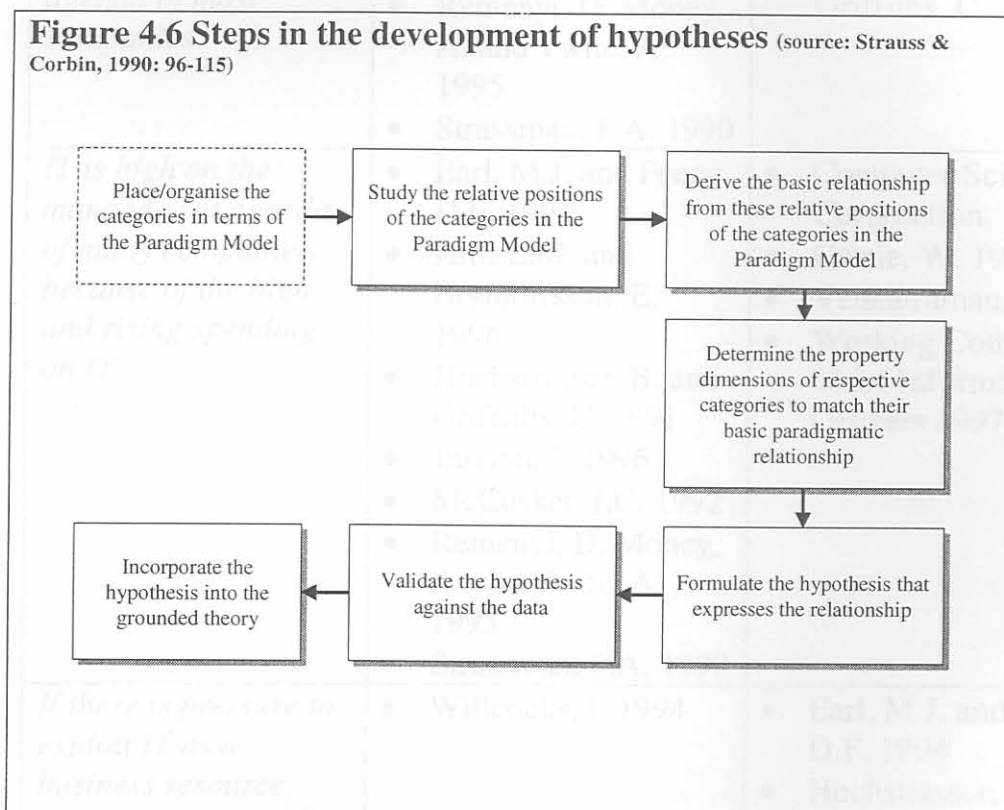
The core category has been identified as 'IT on the management agenda'. The other categories, in relation to this core category, are in terms of the Paradigm Model components:

Causal conditions	<ul style="list-style-type: none"> <li>• Organisational spending on IT</li> <li>• IT track record</li> <li>• Need to exploit IT as a business resource</li> </ul>
Action/inter-action strategies	<ul style="list-style-type: none"> <li>• IT value on the management agenda</li> </ul>
Intervening conditions	<ul style="list-style-type: none"> <li>• Management's mindset about IT as a business resource</li> <li>• Business/IT relationship</li> <li>• Management's comfort with IT</li> </ul>
Consequence/outcome	<ul style="list-style-type: none"> <li>• Questions about IT value</li> </ul>

The above analysis and interpretation enable the structuring of a Paradigm Model around the phenomenon '**IT on the management agenda**'. The resulting paradigm model is shown diagrammatically in Figure 4.5



Axial Coding requires further that a set of hypotheses be formulated to more fully describe the connections between or the inter-relationships for each category in Paradigm Model 1. The steps in the development of these hypotheses are shown in Figure 4.6.



Each of the hypotheses has further been validated based on data from the Literature Case. The hypotheses cover all the relationships between categories as depicted in Paradigm Model 1. The focus of these hypotheses is the phenomenon being studied, namely management dissatisfaction with explanations of IT value. The hypotheses and their validation are shown in Table 4.2.



<b>Hypotheses</b>	<b>Explicitly supported by:</b>	<b>Implicitly supported by:</b>
<i>Because of IT's poor track record, IT is on the management agenda of most companies</i>	<ul style="list-style-type: none"> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• McCusker, I.C. 1992</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Strassman, P.A. 1990</li> </ul>	<ul style="list-style-type: none"> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> </ul>
<i>IT is high on the management agenda of many companies, because of the high and rising spending on IT</i>	<ul style="list-style-type: none"> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Jurison, J. 1996</li> <li>• McCusker, I.C. 1992</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Strassman, P.A. 1990</li> </ul>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Currie, W. 1995</li> <li>• Venkatraman, V. 1997</li> <li>• Working Council for Chief Information Officers 1997</li> </ul>
<i>If there is pressure to exploit IT as a business resource, then IT will be high on the management agenda</i>	<ul style="list-style-type: none"> <li>• Willcocks, L. 1994</li> </ul>	<ul style="list-style-type: none"> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Venkatraman, V. 1997</li> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> </ul>
<i>If management is dissatisfied with explanations of IT value, then IT will be high on the management agenda</i>	<ul style="list-style-type: none"> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Willcocks, L. 1994</li> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Strassman, P.A. 1990</li> </ul>	<ul style="list-style-type: none"> <li>• Earl, M.J. and Feeny, D.F. 1994</li> </ul>

**Table 4.2 Hypotheses describing inter-relationships in Paradigm Model 1**

Hypotheses	Explicitly supported by:	Implicitly supported by:
<i>Because IT is high on the management agenda, management is concerned about IT value</i>	<ul style="list-style-type: none"> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Willcocks, L. 1994</li> <li>• Currie, W. 1995</li> </ul>	<ul style="list-style-type: none"> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• McCusker, I.C. 1992</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Strassman, P.A. 1990</li> </ul>
<i>If management's comfort with IT is low, then management's concern about IT value will be high</i>	<ul style="list-style-type: none"> <li>• Currie, W. 1995</li> <li>• McCusker, I.C. 1992</li> </ul>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Strassman, P.A. 1990</li> </ul>
<i>If the business/ IT relationship is poor, then management's concern about IT value will be high</i>	<ul style="list-style-type: none"> <li>• Currie, W. 1995</li> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• McCusker, I.C. 1992</li> </ul>
<i>If management's mindset about IT is traditional, then management's concern about IT value will be high</i>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Currie, W. 1995</li> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• McCusker, I.C. 1992</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Working Council for Chief Information Officers 1997</li> </ul>	<ul style="list-style-type: none"> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Strassman, P.A. 1990</li> <li>• Venkatraman, V. 1997</li> </ul>

<b>Hypotheses</b>	<b>Explicitly supported by:</b>	<b>Implicitly supported by:</b>
<i>If management's concern about IT value is high, then the need for an effective and credible IT evaluation process is high</i>	<ul style="list-style-type: none"> <li>• Currie, W. 1995</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Willcocks, L. 1994</li> </ul>	<ul style="list-style-type: none"> <li>• Earl, M.J. and Feeny, D.F. 1994</li> </ul>

Using Paradigm Model 1 (Figure 4.5) and the hypotheses contained in Table 4.2., the core category '**IT on the management agenda**', can be further described and explained in narrative form. (This is necessary to establish an overall story line required in Selective Coding for the integration of the various paradigm models.):

*IT is on the management agenda due to the poor track record of IT; because organisational spending on IT is high and rising; because almost all companies need to effectively exploit IT as a business resource and because managers are dissatisfied with explanations of IT value. Under these circumstances, IT is a high priority issue on the management agenda.*

*Management's concern about IT value is conditioned by factors such as their level of comfort with IT and IT-related matters; the relationship between business and IT as well as management's mindset about IT as a business resource.*

*The consequence of management's concern about IT value is the need for an effective and credible IT evaluation process.*



Development of a narrative about the core category of a Paradigm Model provides a further ‘check’ on the logic behind the placement of categories and the links between them.

A Paradigm Model was developed around the core category labeled ‘**IT on the management agenda**’. The original problem being researched, i.e., ‘**Dissatisfaction with explanations of IT value**’ was in Paradigm Model 1, placed as a *causal condition* for ‘**IT on the management agenda**’.

After the development of Paradigm Model 1 (focused on the core category ‘IT on the management agenda’) a number of categories from the Open Coding analysis, were still not placed or related. The Axial Coding process was repeated and a further core category was identified. The next section addresses the paradigm model for this core category namely ‘IT evaluation process’.

Further iterations of the Axial Coding process yielded no further Paradigm Models relevant to the research problem and research questions which were formulated in Chapters 2 and 3.

## 9. Paradigm Model 2: IT evaluation process

This section outlines how, based on the definitions of the different category types in the Paradigm Model (described in Table 4.1) and the general layout of paradigm models in the GTM, a specific Paradigm Model was developed around the core category ‘**IT evaluation process**’.

The development of Paradigm Model 2 followed the same steps as described for the development of Paradigm Model 1. The process started

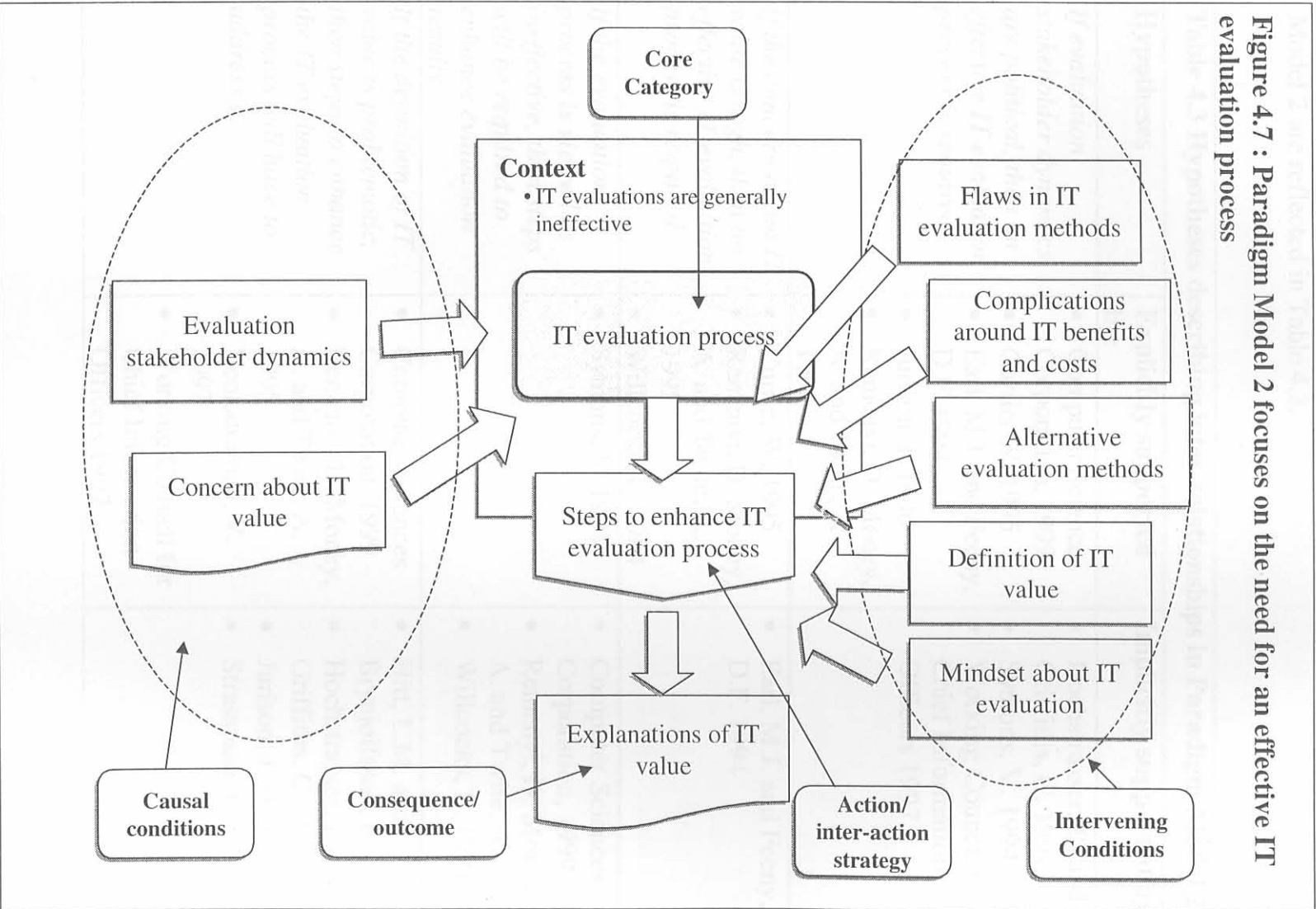
with the category **'IT evaluation process'** which transpired to be the core category of this paradigm model. Two categories were identified as causal conditions for the **'IT evaluation process'**. The categories are: **'Evaluation stakeholder dynamics'** and **'Concern about IT value'**. (Note: The latter category was also identified as an action strategy which resulted in the need for an IT evaluation process in Paradigm Model 2).

**'Steps to enhance IT evaluation results'** was identified as an action/inter-action strategy pertaining to the core category **'IT evaluation process'**. This action/inter-action strategy will be conditioned by the following categories: **'Definition of IT value'**; **'Complications around IT benefits and costs'**; and **'Flaws in IT evaluation methods'**. **'Explanations of IT value'** was established as the outcome or consequence of **'Steps to enhance IT evaluation results'**.

Completion of Paradigm Model 2 resulted in all the categories being placed in paradigm models. The resulting paradigm model is shown in Figure 4.7.

As was the case for Paradigm Model 1, Axial Coding requires that a set of hypotheses be formulated to more fully describe the connections between or the inter-relationships for each category in Paradigm Model 2. The formulation of hypotheses also serves to check the logic of the paradigm model. In other words, if the logic of the model is not sound, then the formulation of valid hypotheses would be at best difficult. The steps in the development of these hypotheses also followed those shown in Figure 4.6 earlier.

Figure 4.7 : Paradigm Model 2 focuses on the need for an effective IT evaluation process





The hypotheses describing the conceptual relationships in Paradigm Model 2 are reflected in Table 4.3.

**Table 4.3 Hypotheses describing inter-relationships in Paradigm Model 2**

Hypotheses	Explicitly supported by:	Implicitly supported by:
<i>If evaluation stakeholder dynamics are political, then an effective IT evaluation process is required</i>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Currie, W. 1995</li> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• Jurison, J. 1996</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> </ul>	<ul style="list-style-type: none"> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Symons, V. 1994</li> <li>• Working Council for Chief Information Officers 1997</li> </ul>
<i>If the concern about IT value is high, then an effective IT evaluation process is required</i>	<ul style="list-style-type: none"> <li>• Currie, W. 1995</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Willcocks, L. 1994</li> </ul>	<ul style="list-style-type: none"> <li>• Earl, M.J. and Feeny, D.F. 1994</li> </ul>
<i>If the evaluation process is viewed as ineffective, then steps will be required to enhance evaluation results</i>	<ul style="list-style-type: none"> <li>• Symons, V. 1994</li> </ul>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Willcocks, L. 1994</li> </ul>
<i>If the definition of IT value is problematic, then steps to enhance the IT evaluation process will have to address it</i>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Venkatraman, V. 1997</li> <li>• Working Council for Chief Information Officers 1997</li> </ul>	<ul style="list-style-type: none"> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Jurison, J. 1996</li> <li>• Strassman, P.A. 1990</li> </ul>

**Table 4.3 Hypotheses describing inter-relationships in Paradigm Model 2**

Hypotheses	Explicitly supported by:	Implicitly supported by:
<i>Because of complications around IT benefits, steps to enhance the IT evaluation process will have to address this</i>	<ul style="list-style-type: none"> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Jurison, J. 1996</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> </ul>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Currie, W. 1995</li> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• McCusker, I.C. 1992</li> <li>• Strassman, P.A. 1990</li> <li>• Venkatraman, V. 1997</li> </ul>
<i>Because of significant flaws in IT evaluation methods, steps to enhance the IT evaluation process will have to address this</i>	<ul style="list-style-type: none"> <li>• McCusker, I.C. 1992</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Strassman, P.A. 1990</li> </ul>	<ul style="list-style-type: none"> <li>• Currie, W. 1995</li> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Jurison, J. 1996</li> <li>• Symons, V. 1994</li> <li>• Working Council for Chief Information Officers 1997</li> </ul>
<i>If the mindset about IT evaluation is conservative, then steps to enhance the IT evaluation process will have to address this</i>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999</li> <li>• Currie, W. 1995</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> </ul>	<ul style="list-style-type: none"> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Jurison, J. 1996</li> <li>• McCusker, I.C. 1992</li> <li>• Strassman, P.A. 1990</li> <li>• Symons, V. 1994</li> <li>• Working Council for Chief Information Officers 1997</li> </ul>

<b>Hypotheses</b>	<b>Explicitly supported by:</b>	<b>Implicitly supported by:</b>
<i>If alternative evaluation methods are limited, then steps to enhance the IT evaluation process will have to address this</i>	<ul style="list-style-type: none"> <li>• Jurison, J. 1996</li> <li>• Earl, M.J. and Feeny, D.F. 1994</li> <li>• Symons, V. 1994</li> </ul>	<ul style="list-style-type: none"> <li>• Currie, W. 1995</li> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Computer Sciences Corporation, 1999</li> <li>• Strassman, P.A. 1990</li> </ul>
<i>If steps to enhance IT evaluation results are less effective, then explanations of IT value will not be satisfactory</i>	<ul style="list-style-type: none"> <li>• Currie, W. 1995</li> <li>• Hitt, L.M. and Brynjolfsson, E. 1996</li> <li>• Hochstrasser, B. and Griffiths, C. 1991</li> <li>• Jurison, J. 1996</li> <li>• Remenyi, D. Money, A. and Twite, A. 1995</li> <li>• Strassman, P.A. 1990</li> <li>• Working Council for Chief Information Officers 1997</li> </ul>	<ul style="list-style-type: none"> <li>• Computer Sciences Corporation, 1999.</li> <li>• McCusker, I.C. 1992</li> <li>• Symons, V. 1994</li> </ul>

Based on Paradigm Model 2 (Figure 4.7) and the hypotheses about inter-relationships between categories (refer to Table 4.3), the core category ‘**IT evaluation process**’, can be explained in the narrative form:

*An effective IT evaluation process is required due to conditions such as dynamics among evaluation stakeholders and concern about IT value. Since IT evaluation processes are generally considered as ineffective, steps to enhance it are required. Such steps are, however, influenced and conditioned by factors such as:*

- *Available alternative IT evaluation methods;*



- *The mindset about IT evaluation;*
- *Significant flaws in almost all evaluation methods;*
- *Problems with the definition of IT value; and*
- *Complications around IT benefits and costs.*

*Due to the above intervening conditions, separately or together, steps to enhance IT evaluation results may be less effective. As a consequence, explanations of IT value will thus not be satisfactory.*

Axial Coding was applied in the preceding sections to relate the categories to each other and around the core category. In the process, the problem being studied, namely dissatisfaction with explanations of IT value, have been related to both the key phenomena: in the first instance as a causal condition for 'IT on the management agenda'; and secondly as a consequence of the 'IT evaluation process'.

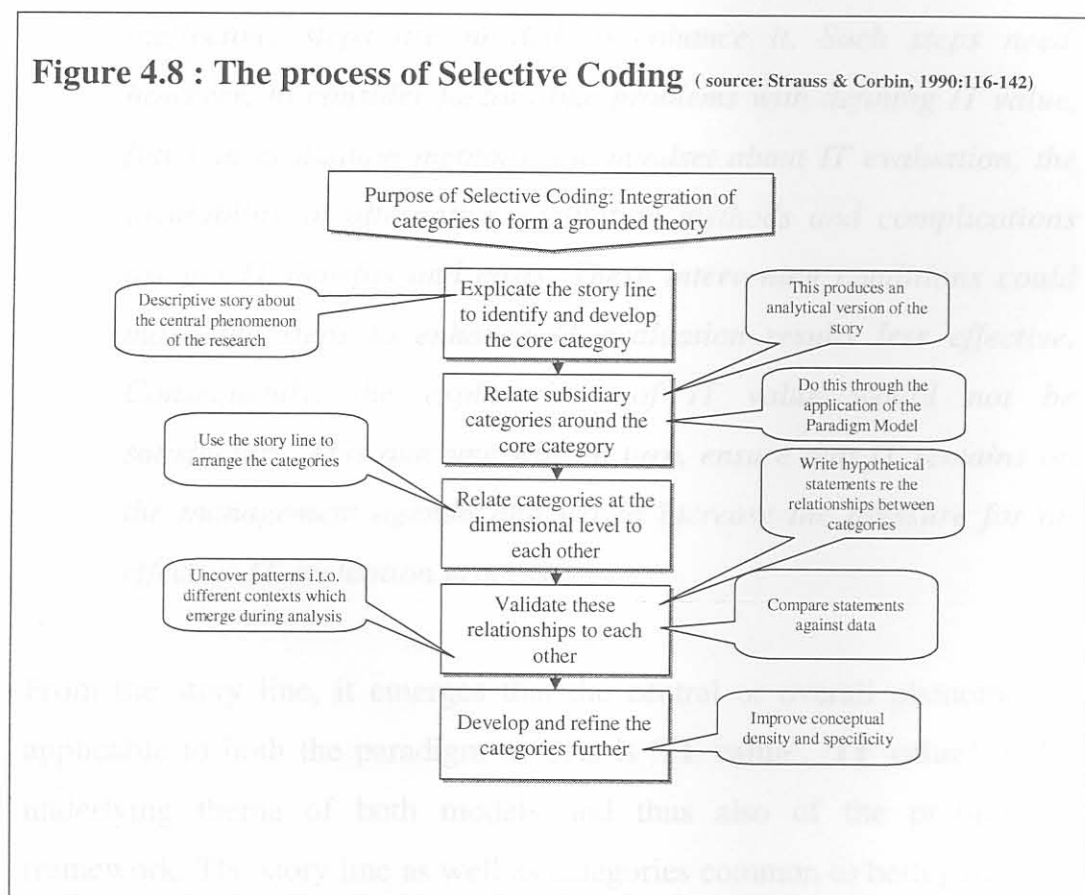
The ultimate objective of Chapter 4 is, however, to develop a preliminary framework to clarify the problem of dissatisfaction of IT evaluation results. The next step in achieving the chapter's objective is to apply the process of Selective Coding.

## **10. Integrating the two paradigm models into a preliminary framework**

The categories resulting from the process of Open Coding have been arranged into two paradigm models, each focused on a particular phenomenon. Further integration is required to relate the two phenomena (with the accompanying categories) to each other. This section focuses on the application of Selective Coding to assemble the categories into the preliminary framework.

Selective Coding is defined as: “The process of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development” (Strauss & Corbin, 1990: 116). The core category is viewed as the central phenomenon around which all the other categories are integrated. Strauss & Corbin (1990: 117) maintain that Selective Coding is not much different from Axial Coding. It is just done at a much higher level of analysis. Figure 4.8 depicts Selective Coding.

**Figure 4.8 : The process of Selective Coding** ( source: Strauss & Corbin, 1990:116-142)



The process of Selective Coding requires that a story line first be formulated and committed to, in order to achieve overall integration (Strauss & Corbin, 1990: 119). The story line is a conceptualisation of a descriptive account about the central phenomenon of the study. Using the narrative descriptions of the two paradigm models, developed in earlier

sections, an overall story line can be formulated. In the case of dissatisfaction with explanations of IT value (being the focus of the research), the *story line* is as follows:

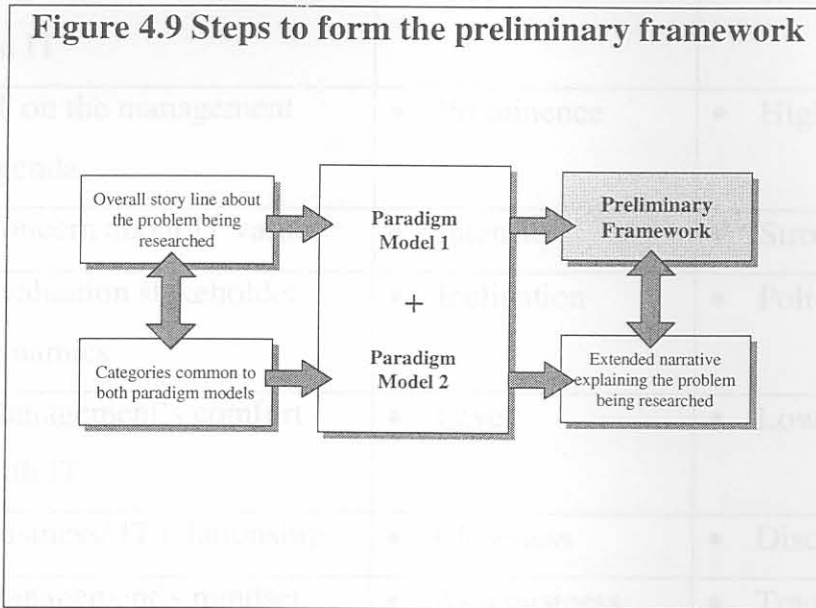
*Inadequate or unsuitable explanations of IT's value is one of a number of reasons why IT is on the management agenda. Concerns about IT value as well as the dynamics around evaluation stakeholders highlight the need for an effective IT evaluation process. Since IT evaluation processes are generally viewed as ineffective, steps are needed to enhance it. Such steps need, however, to consider factors like problems with defining IT value, flaws in evaluation methods, the mindset about IT evaluation, the availability of alternative evaluation methods and complications around IT benefits and costs. These intervening conditions could make the steps to enhance IT evaluation results less effective. Consequently, the explanations of IT value would not be satisfactory. This outcome will, in turn, ensure that IT remains on the management agenda and would increase the pressure for an effective IT evaluation process.*

From the story line, it emerges that the central or overall phenomenon applicable to both the paradigm models is **'IT value'**. **'IT value'** is the underlying theme of both models and thus also of the preliminary framework. The story line as well as categories common to both paradigm models, guided the integration of the two paradigm models around the problem being researched.

It is evident from the story line, with **'IT value'** as the underlying theme, that unsatisfactory explanations of IT value is the *result or outcome* of problems with IT evaluations. It is, however, also a *causal condition*



resulting in IT being high on the management agenda. The less satisfactory the explanations are, the bigger the challenge will be to have an effective IT evaluation process. Figure 4.9 shows the steps for compiling the preliminary framework.



Based on the hypotheses formulated for the paradigm models (refer to Tables 4.2 and 4.3), it would seem that the story-line holds true for a specific set of conditions or context. This study is concentrating on the problem where explanations of IT value are not satisfactory. It appears, from the hypotheses supporting the preliminary framework, that the problem being studied is prevalent under the following set or pattern of conditions:

**Table 4.4: The pattern of conditions associated with the phenomenon being researched**

Category	Property	Dimensions
1. Explanations of IT value	• Adequacy	• Unsatisfactory
2. IT track record	• Perceptions about it	• Poor

<b>Table 4.4: The pattern of conditions associated with the phenomenon being researched</b>		
<b>Category</b>	<b>Property</b>	<b>Dimensions</b>
3. Need to exploit IT as a business resource	• Pressure	• High
4. Organisational spending on IT	• Size	• High & rising
5. IT on the management agenda	• Prominence	• High
6. Concern about IT value	• Intensity	• Strong
7. Evaluation stakeholder dynamics	• Inclination	• Political
8. Management's comfort with IT	• Level	• Low
9. Business/ IT relationship	• Closeness	• Disconnect
10. Management's mindset about IT	• As a business resource	• Traditional (cost or commodity)
11. IT evaluation process	• Views	• Ineffective
12. Alternative evaluation methods	• Availability	• Limited
13. Flaws in IT evaluation methods	• Significance	• High
14. Complications around IT benefits and costs	• Scope/magnitude	• High
15. Definition of IT value	• Agreement	• Problematic
16. Steps to enhance IT evaluation results	• Impact	• Less effective
17. Mindset about IT evaluation	• Inclination	• Conservative

This pattern of conditions helps to describe the preliminary framework and thus the reasons for dissatisfaction with explanations of IT value. Figure 4.10 describes the preliminary framework which clearly shows the link where the adequacy of explanations of IT value is a *causal condition* for IT being on the management agenda and where it is also the *outcome* of the effectiveness of IT evaluations. Figure 4.10 shows further that the pattern of conditions under which explanations of IT value would be unsatisfactory. The preliminary framework, together with the hypotheses specifying inter-relationships between the categories, represent an emerging theory to enable a better understanding of the reasons why explanations of IT value are often not satisfactory.

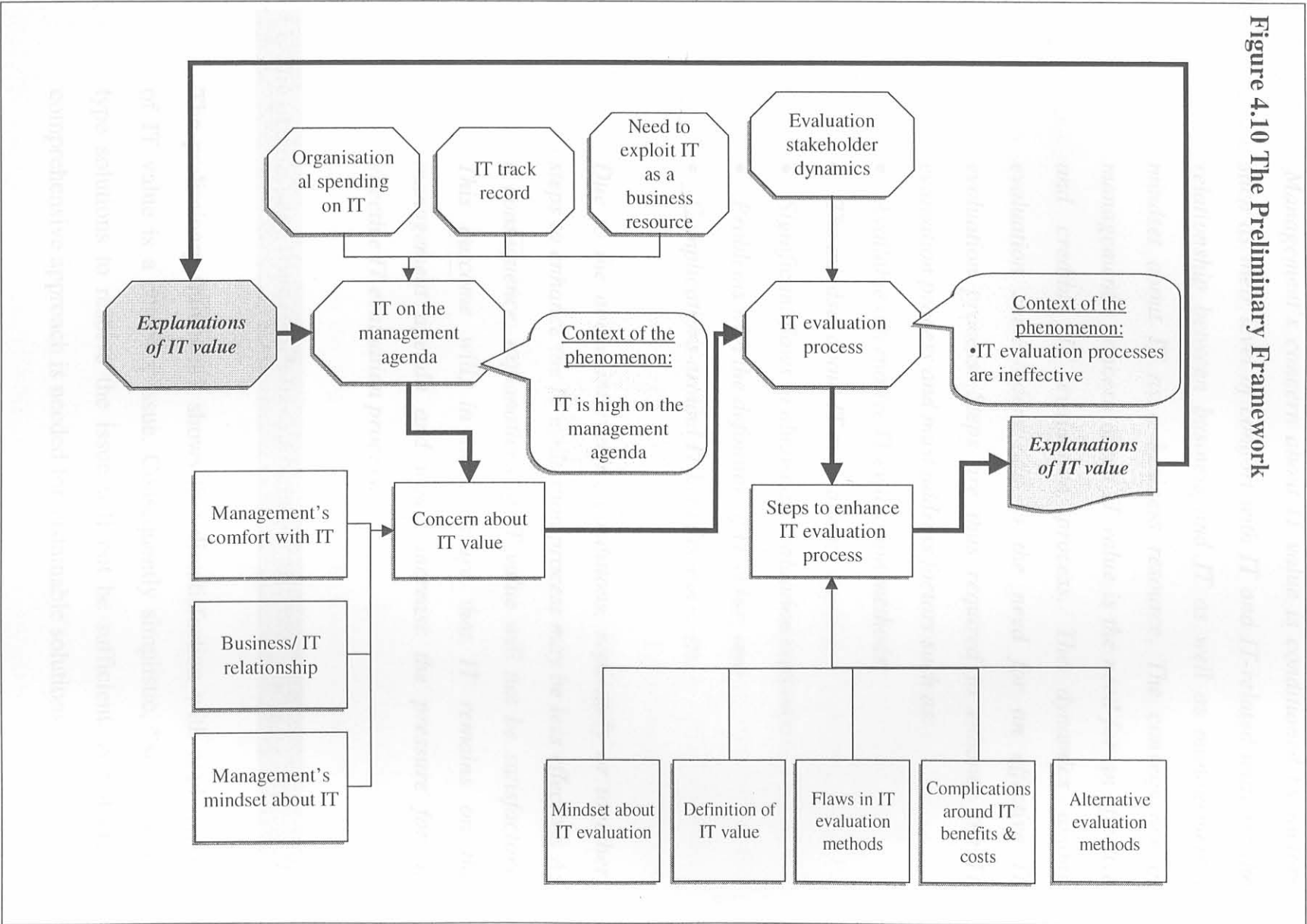
The initial story line can now be expanded into a narrative description of the central phenomenon, i.e., 'IT value' and specifically about the reasons why companies are not satisfied with explanations of IT value. This narrative description was derived from 1] the preliminary framework contained in Fig 4.10; 2] the hypotheses depicting the relationships between the categories of the preliminary framework (Tables 4.2 and 4.3); and 3] the set of conditions which forms the context under which the core phenomenon is being studied (Table 4.4).

The reasons why managers are often not satisfied with explanations of IT value can be explained as follows:

*IT is on management's agenda due to the poor track record of IT; because organisational spending on IT is high and rising; because almost all companies need to effectively exploit IT as a business resource and because managers are dissatisfied with explanations of IT value. IT is, under these circumstances, on the management agenda as a high priority issue. One of the results of IT being high on the management agenda is a concern about the value of IT.*



Figure 4.10 The Preliminary Framework



*Management's concern about IT value is conditioned by factors such as their level of comfort with IT and IT-related matters; the relationship between business and IT as well as management's mindset about IT as a business resource. The consequence of management's concern about IT value is the need for an effective and credible IT evaluation process. The dynamics among evaluation stakeholders add to the need for an effective IT evaluation process. Steps are thus required to enhance the IT evaluation process and must address factors such as:*

- *Available alternative IT evaluation methods;*
- *The mindset about IT evaluation;*
- *Significant flaws in almost all evaluation methods;*
- *Problems with the definition of IT value; and*
- *Complications around IT benefits and costs.*

*Due to the above intervening conditions, separately or together, steps to enhance the IT evaluation process may be less effective. As a consequence, explanations of IT value will not be satisfactory. This outcome will, in turn, ensure that IT remains on the management agenda and would increase the pressure for an effective IT evaluation process.*

## **11. The preliminary framework has some implications**

The preliminary framework shows that dissatisfaction with explanations of IT value is a complex issue. Consequently simplistic, “silver bullet” type solutions to resolve the issue will not be sufficient. A holistic or comprehensive approach is needed for sustainable solutions.

To emphasize the need for more comprehensive solutions, consider a situation where steps are needed to enhance the effectiveness of IT evaluations. If the search for alternative evaluation methods is seen as the only answer, then the required steps may not be fully effective or could even be a failure. A more comprehensive approach would require that the mindset about IT evaluation also receives attention or it could be that there is no agreed definition of IT value in place. In fact, part of the solution may be to have IT value defined in various ways to fully capture the multiple impacts of IT and the interests of all the stakeholders.

It is also evident from the preliminary framework that concerns about IT value could originate from potentially related, but different sources. If, for example, the concern originates from IT's poor track record, then the evaluation process should be focused on this concern and not, for instance, on the need to exploit IT as a business resource through investment in new IT systems or infrastructure. In such a case, the dynamics among the stakeholders in the evaluation process must also be managed with the real concern, i.e., IT's track record, as the main focus.

Managers must further recognise that concerns about IT value are influenced by factors like business managers' levels of comfort with IT and related matters, the relationship between business and IT or even management's mindset about IT as a business resource. Managing these factors may be enough to address the IT value concerns, without embarking on a time-consuming, expensive and difficult IT evaluation process. If an IT evaluation is still required, the process and steps to enhance its results must not lose sight of any of these factors.

It is lastly vital to note that dissatisfaction with explanations of IT value is cyclic in nature. If the evaluation process is not effective (i.e., producing



adequate IT value reports) and steps to enhance the IT evaluation process are not successful, then the dissatisfaction with explanations of IT value will be increased. Previous dissatisfaction with such explanations will intensify. This in turn, will increase IT's prominence as an issue on the management agenda. Obviously concerns about IT value would increase and pressure to make IT evaluations more effective would intensify. If this cycle continues to repeat itself, it could result in some drastic management actions.

## 12. Summary

The aim of the chapter has been achieved since a preliminary framework, aimed at understanding why explanations of IT value are often unsatisfactory, has been developed. This preliminary framework is the result of a grounded analysis of the initial Literature Case. The preliminary framework has the important function to focus further research steps and analysis as shown in Figure 4.1 (Pandit, 1996: 4).

In the next chapter, the further development and refinement of the framework to add to the understanding of why accounts of IT value are often not satisfactory, will be continued. The objective of Chapter 5 is not only to refine the preliminary framework developed in this chapter, but also to reach theoretical saturation amongst the framework's categories. Chapter 5 will employ empirical cases in pursuit of its objectives.

The concept of theoretical sampling will be guiding the research work in Chapter 5. During the initial data collection in Chapter 4, when the main categories were emerging, a full and deep coverage of data was needed. Subsequent theoretical sampling requires only the collection of data on targeted categories as well as for the development and refinement of

properties and hypotheses. According to Pandit (1996: 4) those categories with the greatest explanatory power should be saturated as completely as possible. A category is saturated when it is stable in the face of new data and when it is rich in detail.

The empirical cases, to be used in the next chapter, will concentrate mostly on a specific set of categories, i.e. those categories in the preliminary framework which appear to have great explanatory ability and/or which appear to have a limited degree of saturation from the Literature Case. The categories selected, are:

- Management's mindset about IT as a business resource;
- Management's comfort with IT;
- The business/IT relationship;
- The mindset about IT evaluation; and
- The definition of IT value.

The empirical cases in Chapter 5 will, apart from concentrating on the above, also aim to refine the labeling of categories; to refine and expand the hypotheses about the relationships between categories; to identify further categories; and to identify further hypotheses.

## Chapter 5

### The Concluding Framework

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## The Concluding Framework

Figure 5.1 The Focus of Chapter 5

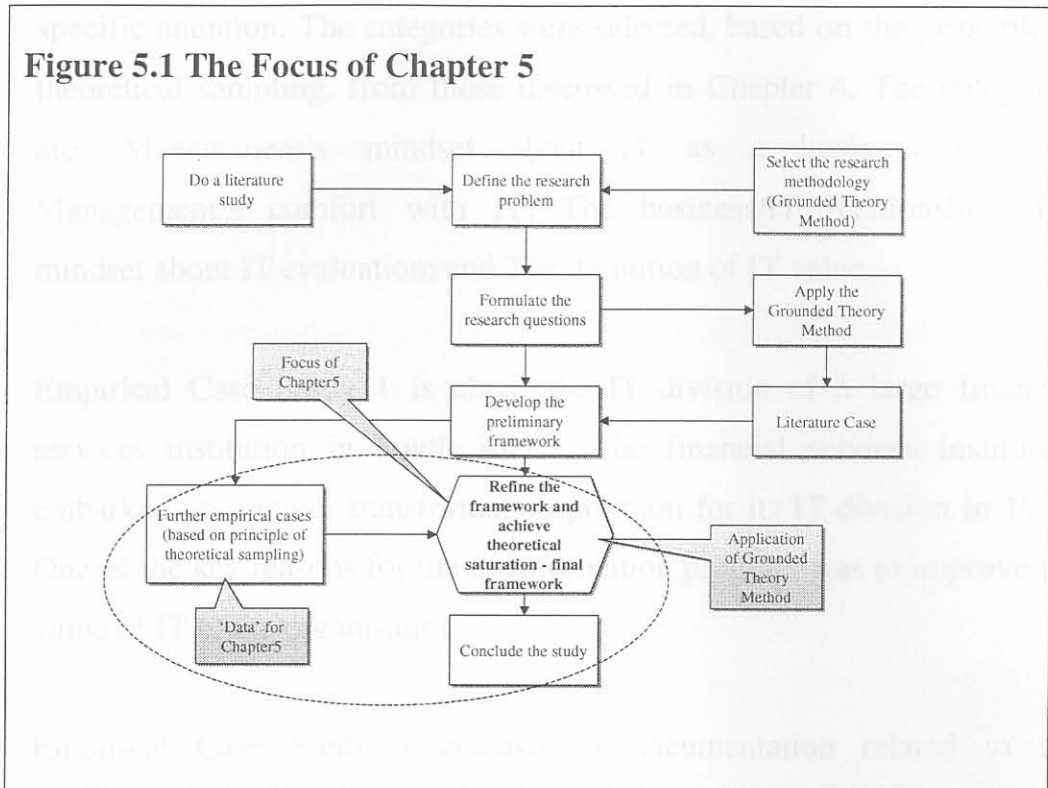
### 1. Background

A preliminary framework, to clarify dissatisfaction with explanations of IT value, was developed in the previous chapter. The development of the preliminary framework was based on the grounded analysis of a Literature Case. This framework provides an initial understanding of the reasons why managers are not satisfied with explanations of IT value.

Chapter 5 continues with the further development and refinement of the above framework. The objective of Chapter 5 is not only to refine the preliminary framework developed in the previous chapter, but also to reach theoretical saturation amongst the categories contained in the preliminary framework. In this context, refinement means improving on and expanding the preliminary framework of Chapter 4 along the dimensions of specificity, precision and density.

A second objective of Chapter 5 is to achieve theoretical saturation of the framework. A theory or framework is saturated when: 1] it is stable in the face of new data, 2] it is rich in detail and 3] the relationships between categories are well established and validated (Strauss and Corbin, 1990: 188). The purpose and structure of Chapter 5 is shown in Figure 5.1 on the next page.

At the conclusion of Chapter 5, the work for accomplishing the overall research objective will be completed. The research objective was formulated in Chapter 3 as: **“To develop a framework which clarifies the reasons why business managers are dissatisfied with explanations of IT value.”**



The Grounded Theory Method will again guide the expansion and refinement of the preliminary framework into the concluding framework. The focus of the data analysis and synthesis in Chapter 4 was on the Literature Case while two Empirical Cases will be used in Chapter 5.

## 2. Empirical Cases were used to refine the framework

In Chapter 3, it was explained that data for the research will be organised into three case studies. According to Pandit (1996: 3) such case studies or cases are the principal units of data in the Grounded Theory Method. Chapter 3 also elaborates on available methods of data collection, including the use of interviews.

Chapter 5 employs two empirical case studies in the pursuit of its objectives, namely to refine the preliminary framework and to reach theoretical saturation. In this process, a number of categories will receive

specific attention. The categories were selected, based on the principle of theoretical sampling, from those discussed in Chapter 4. The categories are: Management's mindset about IT as a business resource; Management's comfort with IT; The business/IT relationship; The mindset about IT evaluation; and The definition of IT value.

Empirical Case Study 1 is about the IT division of a large financial services institution in South Africa. The financial services institution embarked on a major transformation program for its IT division in 1999. One of the key reasons for the transformation program was to improve the value of IT to the organisation.

Empirical Case Study 1 consists of documentation related to the transformation program and also a number of supporting interviews. The documents were selected specifically for their explanatory power regarding the categories mentioned above. The documentation contains further discussions on and perspectives about the subject of IT value.

More specifically the Empirical Case Study 1 documents include:

- The results of a survey among some 120 senior business and IT managers regarding the importance of IT and their satisfaction about IT services/performance;
- The introduction of a company-wide Investment Appraisal process in the 2000/2001 financial year to identify IT projects which are strategic and of high value.

A number of interviews were conducted to supplement the above documents. The interviews were conducted with managers closely involved in the application of the Investment Appraisal process. The interviews concentrated *inter alia* on topics like the investment appraisal



method; the rationale for doing investment appraisals; compliance with the process; the quality of the investment appraisal results; as well as dynamics among the people involved in the investment appraisals.

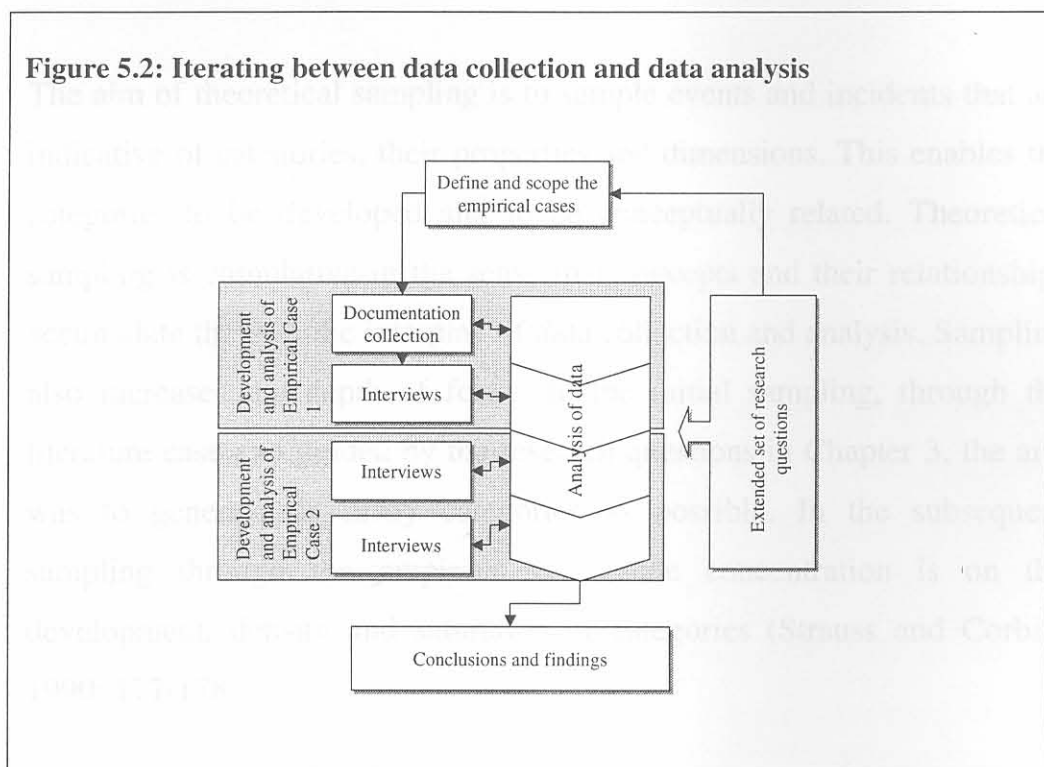
Empirical Case 2 is about the role of information technology in a major public services organisation in Pretoria, South Africa. Data in Empirical Case 2 was collected by means of interviews with senior business and IT managers. The interviews focused on the topic of IT value in general. This general topic was elaborated on through a number of specific themes shown in Table 5.1 below.

**Table 5.1 Interview Themes**

- Defining IT value
- Management concerns about IT
- Management's comfort with IT
- Exploiting IT as a business resource
- The Business: IT relationship
- Rationale for conducting IT evaluations
- Evaluation methods and criteria
- Performing IT evaluations
- Stakeholder dynamics around IT evaluation
- Quality of IT evaluation results
- Use of IT evaluation results
- Ability/capacity to evaluate IT
- Satisfaction with IT evaluation results

The compilation of the empirical cases proceeded in an iterative manner. For example, the documentation of Empirical Case 1 was collected and analysed. Based on the analysis, further interviews were decided upon.

Preparation of Empirical Case 2 only started when the analysis of Empirical Case 1 was basically completed. This iteration between data collection and data analysis is shown in Figure 5.2. This figure also shows how the set of extended research questions supports the data analysis process.



The data in the two empirical cases was, in turn, subjected to the coding processes of the grounded theory method where asking questions and making comparisons are key analysis techniques. The development of the preliminary framework enabled the further development of the set of research questions. The reason for further developing this set of research questions, originally formulated in Chapter 3, is to support data analysis.

### 3. Theoretical sampling guided the development of further research questions

As in Chapter 4, the analytical procedures of *questioning* and the *making of comparisons* are key to refining the components of the preliminary framework (Strauss and Corbin, 1990: 62-63).

The aim of theoretical sampling is to sample events and incidents that are indicative of categories, their properties and dimensions. This enables the categories to be developed and to be conceptually related. Theoretical sampling is cumulative in the sense that concepts and their relationships accumulate through the interplay of data collection and analysis. Sampling also increases the depth of focus. In the initial sampling, through the literature case and guided by the research questions in Chapter 3, the aim was to generate as many categories as possible. In the subsequent sampling through the empirical cases, the concentration is on the development, density and saturation of categories (Strauss and Corbin, 1990: 177-178).

Further and more specific questions are required to facilitate the sampling of the empirical cases. These questions were developed by relating the initial set of research questions, posed in Chapter 3, with the preliminary framework developed in Chapter 4. In this process, some additional and also more specific questions have been generated. The questions are shown in Table 5.2.

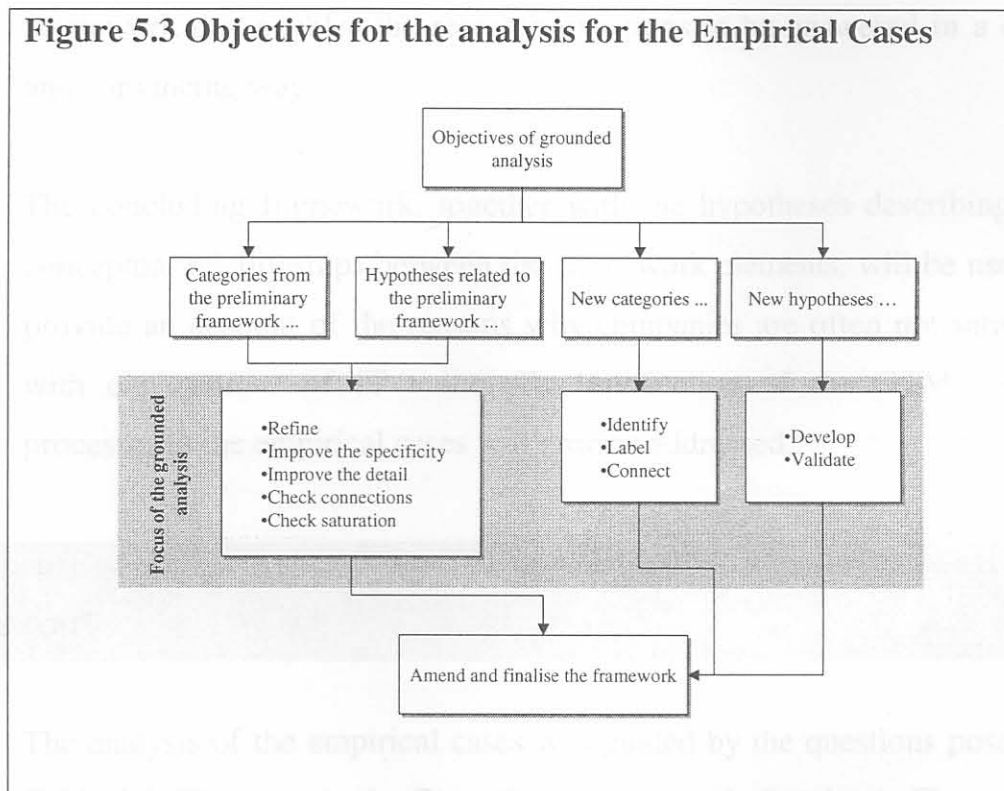


<b>Table 5.2: Refined research questions</b>	
<b>Basic Research Questions (as per Chapter 3)</b>	<b>Further questions derived from the preliminary framework</b>
What are the concerns that prompt managers to inquire about the value of IT?	<ul style="list-style-type: none"> <li>• Is IT an issue for management? Why is IT an issue?</li> <li>• Do managers address the issue of IT value explicitly or implicitly?</li> <li>• Do managers have access to explanations of IT value?</li> <li>• What makes explanations of IT value unsatisfactory?</li> </ul>
How do organisations in general approach the issue of IT value?	<ul style="list-style-type: none"> <li>• Do organisations formally evaluate IT?</li> <li>• Are evaluations done ad hoc or regularly according to an evaluation program?</li> <li>• Who in the organisation is driving IT evaluations?</li> <li>• What evaluation methods are being used?</li> <li>• How effective are these methods?</li> </ul>
Why is the concept of IT value so problematic for business managers?	<ul style="list-style-type: none"> <li>• Do business managers have a shared understanding of the concept IT value?</li> <li>• What do managers mostly regard as value from IT?</li> <li>• How do managers think about value and specifically IT value?</li> </ul>
How should the issue of IT's value be approached?	<ul style="list-style-type: none"> <li>• What should be avoided in IT evaluation?</li> <li>• How would companies prefer to conduct IT evaluations?</li> <li>• How could companies improve IT evaluation?</li> </ul>

This enhanced set of questions has the purpose to guide the grounded theory analysis (in other words the open, axial and selective coding) of the empirical cases.

#### 4. Grounded theory analysis was applied to both empirical cases

The two empirical case studies were subjected to grounded analysis guided by the objectives of Chapter 5 as shown in Figure 5.3.



Thus, the analysis of the empirical cases in this chapter is to generate new categories and hypotheses on the one hand, but to also further refine the labeling of available categories; as well as to refine and expand the hypotheses about the relationships between these categories.

The remainder of Chapter 5 will discuss the results of the grounded theory analysis of the two empirical cases, i.e., the results from the application of the open coding, axial coding and selective coding processes. The subsequent impact on the preliminary framework will be pointed out and discussed. The synthesis of the new and changed categories and the corresponding relationships will be presented as the concluding framework. The term 'concluding framework' is preferred to the term 'final framework'. The term 'final framework' is not appropriate, because further case studies and analysis could well result in even further adjustments and refinements. The term 'concluding framework' refers to a framework that enables the research questions to be answered in a clear and convincing way.

The concluding framework, together with the hypotheses describing the conceptual relationships between the framework elements, will be used to provide an account of the reasons why companies are often not satisfied with explanations of IT value. The application of the GTM coding processes to the empirical cases will now be addressed.

## **5. Open Coding was used to identify new categories and to refine existing categories**

The analysis of the empirical cases was guided by the questions posed in Table 5.2. The steps in the Open Coding process (refer also to Figure 4.2) were again applied to the empirical cases. The case data was examined and analysed (using questions and making comparisons) in order to identify and label concepts. The Analysis Worksheets for the empirical cases are the same as for the Literature Case.



The above concepts were grouped into labeled categories. The categories available from the preliminary framework were used as far as possible. Where it was found that the concepts do not fit the available categories, *new* categories were formed. The new categories were subsequently further developed in terms of their properties and dimensions. The labels of the categories available from the preliminary framework were in addition validated against the concepts emerging from the empirical cases.

The process of Open Coding was applied to both empirical cases and it yielded three new categories. These are categories that are not contained in the preliminary framework and represent a potential extension of that framework. The new categories are detailed in Table 5.3:

<b>Category</b>	<b>Properties</b>	<b>Dimensions</b>
Control of IT	Need (motivation)	High to low
IT evaluation capability	Strength	Poor to good
State of IT evaluation	Degree of adoption	Informal to formal

No re-labeling of the categories in the preliminary framework was required. The application of the Open Coding steps to the empirical cases showed further that theoretical saturation has been achieved in all the categories contained in the preliminary framework. This means that no significant changes have been uncovered among the properties and dimensions of the categories. The next step is to incorporate the three new categories into the framework.

## 6. Axial Coding was used to incorporate the newly identified categories into the framework

The Paradigm Model concept was used to incorporate the new categories (refer to Chapter 4 for more detail about the paradigm model). In Chapter 4, two Paradigm Models were developed around the core categories '**IT on the management agenda**' and '**IT evaluation process**' respectively. The Axial Coding process was applied to the empirical cases with basically two aims, the first to determine how the three new categories would relate to or fit the two previously developed Paradigm Models, while the second aim is to establish whether any core categories (and thus Paradigm Models) would result from the new categories.

The steps involved in the application of the Axial Coding process are similar to those described in Chapter 4. It was found that no new core categories were required. All three new categories could be related to the two existing core categories. The incorporation of the three new categories will now be discussed.

Each of the new categories will be dealt with individually. All the resulting changes will, however, be incorporated into the concluding paradigm models.

The first new category to be dealt with is labeled '**Control of IT**'. Application of the axial coding steps showed that the category '**Control of IT**' is related to both the core categories identified from the Literature Case. The category '**Control of IT**' was found to be in the first instance, a *consequence* of the category '**Concern about IT value**'. This relationship can be specified through the following hypothesis: *If the concern about IT value is high, then the need for control of IT will be high* (refer also to



Table 5.3 for validation of this relationship). **‘Concern about IT value’** is an action/inter-action strategy in response to the core category **‘IT on the management agenda’**. Ultimately **‘Control of IT’** is therefore a *consequence or outcome* of core category **‘IT on the management agenda’**. The new category **‘Control of IT’** was thus found to be part of Paradigm Model 1.

**‘Control of IT’** was in addition established as a *causal condition* for the other core category labeled **‘IT evaluation process’** which is part of Paradigm Model 2. The relationship between **‘Control of IT’** and **‘IT evaluation process’** can be specified as follows: *If the need for control of IT is high, then the IT evaluation process will have to be effective.* The new category **‘Control of IT’** thus serves as a component to both Paradigm Models.

The next new category is **‘State of IT evaluation’**. This category could not be unambiguously related to Paradigm Model 1. The category was, however, related to the **‘IT evaluation process’** which is the core category of Paradigm Model 2. **‘State of IT evaluation’** was found to be a sub-category of the **‘IT evaluation process’**. The **‘State of IT evaluation’** is a property of the “IT evaluation process” and serves to extend the context of Paradigm Model 2. This requires that the hypothesis describing the relationship between **‘IT evaluation process’** and **‘Steps to enhance the IT evaluation process’** be updated to: *If the IT evaluation process is viewed to be ineffective and/or the state of IT evaluation is informal, then steps will be required to enhance the IT evaluation process.* The category **‘State of IT evaluation’** is thus part of the *context* of Paradigm Model 2.



The third and last of the new categories has been labeled '**IT evaluation capability**'. This category was related through the application of the axial coding steps to the core category '**IT evaluation process**' and established as a sub-category of the '**IT evaluation process**'. As a sub-category of '**IT evaluation process**', it forms part of the properties describing the '**IT evaluation process**'. The hypothesis, describing the relationship between '**IT evaluation process**' and '**Steps to enhance the IT evaluation process**', can be updated as follows: *If the IT evaluation process is viewed to be ineffective and/or the state of IT evaluation is informal, and/or the IT evaluation capability is low, then steps will be required to enhance the IT evaluation process.* The category '**IT evaluation capability**' is thus part of the *context* of Paradigm Model 2.

The incorporation of the three new categories into the two original paradigm models developed in Chapter 4 necessitates that some new relationships be specified and validated. The hypothesis depicting the relationships between the elements of the updated paradigm model and their validation against the empirical cases are shown in Table 5.4.

**Table 5.4: New relations between the elements of the updated Paradigm Model 1**

Hypothesis	Support by EC1	Support by EC2
If the concern about IT value is high, then the need for control of IT will be high.	Explicit	Implicit

The next step is to incorporate these changes into the overall Paradigm Model. These changes are depicted in Figure 5.4. It shows that the new category '**Control of IT**' is the only the change to Paradigm Model 1.

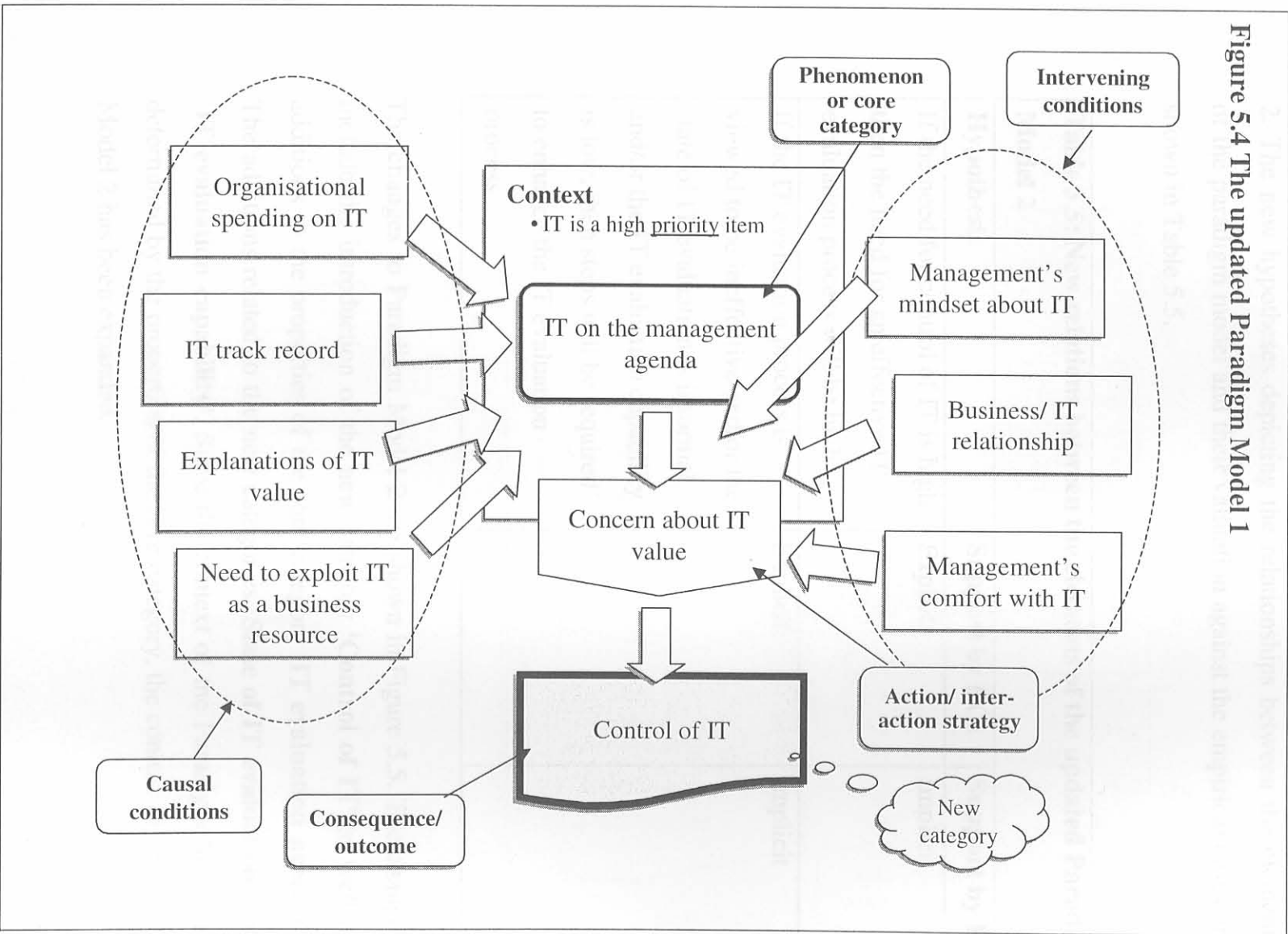


Figure 5.4 The updated Paradigm Model 1

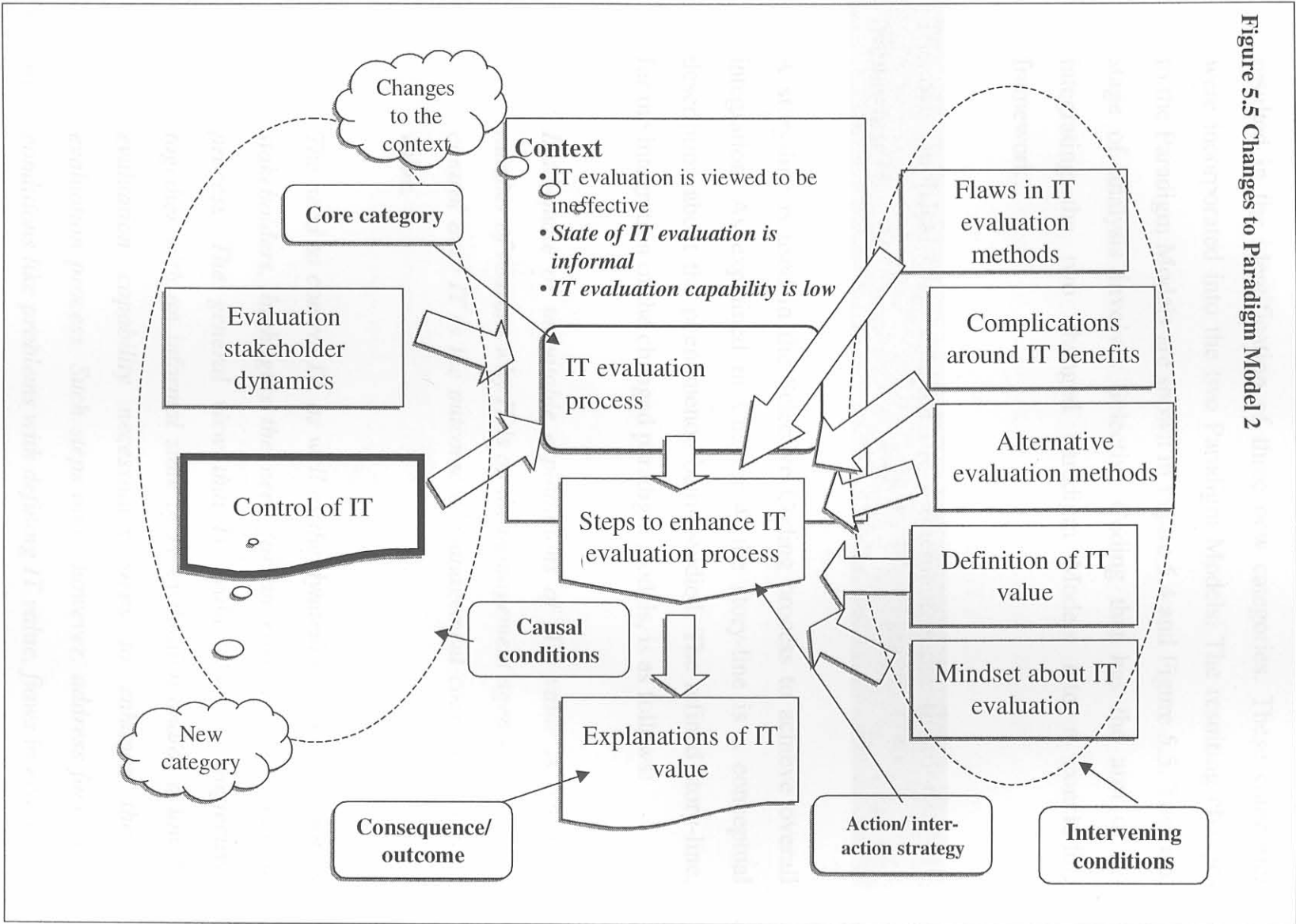
The new categories also require an update of the original Paradigm Model 2. The new hypotheses depicting the relationships between the elements of the paradigm model and their validation against the empirical cases are shown in Table 5.5.

<b>Hypothesis</b>	<b>Support by EC1</b>	<b>Support by EC2</b>
If the need for control of IT is high, then the need for an effective IT evaluation process will be high	Explicit	Implicit
If the IT evaluation process is viewed to be ineffective and/or the state of IT evaluation is informal, and/or the IT evaluation capability is low, then steps will be required to enhance the IT evaluation process.	Explicit	Implicit

The changes to Paradigm Model 2 are shown in Figure 5.5. The changes include the introduction of the new category '**Control of IT**' as well as additions to the properties of the core category '**IT evaluation process**'. The additions related to the new categories '**State of IT evaluation**' and '**IT evaluation capability**'. Since the context of the Paradigm Model is determined by the properties of the core category, the context of Paradigm Model 2 has been expanded.



Figure 5.5 Changes to Paradigm Model 2



The application of open and axial coding to the two empirical cases resulted in the identification of three new categories. These categories were incorporated into the two Paradigm Models. The resulting changes to the Paradigm Models are shown in Figure 5.4 and Figure 5.5. The final stage of analysis involves Selective Coding that has the aim of re-integrating the two changed Paradigm Models into a concluding framework.

## 7. The two empirical cases enabled the refinement and saturation of the framework

A story-line is used in the Selective Coding process to achieve overall integration. As explained in Chapter 4, the story-line is a conceptual description about the phenomenon being studied. The refined story-line, for the integration of the changed paradigm models, is as follows:

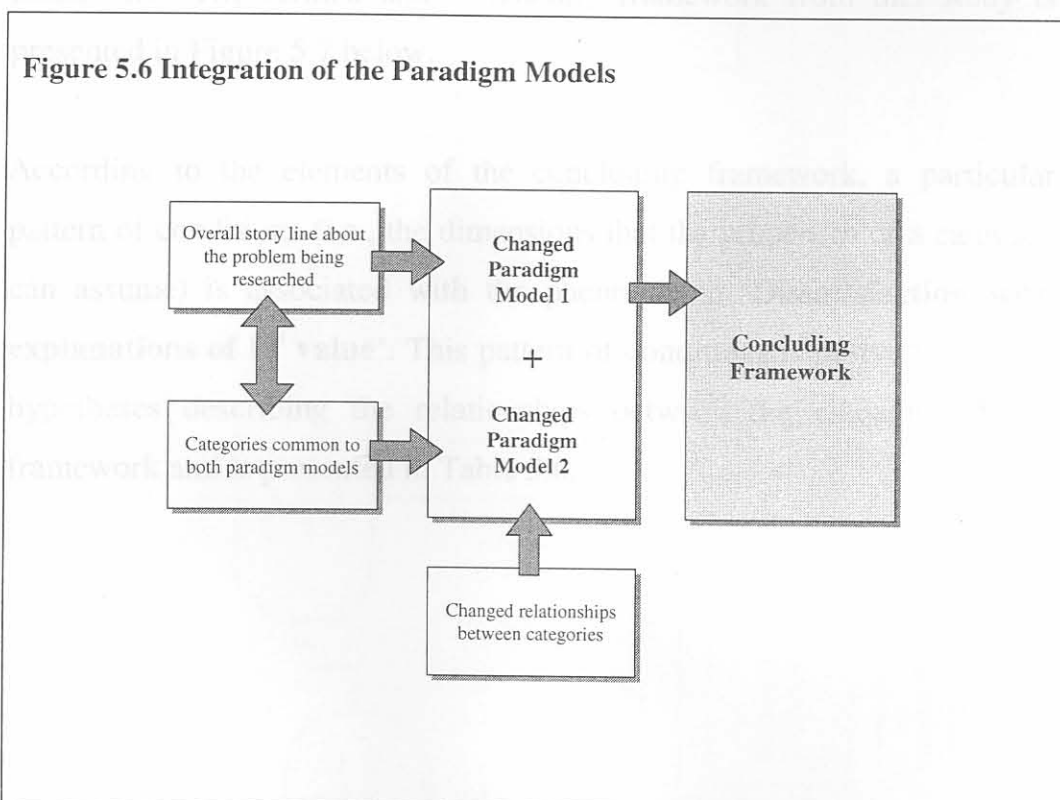
*Inadequate or unsuitable explanations of IT's value is one of a number of reasons why IT is on the management agenda. Achieving control over IT is the outcome of management concerns about IT value.*

*The need to control IT, as well as the dynamics around evaluation stakeholders, highlights the need for an effective IT evaluation process. The general view that IT evaluations are ineffective, together with an informal state of IT evaluation and/or a low IT evaluation capability necessitates steps to enhance the IT evaluation process. Such steps must, however, address factors or conditions like problems with defining IT value, flaws in evaluation methods, the mindset about IT evaluation, the availability of alternative evaluation methods and complications around IT*

*benefits. These intervening conditions could make the steps to enhance the IT evaluation process less effective.*

*If the effectiveness of the IT evaluation process is not enhanced, then explanations of IT value will not be satisfactory. This outcome will, in turn, ensure that IT remains on the management agenda and would increase the need for control over IT as well as increasing the pressure for an effective IT evaluation process.*

The two Paradigm Models were integrated around this story line. The



process of integrating the two changed Paradigm Models into the concluding framework is shown in Figure 5.6. These two paradigm models show two categories that are common to both. **‘Control of IT’** is, on the one hand, a consequence of concerns about IT value. It is also, on the other hand, a causal condition for an effective IT evaluation process.

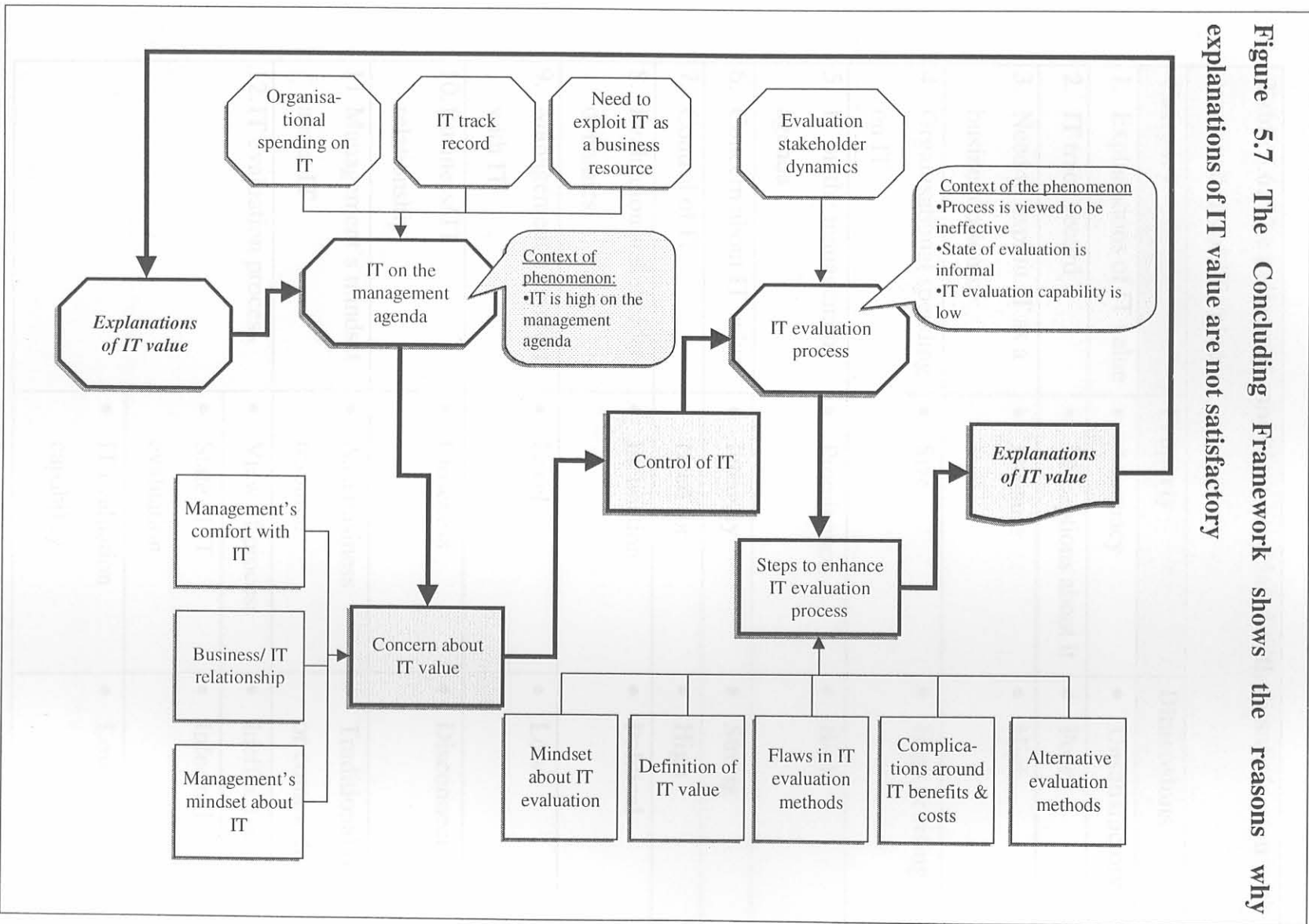


**‘Explanations of IT value’** is the other category common to both paradigm models. It is a causal condition for **‘IT on the management agenda’**, as well as the consequence of **‘Steps to enhance the IT evaluation process’**. In the case where these steps are not successful, **‘Explanations of IT value’** will not be satisfactory. This will in turn become a causal condition for **‘IT on the management agenda’**.

The hypotheses describing the new or changed relationships between the elements of the Paradigm Models, shown in Tables 5.4 and 5.5, further facilitated the logical integration of the two models into a concluding framework. The refined and concluding framework from this study is presented in Figure 5.7 below.

According to the elements of the concluding framework, a particular pattern of conditions (i.e., the dimensions that the properties of a category can assume) is associated with the phenomenon **‘Dissatisfaction with explanations of IT value’**. This pattern of conditions is derived from the hypotheses describing the relationships between the elements of the framework and is presented in Table 5.6.

**Figure 5.7 The Concluding Framework shows the reasons why explanations of IT value are not satisfactory**



**Table 5.6: The pattern of conditions associated with dissatisfaction with explanations of IT value**

Category	Property	Dimensions
1. Explanations of IT value	• Adequacy	• Unsatisfactory
2. IT track record	• Perceptions about it	• Poor
3. Need to exploit IT as a business resource	• Pressure	• High
4. Organisational spending on IT	• Size	• High & rising
5. IT on the management agenda	• Prominence	• High
6. Concern about IT value	• Intensity	• Strong
7. Control of IT	• Need for	• High
8. Evaluation stakeholder dynamics	• Inclination	• Political
9. Management's comfort with IT	• Level	• Low
10. Business/ IT relationship	• Closeness	• Disconnect
11. Management's mindset about IT	• As a business resource	• Traditional (cost or commodity)
12. IT evaluation process	• View of process	• Ineffective
	• State of IT evaluation	• Informal
	• IT evaluation capability	• Low



<b>Table 5.6: The pattern of conditions associated with dissatisfaction with explanations of IT value</b>		
<b>Category</b>	<b>Property</b>	<b>Dimensions</b>
13. Alternative evaluation methods	• Availability to implement	• Limited
14. Flaws in IT evaluation methods	• Significance	• High
15. Complications around IT benefits	• Scope	• High
16. Definition of IT value	• Agreement	• Problematic
17. Steps to enhance the IT evaluation process	• Impact	• Less effective
18. Mindset about IT evaluation	• Inclination	• Conservative

This pattern of conditions translates into a set of eighteen hypotheses that describes the relationships between the categories or elements of the concluding framework. The concluding set of hypotheses is presented in Table 5.7.

<b>Table 5.7 The concluding set of hypotheses describing the relationships between the elements of the concluding framework</b>	
1.	<i>Because of IT's poor track record, IT is on the management agenda of most companies</i>
2.	<i>IT is high on the management agenda of many companies, because of the high and rising spending on IT</i>
3.	<i>If there is pressure to exploit IT as a business resource, then IT will be high on the management agenda</i>

<b>Table 5.7 The concluding set of hypotheses describing the relationships between the elements of the concluding framework</b>	
4.	<i>If management is dissatisfied with explanations of IT value, then IT will be high on the management agenda</i>
5.	<i>Because IT is high on the management agenda, management is concerned about IT value</i>
6.	<i>If management's comfort with IT is low, then management's concern about IT value will be high</i>
7.	<i>If the business/ IT relationship is poor, then management's concern about IT value will be high</i>
8.	<i>If management's mindset about IT is traditional, then management's concern about IT value will be high</i>
9.	<i>If the concern about IT value is high, then the need for control of IT will be high</i>
10.	<i>If the need for control of IT is high, then the need for an effective IT evaluation process will be high</i>
11.	<i>If evaluation stakeholder dynamics is political, then the need for an effective IT evaluation process will be high</i>
12.	<i>If the IT evaluation process is viewed to be ineffective and/or the state of IT evaluation is informal, and/or the IT evaluation capability is low, then steps will be required to enhance the IT evaluation process</i>
13.	<i>If the definition of IT value is problematic, then steps to enhance the IT evaluation process will have to address it</i>
14.	<i>Because of complications around IT benefits and costs, steps to enhance the IT evaluation process will have to address it</i>
15.	<i>Because of significant flaws in IT evaluation methods, steps to enhance the IT evaluation process will have to address it</i>
16.	<i>If the mindset about IT evaluation is conservative, then steps to enhance the IT evaluation process will have to address it</i>



**Table 5.7 The concluding set of hypotheses describing the relationships between the elements of the concluding framework**

- |     |   |
|-----|---|
| 17. | <i>If alternative evaluation methods are limited, then steps to enhance the IT evaluation process will have to address it</i>   |
| 18. | <i>If steps to enhance the IT evaluation process are not successful, then explanations of IT value will not be satisfactory</i> |

The framework could be considered as *concluding* because ...

- The new categories and additional or changed relationships from the empirical cases have been incorporated and no new categories seem to be forthcoming from the analysis of the data;
- The new relationships have been logically defined and incorporated into the relationship schedule (Table 5.7); and
- All the categories appear to have reached an acceptable level of theoretical saturation.

#### **8. A refined description can now be presented on the reasons why explanations of IT value are not satisfactory**

The initial story-line used for the integration of the adjusted Paradigm Models, can now be expanded into an explanation of the reasons why managers are dissatisfied with explanations of IT value. This explanation specifically responds to the research problem formulated in Chapter 2. The research problem was formulated as: “Why are business managers dissatisfied with explanations of IT value?”

This detailed explanation was derived from 1] the concluding framework as presented in Fig 5.7; 2] the hypotheses depicting the relationships between the categories of the preliminary framework (Table 5.7); and 3] the pattern of conditions under which the research problem could occur



(Table 5.6). The concluding description of managers' dissatisfaction with explanations of IT value is the following:

*IT is on management's agenda due to the poor track record of IT; because organisational spending on IT is high and rising; because almost all companies need to effectively exploit IT as a business resource and because managers are dissatisfied with explanations of IT value.*

*IT is, under these circumstances, on the management agenda as a high priority issue. One of the results or outcomes of IT being high on the management agenda is a concern about the value of IT.*

*Management's concern about IT value is conditioned by factors such as their level of comfort with IT and IT related matters; the relationship between business and IT as well as management's mindset about IT as a business resource. The consequence of management's concern about IT value is the need for increased control of IT.*

*The need for increased control of IT requires in turn an effective and credible IT evaluation process. IT evaluation processes are typically characterised as being low in effectiveness, the state of IT evaluation tend to be informal and the IT evaluation capability is low. Pressure is further exerted on the effectiveness of the IT evaluation process due to evaluation stakeholder dynamics. As a result, steps are required to enhance the effectiveness of the IT evaluation process.*

*Such steps (i.e. to make the process more effective) must address these factors:*

- *Available alternative IT evaluation methods;*
- *The mindset about IT evaluation;*
- *Significant flaws in almost all evaluation methods;*
- *Problems with the definition of IT value; and*
- *Complications around IT benefits and costs.*

*Failure to address the above intervening conditions, separately or together, could prevent an enhanced IT evaluation process. As a consequence, explanations of IT value will not be satisfactory. This outcome will, in turn, ensure that IT remains on the management agenda and will increase the need for control of IT and subsequently add to the pressure for an effective IT evaluation process.*

The framework not only responds to the research problem by clarifying why managers are dissatisfied with explanations of IT value, it also has implications for dealing with such a problem situation. These implications will be discussed in the next section.

## **9. The concluding framework has significant implications**

The framework shows that dissatisfaction with explanations of IT value is a complex issue. Consequently simplistic, “silver bullet”-type solutions to resolve the issue will not be sufficient. A holistic or comprehensive approach is needed for sustainable solutions.

To emphasize the need for more comprehensive solutions, consider a situation where steps are needed to enhance the IT evaluation process. If

the search for alternative evaluation methods is seen as the only answer, then the required steps may not be fully effective or could even be a failure. A more comprehensive approach would require that the mindset about IT evaluation also receives attention or it could be that there is no agreed definition of IT value in place. In fact, part of the solution may be to have IT value defined in various ways to fully capture the multiple impacts of IT and the interests of all the stakeholders.

It is also evident from the concluding framework that concerns about IT value could originate from potentially related but different sources. If, for example, the concern originates from IT's poor track record, then the evaluation process should be focused on this concern and not, for instance, on the need to exploit IT as a business resource through investment in new IT systems or infrastructure. In such a case, the dynamics among the stakeholders in the evaluation process must also be managed with the real concern, i.e., IT's track record, as the main focus.

Managers must further recognise that concerns about IT value are influenced by factors like business managers' levels of comfort with IT and related matters, the relationship between business and IT or even management's mindset about IT as a business resource. Managing these factors may be enough to address the IT value concerns, without embarking on a time-consuming, expensive and difficult IT evaluation process. If an IT evaluation is still required, the process and steps to enhance the process must not lose sight of any of these factors.

It is lastly vital to note that dissatisfaction with explanations of IT value is cyclic in nature. If the evaluation process is not effective (i.e., not producing adequate IT value reports) and if steps to enhance the process are not successful, then the dissatisfaction with explanations of IT value



will increase. Previous dissatisfaction with such explanations will intensify. This in turn, will increase IT's prominence as an issue on the management agenda. Obviously concerns about explanations of IT value will increase and pressure to make IT evaluations more effective would intensify. If these cycles continue, it could result in some drastic management actions.

## 10. Summary

The chapter achieved its objectives to 1] refine and extend the preliminary framework and 2] to achieve theoretical saturation of the categories. This enabled a concluding framework to be developed that clarifies why explanations of IT value are often unsatisfactory. This framework was the main object of this study. The next chapter will therefore critically discuss and assess the results and findings of the study.

Chapter 6 will assess the research and the research findings. The chapter starts with considering the merit of the research problem and then proceeds to evaluate the achievement of the research objective. The appropriateness of the research method and the application thereof is dealt with next, followed by a discussion of the research results and the degree to which the research questions have been answered. The implications of the research results will further be considered and specifically its application potential. Chapter 6 will also indicate some ideas on the way forward with this particular research problem. Lastly, the specific contribution of this research work will be described and evaluated.

## Evaluation of the Research Chapter 6

### Evaluation of the Research

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## Evaluation of the Research

### 1. Background

The previous chapters described the development of a theory, represented through a framework, a set of hypotheses describing relationships within the framework as well as a pattern of conditions under which managers are likely to be dissatisfied with explanations of IT value. The study started with the definition of the research problem, a literature overview and the design of the research.

The theory was developed through the Grounded Theory Method. The development of the theory took place in two stages. The first stage developed a preliminary theory based on a Literature Case. The second stage, covered in Chapter 5, expanded and refined the preliminary framework into a concluding theory through two Empirical Cases.

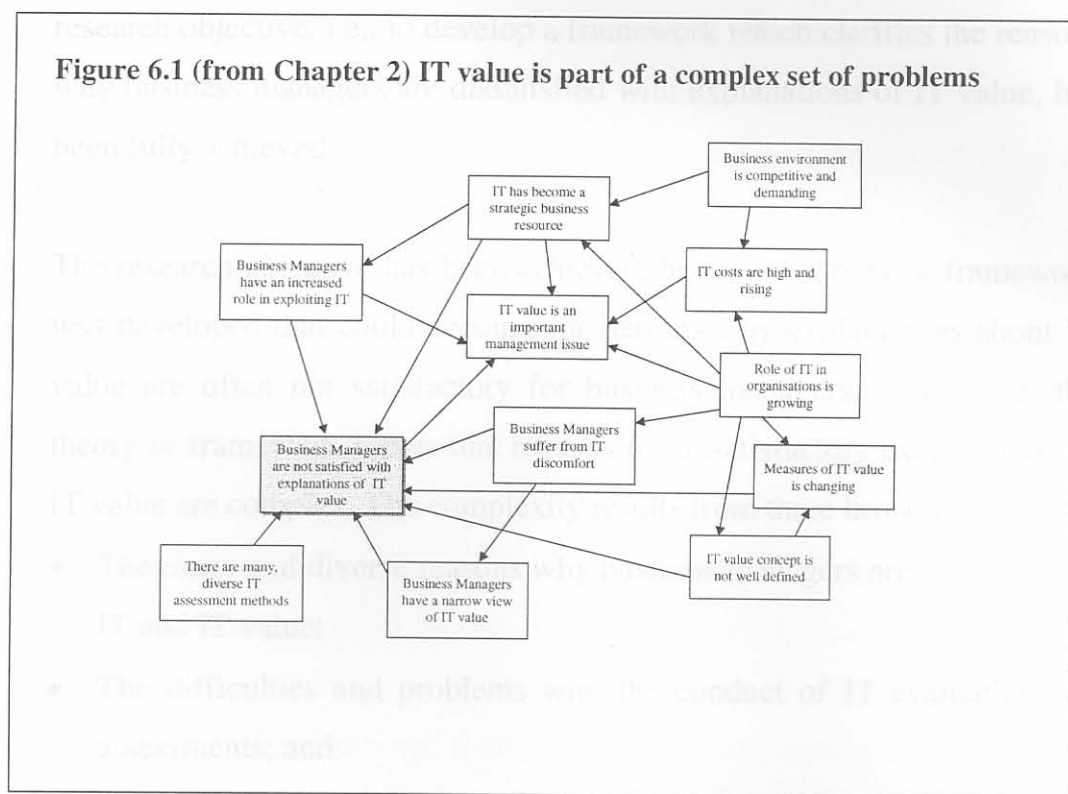
Chapter 6 contains an assessment of the research and its findings. The chapter starts with the merit of the research problem, and then proceeds to assess the achievement of the research objective. The appropriateness of the research method and the application thereof is dealt with next. This is followed by a discussion of the research results and the degree to which the research questions have been answered. The implications and contribution of the research results are considered and specifically its application potential. The chapter concludes with some suggestions on the way forward with this particular research problem.



## 2. The research has addressed the broad issue of IT value

IT has become a critical business resource for most companies today. As more and more funds are being invested in IT, the challenge of extracting and demonstrating value from this important business resource increases. IT value was shown to be part of a highly complex set of problems in Chapter 2. This complex network of problems is shown in Figure 6.1.

Figure 6.1 (from Chapter 2) IT value is part of a complex set of problems



Getting satisfactory answers to questions about IT value remains a problem for business managers. "... the question of IT value is far from settled." (Hitt and Brynjolfsson, 1996). Despite extensive research, this problem is not yet resolved. "Misunderstandings about value underlie all important issues faced by IS" (CSC, 1999: 1).

As a consequence, the research addressed the following problem: "Why are business managers often dissatisfied with explanations of IT value?"

### 3. The research focused on the development of a framework about explanations of IT value

The research objective was pursued through the application of the Grounded Theory Method. The research focus was on IT at business unit or company level and the research perspective is that of senior business executives or business managers (typically in charge of the business unit or company). The first question in assessing the research is whether the research objective, i.e., to develop a framework which clarifies the reasons why business managers are dissatisfied with explanations of IT value, has been fully achieved.

The research objective has been achieved, because a theory or framework was developed that could account for reasons why explanations about IT value are often not satisfactory for business managers. In essence, the theory or framework shows that reasons for unsatisfactory explanations of IT value are complex. The complexity results from three broad areas:

- The many and diverse reasons why business managers are interested in IT and IT value;
- The difficulties and problems with the conduct of IT evaluations or assessments; and
- A variety of factors that must be addressed by the steps to improve the process of IT evaluations.

All these problem areas are inter-related, thereby adding to the complexity of the IT value problem. It is further appropriate to note that there is often a lack of agreement among the IT evaluation stakeholders, as to what constitute an acceptable definition of IT value. This is one of the fundamental factors that could be influencing enhancements to the IT evaluation process.

A further point for assessing the research is to establish whether the research questions have been answered. This aspect will be discussed in the next section.

#### 4. The research enabled some answers to the basic research questions

The research problem was supported through a set of four questions which have been formulated to guide the research. The questions are (from Chapter 3) the following:

1. What are the concerns that prompt business managers to inquire about the value of IT?
2. How do organisations generally approach the issue of IT value?
3. Why is the concept of IT's value so problematic for business managers?
4. How should the issue of IT's value be approached?

The answers to each of the research questions, based on the theory or framework developed in Chapters 4 and 5, will now be discussed.

**1. What are the concerns that prompt business managers to inquire about the value of IT?** Three major concerns, that could cause managers to be uneasy about IT value, have been established. The first concern is the high and rising organisational spending on IT. As a result, IT is consuming more and more of the organisational budget. The second concern is IT's track record in the delivery of IT projects and services. The third concern stems from management's expectations to exploit IT as an important or even critical business resource. These concerns are discussed in more detail in Chapters 3 to 5.



## ***2. How do organisations generally approach the issue of IT value?***

Organisations typically employ a variety of methods to assess IT value. The methods to evaluate IT value can be grouped according to Renkema (2000: 102 – 104) into four major types. The types of evaluation methods are:

- The Financial approach;
- The Multi-criteria approach;
- The Ratio approach; and
- The Portfolio approach.

Chapter 3 elaborates more on each of these types of evaluation. Most organisations tend furthermore to focus almost exclusively on the *ex ante* evaluation of IT.

The effectiveness of these evaluation methods are inhibited or influenced by a number of factors. There is the lack of agreement among stakeholders on how to define the value of IT as well as conceptual flaws in almost all of the IT evaluation methods. The complexity of IT benefits and IT costs further complicate IT evaluation. An additional factor is the mindset about IT evaluation; for instance, management may not devote enough time and effort to IT evaluation. The evaluation methods and factors influencing them are dealt with in more detail in Chapters 3 to 5.

***3. Why is the concept of IT's value so problematic for business managers?*** The answer to the question why IT value is so problematic for business managers can be divided into two parts. The first part concentrates on concerns about IT value. The research has established, in the first place, that IT value is difficult to explain satisfactorily. The study has highlighted that managers' concerns about IT value are mediated or conditioned by the following aspects:

1. Business managers often have a low level of comfort with IT and related matters, thereby limiting their appreciation of what IT can do;
2. In many companies the relationship between IT and the business is not very good; and
3. Many business managers have a limiting view of IT, where it is regarded as a commodity product or service instead of a potentially critical business resource. In such a case, views on IT value will be limited to cost benefits and savings. Chapter 3 elaborates more on this particular point.

The second part of the answer to the question why the concept of IT value is problematic for business managers, considers the factors that must be addressed by the steps to enhance IT evaluation process. Two of these factors deserve special mention:

1. The difficulty in defining IT value and especially the possibility that various stakeholders could have multiple definitions of IT value; and
2. The complexity and difficulties in identifying and measuring all of the IT benefits and costs.

**4. How should the issue of IT's value be approached?** This question was dealt with fully in Chapter 5. In brief, organisations must recognise that establishing IT value is difficult and complex. A comprehensive approach is required for a sustainable solution where organisations must, in the first instance, understand why IT is on the management agenda and what could be influencing management's concerns about IT value. Without this understanding, an IT evaluation could easily provide answers to the wrong question. Secondly, managers must appreciate that IT evaluations are difficult and costly. A number of factors must be addressed by the steps to

enhance the IT evaluation process. For instance, the real problem with an IT evaluation may not necessarily be with the evaluation method being used, but could more fundamentally be due to the lack of an agreed definition of IT value. Organisations must further realise that dissatisfaction with explanations of IT value is cyclical in nature. On the one hand, it could be a cause for IT being on the management agenda. On the other hand, it could be the result of an ineffective IT evaluation process.

*How was the original sample selected? (On what grounds?) Figure*

The research has thus provided answers to all the research questions. The assessment of the research also needs to consider the suitability of the research method employed. The assessment of the research method will be discussed in the next section.

*Figure 3.2 The overall research approach*

## **5. The Grounded Theory Method has proven to be a suitable research method**

A qualitative research approach was adopted, since the issue of IT value is not so much a technical issue, but more a managerial and organisational issue (refer to Chapter 3 for more detail).

It was further shown in Chapter 3, that an interpretive approach to qualitative research is appropriate. It was explained that this approach provides a way of increasing our understanding of critical IT issues. As a result the Grounded Theory Method was selected as the specific methodology to conduct the research.

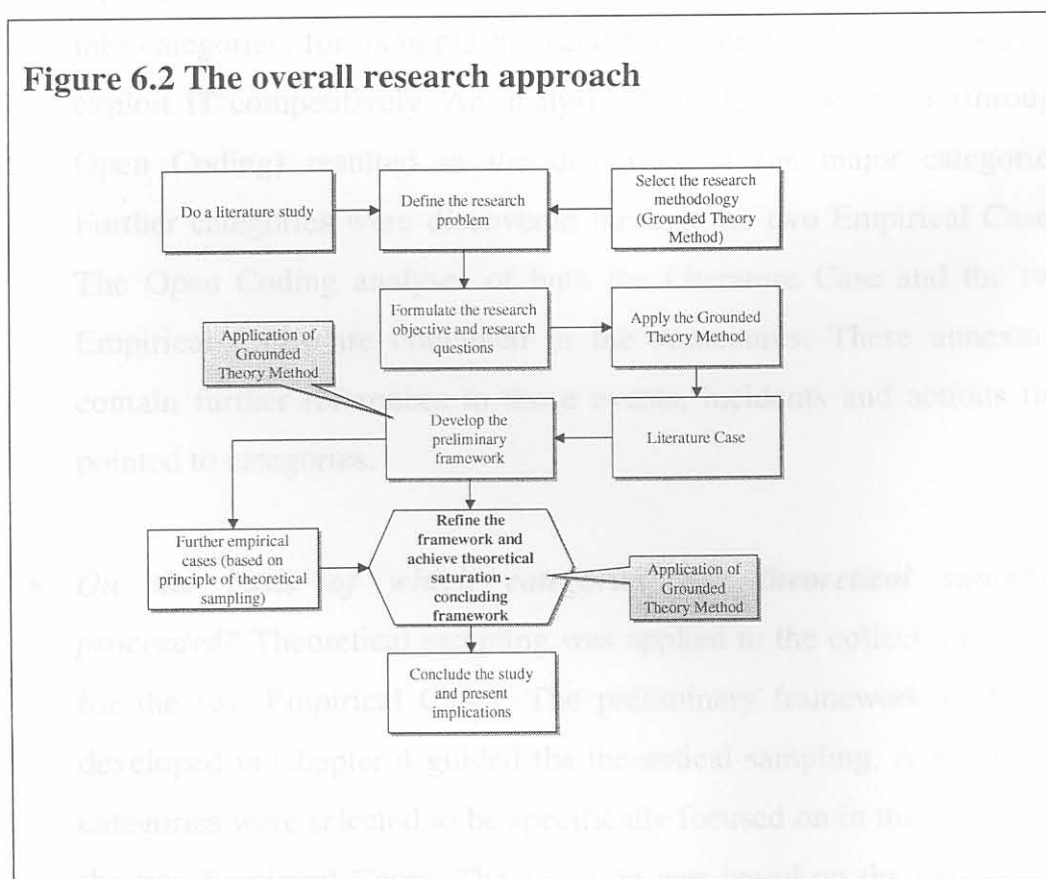
Strauss and Corbin (1990: 251 – 254) provide some evaluative criteria for judging grounded theory research. They say, in judging a research publication, that 1] judgments are made about the validity, reliability and



credibility of data; 2] the adequacy of the research process through which the theory has been generated; and 3] judgments are made about the empirical grounding of the research findings.

The criteria suggested by Strauss and Corbin (1990: 253) will now be used to assess the research process. The assessment is done in the following sections.

- *How was the original sample selected? (On what grounds?)* Figure 6.2 (imported from Chapter 4) shows an overview of the research approach.



The development of the framework started with a Literature Case where books, documents and papers were selected for the Literature Case. These

were selected based on their relevance to the phenomenon being studied as well as ensuring a broad coverage of the data. The Literature Case was used to develop a preliminary framework or theory.

- *What major categories emerged?* A total of 19 categories were selected to form the concluding framework shown in Chapter 5, Figure 5.7. Six sub-categories were also identified.
- *What were some of the events, incidents, actions that pointed to these categories?* The various aspects of the research problem emerged in Chapter 2. The overview of the literature in Chapters 2 and 3 highlighted various incidents and actions that were eventually grouped into categories, for example the need for control of IT or pressure to exploit IT competitively. An analysis of the Literature Case (through Open Coding) resulted in the discovery of the major categories. Further categories were discovered through the two Empirical Cases. The Open Coding analyses of both the Literature Case and the two Empirical Cases are contained in the Annexures. These annexures contain further references to those events, incidents and actions that pointed to categories.
- *On the basis of which categories has theoretical sampling proceeded?* Theoretical sampling was applied to the collection of data for the two Empirical Cases. The preliminary framework or theory developed in Chapter 4 guided the theoretical sampling. A number of categories were selected to be specifically focused on in the analysis of the two Empirical Cases. The selection was based on the explanatory ability of the categories (in other words the categories' ability to describe the research problem), as well as the degree of saturation for each category evident from the Literature Case. Application of the

- Grounded Theory Method resulted in some changes to the major categories. These changes are described in more detail in Chapter 5.
- *What were some of the hypotheses pertaining to the conceptual relations and on what grounds were they formulated and tested?* A complete list of hypotheses, describing all the relationships between the elements of the concluding framework, is shown in Chapter 5. The process of Axial Coding and specifically the Paradigm Model was used to identify and develop these relationships. Each hypothesis was validated against the Literature Case and/or the two Empirical Cases. Axial coding and hypothesis testing activities are covered in more detail in Chapters 4 and 5.
  - *Were there instances when hypotheses did not hold up against what was actually observed?* New categories emerged through the Open Coding of the Empirical Cases. As a result, some of the hypotheses developed in the Literature Case had to be amended or dropped. New hypotheses had to be formulated and tested. The new hypotheses, as well as the amended hypotheses were validated against the Empirical Cases (see Chapter 5 for more detail).
  - *How and why was the core category selected?* The broad issue of IT value surfaced as a major challenge in the researcher's work situation. This proved to be a general issue for business and IT managers across organisations. The need to develop a deeper understanding emerged from the literature study where the complexity of resolving the IT value issue was comprehensively illustrated (see also Figure 6.1).

The research process has been assessed in the preceding sections. The empirical grounding of the study must further be considered. Strauss and



Corbin (1990: 254 – 256) provide the criteria for assessing the empirical grounding of the study. Each of these will now be assessed in more detail.

- phenomenon can occur, has also been specified (Table 5.1).

• ***Are concepts generated?*** Yes, the Open Coding process was used to generate concepts. Concepts were derived from both the Literature Case and the two Empirical Cases. The Open Coding analysis to identify concepts is shown in the Annexures.
- explanation? The codification of the paradigm model (refer also ...)

• ***Are the concepts systematically related?*** The techniques of questioning and the making of comparisons in the Grounded Theory Method were used to relate concepts and to group the concepts into categories. The basic and supporting research questions that guided the formation of categories were formulated in Chapters 3 and 5. See also the Annexures for the grouping of concepts into categories.
- Has process been taken into account? Process has been accounted for ...

• ***Are there many conceptual linkages and are categories well developed? Do they have conceptual density?*** The categories established through the Open Coding process were conceptually related through the Paradigm Model (see also Figure 4.4 and Table 4.1 for a description of the Paradigm Model). Each category has furthermore been developed in terms of its attributes and the dimensions each of these attributes can assume. Hypotheses have been developed to specify or describe the conceptual links between categories. The attributes of the categories were used to specify under which circumstances (context) the central phenomenon is likely to occur. The pattern of conditions for the concluding framework is shown in Table 5.6.
- The concluding theory or framework ...

holistic approach, relates these issues to each other and to the ...

• ***Is much variation build into the theory?*** This study has focused specifically on the central phenomenon, namely where explanations of

IT value (i.e., the results of IT value assessments) are not satisfactory for business managers. A pattern of conditions, under which this phenomenon can occur, has also been specified (Table 5.6). Some ideas for extending the theory or framework are suggested later in this chapter.

- ***Are the broader conditions that affect the phenomenon built into its explanation?*** The application of the paradigm model (refer also to Figure 4.4 and Table 4.1) ensured that the broader conditions affecting the research problem have been considered. For instance, (referring to Figure 5.7) it is clear that expectations to exploit IT competitively and increasing IT expenditures are some of the broader conditions influencing the research problem.
- ***Has process been taken into account?*** Process has been accounted for in the development of the framework. This is most evident from the concluding framework or theory where the category labeled **‘Dissatisfaction with explanations of IT value’** is a causal condition for management’s questions about IT value. This category is also a consequence of ‘unsuccessful’ IT evaluations. Thus in a scenario (refer to Figure 5.7) where IT evaluation is improved to produce more satisfactory explanations of IT value, business managers will be less inclined to be concerned about IT value.
- ***Do the theoretical findings seem significant and to what extent?*** The study has highlighted the complex interplay of issues surrounding the IT value phenomenon. The concluding theory or framework with its holistic approach, relates these issues to each other and to the IT value problem. The framework facilitates an improved understanding of the problem, which allows for more effective approaches to be developed.



The manner in which the problem was approached is quite comprehensive. The approach not only considered problems around IT evaluation, but also the variety of reasons why IT value is questioned in the first place. The approach further considered reasons why improvements to IT evaluation are difficult and often not very successful. The framework could stimulate new research or studies relating to the problem of IT value. Chapter 5 also contains a section on the significance of the findings for managers.

Apart from the empirical grounding of the study, the significance of the research findings is an important factor in the evaluation of the research. The significance of the research findings will be dealt with in the following section.

## **6. The findings of the research resulted in an improved appreciation of the research problem**

The objective of the research was **“To develop a framework which clarifies the reasons why business managers are dissatisfied with explanations of IT value.”** A theory or framework was therefore developed which could assist organisations to improve their understanding of the IT value problem. This represents an important step in the process of finding an effective and sustainable solution to situations where managers are dissatisfied with explanations of IT value.

The concluding framework, as depicted in Figure 5.7, has significant explanatory potential. This potential is illustrated through the application of the framework to a case study where IT value is a pertinent issue. The explanatory power of the framework will be confirmed by relating and applying the theory or framework (with its supporting hypotheses and the

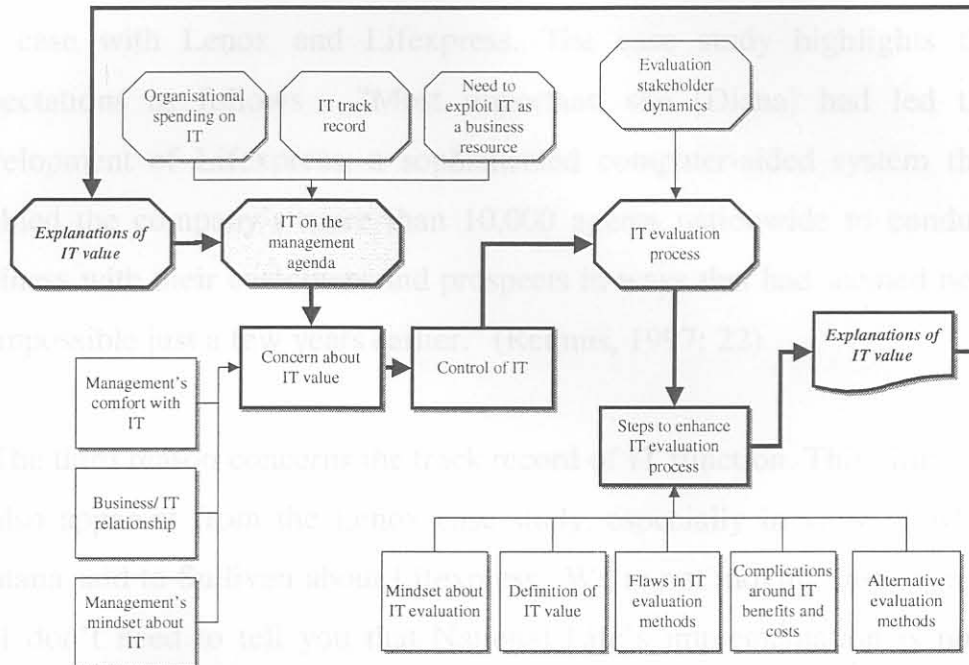


pattern of conditions under which there is dissatisfaction with explanations of IT value) to the problems and issues contained in this case study. The case study is entitled: “The IT System That Couldn’t Deliver” (Reimus, B. 1997. *The IT System That Couldn’t Deliver*. Harvard Business Review, May-June 1997: pp. 22-35. The article is included as an Addendum). The case study can be summarised as follows:

*In essence the case study concerns Lenox, an insurance company. Lenox has invested in Lifexpress, a sophisticated computer system. Lifexpress allows Lenox’s agents nation-wide to conduct business with their customers and prospects in ways that had seemed next to impossible a few years earlier. Lifexpress allows an agent, using a laptop computer, to develop a thorough financial profile of a customer, then to identify and explore Lenox’s most appropriate policies, to conduct an initial actuarial analysis, as well as doing a comparison with competitors and then to generate the required paperwork.*

*For various reasons, Lifexpress was not having the market impact that the Lenox executives had hoped for. The Chief Executive of Lenox has called a management committee meeting to assess the situation. The key players in the case study are: 1] James Bennet, CEO and President of Lenox; 2] Diana Sullivan, Chief Information Officer; and 3] Clay Fontana, Lenox’s Chief Financial Officer. [Sullivan furthermore reports to Fontana.]*

The complete case study is in the Annexures. The concluding theory, developed in Chapter 5, will now be used to provide structured comment on the case study. The framework, as a key element of the theory, is shown, for quick reference purposes, in Figure 6.3 below.

Figure 6.3: The concluding framework<sup>1)</sup>

<sup>1)</sup> The framework must be viewed in combination with the hypotheses describing the relationships between the framework elements (Table 5.7) and the pattern of conditions under which there is dissatisfaction with explanations of IT value (Table 5.6)

From the case study, it is clear that IT is quite prominent on the management agenda of Lenox. In terms of the framework (Figure 6.3) there could be specific reasons for IT to be on the management agenda:

1] One reason is organisational spending on IT since Lenox has incurred significant spending on Lifexpress. For instance, in the case study it is stated that "... Lenox's executives were growing concerned that the multi-million dollar project would not have the impact that they have hoped for." (Reimus, 1997: 22) and a further comment from Bennet: "... Diana should do an update of where things stand. Suffice it to say that I don't believe we are where we need to or expected to be with the kind of investment we have made." (Reimus, 1997:23).

2] Another reason for IT to be on the management agenda, is the expectations of management to exploit IT competitively. This seems to be the case with Lenox and Lifexpress. The case study highlights the expectations as follows - "Most important, she [Diana] had led the development of Lifexpress, a sophisticated computer-aided system that enabled the company's more than 10,000 agents nationwide to conduct business with their customers and prospects in ways that had seemed next to impossible just a few years earlier." (Reimus, 1997: 22).

3] The third reason concerns the track record of IT function. This situation is also apparent from the Lenox case study, especially in view of what Fontana said to Sullivan about Lifexpress "We're not moving fast enough ... I don't need to tell you that National Life's implementation is now running ahead of us." And Sullivan's response: "We've been through this before, ...A large percentage of National Life's [a competitor] agents are younger and more technology savvy. Even though we're behind schedule, I am confident that we will get on track before the year is out." (Reimus, 1997:23).

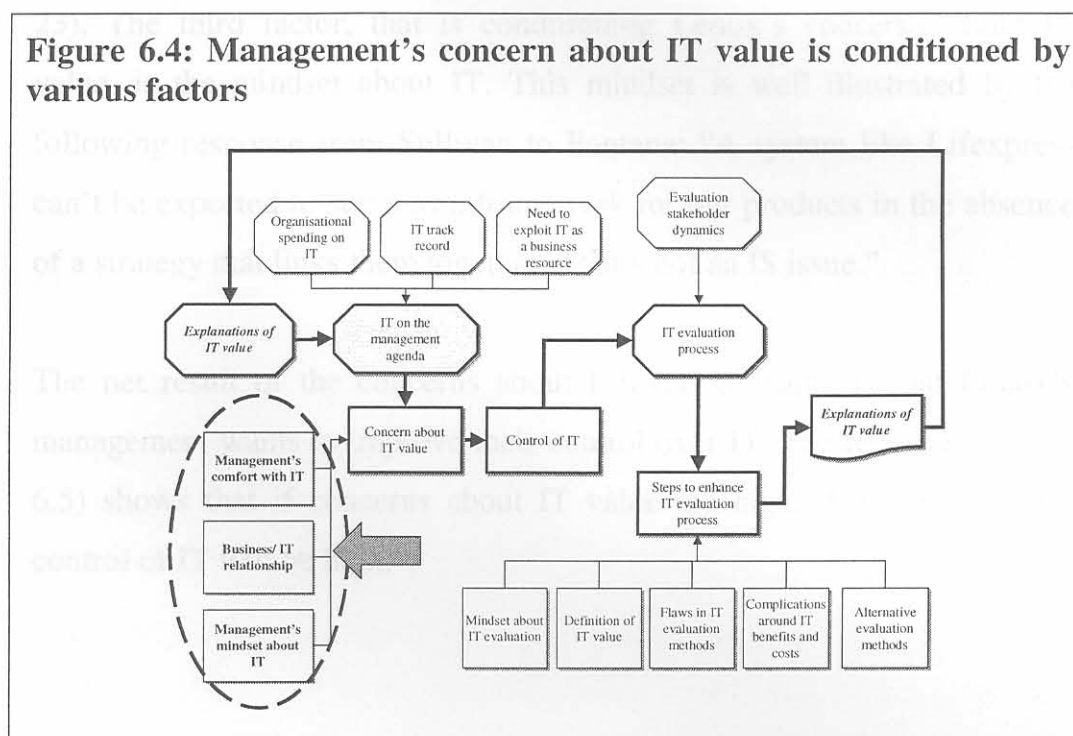
The hypotheses supporting the framework (Table 5.7) indicates that if IT spending is high; if there is a need to exploit IT; and if there are perceptions of a poor IT track record then IT will be a high priority on the management agenda. If IT is high on the management agenda, then concerns about the value of IT will also be high. This is also the case with Lenox. To illustrate the point, Bennet told Sullivan: "I spoke to one of National Life's general agents the other day ... and he told me they were closing deals on most policies in less than half the time it's apparently taking us. They began their rollout more than six months after we launched Lifexpress, and look at how much of National's field force is on



their system ... Can someone explain to me why that's not happening here?" (Reimus, 1997: 23).

The research has shown that if IT is high on the management agenda, then management's concern about IT value will be high. Figure 6.4 points out that management's concern about IT value is conditioned by various factors.

**Figure 6.4: Management's concern about IT value is conditioned by various factors**



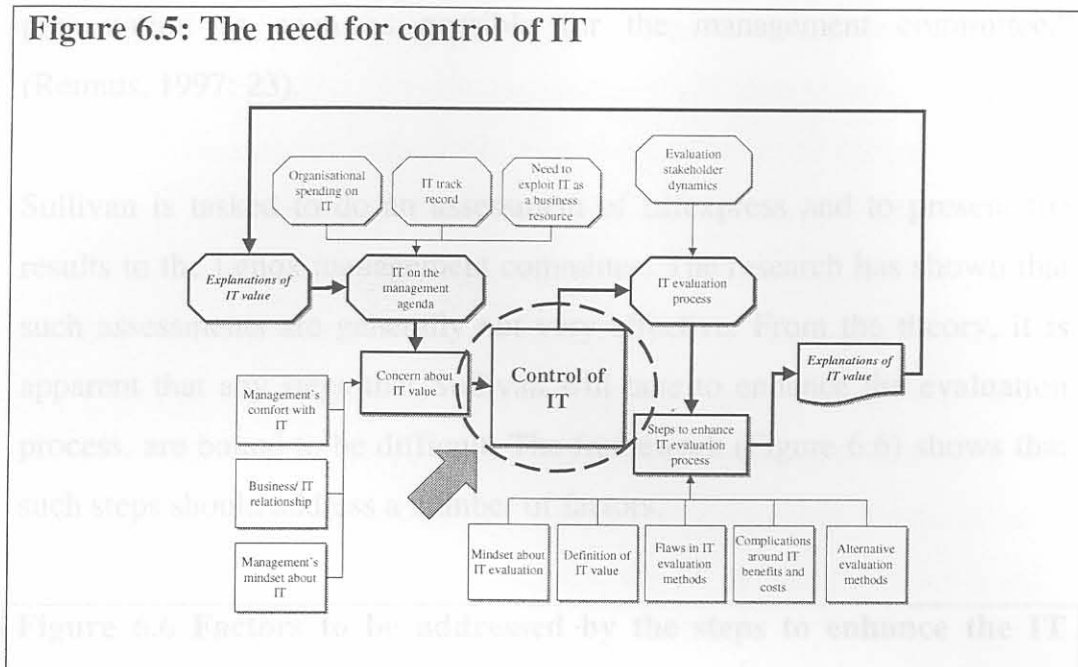
The Lenox case study highlights all three the factors, namely management's comfort with IT, the business/IT relationship and management's mindset about IT. Each of these factors will now be briefly discussed.

Lenox's management is not entirely comfortable with IT matters. A statement from Bennet is typical of this: "Computers have never been one of our strengths. We know we have some catching up to do." (Reimus, 97: 22). The relationship between the key business and IT managers of Lenox

is also not good. For example, Fontana said to Sullivan: “It’s your system, Diana, ... you know what the bottomline is. We made this tremendous investment based on your recommendation.” Sullivan reacted to Fontana’s statement as follows: “Lifexpress has met its implementation schedule and come in on budget. We have met all the system requirements that were identified early on ... but we need more leadership to carry our original vision to fruition.” A remark from Bennet to Sullivan reinforces the point: “I don’t think you have kept us sufficiently informed.” (Reimus, 1997: 23). The third factor, that is conditioning Lenox’s concerns about IT value, is the mindset about IT. This mindset is well illustrated by the following response from Sullivan to Fontana: “A system like Lifexpress can’t be expected to serve as a framework for our products in the absence of a strategy that links them together. That’s not an IS issue.”

The net result of the concerns about Lifexpress’ value is that Lenox’s management wants to improve their control over IT. The research (Figure 6.5) shows that if concerns about IT value are high, then the need for control of IT will be high.

The study (and specifically Table 5.7) shows that if the need for control of IT is high and/or if the dynamics among evaluation stakeholders are political, then the need for an effective IT evaluation process will be high. The high need for control of IT at Lenox has already been discussed. The dynamics between the key actors at Lenox are not healthy. This is illustrated by the following incident: “To Sullivan’s distress, her boss, Clay Fontana, Lenox’s chief financial officer, was clearly trying to hold her accountable for more than the creation and implementation of the system (Lifexpress) – he was putting her on the hook for the results of the system, too.” (Reimus, 1997: 22). Bennet is calling for an assessment of Lifexpress: “Diana should do an update of where things are and ... Please schedule a time for us to meet, and let’s put a plan together.”

**Figure 6.5: The need for control of IT**

Bennet stated: "... Suffice it to say that I don't believe we are where we need or expected to be with the kind of investment we have made." He then told Sullivan: "Please schedule a time for us to meet, and let's put together a presentation as soon as possible for the management committee." (Reimus, 97: 23).

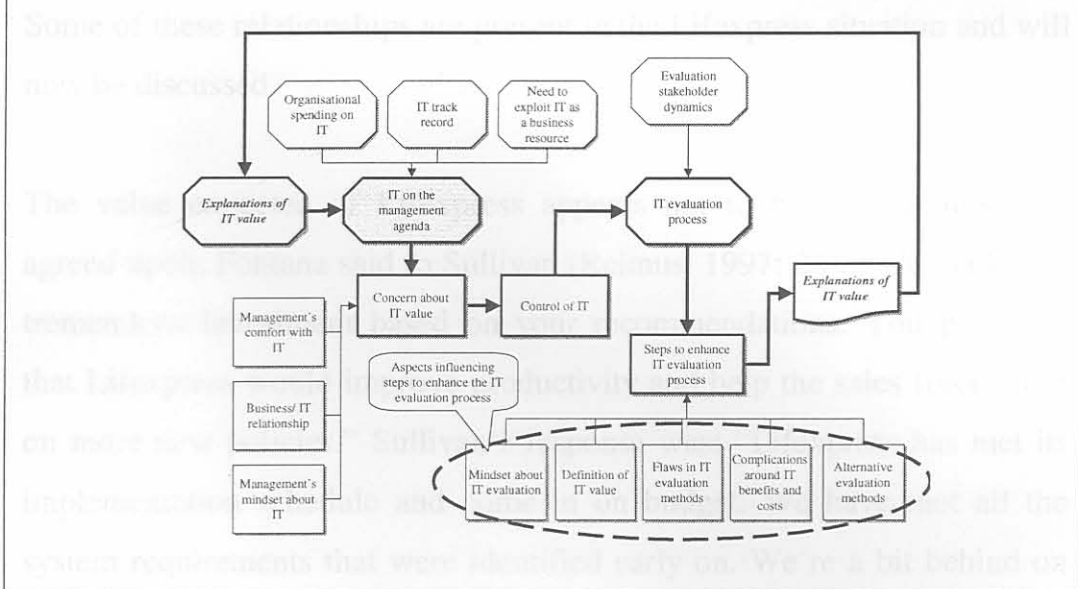
The theory (and specifically Table 5.7) shows that if the need for control of IT is high and/or if the dynamics among evaluation stakeholders are political, then the need for an effective IT evaluation process will be high. The high need for control of IT at Lenox has already been discussed. The dynamics between the key actors at Lenox are not healthy. This is illustrated by the following incident: "To Sullivan's distress, her boss, Clay Fontana, Lenox's chief financial officer, was clearly trying to hold her accountable for more than the creation and implementation of the system [Lifexpress] – he was putting her on the hook for the results of the system, too." (Reimus, 1997: 22). Bennet is calling for an assessment of Lifexpress: "Diana should do an update of where things stand" and "Please schedule a time for us to meet, and let's put together a



presentation as soon as possible for the management committee.” (Reimus, 1997: 23).

Sullivan is tasked to do an assessment of Lifexpress and to present the results to the Lenox management committee. The research has shown that such assessments are generally not very effective. From the theory, it is apparent that any steps that Sullivan will take to enhance the evaluation process, are bound to be difficult. The framework (Figure 6.6) shows that such steps should address a number of factors.

**Figure 6.6 Factors to be addressed by the steps to enhance the IT evaluation process**



The research has established some specific relationships pertinent to the steps to enhance the evaluation process. The relationships, extracted from Table 5.7, are shown below:

- If the definition of IT value is problematic, then steps to enhance the IT evaluation process will have to address it
- Because of complications around IT benefits and costs, steps to enhance the IT evaluation process will have to address it
- Because of significant flaws in IT evaluation methods, steps to enhance the IT evaluation process will have to address it
- If the mindset about IT evaluation is conservative, then steps to enhance the IT evaluation process will have to address it
- If the availability of alternative evaluation methods are limited, then steps to enhance the IT evaluation process will have to address it

Some of these relationships are present in the Lifexpress situation and will now be discussed.

The value expected of Lifexpress appears not to be well defined and agreed upon. Fontana said to Sullivan (Reimus, 1997: 23): “We made this tremendous investment based on your recommendations. You predicted that Lifexpress would improve productivity and help the sales force close on more new policies.” Sullivan’s response was: “Lifexpress has met its implementation schedule and come in on budget. We have met all the system requirements that were identified early on. We’re a bit behind on training, to be sure. But we need more leadership to carry our original vision to fruition.” Furthermore, the benefits expected of Lifexpress appear to be not clear: “We’re behind in part because we don’t have a clear product strategy. Our tendency has been to jump on the proverbial bandwagon every time a competitor comes out with a new product ... A system like Lifexpress can’t be expected to serve as a framework for our products in the absence of a strategy that links them together.” (Sullivan to Fontana, in Reimus (1997: 23)). From the preceding it would seem that

steps to enhance the evaluation process would have to address these issues before the value of Lifexpress could be assessed.

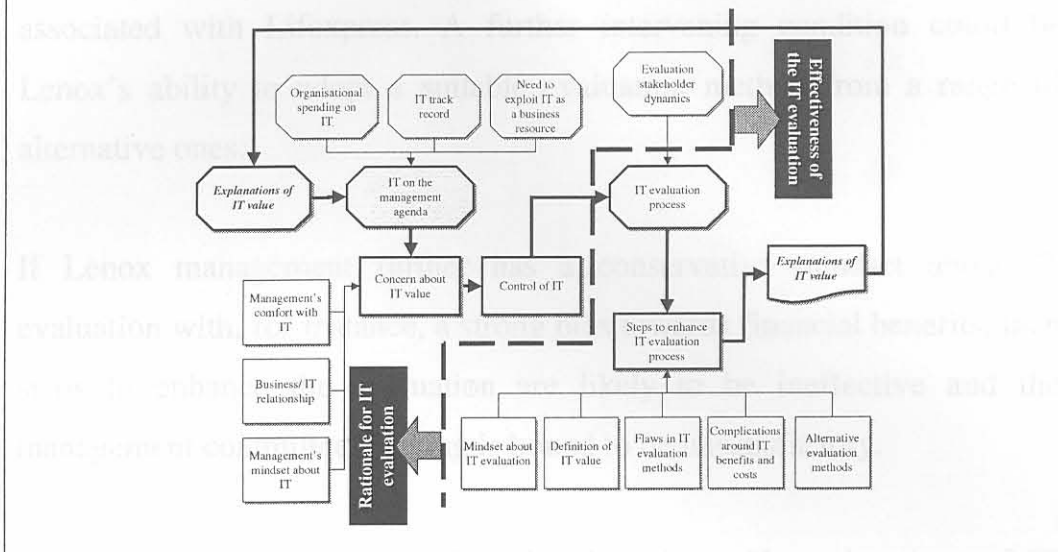
The case study does not cover the actual management committee meeting. The theory indicates, though, that if steps to enhance the IT evaluation process are not effective, then explanations of IT value will not be satisfactory. This is according to the theory a recurring phenomenon, in other words, if explanations of IT value are not satisfactory, then IT will remain high on the management agenda and the whole process will start afresh.

The research and subsequent theory are not only useful to describe the potential dissatisfaction with explanation of the value of Lifexpress at Lenox. It also provides some guidelines to Lenox's management on how to effectively deal with the situation. The framework shows firstly that dissatisfaction with explanations of IT value is a complex issue. Lenox's management must realise that simplistic, "silver bullet"-type solutions to resolve the issue may not be sufficient.

A comprehensive approach is needed for sustainable solutions. The proposed approach has, in terms of the theory, two purposes. The first is to establish what the rationale for the evaluation is and the second is to ensure an effective evaluation process. The dual purpose is shown in Figure 6.7 on the following page. In terms of the rationale for the evaluation, the Lenox management should be clear on what they would be discussing at the planned management committee meeting. Are they focusing on Lifexpress and/or on Sullivan? The Lenox management should further clarify what their real concerns are: is it the high spending on Lifexpress or the urgent need to exploit it competitively or is it Sullivan's track record with Lifexpress?



**Figure 6.7: The approach to enhance explanations of IT value has a dual purpose**



The research indicates that failure to reach clarity on this point will cause dissatisfaction with the evaluation results. The Lenox management must consider in addition, whether their concerns are not perhaps conditioned and influenced by their level of comfort with IT matters or by the seemingly poor relations between business and IT (most notably between Sullivan and Fontana).

As mentioned before, the proposed approach has two purposes or aims. The first aim is to establish the need and rationale for the evaluation of IT. This has just been discussed. The second purpose or aim is to ensure an effective evaluation process (refer also to Figure 6.7 above). According to the theory (see Table 5.5), the IT evaluation process could be ineffective, the state of evaluation could be informal or low key and the evaluation capability could be low. Lenox's management and Sullivan specifically must establish whether there is the need for steps to enhance the evaluation process.

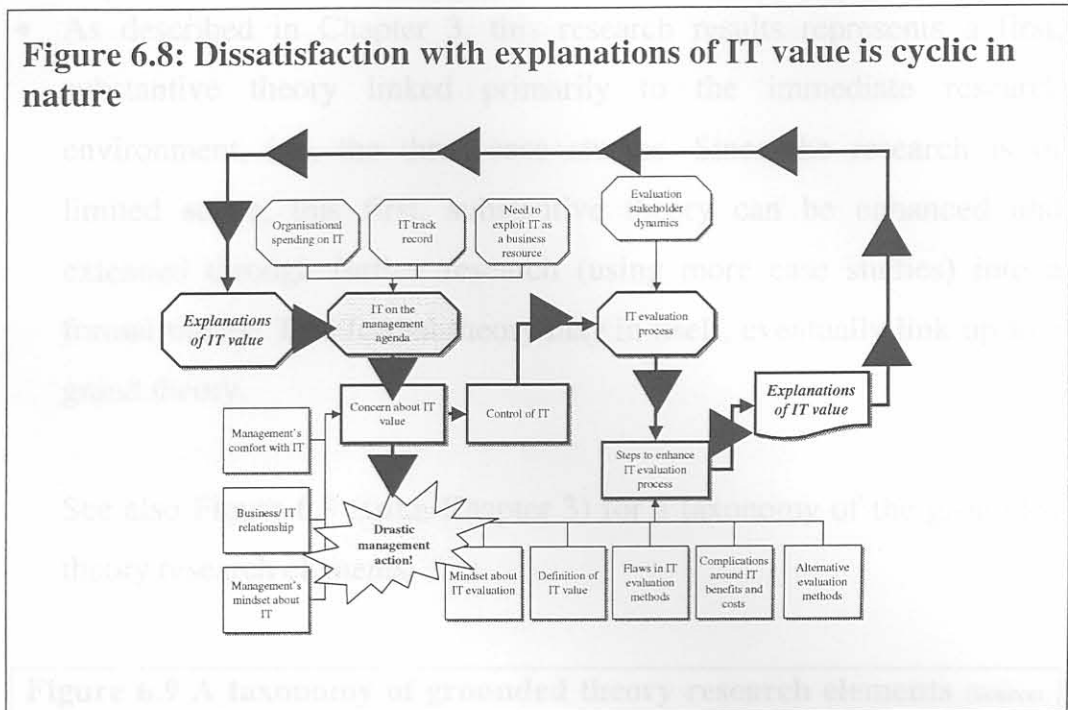
The Lenox management must further recognise that the above steps should address factors (Figure 6.7) like the lack of an agreed definition of Lifexpress' value to Lenox or complications around the benefits and costs associated with Lifexpress. A further intervening condition could be Lenox's ability to adopt a suitable evaluation method from a range of alternative ones.

If Lenox management further has a conservative mindset about IT evaluation with, for instance, a strong bias towards financial benefits, then steps to enhance the evaluation are likely to be ineffective and the management committee meeting is bound to be unsatisfactory.

Lastly, it is essential to note that dissatisfaction with explanations of IT value, whether it is about a particular information system or about the IT function, is cyclic in nature. If Sullivan's evaluation presentation or report to the Lenox management committee is not satisfactory, then Lifexpress or the IT function (Sullivan) or even both will remain as an issue on the Lenox management agenda. Concerns about the value of Lifexpress, or about the IT function, will increase and the pressure for more effective assessments would intensify. If this cycle continues, it could result in some drastic management actions from Bennet and the Lenox management committee.

- The framework could be used to identify and select categories with the greatest explanatory power with regard to the issue of IT value. These categories should be considered as priorities for further research on the phenomenon where business managers are not satisfied with explanations of IT value.

**Figure 6.8: Dissatisfaction with explanations of IT value is cyclic in nature**



The above discussion has demonstrated the application of the theory (i.e., the framework in Figure 6.3 in combination with the hypotheses (Table 5.5) and the pattern of conditions (Table 5.4)) to a case study. The theory has, however, not only application potential, but could generate or guide further research. The next section addresses this point.

## 7. The framework also points to further research and study opportunities

The framework developed in this study attempts to provide a more holistic understanding of the problems surrounding the issue of IT value. Given the importance of the phenomenon being researched, the following suggestions are made for further research:

- The framework could be used to identify and select categories with the greatest explanatory power with regard to the issue of IT value. Such categories should be considered as priorities for further research into the phenomenon where business managers are not satisfied with explanations of IT value.

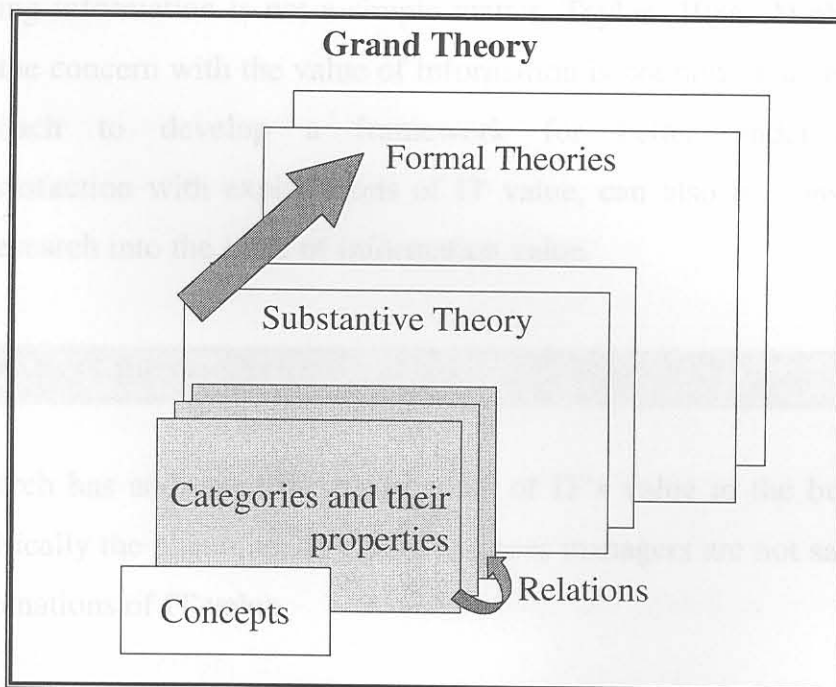


- As described in Chapter 3, this research results represents a first, substantive theory linked primarily to the immediate research environment, i.e., the three case studies. Since the research is of limited scope, this first, substantive theory can be enhanced and extended through further research (using more case studies) into a formal theory. This formal theory may in itself, eventually link up to a grand theory.

See also Figure 6.9 (from Chapter 3) for a taxonomy of the grounded theory research elements.

**Figure 6.9 A taxonomy of grounded theory research elements** (Source:

Lehman, 1999: 8)



- Acceptable levels of saturation were achieved after subjecting the two Empirical Cases to the GTM. Subjecting the framework or research

The problem to further cases could result in the expansion and further refinement of this substantive theory into a Formal Theory. The expansion and refinement could be in the form of new or revised categories or hypotheses, while the attributes and dimensions of the categories could also be refined.

- Each of the categories provides in own right, ample scope for more in-depth research. Such research will benefit from having the framework as a comprehensive context to work within. A deeper understanding from such in-depth research on any of the categories in relation to the central phenomenon, could add to the refinement and further development of the overall theory.
- The issue of information value is closely related to, but distinct from this research problem. According to van Loggerenberg (1995: 75) valuing information is not a simple matter. Taylor (1986: 4) observes that the concern with the value of information is not new. The research approach to develop a framework for better understanding dissatisfaction with explanations of IT value, can also be considered for research into the issue of information value.

## 8. Contribution of the research

The research has addressed the broad issue of IT's value to the business and specifically the phenomenon where business managers are not satisfied with explanations of IT value.

The key contribution of the research is the establishment of a framework for a deeper understanding of why explanations of IT value are not satisfactory. The framework is, to the best of our knowledge, the only one of its kind.

The framework reflects a business management perspective and highlights: 1] the need to appreciate the reasons why business managers are concerned about IT value and 2] the difficulties around the effectiveness of the IT evaluation process. Unsatisfactory explanations of IT value reflect both as a consequence of an ineffective IT evaluation process as well as a causal condition leading to management concerns about the value of IT.

## 9. Summary

Chapter 6 has concluded the research with an assessment of its findings. This assessment was largely guided by the evaluation criteria provided by Strauss and Corbin. The evaluation has confirmed that the research problem has substantial significance for business managers.

The research objective required the development of a framework as a step towards understanding dissatisfaction with explanations of IT value. The theory consisting of a framework, supported by hypotheses about relationships within the framework as well as a pattern of conditions under which the research problem occurs, was produced through the application of Grounded Theory Method. Three case studies were used that resulted in a concluding theory consisting of a framework, a set of hypotheses describing the relationships between the elements of the framework and a pattern of conditions under which there is dissatisfaction with explanations of IT value.

The research results appear to meet the criteria for research based on the Grounded Theory Method. The theory or framework proved further to be effective in providing answers to all the basic research questions. The main contribution of the research is the framework for understanding why



explanations of IT value are not satisfactory. This framework is believed to be unique. The framework demonstrated, in addition, real-life application potential since it was used in a case study to clarify issues related to IT value in real-life situations.

Lastly, the research and specifically the theory suggest some opportunities for additional research and for the further development of this initial substantive theory about dissatisfaction with explanations of IT value, into a formal theory.

## 10. Concluding Remarks

The research has produced a theory that describes the reasons why managers are often not satisfied with explanations of IT value. The theory represents an improved understanding of the research phenomenon, which could be of significance for managers. Organisations must firstly recognise that a comprehensive approach is required to cope with the difficulties and complexity in establishing IT value.

The theory indicates two broad strategies to overcome or avoid dissatisfaction with explanations of IT value. The first strategy is to fully understand the reasons for management's concern about IT value as well as to recognise those conditions that could influence concerns about the value of IT. The second strategy is to ensure an effective IT evaluation process by specifically addressing those conditions that could influence or mediate steps to enhance the IT evaluation process.

Organisations must further appreciate the significance of dissatisfaction with explanations of IT value. Incidents of dissatisfactions are cyclical in nature and will not go away on their own. The research and resulting

Literature theory represents a milestone in the quest to understand dissatisfaction with explanations of IT value. The quest is, however, not over yet ...

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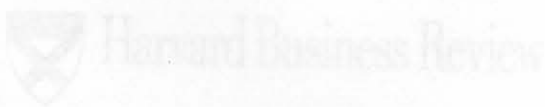
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## Addendum

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Reimus, B. 1997. *The IT System That Couldn't Deliver*. Harvard Business Review, May-June 1997: 22-35<sup>1)</sup>

by Byron Reimus



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<sup>1)</sup> Included with the permission of Harvard Business School Publishing

Lenox's IT system is in trouble.

# The IT System That Couldn't Deliver

## The IT System That Couldn't Deliver

by Byron Reimus

by Byron Reimus

"Identification is the name of the game," Byron Reimus had said. "As long as they have the option of selling their competitor's products, we have to give them the right tools to generate lead of fact, reliable information they need to close a sale in our field. Think hardphones. It's that simple."

But it wasn't that simple at all. For three years at Lenox Insurance Company, Sullivan had followed to

Most important, she had led the development of Lenoxpro, a sophisticated computer-aided system that avoided the company's main client, H.O.D. agents, business life to another business with their customers and employees in ways that had seemed almost impossible just a few years earlier. Lifeinsurance was a complex, always computer-aided a challenge that was the result of a customer, often, and engine. Lenox had used appropriate software, creating a system that was a simple, powerful, and small. Lenox started up against competitors' salaries and performance, and it was all the more difficult because the system was a year in progress that had taken Sullivan's time from a year to six weeks could now be used in a way

...and, two days later, but now the ...  
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...on you, we are trying to ...  
...costs, but more than the ...  
...we have a system of ...  
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With Lenoxpro, she thought she had met her expectations. Within the first few months at Lenox, Sullivan had worked quickly to figure out a way to combine their technology with the company's lead lines. The team of more than a dozen by themselves had built hardware as well as several people from information services, lead operations, marketing, and sales, she had also enlisted some consultants from an information technology firm, who were right-handed for their work with a company in the insurance field, to help guide operations and progress in the process.

In short order, Sullivan had created a system of her own, but she could not see technology as the only challenge that Sullivan needed, and she had seen the company's technology as a key to success for Lenoxpro. She had loved the system, it was simple, easy to use, and she had seen the potential of the system. She had seen the potential of the system. She had seen the potential of the system.

the latter the role of CIO that Reimus had described. Reimus had concluded in his "Companions have never

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## CASE STUDY

*Lenox's IT system is in trouble.  
Who will fix it, and how?*

## The IT System That Couldn't Deliver

by Byron Reimus

"Distribution is the name of the game," Lenox CEO and president James Bennett told the insurance company's newly hired chief information officer, Diana Sullivan, three years ago. Sullivan recalled the details of that first extended conversation with Bennett as though it were yesterday.

"We depend heavily on independent agents to sell our policies," Bennett had said. "As long as they have the option of offering our competitors' products, we have to give agents the right tools to get the kind of fast, reliable information they need to close a sale in our favor. Think distribution. It's that simple."

But it hadn't been that simple. In her three years at Lenox Insurance Company, Sullivan had fulfilled to

Most important, she had led the development of Lifexpress, a sophisticated computer-aided system that enabled the company's more than 10,000 agents nationwide to conduct business with their customers and prospects in ways that had seemed next to impossible just a few years earlier. Lifexpress let an agent, using a laptop computer, develop a thorough financial profile of a customer, identify and explore Lenox's most appropriate policies, conduct an initial actuarial analysis, compare in detail how Lenox stacked up against competitors' ratings and performance, and generate all the necessary paperwork on-site to consummate a sale. A process that had taken anywhere from four to six weeks could now be completed in a few

press, two competitors had launched similar systems, and Lenox's executives were growing concerned that the multimillion-dollar project would not have the impact in the marketplace that they had hoped for. To Sullivan's distress, her boss, Clay Fontana, Lenox's chief financial officer, was clearly trying to hold her accountable for more than the creation and implementation of the system—he was putting her on the hook for the results of the system, too.

Sullivan stood at her office window, looking out over Fairfield's sprawling west side, wondering how she could begin to separate what she was responsible for from what she wasn't. A veteran information-technology executive with more than 20 years of experience, Sullivan had been recruited by Lenox from a major competitor, in no small measure because of her understanding of the insurance business, excellent track record in information services, and strong leadership abilities. Bennett and Fontana had made it clear at the time that they wanted her to conceive a technology vision for Lenox.

With Lifexpress, she thought she had met their expectations. Within her first few months at Lenox, Sullivan had moved quickly to organize a team to evaluate how technology could be better deployed to support the company's field force. The team of more than a dozen key executives included Fontana as well as several people from information services, field operations, marketing, and sales. She had also retained some consultants from an information technology firm, who were highly regarded for their work with companies in the insurance field, to bring outside expertise and perspective to the process.

In short order, Sullivan had articulated a vision of how the company could use technology to meet the challenges that Bennett had described, and she had persuaded the company's management committee to invest in Lifexpress. She had delivered the system on time and on budget, and had met all the specifications that Bennett and the other senior managers had agreed to. After a relatively smooth testing phase,

**Lifexpress was not having the market impact that Lenox execs had hoped for.**

the letter the role of CIO that Bennett had described. Bennett had confided in her: "Computers have never been one of our strengths. We know we have some catching up to do." Sullivan was proud of how she had helped Lenox catch up—by updating key applications, bringing in new technologies, and reorganizing and streamlining the information services organization.

days or, in some instances, a matter of hours.

Within the last few weeks, however, as Lenox's IS staff finished rolling out the system, Sullivan began to realize that her role wasn't as clear as she had thought it was after that first conversation with Bennett. She was no longer certain which accomplishments mattered. In the time it had taken Lenox to deliver Lifex-



## CASE STUDY

the companywide implementation, although slightly behind schedule, was finally picking up steam. The first agents to use the system had offered mostly positive feedback about its hardware configuration and software.

But apparently Fontana wasn't seeing any of that. At their last few weekly half-hour meetings, Fontana had become impatient with Sullivan whenever she had tried to distinguish between what she could control and what she couldn't. And that morning's meeting had deeply unsettled her—in part because Bennett had joined the discussion and seemed to side with the CFO.

Sullivan turned away from the window and sat down at her desk. She opened a file of notes she kept of her meetings with Fontana and reread what she had written about that morning's discussion.

She had entered Fontana's office just before 10, a couple of minutes early. He had frowned as she updated him on how the plans were proceeding for training Lenox's agents to use the new system.

"We're not moving fast enough," he had said when she was finished. "I don't need to remind you that National Life's implementation is now running ahead of ours. More than half of their agents are trained and on-line even though their rollout began months after ours."

"We've been through this before," Sullivan had replied patiently. "A large percentage of National Life's agents are younger and more technology savvy. Even though we're behind schedule, I am confident that we will get on track before the year is out. The response has been excellent from those on-line so far. We just have more of a learning curve with our agents. We knew that going in. The training is taking longer than we expected. That's all."

"It could also have something to do with the fact that their system is reportedly more user-friendly than ours," Fontana had said. Before Sullivan could answer, he had added,

*Byron Reimus is a Boston-based writer and consultant on workplace communication issues.*

"I'm just as concerned that so far only about 40% of our product line is on the system. Your people tell me that Manchester Mutual has already managed to put all of its insurance products, plus a good chunk of securities offerings, into its system. I don't need to spell out for you what that means its agents can do in terms of cross selling. Where are we on all this?"

"Where we were last week," Sullivan had said. "We're still waiting for the disability people to provide the data so that we can do the inputting and testing. With all due respect,

we've come. Lifexpress has met its implementation schedule and come in on budget. We have met all the system requirements that were identified early on. We're a bit behind on training, to be sure. But we need more leadership to carry our original vision to fruition."

It had been at around that point in their conversation that Bennett had happened to walk by Fontana's office. "Jim," Fontana had called out to the CEO. "Could you visit with us for a few minutes? Diana and I are in the midst of a discussion about Lifexpress, and I want her to hear

**"It's your system, Diana. We based this investment on your recommendation."**

Clay, that's really not an IS issue. Also, remember that we agreed not to put Lenox's mutual funds on the system until we had worked out all the bugs.

"As far as Manchester Mutual is concerned," she had added, "the fact is that we currently offer more than twice as many products as it does—or as most of our other competitors do, for that matter. We're behind in part because we don't have a clear product strategy. Our tendency has been to jump on the proverbial bandwagon every time a competitor comes out with a new product. One result is that we have so many offerings, it's hard for an agent to keep track of them. A system like Lifexpress can't be expected to serve as a framework for our products in the absence of a strategy that links them together. That's not an IS issue."

"It's your system, Diana," Fontana had said. "You know what the bottom line is. We made this tremendous investment based on your recommendations. You predicted that Lifexpress would improve productivity and help the sales force close on more new policies."

"What concerns me at this stage," Sullivan had told him, "is that we are focusing too much on what competitors are doing and not enough on leading the way. In the process, we're failing to acknowledge how far

some of what you shared with me yesterday."

"I think we should schedule a meeting with the management committee on this," Bennett had offered, without looking at either executive. "Diana should do an update of where things stand. Suffice it to say that I don't believe we are where we need or expected to be with the kind of investment we have made."

"I spoke to one of National Life's general agents the other day," Bennett had continued, "and he told me they were closing deals on most policies in less than half the time it's apparently taking us. They began their rollout more than six months after we launched Lifexpress, and look at how much of National's field force is on their system. They can't sign up agents fast enough for training. Can someone explain to me why that's not happening here?"

Bennett hadn't waited for a response from either executive. Addressing Sullivan directly for the first time, he had added, "We have to figure out how to get this thing fixed and back on track fast. We're losing a lot of momentum. I don't think you have kept us sufficiently informed. Please schedule a time for us to meet, and let's put together a presentation as soon as possible for the management committee."



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Even before the chief executive had walked out of the office, Fontana had been quick to jump in.

"I don't think I have anything to add to what Jim said. My advice is get your ducks in a row. Let's schedule a time next week for an hour so that we can plot out your presentation. We have a lot of bases to cover. I'm concerned about backsliding. More important, we may be losing sight of what the original requirements were. Let's think about that before we go any further."

*Get my ducks in a row, Sullivan thought, looking up from her computer. What on earth was that supposed to mean?*

*HBR's cases present common managerial dilemmas and offer concrete solutions from experts. As written, they are hypothetical, and the names used are fictitious. We invite you to write to Case Suggestions, Harvard Business Review, 60 Harvard Way, Boston, MA 02163, and describe the issues you would like to see addressed.*

## Who Is Responsible for Assuring Technology Success at Lenox?

Five commentators offer advice on how to manage IT for business results.



**JAMES K. SIMS** is president and CEO of Cambridge Technology Partners, a systems integration and management consulting company in Cambridge, Massachusetts. **THORNTON MAY** is vice president of research and education at Cambridge Technology Partners.

Lenox's Lifexpress system is in trouble, but the crisis is just a symptom of a larger problem. The company's managers do not fully understand how to use information technology to create value. To ensure that their problems with Lifexpress will not recur, James Bennett, Clay Fontana, and Diana Sullivan



**Bennett must set a new agenda for IT investments.**

must correct four mistakes they made in how they decide on, manage, and fund information technology investments.

The mistakes Lenox's managers made are quite common. From the in-depth discussions we have conducted with more than 100 CIOs of large and midsize organizations in a variety of industries, it is clear that most companies feel they are not getting full value from their infor-

mation technology investments. We believe the following four technology blind spots that have been highlighted in this case are key reasons for those poor returns:

**Inadequate Vision and Leadership.** Bennett and Fontana delegated the "vision thing" to the newly hired CIO. Vision simply can't be delegated (or outsourced, for that matter). Vision has to be shared by the company's managers, believed in, and acted on.

**No Business Accountability.** Working solo, Sullivan couldn't possibly make Lifexpress successful with agents and customers. Only business managers who are held responsible for delivering business results can do that.

**Slow Implementation.** Sullivan was off the planet if she thought a three-year project was acceptable. In our experience, applications that directly affect revenue and competitive position should be built in a year or less. Taking longer increases the risk that the company will not get full value for its investment.

**Insufficient Funding for IT.** Lenox was clearly playing catch-up. But in several industries today, the introduction of new technology to improve relationships with customers or to develop new products is accelerating so rapidly that it becomes more and more difficult for companies like Lenox to expect to be able to come from behind.

Certainly, Lenox's management team needs to move quickly to fix Lifexpress. But we would like to focus on what Lenox has to do to ensure that it does a better job with future IT investments.

First, Bennett must step into the vision vacuum. He should call his direct reports into a closed-door meeting and put some stakes in the ground. Bennett needs to make it clear to them that technology plays a major role in the company's ability to compete and that Lenox is unacceptably behind its competitors in the application of technology. He must also require his managers to make time for a discovery process that will yield a shared vision of technology's role in the business. At that meeting, he should announce



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that for the next 18 months he will tie executives' and middle managers' bonuses to behaviors that further the new vision.

That will get his managers' attention. In the months ahead, Bennett should make his managers understand that *they* are responsible for using technology to deliver value – and that not having a “feel” for IT will become a significant career liability. We know of CEOs who require high-profile business executives to rotate through the information technology organization at some point in their careers.

Of course, Lenox's managers will need help in understanding how to create value with IT. Sullivan, working with the executive vice president of human resources, should reach out to the academic community and to operators of world-class technology trade shows to sculpt appropriately priced make-us-smart-about-making-money-with-technology curricula for Lenox's managers. In the meantime, Bennett and Fontana, with Sullivan's help, need to devote time to considering how technology will shape competition in their industry.

In addition to establishing vision and accountability at this meeting, Bennett must take steps to speed the delivery of systems. He should review all IT proposals with an eye on the clock. How much time will it take to reach a consensus on func-

tion; they track the spread of new behaviors the technology is meant to instill. Such a map would identify high-risk, low-risk, and no-risk business units. Bennett should put pressure on units struggling to assimilate the technology.

Lenox should also explore new models for funding IT investments. We are aware of some progressive CFOs who fund projects the way investment bankers do: business managers compete for IT capital, and funding goes to those projects that will generate the highest payback. At other companies, CIOs have stopped using calendar-year budgets, finding them too slow and inflexible. Instead, they set aside funds to sustain their companies' underlying technology infrastructures and opportunistically fund new projects as they come up. At those companies, the entire management team regularly reviews the status of projects, very much in the way that fund managers review portfolio performance at large mutual-fund organizations. Also, twice a year, Bennett should convene summits of smart technology people (such as bright CIOs from noncompeting companies, clever industry analysts and journalists, benchmarking consultants, and topflight academics) to audit how big a bang Lenox is getting for its buck.

If Lenox doesn't address its underlying approach to managing tech-



**RICHARD NOLAN** is the M.B.A. Class of 1942 Professor of Business Administration at the Harvard Business School in Boston, Massachusetts.

### Lenox needed to deliver a system in months, not years.

This is an absolute disaster. Lenox's managers act as if they have all the time in the world to develop systems for their business. In a world where competition moves swiftly, and the needs of customers change rapidly, it just doesn't make sense to spend two to three years developing a system before it is even rolled out to the field. Worse, Lenox has nothing of strategic value to show for its efforts.

Companies today must be proactive in finding out what their competition is up to and what customers need, and they must be able to act on that information quickly. In other words, they must be able to sense and respond. More than that, they must sense and respond on a continual basis and, increasingly, be able to make their decisions in real time – the pace of computers and telecommunications.

Lenox has been moving at a more traditional, slower pace. The management team's “cycle speed” for decision making is the annual budget. That is, managers decide on an issue once, establish goals, and then set out to accomplish those goals. They do not continually and dynamically

## Sullivan was off the planet if she thought a three-year project was acceptable.

tions, finalize design, complete development, and deploy such systems? How much time will senior management need to make such initiatives successful? Bennett should also expect Fontana to create monitoring systems to track the time dimensions Bennett deems critical.

Sullivan can help by publishing something we've seen in use at a few innovative companies—a weekly postdeployment assimilation map (PDAM). These maps resemble ones used by the Centers for Disease Con-

nology, it had better learn to live with disappointment. There is little chance that it will be able to do the digital heavy lifting required of high-performing financial-services companies. If change does not occur at Lenox, we predict Sullivan will leave the organization (perhaps of her own volition) and that there will be a revolving door at its CIO's office for some time to come. In our view, rapid CIO turnover is a sure sign that a company isn't managing its technology effectively.



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reevaluate decisions. If the company had been operating in real time, rather than on a budget-planning cycle, its managers would have cobbled together a prototype quickly and put it in the field, tested response to it, reevaluated assumptions, set new targets, redeployed resources, and tried again. Lenox might have had a system up in months rather than in years—a system that through continual reevaluation was better tuned to deliver the value that the company's managers wanted.

Lenox's senior managers should never have fully delegated the development of a strategic information-technology system to their CIO. Sullivan should not have let this happen, either. She is a traditional CIO who asked senior managers what to do and then designed and delivered a system aimed at that defined target. But she did not understand the strategic context for the project and brought in something inappropriate. I don't have a lot of faith in her.

Today's more-effective CIOs take responsibility for the results of IT investments, in partnership with senior management. Together, they monitor the real-time systems they are putting into place and make changes as necessary. In this way, systems can be more tightly linked to the company's strategy. In fact, some recent IT-outsourcing agreements reflect such partnerships, too. In these innovative agreements, the outsourcing vendor takes an equity stake in the customer's business. That is the ultimate incentive and reward for delivering IT systems that yield strategic business results.

But what should Lenox do now?

Nothing would be gained by a witch-hunt. If anyone should be

CEO, the CFO, and the CIO recognize that they have placed their company in strategic jeopardy. They need a shared understanding of the urgency of their situation.

However, I would drop the CFO from the team. Fontana doesn't really understand what's going on, and he's looking for scapegoats. In fact, he is a dysfunctional filter between the CEO and the CIO.

Let me explain what I mean by that because this case raises a serious structural question that CEOs should be alert to. In my experience, having the CIO report to the CFO is a legacy from the data-processing era of three decades ago. Few companies have rethought the reporting relationship since. Unfortunately, all too often, CFOs do not provide the strategic guidance that CIOs need—the kind of guidance they can get only from the CEO and other general managers. Also, many CFOs operate—as Fontana apparently does—much like an overly conservative, accounting-oriented filter between the CIO and other members of the senior management team. Keeping Fontana on the team may slow it down.

I would also consider replacing the CIO. Sullivan must immediately become a full partner in determining how Lenox will use technology to further the strategic goals of the business—and that means taking responsibility for the business results of system investments. If she does not, she cannot possibly contribute to the team.

After getting the team "right-headed," Lenox needs to benchmark to uncover the best-of-breed IT-enabled distribution systems. The company must invest resources to match its competitors quickly, or it

into place the people and processes necessary to continuously sense and respond. Until it learns to run fast and run scared, Lenox will not be out of the woods.



**ROBERT A. DISTEFANO** is senior vice president for information technology at the Vanguard Group in Valley Forge, Pennsylvania.

Sullivan failed to understand her role. She should have created the environment needed to make technology effective at Lenox.

Sullivan has not done her job. She was all too eager to accept the trust and confidence Bennett placed in her three years ago. Now, however, after failing to rise to the challenge, she wants to resort to an old functional excuse: "I built the system to specification, on time, and within budget, so I did my job." She doesn't grasp the nature and magnitude of her role.

Without question, Bennett isn't blameless. His strategy for pumping new life into the agent distribution channel was seriously flawed. He simplistically looked for a "silver bullet" application and a heroine to deliver it. After hiring a new CIO and giving the mission to her, Bennett disappeared. That sounds more like abdication than delegation to me. Also, he erroneously viewed the problem Lenox faced with its prod-

## The CFO doesn't understand what's going on; he's looking for scapegoats.

fired, it should be all the chiefs—the CEO, the CFO, and the CIO—because they are equally responsible for this disaster. The real solution to the dilemma will begin when the

will risk losing both customers and agents. But even if Lenox closes with its competitors, the company is not on safe ground. To be a winner in its industry, Lenox must begin to put



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ucts and field agents as technological and seemingly bypassed or exonerated the company's business leaders. Finally, and significantly, Bennett parked Sullivan under the CFO. Now, don't get me wrong: CFOs are important people. Still, if Bennett had been genuinely passionate about distribution through technology, he absolutely needed to have Sullivan report directly to him.

Nevertheless, the case really is the story of Sullivan's failure. A CIO should create an environment in which technology-based change programs can be successfully implemented. Had Sullivan acted like a CIO, she would have recognized several early signals warning her that she wouldn't be able to do her job effectively, and she would have quickly offered Bennett and Fontana corrective options. (Although we don't see enough of Bennett to know him, good CEOs welcome challenges to their ideas, as long as they come after appropriate consideration and analysis.) Let's look more closely at those warning signals:

□ Computers were not one of Lenox's strengths because its managers did not understand how technology could further their business goals. Organizations can't correct a situation like this simply by hiring a new CIO. Sullivan overestimated the impact she could have within such an organization. She should have worked to improve Lenox's competence in this area. She needed to show Lenox's business managers how other companies use technology and then guide them as they championed such projects within their own units.

□ Sullivan organized a team to set the vision for the project, but she never secured the commitment of the sales, marketing, and field operations. She should have recognized that their active leadership was critical for successfully implementing this massive change initiative.

□ Sullivan rightly complained about the lack of a product strategy but failed to insist that Lifexpress have a clear business purpose that was well grounded in corporate strategy. She should have realized that she could not provide a technology vision in

the absence of a product/marketing/sales vision.

□ Why was this a three-year project? A seasoned CIO quickly learns to control a project's scope and manage expectations. Lifexpress should have been designed to maximize the potential of Lenox's most profitable products. That would have allowed Lenox to roll out the system much sooner. Such a system also may have been less complex and therefore easier to teach to agents.

Is Sullivan doomed? Certainly not. She is obviously a bright woman with a good track record of delivering IT solutions. Nevertheless, she needs to understand that her role isn't merely to write programs on time and under budget. Big projects work best when there is a passionate business sponsor, when the business purpose is clear, when the users are an integral part of the concept and design phases, when managers rigorously apply the 80/20 rule to control project scope and adequately assess time to market, when teams build prototypes and adjust them before rolling out completed systems, and when the technical staff has the skills and motivation to deliver.

I'm certain Sullivan knows all this, at least retrospectively. At this point, she must do four things.

**She must talk openly and candidly with Fontana and Bennett.** Both executives must be at that meeting: she works for Fontana, but she has accepted Bennett's mission. This session is Sullivan's Olympic Games; it will make or break her. She needs to be at her best to convince the two executives that she knows what the problem is and can fix it. Sullivan must clearly describe the ingredients critical for a successful project and then fess up to her failure to recognize that those ingredients were missing.

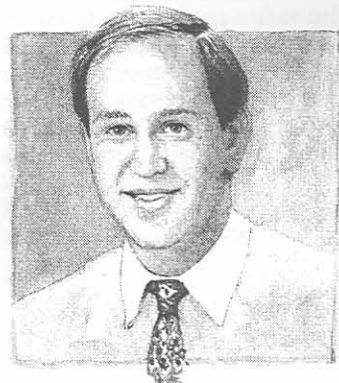
**She desperately needs to ally herself with the head of either the sales or field operation.** Bennett *must* recognize that Sullivan needs business leadership and assign someone to work with her to see this through.

**She must focus the project.** With her new business sponsor, Sullivan must work to make the system support the products that have the

greatest profit potential. By doing so, she'll not only design a system that can have impact but she'll also have started Lenox on the path to a clear product strategy.

**She should work with a few talented agents and train them well.** She then could make them role models for the rest by widely publicizing their successes.

Sullivan needs to help Lenox's leaders articulate their vision and show them the possibilities that technology offers. Above all else, she needs to understand that her role as a CIO today is to show Lenox's senior line managers how to use technology successfully to change their businesses.



**JOHN KING** is president of King Information Group, an information-technology consulting company in Peachtree City, Georgia. King was previously the head of information technology for a major U.S. airline.

Business managers, not the person charged with delivering the tools, should be held accountable for business results.

The situation Sullivan finds herself in should be familiar to many CIOs. It certainly is to me. I made a similar mistake once, so I know how easy it is for information technology



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managers to fall into this trap. Sullivan has unwittingly managed to take on responsibility not only for what she can do (deliver systems) but also for what she can't possibly do (ensure that the new distribution system achieves the results Lenox's managers expect). Whether she and her organization can fix the problems they face is an open question.

Business managers, not technology managers, should take responsibility—and be held accountable—for achieving the financial and strategic goals of IT investments. The CIO should certainly be deeply involved with the management team in understanding the business and its problems, in educating the team on the effective use of information technology, and in creating and selling plans for new IT investments. The CIO must also be responsible for bringing the project in on time, on budget, and to specification. But only the business executive in charge of using the system has the influence, knowledge, and resources to ensure that the system is implemented effectively and delivers the expected results. Accountability belongs to the person who can deliver results, not the person who delivers

the tools to achieve results.


Several years ago, when I was a CIO, I developed the concept for a marketing analysis system. I made the pitch for the system, took the lead in selling its merits to the organization, and developed it. Like Sullivan and many other CIOs, I saw an opportunity for the company and went for it. Good CIOs don't want to be merely computer operators and order takers (as in, "Tell me what you want, and I'll deliver it"). They want to be part of the business and push initiatives of their own. But in their eagerness to make things happen, they may lose sight of what they can and cannot accomplish inside an organization.

I ran into trouble getting the system accepted. I had no control over the employees who would use the system and could not influence their behavior. Pretty soon, all arrows were pointing at me. Fortunately, the head of marketing development took ownership of the system and resolved the problems. He saw the system's potential business value for the company.

The next time I pushed for a new system, I first sold it to the business-line executive who could make it

work. Sullivan should have done the same. Only a business-line executive at Lenox could have made the implementation work and bring home the business results.

Frankly, I think accountability should be documented. The formal business case for any new system should clearly identify which business executive will be held accountable for it—for how and when money will be spent, for how results will be achieved, and for how success will be measured.

But that doesn't help Sullivan now. Her only recourse is to work very closely with the head of sales—although, given all that has gone on at Lenox, I suspect the sales organization will be unwilling at this point to assume responsibility for making the system work. It is unpopular with the CEO and the CFO, and behind competitors' efforts. That means the CIO must either influence field employees to use the system much more effectively or plead mistaken accountabilities to the CFO and the CEO. For Sullivan's sake, I hope she is good at influencing people. 

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