Chapter 4

Developing the Preliminary Framework

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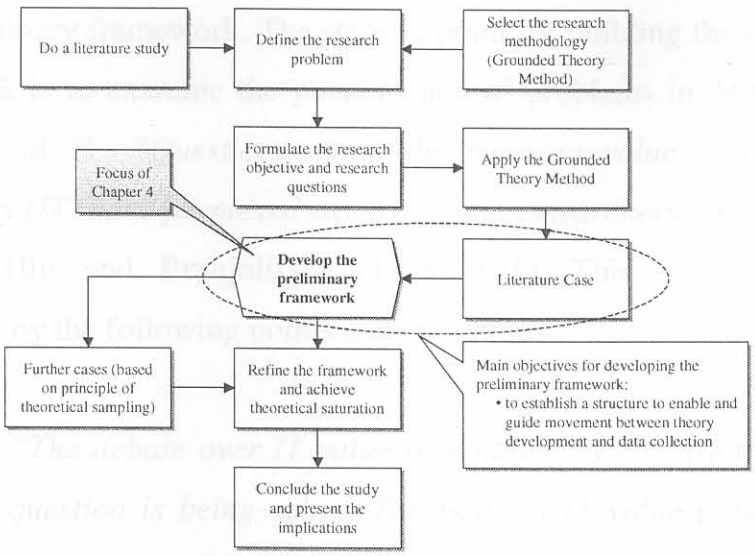
DEVELOPING THE PRELIMINARY FRAMEWORK

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, June1996, 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.

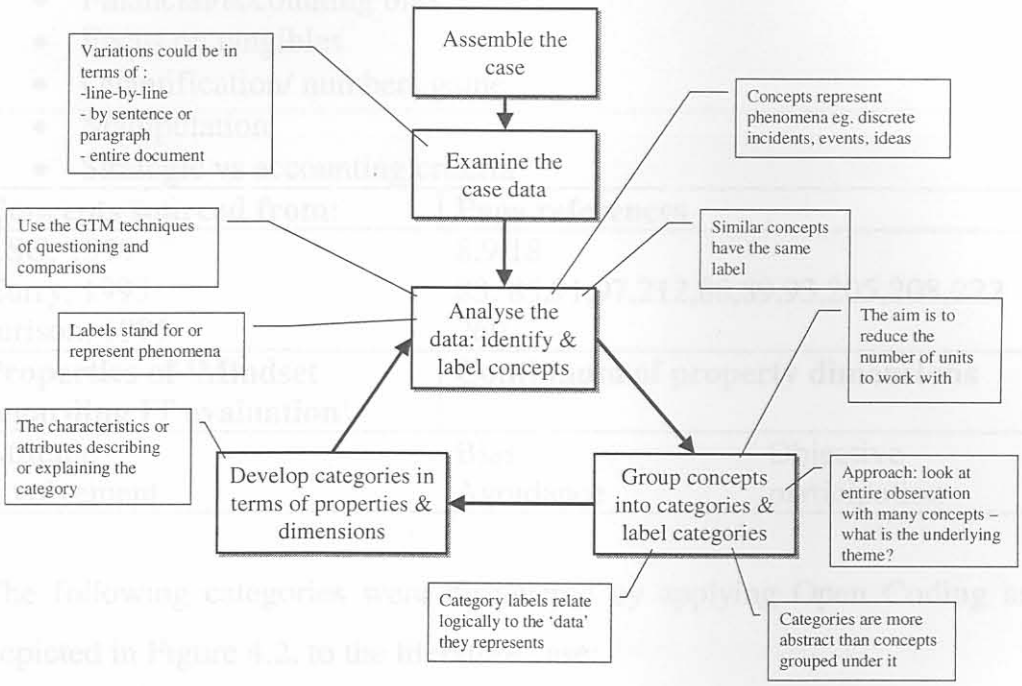
The discovery of categories was therefore guided by the set of primary and secondary research questions discussed in Chapter 3. Strauss and Corbin (1990: 37) state that the main purpose of using the Grounded Theory Method is to develop theory. Research questions are, however, necessary to give flexibility 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[1] to the thesis. An example of such a worksheet is shown in Exhibit 4.1 below.

[1] 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 Curry, 1995 Jurison, 1996	8,9,18 83, 85,91,97,212,88,89,93,205,208,222 269	
Properties of 'Mindset regarding IT evaluation'	**Continuum of property dimensions**	
Attitude Involvement	Bias Avoidance	Objective 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.

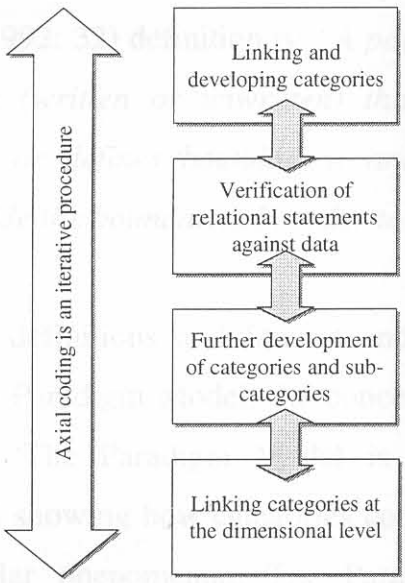
7. The process of Axial Coding was used to connect the categories to form the basic paradigm models

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 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.

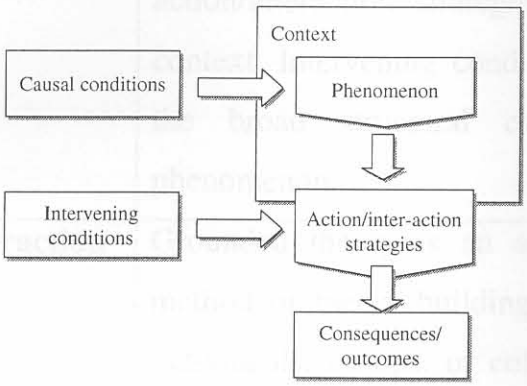
The Cassell Paperback Dictionary (1998: 790) and the Oxford Advanced Learners Dictionary (1989: 894) defines a paradigm as a pattern or an example or a model. Other definitions or descriptions of a paradigm include:

- 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.

TABLE 4.1 The components of a Paradigm Model

Component	Description
Phenomenon	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
Causal Condition	Refers to the events or incidents that lead to the occurrence or development of a phenomenon
Context	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.

TABLE 4.1 The components of a Paradigm Model	
Component	**Description**
Intervening conditions	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.
Action/ interaction strategies	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.
Consequences	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/inter-action 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	• Organisational spending on IT • IT track record • Need to exploit IT as a business resource
Action/inter-action strategies	• IT value on the management agenda
Intervening conditions	• Management's mindset about IT as a business resource • Business/IT relationship • Management's comfort with IT
Consequence/outcome	• Questions about IT value

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

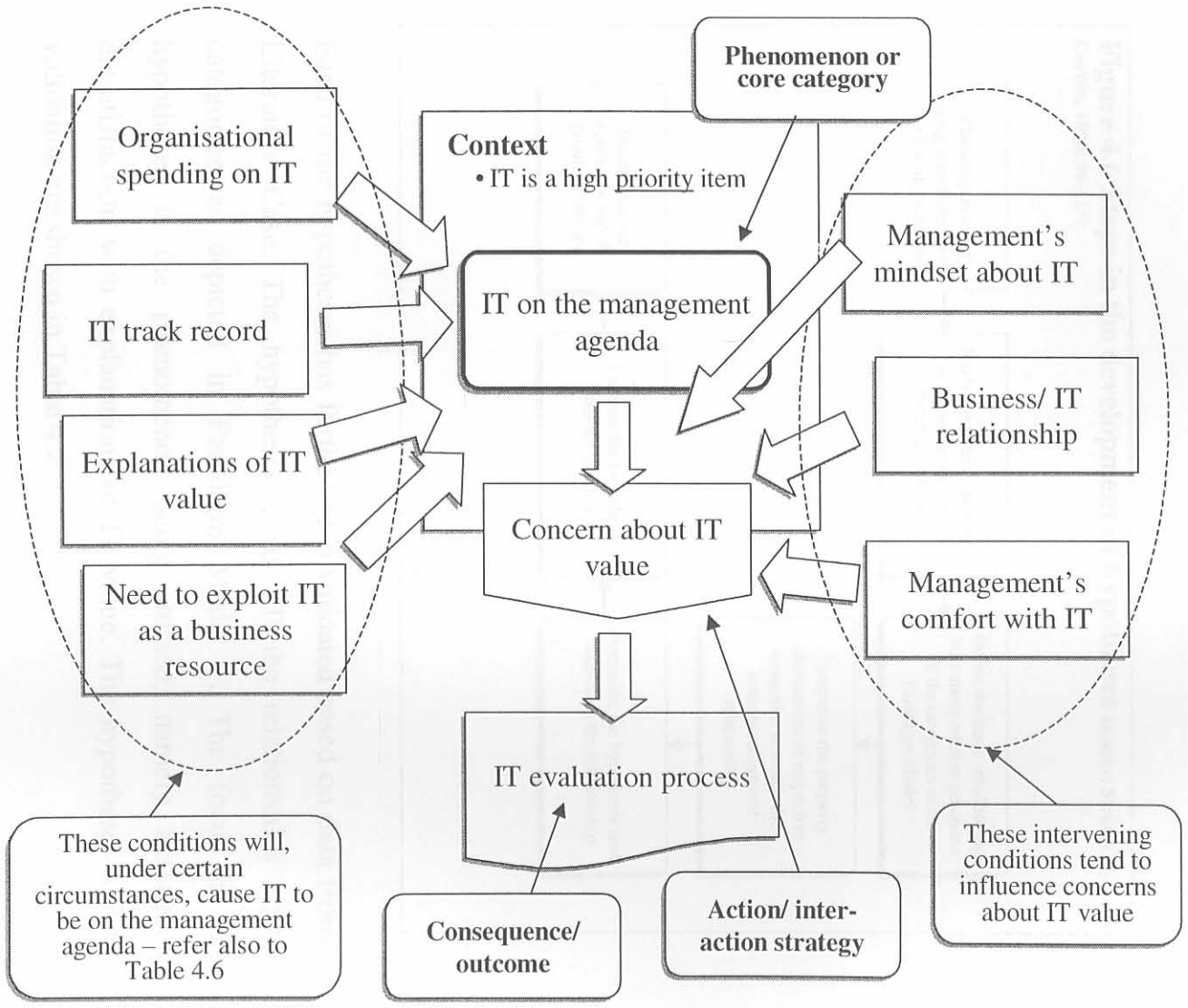
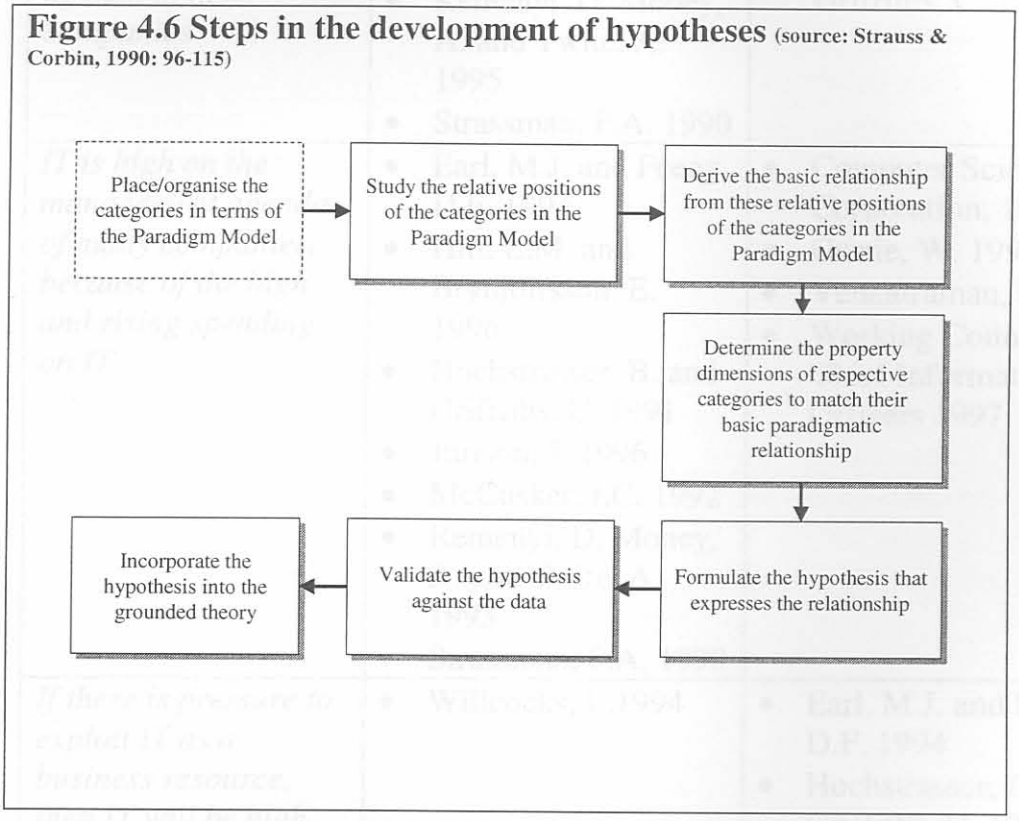


Figure 4.5 : Paradigm Model 1 explains why IT is on the management agenda

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.

Figure 4.6 Steps in the development of hypotheses (source: Strauss & Corbin, 1990: 96-115)



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.

Table 4.2 Hypotheses describing inter-relationships in Paradigm Model 1

Hypotheses	Explicitly supported by:	Implicitly supported by:
Because of IT's poor track record, IT is on the management agenda of most companies	• Earl, M.J. and Feeny, D.F. 1994 • McCusker, I.C. 1992 • Remenyi, D. Money, A. and Twite, A. 1995 • Strassman, P.A. 1990	• Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991
IT is high on the management agenda of many companies, because of the high and rising spending on IT	• Earl, M.J. and Feeny, D.F. 1994 • Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Jurison, J. 1996 • McCusker, I.C. 1992 • Remenyi, D. Money, A. and Twite, A. 1995 • Strassman, P.A. 1990	• Computer Sciences Corporation, 1999 • Currie, W. 1995 • Venkatraman, V. 1997 • Working Council for Chief Information Officers 1997
If there is pressure to exploit IT as a business resource, then IT will be high on the management agenda	• Willcocks, L.1994	• Earl, M.J. and Feeny, D.F. 1994 • Hochstrasser, B. and Griffiths, C. 1991 • Venkatraman, V. 1997 • Hitt, L.M. and Brynjolfsson, E. 1996
If management is dissatisfied with explanations of IT value, then IT will be high on the management agenda	• Remenyi, D. Money, A. and Twite, A. 1995 • Willcocks, L. 1994 • Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Strassman, P.A. 1990	• Earl, M.J. and Feeny, D.F. 1994

Table 4.2 Hypotheses describing inter-relationships in Paradigm Model 1		
Hypotheses	**Explicitly supported by:**	**Implicitly supported by:**
Because IT is high on the management agenda, management is concerned about IT value	• Hochstrasser, B. and Griffiths, C. 1991 • Willcocks, L. 1994 • Currie, W. 1995	• Earl, M.J. and Feeny, D.F. 1994 • McCusker, I.C. 1992 • Remenyi, D. Money, A. and Twite, A. 1995 • Strassman, P.A. 1990
If management's comfort with IT is low, then management's concern about IT value will be high	• Currie, W. 1995 • McCusker, I.C. 1992	• Computer Sciences Corporation, 1999 • Earl, M.J. and Feeny, D.F. 1994 • Hochstrasser, B. and Griffiths, C. 1991 • Remenyi, D. Money, A. and Twite, A. 1995 • Strassman, P.A. 1990
If the business/ IT relationship is poor, then management's concern about IT value will be high	• Currie, W. 1995 • Earl, M.J. and Feeny, D.F. 1994 • Remenyi, D. Money, A. and Twite, A. 1995 •	• Hochstrasser, B. and Griffiths, C. 1991 • McCusker, I.C. 1992
If management's mindset about IT is traditional, then management's concern about IT value will be high	• Computer Sciences Corporation, 1999 • Currie, W. 1995 • Earl, M.J. and Feeny, D.F. 1994 • McCusker, I.C. 1992 • Remenyi, D. Money, A. and Twite, A. 1995 • Working Council for Chief Information Officers 1997	• Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Strassman, P.A. 1990 • Venkatraman, V. 1997

Table 4.2 Hypotheses describing inter-relationships in Paradigm Model 1		
Hypotheses	**Explicitly supported by:**	**Implicitly supported by:**
If management's concern about IT value is high, then the need for an effective and credible IT evaluation process is high	• Currie, W. 1995 • Remenyi, D. Money, A. and Twite, A. 1995 • Willcocks, L. 1994	• Earl, M.J. and Feeny, D.F. 1994

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

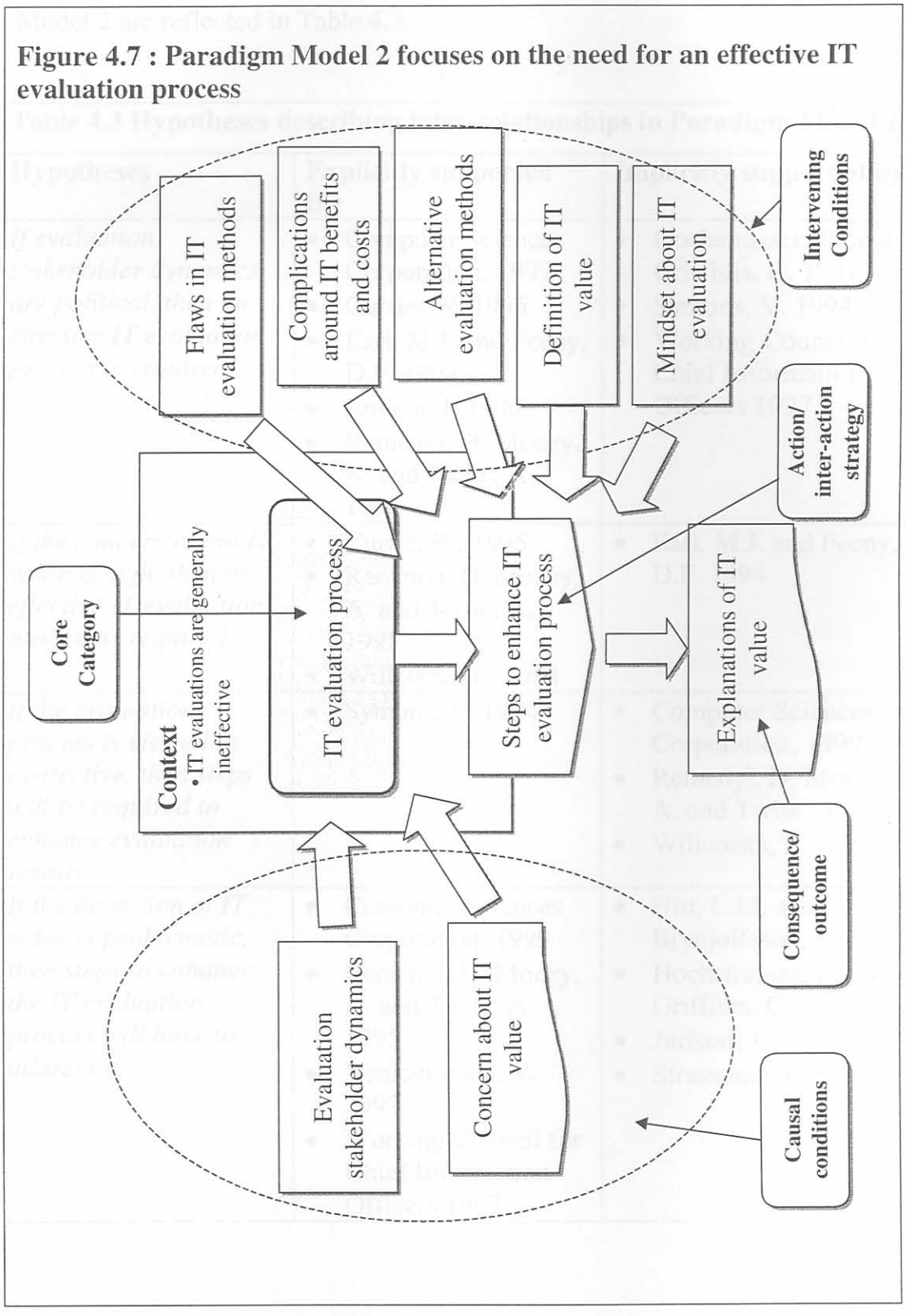
with the category **'IT evaluation process'** which transpired to be the core category of this paradigm model. Two categories were identified as causal conditions for the **'IT evaluation process'**. The categories are: **'Evaluation stakeholder dynamics'** and **'Concern about IT value'**. (Note: The 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:
If evaluation stakeholder dynamics are political, then an effective IT evaluation process is required	• Computer Sciences Corporation, 1999 • Currie, W. 1995 • Earl, M.J. and Feeny, D.F. 1994 • Jurison, J. 1996 • Remenyi, D. Money, A. and Twite, A. 1995	• Hochstrasser, B. and Griffiths, C. 1991 • Symons, V. 1994 • Working Council for Chief Information Officers 1997
If the concern about IT value is high, then an effective IT evaluation process is required	• Currie, W. 1995 • Remenyi, D. Money, A. and Twite, A. 1995 • Willcocks, L. 1994	• Earl, M.J. and Feeny, D.F. 1994
If the evaluation process is viewed as ineffective, then steps will be required to enhance evaluation results	• Symons, V. 1994	• Computer Sciences Corporation, 1999 • Remenyi, D. Money, A. and Twite, A. 1995 • Willcocks, L. 1994
If the definition of IT value is problematic, then steps to enhance the IT evaluation process will have to address it	• Computer Sciences Corporation, 1999 • Remenyi, D. Money, A. and Twite, A. 1995 • Venkatraman, V. 1997 • Working Council for Chief Information Officers 1997	• Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Jurison, J. 1996 • Strassman, P.A. 1990

Table 4.3 Hypotheses describing inter-relationships in Paradigm Model 2

Hypotheses	Explicitly supported by:	Implicitly supported by:
Because of complications around IT benefits, steps to enhance the IT evaluation process will have to address this	• Hochstrasser, B. and Griffiths, C. 1991 • Jurison, J. 1996 • Remenyi, D. Money, A. and Twite, A. 1995	• Computer Sciences Corporation, 1999 • Currie, W. 1995 • Earl, M.J. and Feeny, D.F. 1994 • Hitt, L.M. and Brynjolfsson, E. 1996 • McCusker, I.C. 1992 • Strassman, P.A. 1990 Venkatraman, V. 1997
Because of significant flaws in IT evaluation methods, steps to enhance the IT evaluation process will have to address this	• McCusker, I.C. 1992 • Remenyi, D. Money, A. and Twite, A. 1995 • Strassman, P.A. 1990	• Currie, W. 1995 • Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Jurison, J. 1996 • Symons, V. 1994 • Working Council for Chief Information Officers 1997
If the mindset about IT evaluation is conservative, then steps to enhance the IT evaluation process will have to address this	• Computer Sciences Corporation, 1999 • Currie, W. 1995 • Remenyi, D. Money, A. and Twite, A. 1995	• Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Jurison, J. 1996 • McCusker, I.C. 1992 • Strassman, P.A. 1990 • Symons, V. 1994 • Working Council for Chief Information Officers 1997

Table 4.3 Hypotheses describing inter-relationships in Paradigm Model 2		
Hypotheses	**Explicitly supported by:**	**Implicitly supported by:**
If alternative evaluation methods are limited, then steps to enhance the IT evaluation process will have to address this	• Jurison, J. 1996 • Earl, M.J. and Feeny, D.F. 1994 • Symons, V. 1994	• Currie, W. 1995 • Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Remenyi, D. Money, A. and Twite, A. 1995 • Computer Sciences Corporation, 1999 • Strassman, P.A. 1990
If steps to enhance IT evaluation results are less effective, then explanations of IT value will not be satisfactory	• Currie, W. 1995 • Hitt, L.M. and Brynjolfsson, E. 1996 • Hochstrasser, B. and Griffiths, C. 1991 • Jurison, J. 1996 • Remenyi, D. Money, A. and Twite, A. 1995 • Strassman, P.A. 1990 • Working Council for Chief Information Officers 1997	• Computer Sciences Corporation, 1999. • McCusker, I.C. 1992 • Symons, V. 1994

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'.

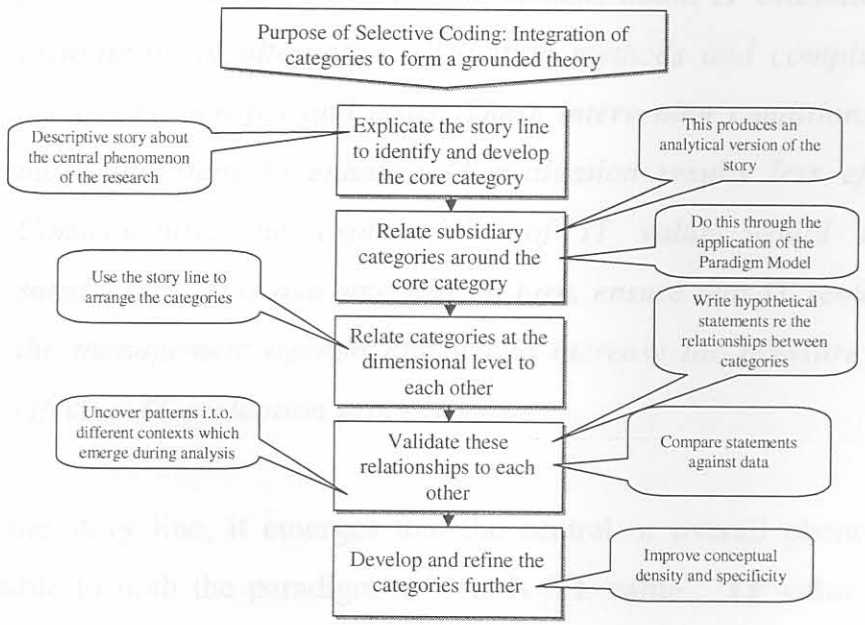
The ultimate objective of Chapter 4 is, however, to develop a preliminary framework to clarify the problem of dissatisfaction of IT evaluation results. The next step in achieving the chapter's objective is to apply the process of Selective Coding.

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:

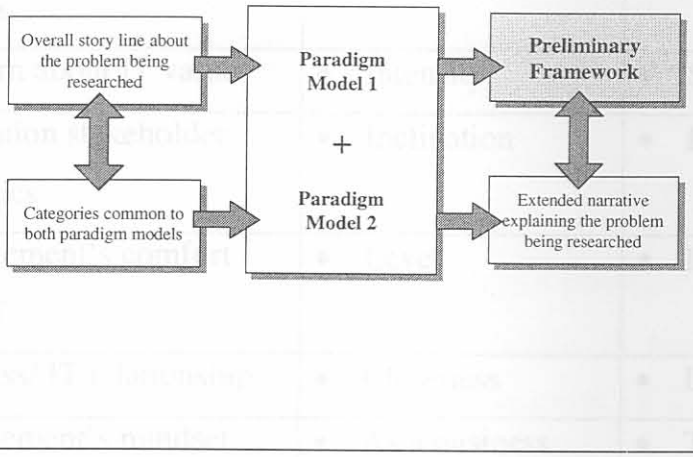
> *Inadequate or unsuitable explanations of IT's value is one of a number of reasons why IT is on the management agenda. Concerns about IT value as well as the dynamics around evaluation stakeholders highlight the need for an effective IT evaluation process. Since IT evaluation processes are generally 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.

Figure 4.9 Steps to form 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

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

Category	Property	Dimensions
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

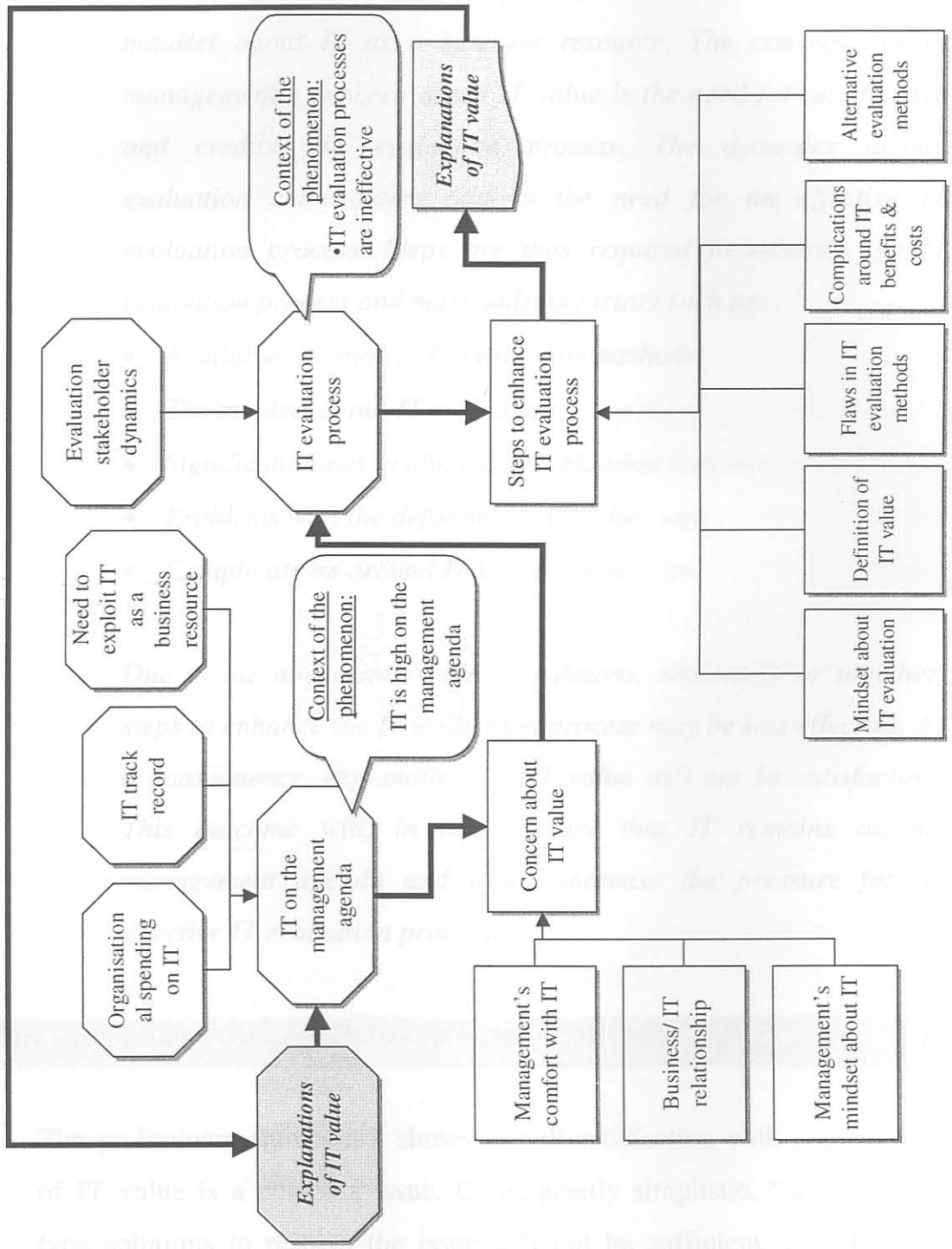
This pattern of conditions helps to describe the preliminary framework and thus the reasons for dissatisfaction with explanations of IT value. Figure 4.10 describes the preliminary framework which clearly shows the link where the adequacy of explanations of IT value is a *causal condition* for IT being 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.