A STUDY OF THE EFFECT OF THE CRITICAL PROCESS TARGETING METHOD ON BUSINESS PROCESS UNDERSTANDING IN MEDIUM SIZED FINANCIAL SERVICES ENTITIES

By

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Abstract

This thesis undertakes exploratory research into the area of business process understanding within the small and medium sized enterprises (SMEs) in Australia. Published evidence suggests that SMEs lag behind larger enterprises in their knowledge and use of tools and methods which may support business success.

Highly competitive environments are likely to drive SMEs to change their business practices more rapidly than larger enterprises. This means that they require flexibility and agility to survive. SME understanding of what to change and the impact of that change is a critical element of their decision making. A process orientation for businesses is not a recent phenomenon, however for SMEs this can be a difficult change from the traditional functional view of business.

A review of the literature identified evidence that supports the need for SMEs to have tools and or methods which progress their understanding of business processes (learning by doing). This research project considered this important gap in existing research by exploring the effect of the Critical Process Targeting Method (as one possible method) on business process understanding. 'Understanding' is the ability to explain, justify, extrapolate, relate and apply knowledge in ways that go beyond the basic knowledge and routine skill (Wiske & Breit 2010, p.5).

This researcher takes the stance (which is neither right nor wrong, but instead a perspective on a situation) that from an ontological perspective, reality is the product of individual perception. The research is conducted as a qualitative interpretivist study in both data collection and analysis activities.

This exploratory research investigated three medium sized entity case studies within the financial sector in Australia. The study used participant case studies to bound the data collection with interviews, documents and diary notes as the data collection methods. Data analysis was conducted using a grounded theory aligned data analysis based on a three phase coding approach.

This research project makes three distinct contributions to Information Systems (IS) firstly, Business Process Management (BPM) and SME practice and knowledge.

Theoretical: This study investigates the subject area using three new case studies in a little explored area of Information Systems and Business Process Management (BPM).

Research Method: This project employs a variation of a Research Method approach, which has enabled the exploration of the Medium sized entities' business process understanding environment.

Practice: This project has identified how the CPTM can be used to improve business process understanding and is suitable for SMEs in the financial services sector.

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At last I can consign this tome to its place on the shelf, one of the giant fossils of my past.

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Abbreviations

Abbreviation	Explanation
ABS	Australian Bureau of Statistics
AHC	Application Hosting Centre
ANZ	Australian New Zealand
AP	Accounts Payable
AR	Accounts Receivable
ASP	Application Service Provider
BP	Business Process
BPM	Business Process Management
BPU	Business Process Understanding
BSc	Balance Scorecard
C4ISR	Command, control, computers, communication (c4), intelligence, surveillance and reconnaissance
CDS	Closed Discovery Systems
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CoBIT	Control objectives for Information Technology
COO	Chief Operations Officer
CPTM	Critical Process Targeting Method
CRM	Customer Relationship Management
DMR	Ducros, Meilleur, Roy & Associates Ltd
EA	Enterprise Architecture
ERP	Enterprise Resource Planning
GM	General Manager
HR	Human Resources
HRIS	Human Resources Information System
ICT	Information & Communications Technology
IS	Information Systems
ISO	International Standards Organisation
IT	Information Technology
ITC	Information Technology and Communications
ITIL	Information Technology Infrastructure Library
UK	United Kingdom
LAD	Literature Assisted Discovery
MD	Managing Director
MISQ	Management Information Systems Quarterly
n.d.	no date
No page#	no page number
PhD	Philosophy Doctorate
PLM	Product Lifecycle Management
RQ	Research Question
SaaS	Software as a Service
SCM	Supply Chain Management
SME	Small to Medium Enterprise
SMEs	Small to Medium Enterprises
SOA	Service Oriented Application
TOGAF	The Open Group Architecture Forum
TQM	Total Quality Management
UHREC	University Human Research Ethics Committee
USA	United States of America
VoIP	Voice over Internet Protocol
MindManager	Mindjet MindManager application see Appendices

Statement of Original Authorship

"This thesis contains no material which has been accepted for a degree or diploma by the University or any other institution, except by way of background information and duly acknowledged in the thesis, and to the best of the my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, nor does the thesis contain any material that infringes copyright."

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Craig Huxley

Date: May, 2013

Chapter One - Introduction

1. Introduction

Small to medium enterprises (SMEs) have been a characteristic of enterprise structure since markets developed. They are the largest single type of enterprise in the Australian (Australian Bureau of Statistics 2007; Australian Bureau of Statistics 2004a) and global market (Banham 2005; Hall 1992) and provide an immense variation of approaches for the goods and services which they grow, manufacture, transport, add value to and sell (Hudson Smith & Smith 2007). Their decision making is typically characterised as being based on individual education and experience (Bharati & Chaudhury 2006) and in Australia at least, might be considered poor or inexperienced in comparison to large enterprise, based on the trading life of the entity (MacGregor & Vrazalic 2005). In the 2007 ABS statistics, 49.1% of all SME businesses had been operating continuously for less than five years, while only 13% had operated for between five and ten years (Australian Bureau of Statistics 2007). In 2005-06 80,000 or 99.5% of all closing businesses were SMEs (Australian Bureau of Statistics 2007).

SME contribution to the national economy in Australia is increasing with only utilities and communications being dominated by large enterprises (Australian Bureau of Statistics 2007). The trend of closures of SMEs to new start-ups is closing from a base of 3% for closures and 12% for start-ups in 2003 to greater than 10% for closures and 5% for start-ups in 2006 (Australian Bureau of Statistics 2007). Much of this reversal in trend is related to the smaller scale medium sized businesses (5-19 employees) (Australian Bureau of Statistics 2007). These figures suggest an environment which is progressively worsening for a sector of the economy which is so vital[1].

As small to medium enterprises (SMEs) strive to compete with large enterprises globally the demand for flexibility and adaptability within the SME structure increases in order to more effectively meet a rapidly changing market environment (Levy & Powell 1998a). Business process understanding has become a critical knowledge area as technology, economics, communication channels, environmental effects and legislation drive

[1] A census was held in 2011 in Australia and the data for this census was not available for inclusion. Thus the data for 2006 is the latest available data for Australia.

businesses of all sizes to further understand their business processes (Bergeron 1992; Doukidis, Lybereas & Galliers 1996; Lees 1987). It is in this environment that this study was undertaken. Improving the process understanding of SMEs and particularly medium sized entities can be argued to be a vital ingredient of the future success of economies. 'Understanding' is the ability to explain, justify, extrapolate, relate and apply knowledge in ways that go beyond the basic knowledge and routine skill (Wiske & Breit 2010, p.5). In Australia the SME sector is characterised as lacking formalised systems and processes (Bergeron 1992; Doukidis, Lybereas & Galliers 1996; Lees 1987) resulting in an inability to undertake complex change projects and complete projects effectively (especially technology based projects)(MacGregor & Vrazalic 2005). They are also guilty of having informal and inadequate planning and record keeping processes (MacGregor & Vrazalic 2005) leading to symptoms such as risk aversion, difficulty in obtaining finance and ultimately less than optimal performance, leading to high failure rates.

This thesis describes a study which investigates business process understanding within the sector of medium sized businesses within Australia.

This chapter discusses firstly the research goals of the study and then the research objectives (1.1 and 1.2). With these complete, it considers the research problem (1.3) with the criticality of process understanding for all businesses and in particular SMEs as they move into more complex and integrated information systems. The research gap is briefly discussed and then the section is summarised. Section 1.4 discussed the purpose and justification for the study and is followed by section 1.5 which is the research context. The next two sections (1.6 and 1.7) consider the research question and strategy and the summary of contributions to the 'body of knowledge'. The final section outlines the following chapters of the thesis.

This chapter follows the structure as described in the following figure (Figure 1).

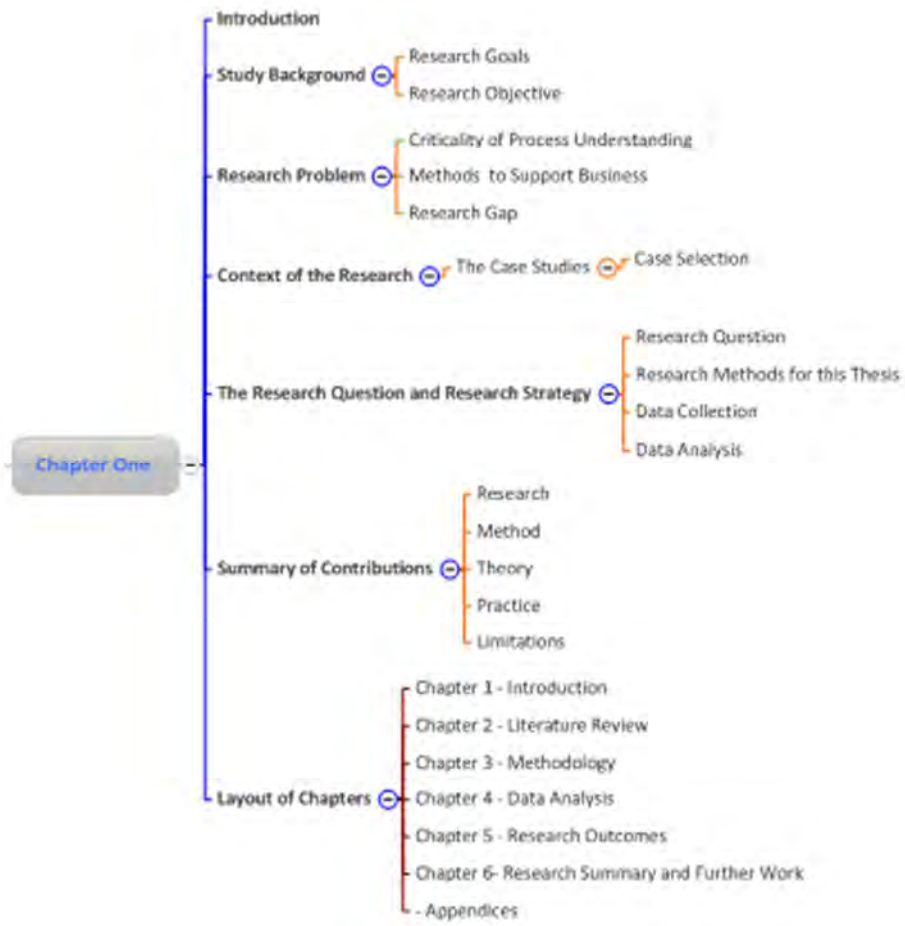

Figure 1- Chapter One Structure

Each chapter and in some cases sections are supported by diagrams such as Figure 1 above. They are intended to provide a visual description of chapter contents as a further aid to understanding the structure and content.

1.1. Study Background

This research degree was commenced as an interest in the area of alignment of Information Technology/ Information Systems (IT/IS) and business. Alignment in general has had considerable research focus over a long period (Boynton & Zmud 1987; Brancheau & Wetherbe 1987; Brancheau, Janz & Wetherbe 1996; Computer Sciences Corporation 2001). The researcher at the time questioned the current approach to alignment and how it might be improved. The area of focus was the effective communication of the link between processes seen partly as the functionality of systems, human activities and organisational goals to improve business IT/IS alignment. This alignment focus led the researcher to questioning the understanding within organisations of their business processes.

The research **goal** based on the prior knowledge of the researcher was to explore an area of community and academic importance that built upon the knowledge and skills of the researcher in such a manner as to contribute effectively to the existing 'body of Knowledge' in the Business Process Management (BPM) and Information Systems (IS) fields.

The research **objective** was to explore the effect of using a suitable method to support the understanding of business processes with an expectation that many of these processes would be systems related.

In a Masters Research project the researcher had developed a method to identify critical processes (Huxley 2003) called the Critical Process Targeting Method or CPTM. This method is able to connect via cause and effect linkages the process or projects of an entity to the business strategy of the entity. The researcher's initial thinking suggested that this method might be one way of improving an entities' business process understanding. However the researcher needed to investigate via the literature review the validity of this option. The literature review contains a detailed analysis of a group of well-known and not so well known methods and tools from which the CPTM was selected as the optimum choice based on SME published characteristics.

1.2. Research Problem

The following contains three subsections, the criticality of process understanding to businesses of all sizes, the methods used to support business in process understanding and the research gap.

1.2.1. Criticality of Process Understanding

There is considerable evidence that SMEs in particular and some large enterprises are having difficulty understanding their processes (Duhan, Levy & Powell 2005; Chapman et al. 2000; Supyuenyong, Islam & Kulkarni 2009; Cragg & Mills 2011). The importance of process understanding is that it is related to everything which is undertaken within an organisation or entity (Maull 2005). Everything an organisation does is a process, whether that is a formal repeatable process or an informal and highly changeable process (Hammer 2003; Maull 2005).

Campbell, Kay and Avison (2005, p.653) state that "organizations are becoming increasingly aware of the importance of aligning information systems with organizational processes,

goals and strategies". These organisations are large entities with extensive experience concerning the problems of systems that are integrated poorly. With so many drivers of process understanding facing businesses of all types and sizes (Davenport 1993; Davenport, Jarvenpaa & Beers 1996; Hill et al. 2006; Hill et al. 2007; Hill et al. 2009; Sinur 2004) the criticality of understanding business process (BPU) is growing. Drivers for BPU are found in political, legal, social, economic and technological areas for the majority of organisations or entities (Sinur 2004).

> This thesis uses a working definition of a business process (fully explained in the literature review) as: 'a partially ordered (in time) set of activities intended to achieve stated outputs and aimed at outcomes which align with business goals or objectives, where the sequence of activity execution may be chaotic or random or deterministic' (Hammer 2003; Maull 2005).

One of the most significant drivers of BPU is that occurring through the use of information systems (Margulius 2005; Bergelson 2007; Latamore 2007). The Australian Bureau of Statistics has identified that the use of technology to support business in Australia is greater than sixty percent for medium sized enterprises and greater than seventy percent for large entities (Australian Bureau of Statistics 2011). Those systems which appear to provide greater business benefits, such as an integrated enterprise system (Duhan, Levy & Powell 2005; Chen & Popovich 2003) require BPU for successful implementation (Duhan, Levy & Powell 2005; Chen & Popovich 2003; Cragg & Mills 2011).

In a study of UK manufacturing SMEs, a "significant number of the SMEs had not previously considered their businesses in terms of the processes they operate to win and fulfil orders" (Chapman et al. 2000, p.357). The study also showed that even after receiving a three day training and analysis package, focussed on their processes, that less than half of the organisations agreed that the training and analysis package provided any new understanding (Chapman et al. 2000). Process understanding is clearly a critical requirement for organisation success whilst being a difficult area of understanding for businesses. Decision makers who need to manage costs and achieve the correct quality need a holistic understanding of the structure and operations of their enterprise (Delen, Dalal & Benjamin 2005). Delen et al (2005, p. 107) ask "what are the tools that will enable such holistic understanding?" They also suggest that integrated enterprise systems such as ERP systems provide part of the solution (Delen, Dalal & Benjamin 2005).

With over 50% of Enterprise Resource Planning system (ERP) projects reporting cost over-runs and an inability to achieve business benefits (Fitz-Gerald & Carroll 2003), the use of these systems is fraught, for organisations where resources are scarce, and risk is

compounded by a comparable lack of knowledge and skills concerning both the systems and their processes. The use of a methodology that will guide business IS/IT decision making, will return financial benefits to the organisation (D'Souza 2004; Farrell 2003; Luftman, Papp & Brier 1999), reduce costs and improve organisational effectiveness and efficiency (Garvey 2003; Buxbaum 2001) is of great benefit.

In the Australian context SMEs appear to focus less on process improvement than larger enterprises. (*ABS defines small organisations as less than 20 staff and medium organisations as more than 19 and less than 200 staff*). The following table indicates the situation in 2009/10 data.

Employment size	operational processes %	organisational/ managerial processes %	Businesses with any abandoned process improvement %
0–4 persons	11.6	13.8	6.5
5–19 persons	24.0	28.9	8.5
20–199 persons	28.1	39.1	8.8
200 or more persons	40.2	48.7	9.4

Table 1- ABS data on introduced or improved processes in 2009-10 Australian Market (Australian Bureau of Statistics 2011)

Table 1 provides data which indicates that in the SME domain, compared to large enterprises, there is less innovation and or improvement of processes, whereas improvement or innovation activity is abandoned at nearly the same rate. This later aspect (abandoned process improvement) may suggest that for those entities which attempt to improve processes the benefits are achievable to the same extent as for large organisations. The question raised is why small and medium organisations undertake process improvement at a lesser rate than large organisations.

The increase in the use of technology (Australian Bureau of Statistics 2011) drives the requirement within a business for increased process understanding as an important activity. It is this understanding that will enable benefits of technology and systems to be realised. IT systems are developed to support processes (via automation, time reduction, simplification for example) within a business and as such require a process understanding to obtain many of the benefits (Duhan, Levy & Powell 2010). Large enterprises have been more focussed on BPU and have therefore been more successful in developing their process understanding (Al-Bakri, Cater-Steel & Soar 2010; Anonymous 2001; Antony & Banuelas 2002; Antony, Kumar & Madu 2005; Ballantine, Levy & Powell 1998; Bernroider & Koch 2001).

Entities which are characterised by a lack of resources, of all types (people, knowledge, information, finance) require an holistic approach to BPU that does not exacerbate the resource and risk issues of these type of entity (Dane & Pratt 2007; Delen, Dalal & Benjamin 2005; Lawson 2002; Moreton 1997; Rosemann & De Bruin 2004; Tsang, Jardine & Kolodny 1999; Yang, Zheng & Viere 2009).

1.2.2. Learning about Business Processes

There are two major elements of 'learning' and these are knowing and doing (Hess 1999; Hiddink 2001; Kolb 1984; Kraatz 1998). Knowing can be related to learning by instruction (Hess 1999) and is exampled by traditional lectures and workshops where information is provided and discussed (Kraatz 1998). Learning by doing requires some instruction and reinforces the knowing with practice (Kraatz 1998; Lawson & Lorenz 1999; O'Driscoll, Carson & Gilmore 2001; Powell 1998). In the 'Seven principals of effective learning' (Hess, 1999) it is suggested that there is:

- frequent contact to sustain motivation when things are difficult
- good collaboration leading to team and group support, improved thinking skills
- individual activities that allow the learner to apply their knowledge
- frequent opportunity for feedback
- high expectations of the outcomes raising the efforts of participants.

These elements indicate that learning by doing is not easily achieved and any support for learning of this type would considerably assist in successful outcomes.

What is needed is an approach to improving an organisations understanding of business processes which considers both the characteristics of organisations which have trouble in this space and the elements of good learning by doing. A procedure is one well used way of assisting an organisation in undertaking a task which is:

- lengthy (the duration can be over a number of days).
- complex (contains more activities than can be easily remembered by someone).
- repeated, essential that everyone does it the same way (done, quarterly biennially, yearly).
- consistent in its use (requires clear understanding to alter without delivering unknown results).

- of high consequence if done wrong (large investments) (Hsiao & Ormerod 1998; Kettinger, Teng & Guha 1997; Leech 2003; Markus & Benjamin 1997; Anon 2011).

The use of a procedure or method would support the entity by providing a tested, repeatable approach to resolving a business need. The use of a method which considers the characteristics of the organisation in addition to the learning elements would provide organisations with one way of improving their understanding of business processes.

1.2.3. Methods to Support Business

A method is a tool or procedure which:

- can be used repeatedly, each time achieving similar results
- can be taught to others within a reasonable time frame
- can be applied by others with a reasonable level of success
- can significantly and consistently provide better results than an ad hoc approach (Berard 2006)

The use of a method to support process understanding is one way in which the personnel of organisations might improve the business process understanding of their decision makers (Das, Zahra & Warkentin 1991; Davidson & Griffin 2000; De Loof 1997; Dekkers 2000; Eisenhardt 1999).

The use of methods though can be fraught with issues as well (Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007). As Zachman (1987)suggests a method is not an answer but the tool for thinking about the problem. The Zachman Framework (Zachman 1987) and other Enterprise Architecture (EA) frameworks (Sessions 2007) provide detailed support for organisations wishing to improve their understanding of business processes as well as other important aspects of their business (Department of Veterans Affairs 2002a; Fujitsu Consulting 2004; Koch 2005; Opengroup.org 2006; Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007).

The experience of users of enterprise architecture is filled with examples of failed initiatives and organisations of all sizes struggling with the breadth and scale of the work involved (Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007; Shah & El Kourdi 2007). Criticisms suggest that EA is an immature method, unable to react to strategic change in the business (Tucci 2011; Shah & El Kourdi 2007). There are also purported to be issues with the

structure of EA in that they do not take into account the interactions of business entities, the complexity of modern information systems and the difficulty of change for users from a functional to process perspective (Schekkerman 2004; Weerakkody, Janssen & Hjort-Madsen 2007; Shah & El Kourdi 2007). These issues have led to poor take up of the methods due to high resource requirements in documenting and using the method and the change effort required of users (Schekkerman 2004; Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007; Shah & El Kourdi 2007).

As an option to explore the use of a method the Critical Process Targeting Method (CPTM) was considered as one lightweight approach to improving business process understanding. Considering first the elements of learning by doing (Hess 1999) the author assessed the method (CPTM) against those elements. The outcomes of the analysis are shown in the table below.

Required Characteristics	CPTM
Learning by Doing characteristics	**CPTM Characteristics**
Frequent contact to sustain motivation when things are difficult	Work alongside the SME to facilitate the completion of the method
Good collaboration leading to team and group support, improved thinking skills	Brings the management team together to discuss and agree the elements which make up the big decision outcomes
Individual activities that allow the learner to apply their knowledge	While normally activities are completed as a group these can be completed individually and brought back to the group for verification and agreement
Frequent opportunity for feedback	Group discussion provides considerable feedback
High expectations of the outcomes that raises the efforts of participants	Users of the CPTM method expect that outcomes will be improved in comparison to their prior efforts.

Table 2- Comparison of Learning by doing elements to CPTM method

In Table 2 the comparison shows that the CPTM method suffices the elements of learning by doing. It is not clear how the final characteristic (high expectations) will impact upon the outcomes of business process understanding by organisations using the CPTM method.

In this thesis the author has decided to use the CPTM Method after first considering other methods as discussed in the literature review (see section 7.6).

1.2.4. Research Gap

The characteristics of SMEs suggest that they have much greater resource supply issues than large enterprises (Mohan-Neill 1995) and thus may require greater support to reach an improved understanding of business processes. To date there have been no studies undertaken to this researcher's knowledge of the effect of using a specific method as an aid

to business process understanding within the SME sector which considers the resource needs of SMEs. Research into business process understanding has been requested by authors (Chapman et al. 2000; Cragg & Mills 2011; James-Moore & Gibbons 1997) but has yet to be undertaken empirically within the SME sector. The tools and methods currently predominantly used are not seen as a viable solution to organisations which are resource poor. Resource poor entities are those which lack sufficient time and financial capability to bring in expertise, seek and 'know' the knowledge required and implement the complex and time consuming methods available.

One element which consistently appears in publications concerning process management is the need for a holistic understanding of the business processes of the organisation (Chapman et al. 2000; Cragg & Mills 2011; James-Moore & Gibbons 1997). A solution which provided for the research gap of improving business process understanding in this way, managing the critical issue of organisations who are resource poor would be highly desirable. This goal would also be a worthy research focus.

Not only would this type of research provide valuable input in a little researched area of the SME sector it would also add support for the larger enterprises attempting to use the more complex methods such as Enterprise Architecture and Quality Improvement.

1.3. Context of the Research

The economic climate during the three years (2003-2006) in which the case studies were completed was, relative to 2012, a stable period. There were no major Australian incidents that appeared to have an impact on any of the case study organisations.

When this research project was being considered in the Australian environment a snapshot of events (bullet points following) provides a small insight into the context of the project for case study participants and the researcher (2004):

- Peter Beattie's Queensland Labour Party state government is re-elected in a landslide
- Qantas launches its discount domestic airline, Jetstar
- Hobart woman Mary Donaldson living in Sydney marries Frederick, Crown Prince of Denmark in Copenhagen
- Australian Jennifer Hawkins wins the Miss Universe contest, held in Quito, Ecuador
- Australia and Thailand sign a free trade agreement

- The Australian Liberal Party of John Howard is returned for a fourth term at the 2004 federal election
- Enormous tsunami devastates Asia; 200,000+ killed (Dec. 26, 2004)

In order to complete the research to the required standard a tight focus for the context was considered necessary given the research's exploratory nature. The decision was made to concentrate on a specific type of entity within the Australian market (see chapter 3). Small to medium entities that provided financial services were identified as possible participants. They were identified as having usually sufficient size and complexity to cope with the risks of research and use information systems in most areas of their operations. This type of entity could have been taken from medium sized finance companies or small to medium sized finance departments of large entities where they operated as suppliers to the larger organisation. The Australian Bureau of Statistics (ABS) definition of the SME category is more than four and less than two hundred staff (Australian Bureau of Statistics 2007).

Three case studies were selected for the research with a focus on the Australian market. The researcher did not identify any issues or impacts which this geographical selection influenced based on a brief comparison of market environments in Western European and North American geographies. The case study organisations had staff numbers between thirty and two hundred, thus fitting the SME criteria.

Each of the organisations provides services of a financial nature and in a similar technological environment. This due to its role meant that many of the compliance processes were similar, though the largest case (Case Study Two), as a provider of 'Trustee' services, had additional compliance requirements imposed by legislation. Each organisation had recently undergone some major change in the structure, people or services provided. This to some extent (the researcher believes) helped to obtain their agreement to participate.

Figure 2 following, contains the criteria that was used to determine if the case study was suitable for use in the research project. The criteria encompasses both practical and theoretical factors ensuring the case studies were appropriate and would indeed provide desirable outcomes for an Australian market.

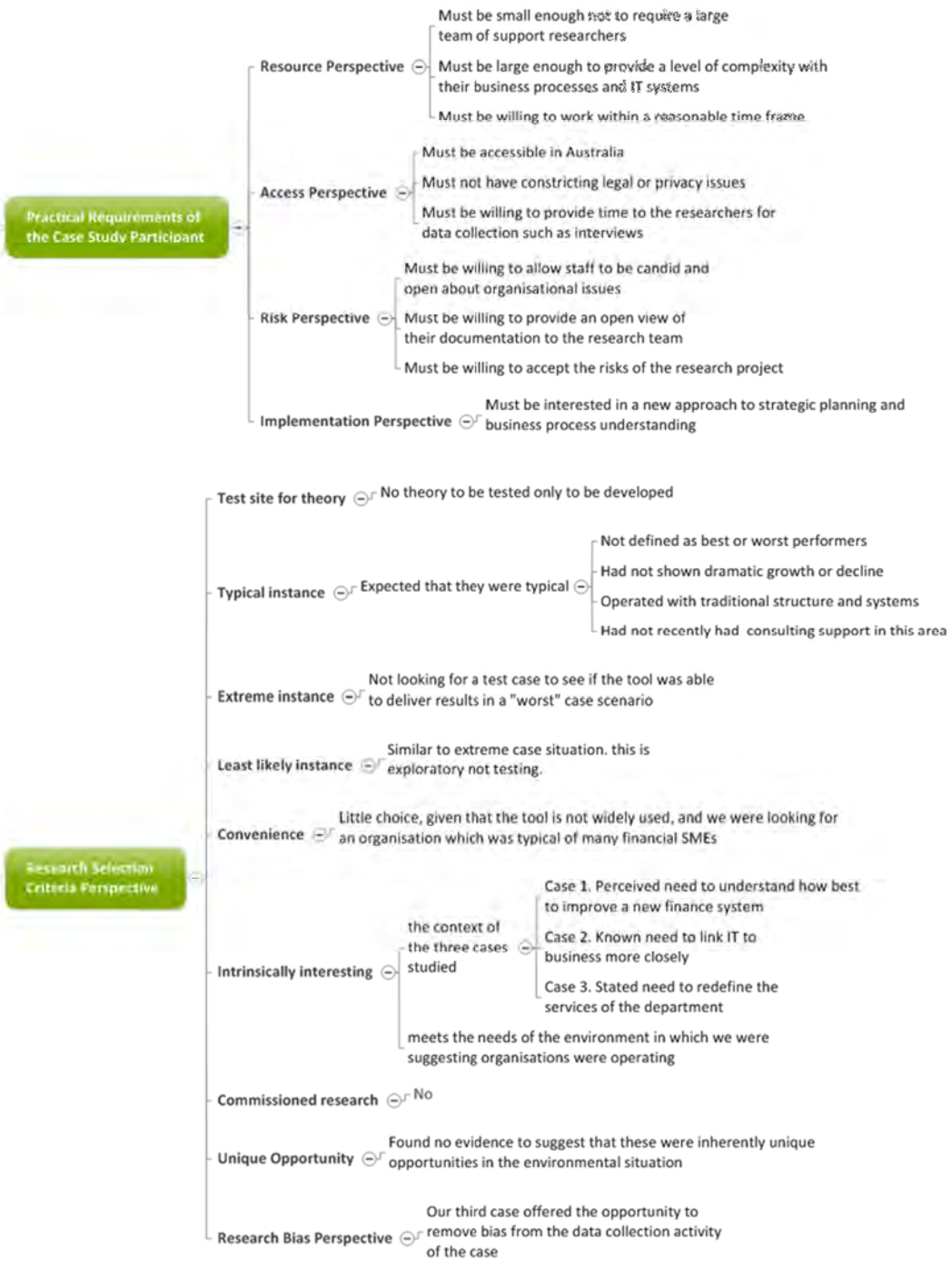

Figure 2 - Case Selection Criteria based on Denscombe, 2007 (Denscombe 2007, pp.38-42)

The literature review (Chapter 2) then provided insight into previous research in the area of business processes and the drivers which encouraged SMEs to understand their business processes. The literature review also provided information from which to select the tool or method which was used in the case studies to support business process understanding. Finally the literature review validated the initial view of the research gap and the need for research in this area as a valuable social and academic area of research.

1.4. The Research Question and Research Strategy

"A research question is a narrow, challenging question addressing an issue, problem, or controversy" (Lipowski 2008, p.1667). A research question or questions should be feasible. Does the researcher have the required knowledge and skills to carry out the activities? Does the researcher have access to the resources and (in this case) the organisations to collect the data necessary to answer the question?

Is the research question interesting? The research project must be one which motivates the researcher sufficiently to spend the years required to investigate and report on the question or questions (Perry, Riege & Brown 1998). The answer or answers to the research question must provide new knowledge which is relevant to the current or future environment (Perry, Riege & Brown 1998).

Research questions may be evaluated by the probability of achieving their goal, along with their potential impact on the community, or population of interest (Perry, Riege & Brown 1998).

Of importance also, is the perspective of ethics for the question. Ethics should consider the risks to the participants of the research. Ethics influences the research strategy which must align with the resources of the researcher and be constrained by ethical behaviour (Perry, Riege & Brown 1998).

This research received clearance from the University Human Research Ethics Committee (UHREC) and complies with the National Statement on Ethical Conduct in Human Research.

1.4.1. Research Question

The research question was an outcome of the literature review and the researchers' existing understanding, knowledge and interests. The researcher initially started with an interest in improving medium sized entities understanding of processes based on the researcher's anecdotal knowledge and experience as a BPM consultant. These medium sized entities were characterised by elements such as:

- having poor management skills in comparison to high performance companies/organisations (MacGregor & Vrazalic 2005)
- more reluctance to take risks (MacGregor & Vrazalic 2005)

- being resource poor in time, technology adoption and use, financial resources and information and access to expertise. (Banham & Bacani 2007; Blili & Raymond 1993; Lybaert 1998; MacGregor & Vrazalic 2005; Mohan-Neill 1995)

What actions would support SME understanding of business processes? This was a valid question but from a practical perspective why would SMEs want to improve their understanding of business processes? There is a growing external influence on SMEs to better understand their processes (Al-Bakri, Cater-Steel & Soar 2010; Asheim 2003; Bergeron et al. 1998; Chong 2007). Thus if a method or tool were able to support improved understanding of business processes, how might the method then mitigate some of the information systems issues being experienced by medium sized entities?

The literature review was initiated at this stage with five major objectives:

1. Substantiate the importance of understanding business processes
2. Identify the major characteristics of SME's today and their changing needs
3. Identify, briefly describe and assess a collection of methods that may support an improved understanding of business processes in organisations with characteristics of an SME
4. Describe the selected method
5. Specify the research question

The thesis uses the following definition of 'understanding which is described and discussed in the literature review. *Understanding is the ability to take existing or new knowledge and use it to explain, justify, extrapolate, relate and apply it in ways that go beyond the basic knowledge and routine skill* (Wiske & Breit 2010, p.5).The literature review identified many different drivers of business process understanding and also the characteristics of SMEs in relation to large enterprises. Then the literature review considered methods which might support business process understanding and eventually confirmed the Critical Process Targeting Method (CPTM) as a suitable choice.

This led to the following exploratory research question (RQ).

How does the CPTM support a greater understanding of medium sized entity processes?

Miles and Huberman (1984, p.35) said that qualitative exploratory research should "begin with a foggy research question and then try to defog it". The research question explores the experience of users of the CPTM in relation to their business process understanding. This research question provides ample focus for an exploratory study where little is known and much can be learned from a deeper and richer investigation of the area in the beginning phase.

The research question is not intended to specifically identify causal constructs or test if the CPTM does improve business process understanding. These types of research foci are not within the scope of the study instead in alignment with the philosophy of the researcher the focus is to develop a deeper and richer understanding of how to improve business process understanding using a methodology.

1.4.2. Research Methods for this Thesis

A broad range of methods were considered for the research project. The researcher sought a qualitative interpretivist method based on the researcher's view of the world. The methodology uses a research design which selects appropriate methods for investigating the research problem and the environment in which it resides while being aligned to the researcher's philosophy. Of the many possible qualitative methodologies such as, ethnography, phenomenology, action research and action learning, grounded theory and case study (Cassell & Symon 1995), which might be used to collect and analyse data for the research project, case study was the preferred method.

Chapter 3 (methodology) provides the full details of the research strategy.

1.4.3. Data Collection

Case study data was obtained from a number of sources; namely unstructured interviews, conversations, non-involved observations, involved observations, historical documentation and CPTM output documentation. The researcher was able to apply triangulation (based on the original meaning of the term (Bazeley 2004)) as a credibility and confirmability quality assurance process (Lincoln & Guba, 1985 in Devers, 1999) (Devers 1999). The triangulation data was sourced from associated researchers in one instance, post case study interviews, existing theory and case study organisation documentation.

The following diagram (Figure 3) depicts the sources of data collected for the case studies.

Figure 3- Sources of Data for the Case Study Analysis

Participant observations were recorded as a researcher reflection diary soon after each contact with the case study participants. Non-involved observations were specific to case study three where a third party consultant undertook the implementation of the Critical Process Targeting Method (CPTM). This provided an opportunity to ascertain if bias was a concern in the previous two case studies. Conversations (explained in Interview data types starting on page 116) were undertaken throughout the implementation of the CPTM and recorded as diary notes and meeting minutes.

1.4.4. Data Analysis

A qualitative data analysis procedure, aligned with the grounded theory procedures of Strauss and Corbin (1990) and Dey (2005), was undertaken in order to analyse the research data collected within the case study environment. Chapter 3 (methodology) provides full details of the analysis method undertaken. A three phase coding analysis (open, axial and selective) was used to firstly breakdown the primary data (unstructured interviews) and to then 'chunk up' the open codes in order to identify themes. These themes were verified by triangulating with both the original data of the case studies and published literature.

1.5. Summary of Contributions

This research project makes three distinct contributions to Information Systems (IS), Business Process Management (BPM) and SME sector practice and knowledge, Practice, Research Method and Theory related contributions.

<u>Research Contributions</u>

The study is the first to explore business process understanding of organisations using a method in the medium entity financial sector. This is a little explored area of IS and BPM.

Research Method Contributions

This study employs a variation of existing research method approaches, which has enabled the exploration of medium sized entities' business process environment. The study has provided a strong case for the use of participative case study in all its variant names ("participant observation" Nandhakumar and Jones (1997) or "process consultation" Schein (1997) or "Appreciative Inquiry" von Weltzien Hoivik (2011)).The study has, it believes, provided clear process for the future use of a grounded theory aligned data analysis approach. The study has also substantiated conversation as a method of interview style harmonious with the needs of the SME sector and resource poor organisations generally. The Study has provided mitigation for bias through the use of a third case study facilitated by a third party. The study has also responded to Dyer and Wilkins (1991 p.613) who communicated "strong and repeated calls for more qualitative, contextual, and interesting research".

Theoretical Contributions

This research project has contributed to theory on process related decision making in medium sized entities which improves the understanding of business processes and is suitable for small and medium sized organisations in the financial services domain in which it was observed. The study has also contributed to theory related to a holistic understanding of business processes as a preference to the predominantly deep and narrow views taken by many organisations (Chen & Popovich 2003; Cragg & Mills 2011; Fargnoli 2006). This new theory contribution adds significant and critical support to academia and practice in business process understanding where current methods are found to be too resource heavy even for some large organisations (Delen, Dalal et al. 2005; Dane and Pratt 2007; Yang, Zheng et al. 2009).

Practice

This research has provided support for struggling management teams being overwhelmed by the need to understand business processes within their organisations. The study provides evidence of how a method can support a holistic understanding of business process in resource poor entities of all sizes. The study also provides evidence of how

collaborative and transparent decision making related to business process understanding is achievable and can have successful outcomes.

Limitations

Limitations and delimitations were identified within a range of perspectives for the study. Delimitations are those characteristics selected by the researcher to define the boundaries of the study, for example the industry of focus and size of organisation. There were Research method limitations, study specific delimitations and researcher specific limitations. The following diagram contains points relevant to both the limitations and delimitations of the study.

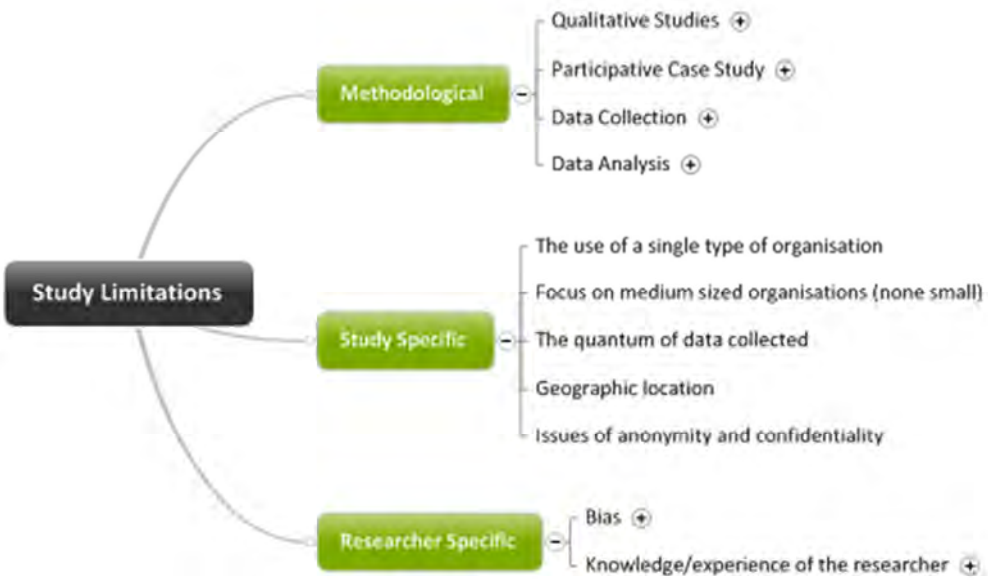

Figure 4- Limitations and Delimitations of the Study

The researcher identified and managed the limitations of the study but made conscience decisions of selection with regards the delimitations of the study. A full explanation of these is provided in section six.

1.6. Layout of Chapters

Each chapter in this thesis is briefly overviewed in the following sub sections. Each chapter has been provided with a mind map outlining the major elements of the chapter to support the readers understanding.

1.6.1. Chapter 1 – Introduction

This chapter has introduced the study detailing the research goals and objectives, the research problem and gap. The chapter also provides a description of the context of the research including information about the environment in which the study was started and the case studies which were undertaken. The research question is provided and a brief overview of the methods for research data collection and data analysis is provided. The chapter also provides a summary of the academic and practical contributions of the study.

1.6.2. Chapter 2 – Literature Review

Chapter Two provides the reader with a review of the published literature related to the research and that which supported the research decision making in regards to the research gap. The literature review provides a discussion of the relevance of business processes in organisations and a discussion and synthesis of the drivers which the researcher identified and believed to be creating a demand for greater understanding of business processes.. The literature review investigates the characteristics of SMEs and the environment in which they operate. The literature review at this point has provided an understanding of the situation in relation to the research question and is then directed towards an analysis of tools or methods which might support business process understanding and verify if the choice of the CPTM is optimal.

The research question is discussed in relation to the literature and the final section provides a brief description of the CPTM. A full description is provided in the Appendices.

1.6.3. Chapter 3 – Methodological Foundations and Data Collection

The purpose of this chapter is to introduce the methodological foundations of the research and to describe the methods used to collect and analyse the data as part of the investigation of the research question: How does the CPTM support a greater understanding of medium sized entity processes? The chapter discusses the research philosophy, the data collection and analysis methods and describes the options available for the research project, the choices made and the rationale for those choices. The result is a qualitative interpretivist exploratory study.

The goal of this chapter of the thesis is to differentiate the truth from beliefs and appearances through the use of a research design which selects appropriate methods for investigating the research problem and the environment in which it resides (Galliers & Land 1987).

1.6.4. Chapter 4 – Data Analysis

Chapter Four introduces the complexities and practice of the data analysis activities. The chapter takes the reader through the case studies sequentially, in an attempt to provide the reader with a richer understanding of the case environment, actors and history. The vignettes used attempt to provide a narrative of the activities that were observed and undertaken by the case study participants. The chapter also describes the analysis of the first two phases of coding with each case study and then discusses the selective coding (third phase) using axial codes from all three cases. The chapter concludes with the major themes of the analysis and a checklist for quality control.

1.6.5. Chapter 5 – Research Outcomes

Chapter Five discusses the two themes which were surfaced in the analysis of the data. With the selective coding completed in Chapter Four the surfaced themes were verified by seeking confirming or disconfirming evidence from the original case study data.

Integrated into the discussion of the emergent contribution to theory and its components was a review of the literature related to the emergent contribution to theory where literature was available. The two themes surfaced were;

- recognition the business problem is process related
- linking processes or process projects to strategic decision making via a collaborative decision process.

1.6.6. Chapter 6- Research Limitations and Further Work

Chapter Six provides a research summary, contributions and a description of the implications of the research for theory and practice. The chapter also discusses the limitations of the study and provides an additional review of the quality of the study using

Lincoln and Guba's (1985) assessment criteria. This quality review is added to by an assessment of the study as a qualitative interpretivist study using the seven principals developed by Klein and Myers (1999). The final section of this chapter describes the possible future work for interested researchers.

1.6.7. Appendices

Chapter seven contains the detailed review of literature research outputs in the business process management domain. This review enabled the researcher to understand where the research area was trending and what might be the gaps in the current and prior research activities of the domain. The appendices also include a section on the journals used in this study and the informed consent form used to obtain consent and inform participants of their rights and risks of participation.

Analysis data from the analysis of the many methods considered in the literature review is also contained in the appendices.

The Appendices have a description of the Mindjet MindManager application which was used to create many of the diagrams used and is an integral tool in the implementation of the CPTM.

The second last section of the appendices contains a detailed description of the Critical Process Targeting Method (CPTM) taken from a draft publication document written by the researcher with editorial support from Glenn Stewart and based on the work of the researcher's IT Master's thesis. The final section of the appendices is the extensive list of references used in this thesis.

1.7. Chapter One Reflections

Chapter One has attempted to succinctly describe the major elements of a complex document that has learnt only a small amount from modern communication methods. The researcher believes that a clear understanding of the journey as described in the thesis will inform the reader and render them a more knowledgeable person. The chapter has provided a set of brief overviews of the following chapters and enables a reader to clearly understand the major elements of this thesis. It has not provided the reader with the insights and new knowledge which continued reading will provide.

Chapter Two – Literature Review

2. Introduction

This chapter is the literature review which provides a summary of published views of the research area, support or repudiation for the thinking of the researcher, and concludes by identifying the research question or questions.

2.1. Purpose of the Literature Review

This literature review is written to achieve a number of important outcomes. It acts first as substantiation of the breadth and depth of the writer's knowledge of the domains of the thesis. That is, it explores the relevance of business process understanding in general and within small to medium enterprises specifically. Secondly it identifies from this literature a 'gap' in the research of sufficient proportions and importance to study for a PhD. Thirdly, it demonstrates the writers' perspective of the area and the decision to investigate the identified research 'gap', and finally the literature review specifies the research question.

2.1.1. Structure of the Literature Review

This literature review begins with an analysis of the literature in respect to a definition of a Business Process to provide clarity regarding the definition used in this thesis.

In addition a discussion of the relevance of business processes in organisations and a further discussion and synthesis of the drivers discussed across a number of perspectives creating a demand for greater understanding of business processes. The analysis identifies outcomes of these drivers and provides some comment concerning their impact on Small to Medium Enterprises (SMEs).

The review of the SME literature which identifies the characteristics of the SMEs and confirms the traditional neglect of this sector, the research gap, then investigates and assesses a range of methods available which might support an 'understanding of business processes'.

The final section of the literature review describes the method selected for exploration of how the Critical Processing Targeting Method (CPTM) supports an 'understanding of business processes' in medium sized entities.

The following diagram provides an overview of the chapter sections as described:

Figure 5- Chapter 2 Structure

Figure 5 above provides a summary of the major sections and sub sections of the chapter.

2.1.2. Objectives of the Literature Review

This literature review has five major objectives:

6. Substantiate the importance of understanding business processes
7. Identify the major characteristics of SME's today and their changing needs
8. Identify, briefly describe and assess a collection of methods that may support an improved understanding of business processes in organisations with characteristics of an SME
9. Describe the selected method
10. Specify the research question

2.1.3. Approach to researching the literature

This literature review follows the traditional and accepted method to discovery of information concerning the research question. It started broadly, looking to identify the range of domains and industries in which research into the strategic planning practices of SME's and enterprises are discussed. These results identified the following industries and domains as being relevant:

- Health
- Education
- Finance
- Manufacturing
- Professional Services
- Government

Like others this researcher started with industries which were familiar, that is, with industries which made greater use of information systems for business support. This meant that Finance, Government, Health and Education were prioritised for initial investigation based on existing contacts and knowledge. Typically this also meant that the industries chosen for further investigation were also service based as, while not strictly correct, manufacturing industries tend to have much less focus on business processes than they do on their manufacturing and supply chain processes.

The focus of the literature review concerned business process understanding within SMEs. Initially a wide search was completed providing many thousands of results. This search process occurred through public search engines or subscription search engines which aggregated many databases to give a wide variety of results.

The literature review also required an extensive search for a method which would be suitable in assisting improving business process understanding.

Journals such as "Knowledge and Process Management" were considered ideal as they contain information related to both the research area and evidence of any prior research suggesting future work in the area. See appendix Section 7.4 for a complete list of journals investigated.

Business Process Management conferences both commercially focused and academically focused were also targeted for investigation (see Section 7.2).

2.2. Defining a Business Process

Before discussing the relevance of a business process we should first clarify what is meant by the concept of '*a business process*'. During 1993 two publications by well-respected authors defined a business process as "a partially ordered set of activities performed to reach a well-defined goal" (Hammer & Champy 1993, p.223) and "a structured set of activities designed to produce a specific output" (Davenport 1993, p.26). Although both definitions in these publications appear to be similar, they are in fact focussing on different aspects of a business process.

The first definition (Hammer and Champy, 1993) describes a business process as having a 'well-defined goal'. The attainment of a 'well-defined goal' is thus an outcome of the business process. A business process can also transform inputs into some other form: the outputs of the process. Whereas the second definition (Davenport, 1993) suggests the activity is to reach a 'specific output'. These outputs may not necessarily be the end point of a well-defined goal. Thus, the output and outcome of a process are essentially two different but not incompatible elements. For example, the output of a process may be a product or service yet the outcome may be a happy customer or supplier.

Maull (2005) states that "a business process is an end to end set of activities that adds value to a customer" (Maull 2005, p.4). This is aligned with Hammer and Champy's (1993)

goal oriented outcomes perspective. A further definition leans towards the goals perspective by stating that these activities which make up a process, "collectively realise a business objective or policy goal" (Pennsylvania State University 2007, no page#). This latter description binds the outputs and outcomes of the process to the business objectives or policy goals.

Therefore in consolidating this information it is considered that the qualities of a business process lead to the following elements of a business process: A business process

- is a set of activities
- is comprise of activities which may be partially or strictly ordered in time
- may be a chaotic selection of activities (sensitive to preconditions with a non-deterministic sequence), random (related to other variables in the execution of the process but not forming the same sequence of activities at each instantiation of the sequence) or deterministic (follows a predicted sequence of activities which are executed in the same way at each invocation of the process)
- results in both outputs and outcomes on execution
- should have the outputs and outcomes linked to business objectives or policy goals.

From this brief discussion we can propose a working definition of a 'business process' for this literature review as:

> *'a partially ordered (in time) set of activities intended to achieve stated outputs and aimed at outcomes which align with business goals or objectives, where the sequence of activity execution may be chaotic or random or deterministic'*

With an understanding that 'business processes' are the activities of the business we move next to the importance of understanding business processes to the organisation.

2.3. Relevance of Business Processes

> "Become a process fanatic. Process is the Clark Kent of business ideas: seemingly mild and unassuming, but actually amazingly powerful. Process is the way in which the abstract goal of putting customers first gets turned

> into its practical consequences. Without process, companies decay into a spiral of chaos and internal conflict" (Hammer 2003, pp.52-53).

This section of the literature review states the argument for the importance of a business process view in organisations today. It starts by outlining the major drivers of this change to business management by looking at the business environment from a number of perspectives. The perspectives selected are legal and political, economic, technological, socio-cultural and environmental as used in the literature review and shown in Figure 6.

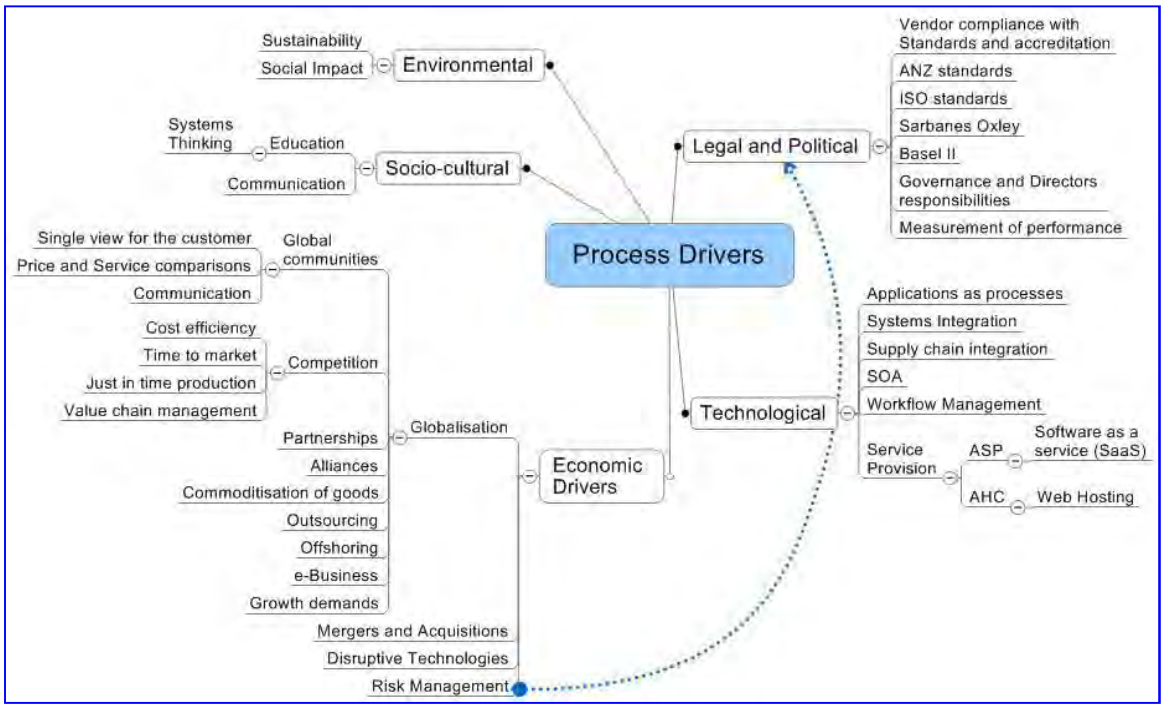

Figure 6- A Multi-perspective view of the drivers of a process view for business

A recent Gartner publication states that the "adoption of process orientation continues to accelerate, despite the persistent confusion about new business process management disciplines and BPM-enabling technologies" (Hill et al. 2007, p.4). While acknowledging that viewing the business from the process perspective is continuing to increase, Gartner (Hill et al. 2007) states that BPM is largely a 'buzzword' for many software and IT service organisations. Gartner also states that

> "like past process management theories, BPM recommends that enterprises apply process orientation as an organizing construct for work and to use this perspective to complement reliance on traditional function and product-centric organizational structures. Also, like past theories, the goal of BPM is to increase operational performance" (Hill et al. 2007, p.4).

Process orientation, for business is not a recent phenomenon. Companies have been focusing on improving processes for many years. One early instance was Henry Ford, whose well known quote "you can have any colour as long as it's black" was an example of a process improvement for his Model T assembly lines (Zarbo & D'Angelo 2006)(Slide22). In more recent times Gartner (Sinur 2004) and others have been recommending a process orientation (Davenport 1993; Rosemann 2002; Choi & Liker 1995). Managers are realising that an understanding of process is critical to progressive business change. It is not just change though for changes sake that is important but the types of change which result in business success and efficiency.

Gartner suggests that there are many factors influencing the movement by business to a process orientation, these include:

- opportunity for cost savings
- avoid friction during mergers and acquisitions
- manage business process outsourcing
- buy software and implement packages better in a more positive way
- control parallel processes by consolidating
- identify tasks that could economically move from manual to automated
- manage processes for optimised cost, time to market, resource loading, risk and quality
- support regulation and compliance
- understand the kinds of processes that should be put in place to support progressive new offerings (Sinur, 2004)

2.3.1. Economic Drivers

In countries which have market economies perhaps the most significant determinants are the range of economic drivers which require businesses to have a greater understanding of their processes in order to compete successfully (McAdam & McCormack 2001; Hall 1992; Lewin & Peeters 2006; Piscitello & Sgobbi 2004; Quinn & Hilmer 1994; Stalk, Evans & Shulman 2000). "Global competition, economic downturn, and the potential offered by emerging technologies are pushing firms to fundamentally rethink their business processes" (Kettinger & Grover 1995, p.10).

The globalisation of business concerns the change in the market presence from purely local, interstate or national to international. To be successful in a global market companies now strive to have standardised processes in an effort to efficiently produce and deliver goods and services to many different customers in many different cultures and geographic locations (Hammer 2002). Standardisation provides an environment in which market entry costs are reduced, safety and quality are improved and scales of economy in both the manufacture and delivery of services and products within a business are achieved. These economies are based on improvements being applicable for the entire organisation rather than only the local environment. Remembering this does not remove the need for geographic and culturally specific requirements when operating on national and global scales (Simon 2001).

MacDonald's are a good example of a company reaping the benefits of process standardisation. MacDonald's strives to ensure that no matter where you are in the world when you enter one of their outlets, you receive consistent quality, service and product (Domingo 2003). Standardising processes should not affect product differentiation – while processes may be standardised some products may be adapted to cater for local religious and cultural influences (Simon 2001).

Hammer (2002, p.29), states that "global process owners create uniform processes and country managers implement them". In this way customers see their dealings with a global company as a single entity and not a loose collection of businesses (Hammer 2002).

The growth of global communities has increased the competition within markets as shown in the commoditisation of airline travel bookings, mortgage loan processing and telecommunications (Hill et al. 2006). Competition is forcing many businesses to look harder for business efficiencies (Hill & Turbitt 2006). The use of the web to sell goods and services has also enabled customers to more easily compare products and prices. There are even web sites which consolidate this information pushing businesses harder competitively (eg: Banking at http://www.infochoice.com.au/aspx/; Comparison shopping at http://www.myshopping.com.au) (Haubl & Trifts 2000; Kocas 2002).

Perhaps one of the most notable benefits to consumers is the amount of information which can be communicated 'online' (Liebowitz 2008). Communication generally aids understanding but also drives competition between businesses. Increased competition results in businesses looking for advantages which it may not have sought in a less

competitive market. Thus one outcome of increased competition is the reduction of costs and improvement in the operational aspects of the business which can be defined as business process improvement.

> Haubl & Trifts (2000, p.18) say: "our findings suggest that interactive methods designed to assist consumers in the initial screening of available alternatives and to facilitate in-depth comparisons among selected alternatives in an online shopping environment may have strong favourable effects on both the quality and the efficiency of purchase decisions". "Such tools allow shoppers to more easily detect products that are overpriced or otherwise dominated by competing alternatives, thus increasing market efficiency" (Haubl & Trifts 2000, p.18).

Understanding what the business does operationally is a vital element of competition. It has been suggested that "competitive success depends on transforming a company's key processes into strategic capabilities that consistently provide superior value to the customer." (Stalk, Evans & Shulman 2000, p.43).

Competition is not just about cost efficiency through focus on activities such as the 'time-to-market', 'just-in-time' production, resource loading and quality management, but may include revenue enhancement via value chain management and vertical or horizontal integration (Sinur 2004).

Businesses have looked to new channels to improve their competitive edge in the market, one of the most influential of these is the e-business channel (Amit & Zott 2001). An understanding of business process is crucial to the success of this channel. "Putting a Web site in front of lousy processes merely advertises how lousy they are. Success in e-business requires processes that permit easy external access and operation" (Hammer 2002, p.29). Amit and Zott, (2001, p.493) citing (Eisenhardt 1999; Teece 1992) suggest that agile business competencies are based on the businesses "managerial and organizational processes, such as those aimed at coordination, integration, reconfiguration, or transformation".

In response to the new set of business pressures companies who compete successfully are turning to buying in the expertise in the form of short term consultants. This type of reactive management brings its own set of process problems. External experts brought in to undertake specific activities within an organisation can create process changes which

result in unknown or unconsidered ripple effects across the business. These '*process stealth bombs'* are often unseen and unplanned yet are devastating in their effect (Huxley 2010).

Partnerships and Alliances impact on processes in a similar way to Mergers and Acquisitions which require that a business understand their processes in the same way that outsourcing and off-shoring does (Harmon 2003). In the activity of interacting, a business must be able to both describe and alter their processes so that an interaction can occur. Harmon (2003, p.35) states that "mergers and acquisitions usually lead to business process redesign efforts" in order to achieve the efficiencies required to substantiate the costs involved.

The increasing trend of outsourcing of business processes also requires that a business has a thorough understanding of its processes (Sinur 2004). To give responsibility to a third party the business must at least be able to identify, for example, who is responsible for what portion of service delivery. This means an understanding of not just what is being outsourced, but how it integrates into the business. This ensures the outputs of the business processes provide the required inputs and that in turn the outsourcers outputs integrate back into the business (Sinur 2004).

A little more complexity is added when the concept of off-shoring is considered. Off-shoring is the moving of business activities to a different country in order to gain cost differentials or access to required resources (Lewin & Peeters 2006). The drivers behind the strategy of relocating manufacturing facilities is to reduce costs by moving manufacturing, assembly and or service operations to low-wage countries, thereby enabling firms from high-cost economies to align their cost structures with their global competitors; and gain greater access to emerging markets and skill pools (Lewin & Peeters 2006).

Aron & Singh (2005) warned that many companies have not seen the expected benefits of off-shoring or outsourcing because they were not outsourcing or off-shoring the right type of processes (Aron & Singh 2005). They suggested that success in this area required at least the ability to identify the 'core' or 'highest priority' processes (Aron & Singh 2005). Other authors, such as Davenport, Earl, and Hammer & Champy have made similar recommendations (Davenport 1993; Earl 1996; M.J. Earl, J.L. Sampler & J.E. Short 1995; Hammer & Champy 1993). The need to identify 'core' or 'critical' processes suggests a requirement to understand processes generally.

The discussion so far has identified that there are many drivers related to the 'economics' of business. Their strong influence on organisations provides incentives for change and exacerbates existing process problems for companies who do not change due to their low understanding of business processes.

2.3.2. Technological Drivers (Application Fit to Organisational Practice)

Most non-strategic applications are now purchased instead of built in-house within the organisation (Banzi, Bruno & Caire 2008). The selection, implementation and use of such packaged applications are a topic of significant research and business activity. For example (Arif et al. 2005; Aron & Singh 2005; Ballantine, Levy & Powell 1998; Banham & Bacani 2007; Bennett & Timbrell 2000; Berisha-Namani 2009; Bernroider & Koch 2001; Bozarth 2006; Chan & Huff 1993; H.H. Chang 2006; Chatterjee 2007; Da Rold et al. 2007; Harding 2007; Kanellis, Lycett & Paul 1999) The correct selection of a packaged software application is a function of process awareness, both from matching the application to the current process set, to the selection of an application which supports best practice processes (Vilpola & Kouri 2005; Bernroider & Koch 2001).

Successful selection is therefore dependent upon business process understanding.

Sinur (2004) identifies many examples of the failures in choosing, implementing and using new applications due to a poor understanding of the processes of the business (Sinur 2004). Applications are becoming far more complex requiring users and, in particular, decision makers to have a greater understanding across a broader area of business activities in order to select the system which best meets the overall business specifications.

The complexity increases dependant on the user's ability to configure the application in order to meet business requirements, in an ever changing environment. In addition there may be the need to change the application to support current forms of business processes (in the customisation of the application).

Companies who implement packaged software without customisation are said to implement a 'vanilla' form (unchanged from the suppliers configuration), and these companies may not realise that the application will drive long-term changes to the way that

they operate (Sinur 2004). To implement in this form organisations may need to alter their current processes to suit those of the application (Bibiano, Mayol & Pastor 2007).

The researcher provides this example of language confusion based on personal experience as a professional business consultant in three complex application selection projects.

Choosing the most suitable application is also riddled with process 'landmines' for the business. The language that is used to describe the processes of an application (and consequently the business processes) can differ depending on the vendor and the package. This language confusion is further exacerbated by the efforts of vendor sales people to differentiate their product from their competitors. Examples of these issues might be seen in the way that some vendors describe the general ledger. Vendor A (Epicore) might describe the general ledger as having sub-ledgers which are designated with dimensions and account numbers which have multiple segments. Vendor B (Infor Sun Systems) might discuss the same general ledger but say that they do not have sub-ledgers and instead use up to 10 'shadow' ledgers and 'analysis dimensions'.

Both of these vendors happen to use the same accounting processes to carry out the functions of the company accounts. How they describe it suggests that they are different where in reality both are dealing with two separate issues in their descriptions. The first is that the 'traditional' use of sub-ledgers is a carryover from times when accounts were kept in books with paper and pens. Sub-ledgers meant that some accounts such as receivables and payables which had many entries could be managed by different groups of people (as they still are in many cases today).

Today, a single application (for example: Navision, SAP, Oracle) allows multiple simultaneous users to undertake tasks on the same set of accounts. Thus it is not necessary to have separate ledgers as this can be managed in the database of the application. The second point of the two descriptions is all about the 'tagging' of the information so that it can be searched for and 'drilled down' into at a later date. But a person who was not sure of the actual processes used to do both of these activities would need to take the vendors' word that there were real differences (Huxley, C; Personal communication 2010).

The following diagram (Figure 7) provides a description of some of the many modules that are available to business within the Enterprise Systems landscape. When choosing and implementing enterprise systems the business requires an intimate knowledge of the

processes across the organisation in order to evaluate the different offers from vendors (Ojal, Vilpola & Kouri 2010).

Figure 7- Vendor Modules for Enterprise Systems

The extension of software/ applications into supply chain management (SCM) and customer relationship management (CRM) has also extended the zone of the business in which applications impact heavily (Hammer 2002). CRM is seen as more than an application. Bibiano describes it as a "cross functional, customer-driven, business process management strategy that maximizes relationships and encompasses the entire organization" (Bibiano, Mayol & Pastor 2007) (section 5).

Large vendors, such as Microsoft Dynamics, Oracle and SAP now offer applications which support the management of suppliers (supplier relationship management), products

(product lifecycle management) and executive information for decision making (business intelligence). The growth in type and scale of business activities which are now supported by these applications has contributed to the pressure on business to further understand their processes (Bibiano, Mayol & Pastor 2007).

In Figure 8, following, the diagram provides an example of the complexity of applications that the vendor SAP provides to clients (Agassi 2003). The vertical rectangles represent the traditional functional modules of Human Resource Management (HRM), Financial Accounting, as well as the emerging extended applications of Supply Chain Management (SCM), Product Life Cycle Management (PLM), Supplier Relationship Management (SRM) and Customer Relationship Management (CRM). Not only do these functional modules have considerable integration, the cross application elements (Resource and Program Management, Merger and Acquisition, Employee Productivity and Product Definition) add considerable complexity to the business by dealing with what might be thought of as a cross section of the functional and extended modules and even interface with older applications shown in the legacy suite.

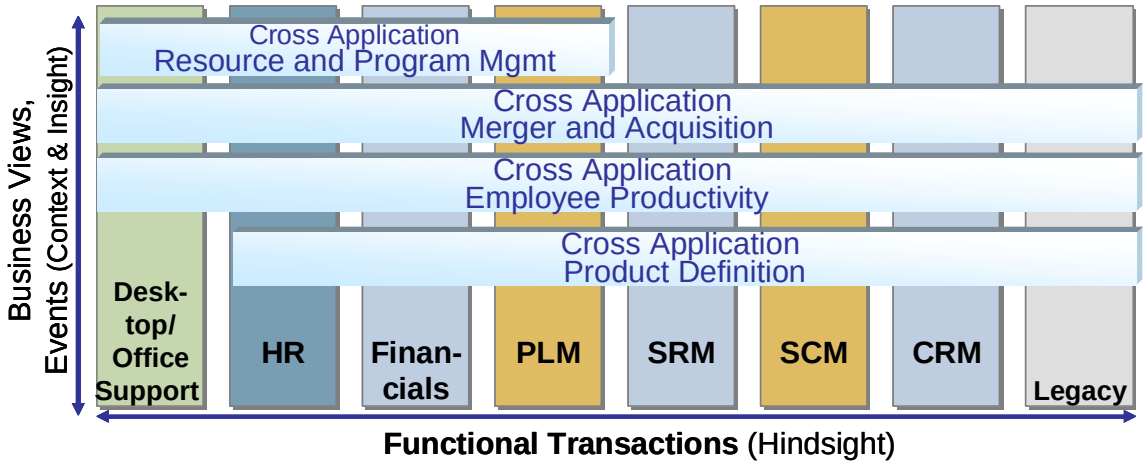

Figure 8- Example of the building complexity of applications from SAP (Agassi 2003)

Vendor response to the complexity and the lack of understanding has been to develop further applications and to offer software access by a variety of business models (Cullen 2005; Harmon 2003).

Business Models

"SOA [Service Oriented Architecture] is an architectural style in which software applications are organized as a set of loosely coupled services" (Oracle 2007, p.1). Service Oriented Architecture (SOA) is focussed on the integration of these activities called services in such a way to enable them to be connected and disconnected almost at will (Bergelson 2007; Chatterjee 2007; Harding 2007). "The growing adoption of SOA combined with progress in systems integration have made it easier to create layers of software that sit atop multiple systems and help manage end-to-end processes" (Margulius 2005, no page#). SOA associated with innovative workflow systems help to automate the constant changes required to processes responding to environmental changes within an organisation (Bergelson 2007). SOAs demand knowledge of the processes of the organisation and how these processes are integrated, linked and operate (Bergelson 2007).

The SOA approach is to recast modules of functional systems into discrete components called services.

Cullen (2005, p.1) states that

> The flexibility provided by service-oriented architecture (SOA) enables the continuous optimization of business processes. But the traditional IT organization, which is oriented toward discrete business units and supported by vertically integrated applications, constrains this optimization rather than helps.

One new business model offered to the market is 'Software as a Service' (SaaS) which is described as 'on-demand' software which allows the user to access the functionality of an application typically through a browser (Latamore 2007). In this business model vendor's deal with the technological issues providing fully integrated sets of applications to businesses. SaaS may be viewed as an evolution of the application service provider (ASP) model. ASP differs from SaaS in that it usually provides a unique instance of the underlying application for each user organisation. SaaS typically uses a multi-tenancy architecture, sharing of a single instance of an application and a single database of user data among all of a service's customers (Latamore 2007).

ASP and SaaS may appear to be a solution to businesses lack of process understanding as the provider deals with the configuration and management of the software. However in some cases, the business has lost the opportunity to understand its processes through the experience of learning to configure the software. Businesses which use SaaS or ASP services

as their solution to the increasingly complex area have essentially outsourced their process management to an organisation which provides them with generic processes. Outsourcing also typically results in a loss of knowledge and skills (Earl 1996) for the business.

Technology related drivers are seen here to have a growing influence on organisations providing many motivations and complications for companies who do not improve their understanding of business processes.

2.3.3. Political and Legal Drivers

A further driver of the process orientation is the move towards using and complying with standards (Barber et al. 2003; Biazzo & Bernardi 2003; Hill et al. 2006; Hill & Turbitt 2006). Process models which require an understanding of your business processes help to produce the documentation required to become accredited to standards such as ISO 9000 (Hill et al. 2006). Barber et al. (2003) suggest that ISO accreditation is driven by market forces such as government agencies which insist that companies providing service be accredited to one or more standards (eg: ISO 9001: 2000 or BS5750) (Barber et al. 2003).

To gain ISO 9000 accreditation companies, on the whole, focus on documenting and managing procedures in order to remain or become compliant. The latest version of this standard, ISO 9000: 2000 is "driving many companies to think in terms of processes. In many cases this has prompted management to actually start to analyze processes and use them to drive change programs" (Harmon 2003, p.32).

Relatively new legislation such as the Sarbanes Oxley Act of 2002 (*Sarbanes-Oxley Act of 2002* 2002) and Basel II initiated a growth of Business Process Management (BPM) projects within financial organisations (*Sarbanes-Oxley Act of 2002* 2002; Margulius 2005) operating internationally, in the United States and the European Union (Hill et al. 2006; Hill & Turbitt 2006; Wadhwa & Karra 2005). Sarbanes Oxley (*Sarbanes-Oxley Act of 2002* 2002) nicknamed SOXS requires auditors to attest that the financial systems of a business are understood sufficiently to be able to ensure that compliance with accounting procedures is occurring. Basel II requires financial service companies to comply with a number of risk management practices which also have an audit or supervisory compliance element (Hill et al. 2006; Di Renzo et al. 2007). Although IT risk has to be considered "the main concern is about non-IT operational risks, such as… risks related to inappropriate processes and procedures of a bank's trading activities" (Di Renzo et al. 2007, p.323). Both pieces of

legislation require the organisation to better understand and manage the security, risk and control of the processes on which their systems are built. To do this requires a process understanding of their information technology (Wadhwa & Karra 2005).

Australian law applicable to company directors (e.g. *Corporations Act 2001*) has increased the possibility of directors becoming individually responsible for situations in which poor risk management is the cause of financial under-performance, bankruptcy and even share value loss. One such example is that of ABC Learning a global child care centre manager with more than 1000 sites. Media reports suggested that poor risk management resulted in the company entering receivership (Hoy 2008).

Compliance measures are one important protection for directors against such actions and the test of effective compliance is "strong corporate governance capabilities that are demonstrable to outside auditors" (Hill et al. 2006, p.1). A willingness by government, private organisations and individuals to litigate has combined with legislation and market forces to push companies to focus on business processes and the identification of their inherent risks (Wadhwa & Karra 2005).

2.3.4. Education Drivers

"Systems thinking put the emphasis on understanding the organization as a whole. Process thinking stresses thinking about the portion of the system that produces a specific set of results" (Harmon 2003, p.110). As early as 1990 and 1993, authors such as Deming (1986) and Senge (1990) wrote about the importance of systems thinking to understand workflow and business processes (O'Neill & Sohal 1999; Deming 1986; Senge 1990). The influence of education using theories such as 'systems thinking' and 'process thinking' provides current and future students in tertiary education with a greater understanding of the usefulness of process understanding. The growth in the teaching of process management has also increased, (zur Muehlen 2008) resulting in businesses being infused by these new generations of students who recognise the need for understanding of business processes.

2.3.5. Environmental Drivers

Environmental reporting is increasingly becoming a corporate governance issue and as such has the same connection to an understanding of processes that is linking legislation such as Basel II and Sarbanes Oxley (Gibson & O'Donovan 2007). Among the drivers of increased

environmental reporting in Australia were "changes to Australian Corporations Law in July 1998 (Section 299 (1)(f)) requiring the Directors' Report for a financial year for companies whose operations were subject to any particular and significant environmental regulation to include details of the entity's performance in relation to such regulation" (Frost & English 2002, no page#). Environmental reporting is further encouraged under ISO 14000. The ISO 14000 environmental management standards ensure that companies minimize the effect their activities have on the environment by implementing specific controls at the process level. "ISO 14000 enables companies to reduce the penalties and fines conferred when environmental laws are breeched. Furthermore, the adoption of ISO 14000 reduces waste, cuts down overhead, and ensures the efficient use of materials." (Interfacing Technologies Corporation 2009, no page#). Initiatives such as the Greenhouse Challenge and Australian National Pollutant Inventory "also act to sustain increasing levels of environmental information provision" (Gibson & O'Donovan 2007, p.954).

A 2007 Gartner report on the sustainability of "Environmental Delivery Models" notes in its key findings that no one knows if these models are really sustainable as assessment and understanding of the end-to-end lifecycle has never been done (Mingay 2007). The drivers for environmental reporting appear to be gradually expanding in scope and number and are further driving the need for a greater understanding of the processes of the business.

Environmental issues, while new, have had a number of years to filter into the management team's consciousness. New innovative ideas can also pose problems for organisations, becoming increasingly difficult to manage.

Disruptive Innovations and the link to process management

Disruptive technologies (or as they are now termed *disruptive innovations*) have become the one issue that by their very nature are difficult to manage using traditional management methods and techniques (Christensen et al. 2006).

Christensen and Overdorf (2000) state in their Harvard Business Review (HBR) article "It's no wonder that innovation is so difficult for established firms. They employ highly capable people – and then set them to work within processes and business models that doom them to failure" (Christensen & Overdorf 2000, p.1).

The link between an understanding of processes and the ability to react to disruptive innovation is seen in the history of failures of such innovations. When discount retailing bloomed, very few of the existing retailers went on to become a leader in discount retailing

and not one of the minicomputer companies succeeded in the personal computer business (Christensen & Overdorf 2000). Media companies are struggling to deal with disruption to supply channels and online piracy that the web has facilitated (Choi & Perez 2007, p.177). They also suggest: "online piracy has shown to be an important source of technological and strategic innovation to both industry incumbents and newcomers" and reports on media companies doing deals with Napster and BitTorrent.

Providers of Voice over IP services (VoIP) are using the telecommunications companies own infrastructure to steal their customers (Godwin-Jones 2005).

These disruptive technologies and innovations are pushing businesses towards the realisation that in order to react quickly to changing markets they must understand their processes more effectively than they currently do. In order to assist in effective change they must be able to assess the suitability of processes to different outcomes (not outputs) that may be required in disrupted markets (Christensen et al. 2006).

2.3.6. Summary of Business Process Drivers

Campbell, Kay and Avison (2005, p.653) state that "organizations are becoming increasingly aware of the importance of aligning information systems with organizational processes, goals and strategies".

The discussion provided above reviewed the drivers encouraging business to have a greater understanding of their business processes in the broad cross-section of business environment. It has covered the domains of technology, socio-cultural, environmental, legal and political and importantly the economic domains, and in all cases, has shown an increased requirement for process understanding.

The section has described the increasingly complex environment that business is now operating in with globalisation (Hammer 2002) and hyper competition (Anon 2008), resulting in outsourcing, off-shoring, mergers and acquisitions (Aron & Singh 2005; Harmon 2003; Sinur 2004) with political and legal changes racing to keep up (Barber et al. 2003; Biazzo & Bernardi 2003; Elzinga et al. 1995; Harmon 2003; Hill et al. 2006; Hill & Turbitt 2006).

Vendors have also reacted to the systems challenge by implementing complex systems such as enterprise resource planning (ERP) and developing further applications that

support the understanding and use of ERP; such as SOA, workflow, Portals and web services (Bibiano, Mayol & Pastor 2007; Hammer 2002; Sinur 2004; Smyth 2001b).

Miles and Snow (1986, p.62) quoted 'one prominent executive' who described the mid 1980's by saying, "not only is it a competitive jungle out there, new beasts are roaming around that we can't identify". The executive cited was referring to the changes in organisational forms and approaches to management that were being seen as a result of the high competition that drove organisations to become more innovative in order to succeed. However, new approaches to management and structure rarely begin in the ideal form; usually they require some continuous alteration to reach the desired state (Miles & Snow 1986). This continuous alteration or modification that has occurred over the last 25 years (Palmer, Benveniste & Dunford 2007) has provided much of the impetus which has resulted in increasing significance for issues such as business process management as a topic of research amongst academics and practitioners.

With an understanding of the importance and scale of the problem at hand the literature review progresses to a review of the published literature concerning BPM and the relevance to SMEs.

2.3.7. An Analysis of BPM Research

A review of Academic and Commercial conferences from 2003 to 2010 was undertaken seeking to understand the research focus of BPM knowledge. This review considered the call for papers, streams and where available freely the presentations and or papers presented at the conferences. Eight topical journals also considered:

1. Business Process Management Journal
2. Communications of the ACM
3. Journal of Management Information Systems
4. Harvard Business Review
5. Information Systems Research
6. MIS Quarterly
7. Today
8. Knowledge and Process Management

The review of journals was initiated by searching for business process management, BPM, process and business process in order to identify the number and type of articles which had been published on business process management in general and business process understanding. A review of returned articles and abstracts indicated the type of article and focus of the research if any. These were coded in the same fashion as the conference data.

In order to understand the field, the author initially looked at the most recent BPM conference of which the call for papers identified thirty seven individual possible areas of research publication and the actual conference had eight tracks and six workshops. An attempt to cluster the topics in logical areas resulted initially in four major topic areas;

1. Process Modelling related to operational views of activities
2. Management of business processes related to strategic or tactical views of activities
3. Integration and association with other business activities
4. Experiential which is related to a focus on the experience of practice

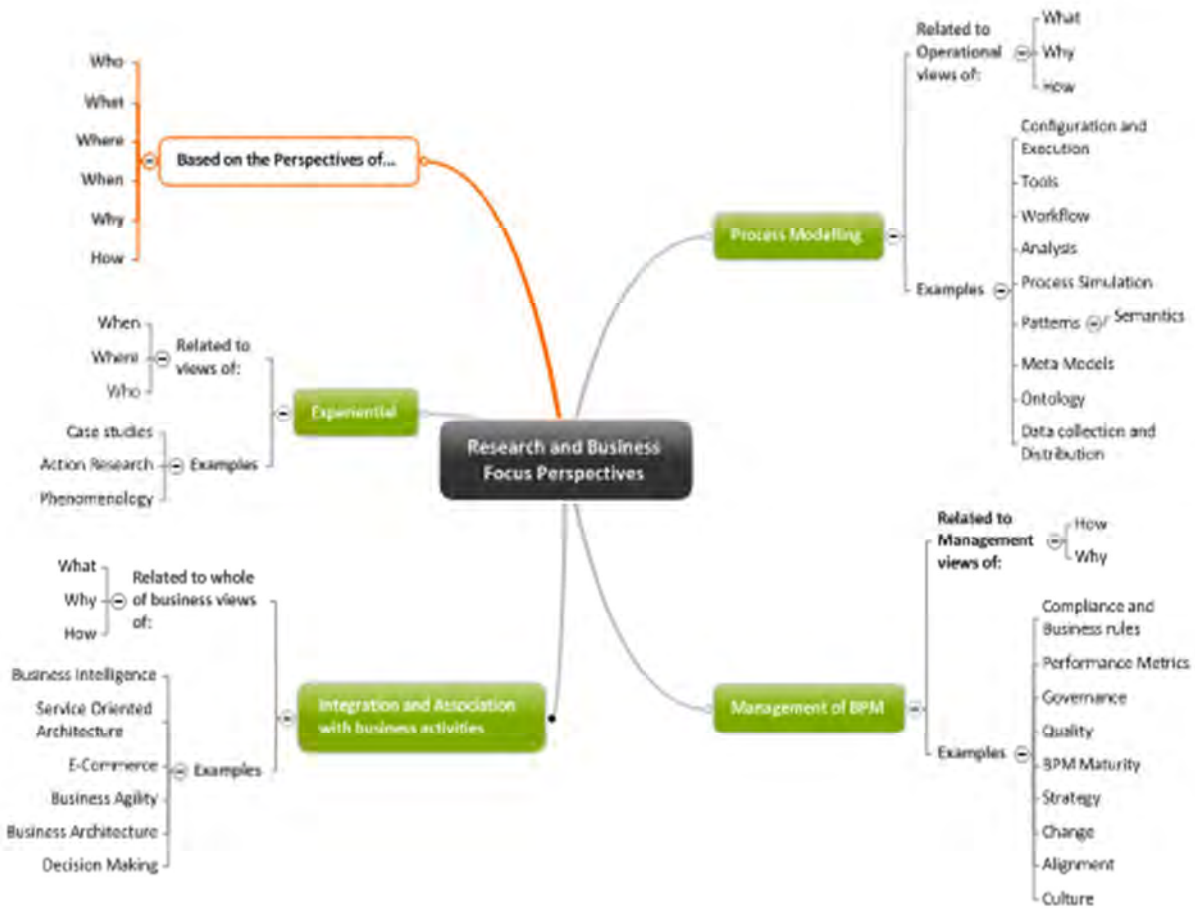

Figure 9- Research perspectives

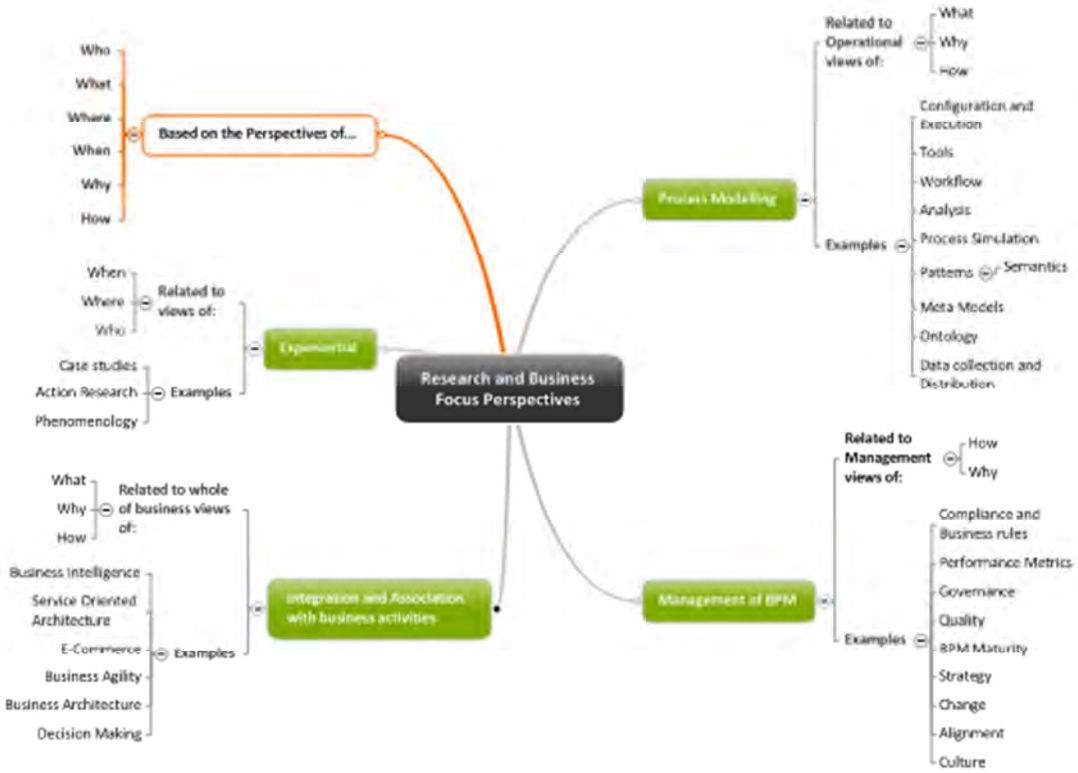

Figure 95 provides an example of the type of research outputs that were associated around the four initially identified clusters. These four clusters were analysed using the perspectives of how, what, where, when, why and who to see if there were any holes in the clusters of activities from this simplistic analysis.

It is worth noting that the 'who' of BPM appears to be an area lacking in research focus or output. This 'who' relates to the people involved from the organisation that have the capabilities and the tacit or organisational knowledge to work in BPM projects. Although there is a considerable weight of publications in the experiential cluster, it appears that not much consideration has been given to who should be involved and why they should be involved, apart from reiterating that change requires a top down approach and clear and public management support.

After the initial clustering of the early data set the review looked at the whole data set that had been reviewed and coded. The coding was undertaken using the previously discussed categories of who, what, where, when, how and why in order to understand the objectives of each of the research publications. The objective of this analysis is not to provide a rigorous and detailed research outcome instead it was to better understand what research been published on business process management and possibly what had not been researched. This can be linked (tentatively) to the number and type of publications in both academic and commercially focused conferences. This is obviously not all the publications which might be considered and thus not something which a researcher would term a rigorous analysis. But for the purposes of this literature review it provides an insight into the environment in which SMEs are operating.

An additional cluster appeared after completing the review of the commercial conferences which was called the *Environmental Factors*. Thus five clusters of domain output were discerned and are shown in Figure 96 below.

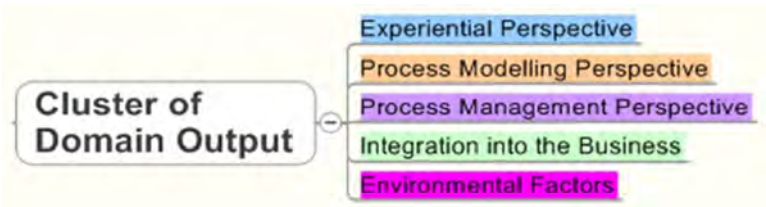

Figure 10- Clusters of Domain Output

The environmental factors outputs were based on informational topics such as "Comparing BPM in Europe to the rest of the world" and "Roadmap to future trends in BPM and

converging BPM technologies" (Gartner BPM Summit 2006). In 2007 and 2008 these were "BPM 2007: Latest Trends & Best Practices" (Gartner, 2007), "The State of the BPM Market" (BPMInstitute, 2008), "The BPMS Market: Key Players and Trends" (Gartner 2008).

This 'environmental factors' perspective was only seen in the commercial conferences reviewed. The commercial conferences appeared to cater to the businesses which supported the domain. That is, the vendors of software supporting workflow and process modelling and the consulting industry. Evidence of this can be seen in the conference tracks such as:

- Developing Core BPM Technology; Managing the BPM Technology Environment; Leveraging the Advantages in BPM Technologies; Whats Next For BPM Suites?

An example of the data coding is provided in the following diagrams the first being based on the BPM 2007 academic conference.

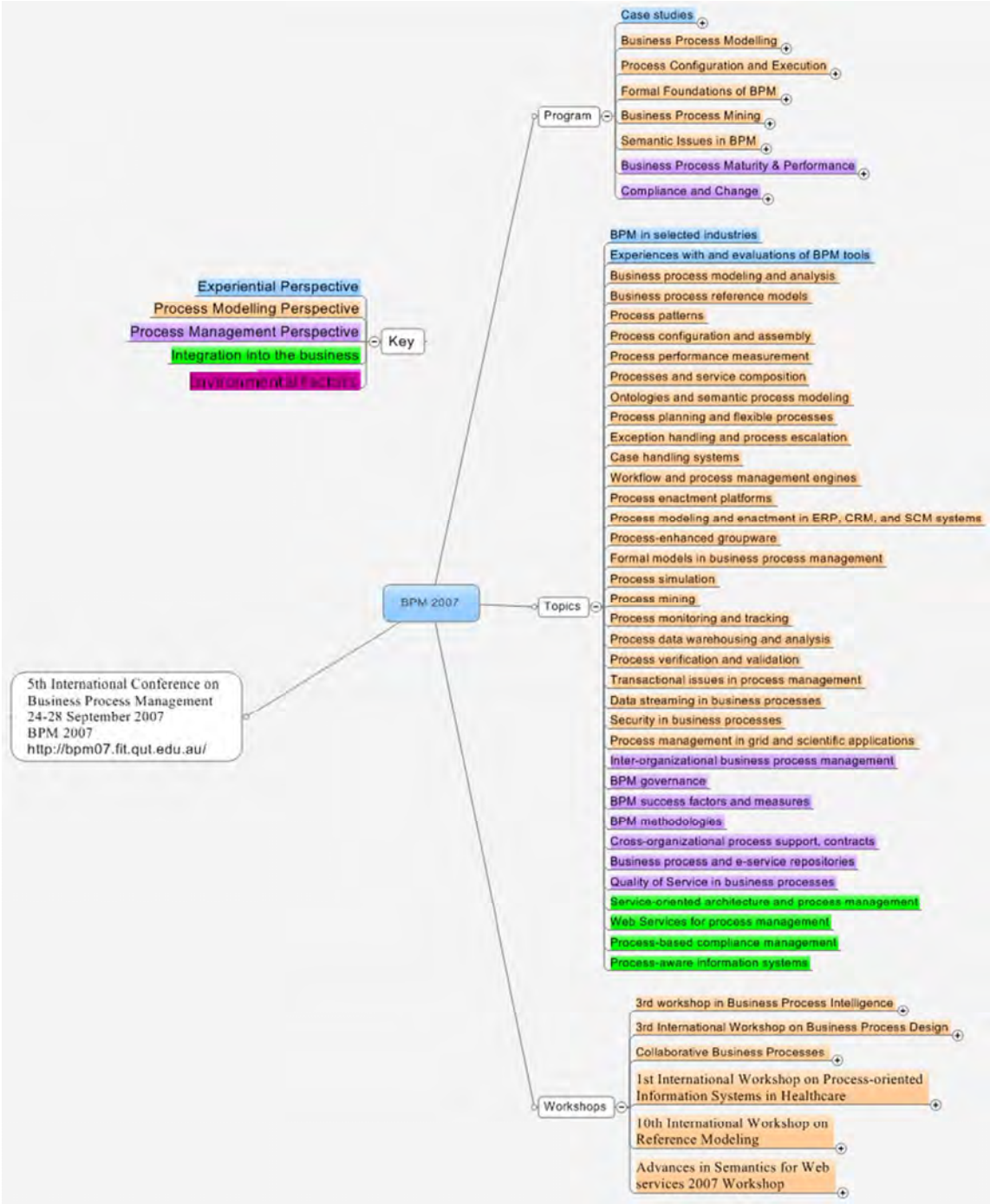

Figure 11- Example coding of the BPM 2007 conference

The next diagram provides similar information but is from the Gartner BPM conference of 2007 and visibly shows the differences in the focus for the two conference types (Academic Figure 97 compared to Commercial Figure 98). Note this is knowingly nearly too small to read the text as the reader need only take in the colour coding.

Figure 12- Gartner BPM 2007 conference example

The major difference between the academic outputs and the more commercially oriented outputs of the conferences are the different emphasis (based on volume of output) when

viewed across the final five perspectives of domain. Commercial conferences appear to have a greater emphasis on the process management and integration perspectives whereas the journals and academic conferences are very heavily weighted towards the process modelling perspective. The trend over the last four years has been to progressively see growth of the management and integration perspectives in both areas of output. So it appears that academia is slowly following what the business might be perceived as seeking.

Of most interest to this literature review is the fundamental lack of research being published on the needs of small to medium sized businesses as identified by authors such as Levy & Powell (2000). Levy and Powell also stated that there was a 'paucity of IS research in SMEs' as did Cooper, C. and Otley, D. (1998), in the 1996 research assessment exercise for business and management (Cooper & Otley 1998).

There appears to be a lack of focus on SME needs in the current commercial and academic conference and journal publications reviewed concerning business process understanding.

In the commercial conferences the experiential perspective tends to describe the use of BPM in large organisations such as Citigroup, Nike, Motorola, Vodaphone and Toyota (Gartner 2006b; Gartner 2006c; Gartner 2006a; Gartner 2007a; Gartner 2007d).

Examples of large organisation research in academic publications (journal and conferences) include research with Nortel Networks (Massey, Montoya-Weiss & O'Driscoll 2002) in an MISQ article and AT&T, Worldnet and Timberland in HBR (Kanter 2006).

In the process management arena, many of the topics discussed have much less relevance to SMEs than to large corporate businesses. For example, papers such as 'Establishing Process Governance: Process Owners, Councils, and Offices' and other ERP related content (Gartner 2007a; Gartner 2007d; Gartner 2007c) have little to say to SMEs. Despite the move by many medium sized enterprises to adopt ERP systems, the literature demonstrates that there is a lack of specific support for the needs of this segment of industry.

BPM conferences requested and received papers on topics such as Business Process Management Maturity and Compliance and Change (QUT 2007);(Hill et al. 2006), Cross-organizational Process Support, Contracts, Quality of Service in Business Processes (Hill et al. 2006) and Integrating Business Policies with Business Processes (LORIA 2005). These topics, just described, are dealing with the mature organisation in the process

understanding arena. As such they expect that readers (organisations) have a certain level of understanding which is not indicated by any research outputs or research experience.

Integration into the business requires the business to have a level of process understanding or process maturity in order to start considering the relationships of the research area with that of the business as a whole or even with other elements such as strategy, culture, change management and IS. Most researchers would agree that generally SMEs tend to follow larger enterprises as their maturity increases; E-business and alignment of IT and Business (Luftman 2003; Walker 2000; Di Renzo et al. 2007) being two such examples.

An examination of the literature in the field of business process management has highlighted the substantial gap which is business process understanding for SMEs. While other gaps such as, who is involved in business process management, can be seen as well. The literature review thus far has shown that:

- understanding is the ability to explain, justify, extrapolate, relate and apply knowledge in ways that go beyond the basic knowledge and routine skill (Wiske & Breit 2010, p.5).
- the drivers of business process understanding are strong and broad in scope for all business types
- the research community and commercial organisations are not providing SMEs with the knowledge or skills to understanding their business processes and thus take advantage of them

What remains is to justify the research by identify researchers who argue or call for research which supports the SMEs understanding of business processes. This element of substantiating the research gap is provided in the following section.

2.3.8. Calls for Further Research into SME Business Process Understanding

"The understanding, skills, and experiences of the employees determine the success of the business and competence development and training efforts can have a direct effect on practice" (Ihlstrom & Nilsson 2011, p.212). Providing the organisation (the people) with the tools and knowledge required to improve their business processes can thus lead to the ability to compete more effectively in this changing market. There are many calls within the

SME research community for greater understanding of how technology, e-business and business processes can be used, support and ultimately provide competitive advantage for SMEs in the SME literature.

Authors such as Harmon (2003), Davenport (2005) and Bititci etal. (2010) all argue that how organisations 'understand' their business processes is a key driver of organisational flexibility and agility (Bititci et al. 2010; Davenport 2005; Harmon 2003). Their understanding of business processes "is seen as a key determinant of an organisation's ability to adapt and respond to emerging threats and opportunities, and thus its sustainability" (Bititci et al. 2011). As will be shown in the following section (2.4 Small to Medium Enterprises) these are critical competitiveness characteristics of SMEs.

One recent research project into the impact of large enterprises on SMEs has found that the SMEs' lack of process understanding and standardisation of those processes has enabled large enterprises to integrate supply chains which effectively out compete SMEs (Emale 2010).

McDonough and Long (1980), Kmicinski (2001) and Duncan (1992) (cited by Kmicinski (2001)) agree that it is as important for SMEs to understand process management as it is for their larger counterparts (Kmicinski 2001; McDonough & Long 1980; Duncan 1992). They suggest that the failure of businesses to understand their processes results in poor decision making investment (Duncan 1992), insufficient knowledge of what to do in relation to the service of customers (Kmicinski 2001) and appropriately managing risk (McDonough & Long 1980).

All of these topics relate to decision making and the capability of the business to manage change occurring either internally or externally. Change is seen to be managed by SME through their flexibility and speed of change and provides SMEs with advantages over their larger and better resourced competitors (Bergeron 1992; de Salas 2002; Doukidis, Lybereas & Galliers 1996; Lees 1987).

Stockdale and Standing (2004) also call for more work to be done on the assistance that process understanding might provide SMEs in competing in the online environment (Stockdale & Standing 2004). They argue that although there is research being undertaken in the online marketplace this is "mainly confined to the activities of large organisations" (Stockdale & Standing 2004, p.310) and there is a need to empirically research SMEs to determine a broad range of competitive needs for this sector.

Three years later Bhagwata and Sharmaa (2007, p.295) continue to argue that researcher understanding of IS-related practices in the SME sector has been a relatively unexplored area in IS research compared to large enterprises (Bhagwata & Sharmaa 2007). Work published by Dowlatshahia and Tahamb (2009) states that "like large organisations, SME should seek the benefits" of process improvement methods (Dowlatshahia & Tahamb 2009, p.612) but are currently restrained by a lack of understanding around their use in the SME context. Others state that 'understanding' of technology and how to effectively use it "requires advanced technology and IT skills (including R&D) and a wide range of specialist business skills and knowledge in areas such as management, strategy and marketing" (Taylor & Murphy 2004, pp.283-284).

The need for further empirical work on the SME is substantiated here in the push by governments for SME improvements which reflect those undertaken by government and large organisations. Researchers also suggest that further work is undertaken in this important sector to better understand their management and operational processes which would lead to effective use of costly technology investments and competitive interaction in the online markets.

The following section moves the literature review to a discussion of the characteristics of SMEs in order to identify the needs of SMEs in relation to the understanding of business processes and the use of tools or methods.

2.4. Small to Medium Enterprises

The literature review has so far discussed and validated the importance of an 'understanding of processes' to business generally. The review has defined a business process and discussed the drivers of this necessary understanding from a number of perspectives.

The review then discussed the type and scope of research in this domain based on a review of five top journals in the information systems arena over the last five years (2002-2010) and BPM conferences both commercial and academic.

The review has identified that SMEs have been neglected in the research outputs of academics and the commercial focus of business providers. It has also identified that there is little support for SMEs to help their understanding of business processes and thus to continue to compete successfully with their larger rivals. Bharati and Chaudhury (2006) state that in the United States (US) "SMEs play a significant role in enhancing the competitiveness of an economy through the process of economic renewal by creation, elimination, and restructuring of economic sectors" (Bharati & Chaudhury 2006, p.88). Their significance in the economies of nations is substantial and as such their ability to compete is a vital element of the health of nations. The next section develops an understanding of this SME sector and its special needs and characteristics.

2.4.1. Definition of SMEs

This section explores that area of business typically thought to provide the greatest impact on society- the Small to Medium Enterprises (ABS 1999c; ABS 1999d). It explores and describes the characteristics of the SME segment which differentiate it from the large organisation.

The Australian Bureau of Statistics (ABS) (Australian Bureau of Statistics 2007) categorises business by type and size. A micro business employs less than 5 persons, a small business is one employing less than twenty persons, a medium sized business is one employing from 20 to less than 200 persons and a large business employs 200 or more persons (Australian Bureau of Statistics 2007). This literature review follows the same segmentation. The ABS definitions differs from other countries such as the UK which categorises by size as 1-9 employees (micro-business), 10-50 employees (small business), 51-500 employees (medium enterprise) and greater than 500 as large (de_Berranger & Meldrum 2000). In this

thesis the geographic location of the study is Australia so the Australian standard has been used.

The SME is considered to be the backbone of industry in most countries around the world. The SME segment provides greater than 70% of employment in many countries and can represent over 90% of all businesses in a country (Kueng, Meier & Wettstein 2000). As such it is a vital part of at least the economic health of most countries and demands the support of research specific to its needs.

Staff Size as a Critical Characteristic

The categorisation of an entity into micro, small and medium purely on staff numbers is for research purposes of the qualitative type a sub-optimal way of categorising an entity. It has been seen from both professional and research (case study) perspectives that the characteristics of an entity such as those discussed in the following sections are much more valuable to the researcher than that of size. For example the characteristic of being "more reluctant to take risks" (MacGregor & Vrazalic 2005, p.513) is one which can be found in all sizes of entity from micro to large.

The conundrum faced in this work is that on initial contact it may be difficult to identify if the leadership of the entity is dictatorial and the management is risk averse. It is much easier to initially identify the approximate number of staff as the type of organisation and thus once inside the entity to identify the more critical characteristics. While the characteristics discussed in the following sections are, according to the researchers, those identified with SMEs generally it should be noted that this is not always the case and that some of these characteristics are also seen in all sizes of entities. Thus while the section continually refers to SMEs this is for clarity and it is the characteristics that are important and not the staff size of the entity.

What are the characteristics of SMEs as they apply to the context of business processes?

2.4.2. Characteristics of SMEs

There have been many studies in the literature that have attempted to define the characteristics of SMEs (MacGregor & Vrazalic 2005). An output of these studies has been a list of features defined by MacGregor & Vrazalic, (2005, p.513) of which the following table lists some of the more pertinent features related to this study.

Have centralised management strategy with a short range planning perspective
Have poor management and business skills
Owners often withhold information from colleagues
Decision making processes are intuitive, rather than based on detailed planning and exhaustive study
Owners have a strong influence in the decision making process
Have informal and inadequate planning and record keeping processes
Have difficulty obtaining finance and other resources, and as a result have fewer resources
Are more reluctant to spend on IT and therefore have limited use of technology
Have a lack of technical knowledge and specialist staff and provide little IT training for staff
Have higher failure rates and thus face more risks
Are more reluctant to take risks

Table 3- Selection of SME characteristics related to Process Understanding (MacGregor & Vrazalic 2005, p.513)

Much of the research concerning SMEs has been focussed on the use of IT (Agarwal 1998; Currie & Selsikas 2001; Dholakia & Kshetri 2004; Levy & Powell 1998a; Levy, Powell & Yetton 2001), strategic planning (McKeirnan & Morris 1994; Stonehouse & Pemberton 2002) e-commerce acceptance and use (Poon, Swatman & Vitale 1996; Al-Bakri, Cater-Steel & Soar 2010; Simpson & Docherty 2004) and organisational growth(Scott & Bruce 1987; Robson & Bennett 2000). The issue of understanding business processes and SMEs is related to each of these elements as business processes are the basis of any organisation. Business processes are the activities that provide services and support, they are impacted by and impact upon the strategic planning, the organisational structure and thus the growth and behaviour of the business in reaching its markets (e-commerce) and achieving its stated or un-stated goals.

To explain the major characteristics of SMEs this section collates the discussion into four areas. These are the:

1. decision making styles
2. resource constraints
3. technology used
4. environment

2.4.3. Decision Making Styles

Gasse (1990, p.103) states that "management skills are important to the survival of the new firm". While not always the case, SMEs are characterised early in their life by a strong entrepreneurial leader (Dalglish 2004). These people generally operate in a dictatorial fashion (Doukidis, Lybereas & Galliers 1996; Lees 1987; Thong, Yap & Raman 1996) and generate strategy as an operational necessity rather than a formal activity (Bergeron 1992; Doukidis, Lybereas & Galliers 1996; Lees & Lees 1987).

The SME approach to technology adoption decisions tends to be most heavily influenced by customers and top management (Bharati & Chaudhury 2006). Customer influenced decision making is generally reactive to their demands (such as having the ability to buy online or changes to a service or product) and heavily influenced by the top management's knowledge and experience (Bharati & Chaudhury 2006). Secondary influences are competitors with personal and professional networks important for medium sized businesses (Bharati & Chaudhury 2006).

De Salas (2002, p.18) states that "many small organisations operate on a short-term 'survival' strategy, rather than a long-term 'future prosperity' strategy that is more aligned to larger organisations". Small businesses generally look for immediate monetary returns from any investment undertaken (Lawrence 1997) thus making longer term 'strategic' decisions and purchases less likely.

Their operational day to day focus, commonly termed 'fighting fires', leads to a lack of formalised systems and processes with resulting ad hoc decision making (Bergeron 1992; de Salas 2002; Doukidis, Lybereas & Galliers 1996; Lees 1987). In many SMEs business strategy is implicit and emergent due to their ability to swiftly react to changes in their environment (de Salas 2002; Levy & Powell 1998a; Pollard & Hayne 1998).

The ad hoc decision making style of SMEs leads to a limited recognition of the use of business cases to influence decision making, instead they rely on the 'quick poll' from a friend or vendor for confirmation (Mohan-Neill 1995). New or small scale businesses are less likely to engage in a formal or structured business environmental research activity and are less informed about macro-business conditions than older or larger firms (Mohan-Neill 1995).

2.4.4. Resource Constraints

Resource constraints may be described as those things such as a lack of information or clear information, lack of access to finance, lack of access to suitably trained and experienced staff and lack of access to suitable infrastructure. The exponential growth in technologies (ABS 1999c) and market geographies has resulted in SME resource constraints in areas such as information generally and information through expertise (Banham 2005). In some cases the constraints are caused by the lack of prioritisation by decision makers in SMEs to the time required to both learn about and make use of the information sources available (Hart & Tzokas 1999; Lybaert 1998).

The need for information and or knowledge in business today is similar to that which it has been for generations. Today it is more about the scale of that information or knowledge requirement which results in resource constraints for SMEs. The world bank in a report to governments in 2003 stated that the "ability to access and analyse information is particularly weak for SMEs" (Fan 2003, no page#).Pollard and Hayne (1998, p.72) states that "in order to be successful, SME would need high quality information and must always provide superior value, better than competitors, when it comes to quality, price and services." This suggests an ongoing need for information which does not appear to be found by many SMEs for a variety of reasons (Berisha-Namani 2009).

The pace of change in IT, manufacturing and communications combined with the expansion geographically of markets and the requirements in many industries for 24x7 business hours has resulted in the traditional handing down of knowledge from father to son, mother to daughter and master to apprentice insufficient to sustain a business.

SMEs suffer from limited resources and poor decision making due to a lack of access to expertise which is symptomatic of their limitations (De Lone & McLean 1992; Fariselli et al. 1999; Holmes & Goibson 2001; Lees 1987; OECD 1998; S. Poon & P. Swatman 1999; J. Raymond 1990). SME reliance on their own knowledge and skills and their immediate informal networks is also a further knowledge resource constraint (Bharati & Chaudhury 2006) leading to sub-optimal decision making such as, following fads and ad hoc or reactive decisions (Jorosi 2006; Harindranath, Dyerson & Barnes 2008).

Lack of access to top-level human and financial resources to support the demand for talent is also a characteristic of SMEs which impacts on their ability to undertake complex change projects and complete projects effectively (MacGregor & Vrazalic 2005). Even for those

SMEs who understand that they have need of knowledge outside of their network sources and look to information/data sources as a solution, there are the large financial costs of information access. The price of Gartner and International Data Corporation (IDC) reports being one example of costly information sources. It might be said that SMEs have easy access to support groups and interest groups but the quality of the information obtained from these sources is yet to be assessed (MacGregor & Vrazalic 2005; Hart & Tzokas 1999; Lybaert 1998).

One apparent resource constraint is that it appears that most research activity (based on the review of publications and conferences) is undertaken in the large enterprise domain and as such even if access to the results of good research is available, it may not be directly applicable to their environment. In the UK in 2001 a Cabinet Office report concluded: The issue of inadequate research on SMEs should be addressed more fully (Performance and Information Unit 2001).

As SMEs have begun to exploit the potential of their information systems (ABS 1999b; ABS 2000; ABS 2004a; ABS 2004b; ABS 2004c), much of their exploitation emulates the early cost reduction strategies of large enterprises (Levy, Loebbecke & Powell 2001). The ability of large organisations to successfully exploit IS from a cost reduction perspective is highly variable with many examples of large organisations failing to even recoup the cost of the software without considering the greater implementation costs. If this is the case with large enterprises and their more extensive resources (financial, expertise and knowledge) then SMEs with their substantially lower resource bases are likely to have increased failure rates in achieving cost reductions using technology. SMEs rely on flexibility to be competitive in the larger market yet flexibility is constrained by fragmented and non-integrated systems (Levy, Powell & Yetton 1998).

Carroll et al (2001) have described the results of studies which reveal the fragmentation of technology use which results in increasingly complex management issues (Carroll et al. 2001). Few SMEs plan (Hagmann & McCahon 1993; MacGregor & Vrazalic 2005) with one study showing less than 42% of SMEs performed planning for any information system in their portfolio. Examples of these are SMEs which continue to purchase desktops on the basis of 'whatever is cheapest at the time' and have little knowledge of what software or hardware is actually being used in their business.

Some of the fragmentation that is seen in SMEs is due to the existence of functional or silo structures in the operations of the business in which each area is concerned only with what is needed to solve their unique needs (Blili & Raymond 1993). Applications are implemented which provide overlaps with other functional areas but are not integrated to reduce the double entry of data and the associated problems that arrive with that situation (Levy & Powell 2000); (Blili & Raymond 1993).

A summary of the environmental characteristics of SMEs is shown in the following table (de Salas 2002):

Characteristics of the SME Environment	
Generally considered flexible	Levy and Powell 1998
Generally constrained by available resources	(Fariselli et al. 1999; Holmes & Goibson 2001; Lees & Lees 1987; OECD 1998; S. Poon & P.M.C. Swatman 1999; J. Raymond 1990; De Lone & McLean 1992)
Have less access to technological information than Large Enterprises	(Holmes & Goibson 2001; Lees 1987; OECD 1998; S. Poon & P.M.C. Swatman 1999)
Have a tendency to rely on informal social networks for information gathering	(Bailey & Royston 1980; Fann & Smeltzer 1989; Freel 2000; Kueng, Meier & Wettstein 2000; Lees & Lees 1987; Vinten 1999)
have a lack of formalised systems and tend to behave in an ad hoc manner	(Bergeron 1992; Doukidis, Lybereas & Galliers 1996; Lees 1987)
generally operate under 'dictatorial' decision making	(Doukidis, Lybereas & Galliers 1996; Lees 1987; Thong, Yap & Raman 1996)
generally suffer from government policies such as inefficient tax systems, labour regulations and other policy burdens	(Holmes & Goibson 2001; S. Poon & P. Swatman 1999)

Table 4- SME environmental characteristics (de Salas 2002)

If as Levy (1998) suggests that highly competitive environments are also likely to drive SMEs to change business processes and that their flexibility by being small and willing to adapt to survive provides this incentive, then their understanding of what to change and the impact of the change is also a critical element of their decision making. The combined characteristics make them sufficiently different to large organisations to warrant different management methods and techniques. SMEs embody a different set of environmental and experiential difficulties in information systems development that renders many large organisational processes unsuitable (Blili & Raymond 1993; Levin, Schneider & Gaeth 1998; Levy, Powell & Yetton 1998; Levy & Powell 2000; Levy, Powell & Yetton 2001). There is also research which shows that current tools and methods developed for large organisations in areas such as developing and implementing strategy (Bonk 1997; Bergeron et al. 1998), information provision, IT adoption (Bhagwat & Sharma 2007; Caldeira & Ward 2002) and use are also problematic within SMEs.

These requirements make it more important to explore suitable methods which support SME understanding of business processes. An understanding of business processes will enable continual change (flexibility), provide clarity for the linkage of strategy to operations, allow for effective technology adoption and reduce the inefficient or ineffective use of resources which for SMEs are critically short.

2.4.5. Changing SME Environment

The large body of literature which describes the SME and Large enterprise domains also describes the way that these have been changing over the last five years. These changes have been in ways which SMEs have not been well prepared for. The dot.com boom and bust dragged many SMEs into a larger geographic market if not a global one in some cases. The dramatic increase in 'online' stores and the use of the internet for business functions has also created its own set of technological, educational and business strategy problems (Rao, Metts & Monge 2003; Jeffcoate, Chappell & Feindt 2000).

Mass market and targeted communication and its associated impact on marketing and customer relationships have increased the levels of stress on not just the management of SMEs but their staff also.

The introduction of the Goods and Services Tax (GST) and Business Activity Statements (BAS) to the Australian market have added to the new list of legal and regulatory frameworks which SMEs must master and then ensure are correctly and competently integrated into their business tasks. (GST is a tax of 10% on most goods and services in Australia. It came into operation in Australia in July 2000: BAS is a form that businesses in Australia must send to the Australian Taxation Office to report their income and to pay other tax obligation such as GST)

This environment necessitates a need for greater integration of systems to monitor business activities and their GST contributions as well as to achieve cost reductions and an understanding of the business information being generated. The effective utilisation and use of systems supports the competitive requirements of SMEs to be flexible and agile (Fan 2003; Berisha-Namani 2009). Only an understanding of what you do (the process view) supports flexibility (Kaplan & Norton 1992; Kaplan & Bower 2000; Kaplan & Norton 2000; Kaplan & Norton 2001; Kaplan 2004). The balanced scorecard method (Kaplan & Norton 1992) emphasises the link between four areas of business and is the same for large and

small organisations. These are the learning and knowledge of staff perspective, the process perspective, the customer needs and wants perspective and the financial perspective. These linkages are based on the logic that you must be able to see what it is that you should be doing in order to understand how your activities (processes) impact on the future goals of the business (Kaplan & Norton 1992).

While there are many problems that are faced by SMEs in the conduct of their business that are different to that of large enterprises. In practice, the primary focus of SMEs is on short-term operational rather than long-term strategic issues, and their decision-making is generally reactive and intuitive rather than proactive and deliberate (Stonehouse & Pemberton 2002; Mazzarol 2004; Jones 1982; Gaskill, Van Auken & Manning 1993; Brouthers, Andriessen & Nicolaes 1998). For those SMEs that do plan, planning is frequently ad hoc rather than formal (Wang, Walker & Redmond 2006; Kelmar & Noy 1990).

2.4.6. Summary of SME Characteristics

This section (Small to Medium Enterprises) has investigated the characteristics of SMEs. The section has discussed the decision making styles of SMEs and aspects of note are:

- SMEs have a centralised management strategy with a short term planning perspective due to their generally dictatorial decision making and reluctance to apply resources which commits them to a long term and in their eyes uncertain and risky path (Bergeron 1992; Doukidis, Lybereas & Galliers 1996; Lees & Lees 1987).
- SME decision making processes are intuitive, rather than based on detailed planning and exhaustive study (Bharati & Chaudhury 2006)
- SME owners have a strong influence in the decision making process and generally operate under 'dictatorial' decision making (MacGregor & Vrazalic 2005).

The section also discussed the resource constraints issues of SMEs finding that:

- SMEs have difficulty obtaining finance and other resources, and as a result have fewer resources (MacGregor & Vrazalic 2005)
- SMEs are more reluctant to spend on IT and therefore have limited use of technology (MacGregor & Vrazalic 2005)

- SMEs are constrained across most facets of business by available resources (Fariselli et al. 1999; Holmes & Goibson 2001; Lees & Lees 1987; OECD 1998; S. Poon & P.M.C. Swatman 1999; J. Raymond 1990; De Lone & McLean 1992).

The third area of focus was the nature of the changing environment for SMEs and the literature search identified that:

- SMEs are more reluctant to take risks due to the unpredictable nature of small business (eg: single large customer) (Fan 2003; Berisha-Namani 2009).
- The dramatic increase in 'online' stores and the use of the internet for business functions has also created its own set of technological, educational and business strategy problems (Rao, Metts & Monge 2003; Jeffcoate, Chappell & Feindt 2000).
- SMEs have informal and inadequate planning and record keeping processes leading to increased risks of failure (MacGregor & Vrazalic 2005)
- SMEs have less access to technological information than large enterprises resulting in less automation and information efficiencies (MacGregor & Vrazalic 2005)
- SMEs have less integration of systems reducing their ability to effectively manage an increasing information load (MacGregor & Vrazalic 2005).

The final aspect which was discussed was the SME understanding of processes where it was identified that:

- SMEs lack of technical knowledge and specialist staff results in little IT training for staff being provided and thus little take up of systems which might improve their process understanding (MacGregor & Vrazalic 2005)
- SME have a lack of formalised systems and tend to behave in an ad hoc manner which is symptomatic of a low level understanding of processes and the benefits that accrue due to improved understanding (MacGregor & Vrazalic 2005).

SMEs find it difficult to compete with large enterprises as large enterprise process understanding has enabled them to integrate supply chains which effectively out compete SMEs (Emale 2010).

In practice the characteristics of an entity (discussed here) provides a much better indication of the type of entity, an SME or large enterprise, than utilising the measure of

staff size alone. Staff size does not always indicate that the entity is one with the characteristics discussed.

2.5. The Use of Methods to Support Understanding

"The key to doing any kind of business process improvement is you have to have a methodology"(Margulius 2006; Margulius 2005)(para 1).

The last decade have seen explosive growth in the number of tools and methods used in software engineering alone yet alone in other industries (Kitchenham BA, Pfleeger SL & Fenton NE 1999). Having a method by which to undertake an activity is the heart of a successful repeatable activity (Margulius 2005; Melnyk 2000; Shields 2008).

A method or methodology is a tool or procedure which:

- can be used repeatedly, each time achieving similar results
- can be taught to others within a reasonable time frame
- can be applied by others with a reasonable level of success
- can significantly and consistently provide better results than an ad hoc approach (Berard 2006)

The aim of a tool or method is to reduce the risk of invalid or inappropriate outcomes (Kitchenham BA, Pfleeger SL & Fenton NE 1999). A method is commonly defined as an orderly procedure or process for doing something (Collins 1999; Makins 1992). A tool can be commonly defined in the context of methods as a mechanical or digital object that supports a person in the effective and efficient completion of tasks (Collins 1999; Makins 1992). In this thesis the researcher takes the meaning of method and methodology to include the use of a tool.

Using a methodology provides a step by step guide to the participants in the method, as well as providing a basis for managing the individual elements of the process (Pestorius 2006). A method provides the understanding of a procedure undertaken to control scope change, establish responsibility, accountability, and authority (Meredith & Mantel Jr 2000) whilst reducing the risks of informal or unplanned activities (SAI Global 2004). Whether a particular method is directly useful to every user and even specific situations is a more difficult question to answer and forms part of this thesis.

The use of a method to support process understanding is one way in which the personnel of organisations might improve the business process understanding of their decision makers (Das, Zahra & Warkentin 1991; Davidson & Griffin 2000; De Loof 1997; Dekkers 2000; Eisenhardt 1999).

If understanding is the ability to explain, justify, extrapolate, relate and apply knowledge in ways that go beyond the basic knowledge and routine skill (Wiske & Breit 2010, p.5). Then a method which will enable the users to take existing process knowledge and make continual changes (flexibility) to their organisation, provide clarity for the linkage of strategy to operations, allow for effective technology adoption and reduce the inefficient or ineffective use of resources might be said to improve understanding of business processes for the organisation.

The use of methods though can be fraught with issues as well (Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007). As Zachman suggests a method is not an answer but the tool for thinking about the problem (Zachman 1987). The Zachman Framework (Zachman 1987) and other Enterprise Architecture (EA) frameworks (Sessions 2007) provide detailed support for organisations wishing to improve their understanding of business processes as well as other important aspects of their business (Department of Veterans Affairs 2002a; Fujitsu Consulting 2004; Koch 2005; Opengroup.org 2006; Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007).

The experience of users of enterprise architecture is filled with examples of failed initiatives and organisations of all sizes struggling with the breadth and scale of the work involved (Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007; Shah & El Kourdi 2007). Criticisms suggest that EA is an immature method, unable to react to strategic change in the business (Tucci 2011; Shah & El Kourdi 2007). There are also purported to be issues with the structure of EA in that they do not take into account the interactions of business entities, the complexity of modern information systems and the difficulty of change for users from a functional to process perspective (Schekkerman 2004; Weerakkody, Janssen & Hjort-Madsen 2007; Shah & El Kourdi 2007). These issues have led to poor take up of the methods due to high resource requirements in documenting and using the method and the change effort required of users (Schekkerman 2004; Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007; Shah & El Kourdi 2007).

The section has put forward an argument for the use of a method in support of business process understanding as a common approach in business in support of many business activities. The following section discusses the criteria used to assess methods a suitable or not for use by SMEs in advancing their business process understanding.

2.6. How to Choose an Appropriate Method or Tool

A search of the grey and black literature offers little support for the evaluation of methods generically. What is available relates heavily to the assessment of software applications as 'tools' or methods used for investigating research or commercial activities (Gomez-Perez & Manzano-Macho 2004; Scozzi, Garavelli & Crowston 2005; Sessions 2007; Shah & El Kourdi 2007; Silverman 1997; Smyth 2001a).

Gartner (2007) consider that selection of business process management support services should be achieved by articulating the business outcomes. For example by reducing labour costs by 15% by overhauling the top five most labour-intensive processes (Gartner 2007c).

This does not provide much direction except to agree with Clark (2006) who provides a comparison of improvement methods and suggests that selection of the most appropriate method is best undertaken by considering four elements:

1. The intended purpose of the method
2. what your organisation values; that is the speed of results, the accuracy of results, the depth of analysis for example
3. the complexity of the problem or process that the method is being selected for
4. time frames for results to become available (Clark 2006)

Utilising this direction the researcher considered the characteristics identified in Section 2.4 to create a set of SME type specific needs for the selection of a suitable method. The result is contained in the following diagram which has two elements of SME need. The researcher also considered the third of Clark's (2006) elements and argues that it relates to the understanding of business processes. Understanding is defined as the ability to explain, justify, extrapolate, relate and apply in ways that go beyond the basic knowledge and routine skill (Wiske & Breit 2010, p.5). Item four of Clark's (2006) elements is considered to be contained within the resource need in Figure 13.

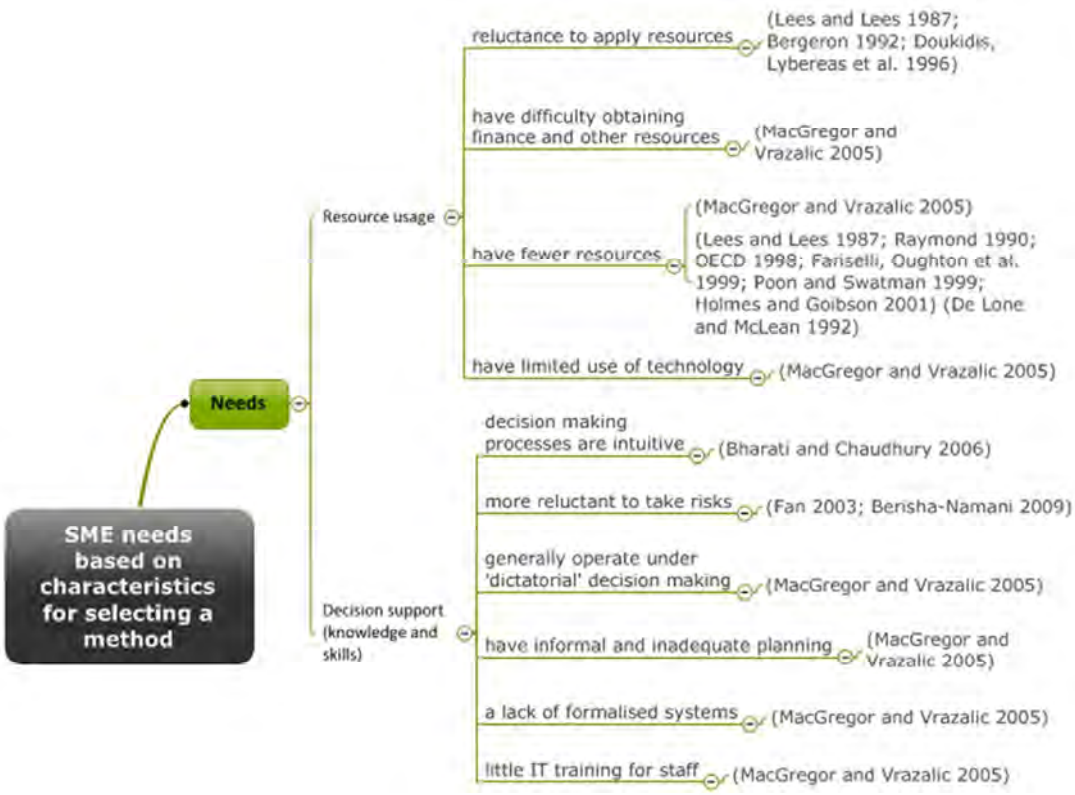

Figure 13- SME needs based on Characteristics

From these needs the researcher was then able to identify three aspects which might be considered assessment criteria. These are: a rating for resource usage and a rating for decision support. The third is derived from the 'intended purpose' of the method (Clark (2006)). This third assessment item considers whether the method provides through its use any particular knowledge of business processes to the users or organisation. The two elements which are directly related to the needs of SMEs are the result of empirical research by the authors cited in the diagram (Figure 13). The second element (decision support) also suggests that the use of a method which has a defined process but is flexible and adaptable to the resources and specific needs of SMEs would be a viable solution to the issues listed in the element, such as "decision making processes are intuitive" (Bharati and Chaudhury 2006) and "informal and inadequate planning" (MacGregor and Vrazalic 2005).

These basic criteria have been expanded upon in order to reduce the complexity of the decision making of the researcher (smaller more transparent decisions) resulting in the following assessment table for each method assessed. The researcher provides in the section headed 'Purpose' information for the reader on the published objectives of the

method or tool. This is also used to ascertain "What type of Process Connection does it provide?" The second element is decision support which is assuming that greater knowledge requirements attest to increased complexity in any decision making occurring based on the assumed knowledge required to use the method. The third element considers the time, budget, information and people resources required to implement or use the method and is also directly related to the lack of resources which SMEs in general are said to suffer from (De Lone & McLean 1992; Fariselli et al. 1999; Holmes & Goibson 2001; Lees & Lees 1987; OECD 1998; S. Poon & P.M.C. Swatman 1999; L. Raymond 1990).

Purpose	What type of Process Connection does it provide?
What is it meant to do?	
How is it meant to do it?	
Is it industry specific?	
Is it function specific?	
Decision Support	Rating for Decision Support?
Strategic planning	
Process modelling	
Repository management	
Specific domain knowledge	
Application specific knowledge	
Detailed business knowledge	
Detailed market knowledge	
Resources required	Rating for Resource Usage?
Time	
People	
Budget	
Information	

Table 5- Template for assessing methods based on SME characteristics

This template (

Purpose	What type of Process Connection does it provide?
What is it meant to do?	
How is it meant to do it?	
Is it industry specific?	
Is it function specific?	
Decision Support	Rating for Decision Support?
Strategic planning	
Process modelling	
Repository management	
Specific domain knowledge	
Application specific knowledge	
Detailed business knowledge	
Detailed market knowledge	
Resources required	Rating for Resource Usage?
Time	
People	
Budget	
Information	

Table 5) has been used to assess a range of methods and tools to identify one which might best suit the needs of SMEs and provide possible support for improving business process understanding.

The following section (Approaches to Understanding Business Processes) summarises the assessment of methods which are contained in the Appendices.

2.7. Selection of a Method in Support of Business Process Understanding

The Collins dictionary (1999) defines method as "a procedure, technique, or way of doing something, especially in accordance with a definite plan" or the "manner or mode of procedure, especially an orderly, logical, or systematic way of instruction, inquiry, investigation, experiment, presentation, etc.: the empirical method of inquiry" (Collins 1999). In this thesis the term method is meant to include the use of a procedure or technique within an organisation or entity.

There are many methods available to support the management of businesses and in some instances the management of processes. In line with the development of new software and systems to support process modelling, enterprise architecture, decision making and strategic planning there is also an increase in the methods available to business for managing if not understanding processes.

First though it is worthwhile clarifying the domain and defining how the researcher will explain the methods described will be explained. Firstly the use of the terms tools and methods can be interchangeable and is intended to mean the same thing. A methodology is an integrated set of activities which may include individual processes, procedures, directions or suggestions. Methodologies aim to provide instructions within which, what may be a diverse yet interdependent set of activities relate in an orderly sequence. A method can be built into a software application by using 'workflow' or training instructions to guide a user to a designated result (Berard 2006).

Selecting the Group for Evaluation

Looking for a group of methods which might be a suitable starting place for selecting an appropriate method for this research study could be a complex task. A review of literature does not provide any guidance on or list of available methods possibly due to the many hundreds if not thousands of methods in use within business (Wiig, de Hoog & van der Spek 1997). Wiig, de Hoog et al. (1997) also state that while there are many methods their specific compatibility with certain activities is problematic and in knowledge management for instance there are many 'gaps' to be found in methods purporting to be suitable for this area of activity (Wiig, de Hoog & van der Spek 1997). A search of the grey literature also identifies a large number of methods for use within business but also adds to the realisation that these methods have many overlaps in their functionality and objectives. For

example one organisation lists four categories in its problem solving techniques page (Mind Tools 2008):

- Problem-Solving Approaches
- Finding the Cause of a Problem
- Improving Business Processes
- Diagram-Based Tools

These four categories have clear overlaps in the 'diagram based tools' and 'improving business processes' categories, with examples such as "Flow Charts" and "Swim Lane Diagrams" were appearing in both lists. Thus the problem of even categorising methods to enable a broad choice is problematic.

A second aspect is the ability of the researcher to both understand and assess to some degree the methods that are selected into the list for assessment. Thus a selection based on some either available information for assessment and the researchers experience is required. Based on this two pronged criteria the researcher selected methods found in a range of larger organisations, those which have been in reasonably common use (based on the researchers own reading of the literature and business experience and appeared outwardly to provide some way of improving business process understanding. The list also included a method developed by the researcher in previous work.

This section of the literature review identifies and describes a collection of the more prominent methods which might be used to support an improved understanding of processes (not just the modelling, storage and communication of the process). Understanding defined as the ability to explain, justify, extrapolate, relate and apply in ways that go beyond the basic knowledge and routine skill (Wiske & Breit 2010, p.5). This review does not look at all possible methods as there is a range of overlap between many of these methods and they share the same pedigree. The section does not provide a detailed analysis of the methods in terms of their properties, strengths and weaknesses, as that is not a requirement or goal of this thesis. Instead it provides sufficient information to support the reasoning behind the final decision in selecting one method for exploration of business process understanding.

These methods are considered from four perspectives: 1. Strategy Development Methods, 2. Governance Focused Methods, 3. Workflow Methods and 4. Process Focused Methods.

"Business process management is the framework for coordinating, managing and sustaining ALL the current Business Improvement disciplines and Philosophies with their tools and capabilities" (Fargnoli 2006)(slide 6).

Figure 14- So many methods, which to choose? (Fargnoli 2006)

The major problem for users is not what can I use but which of all the methods available should I use. This is the context which is communicated in the diagram shown in Figure 14.

The descriptions of methods reviewed were divided into four sets for the sake of clarity: Strategy Development Methods; Governance Focused Methods; Process Focused Methods and Modellng Methods. They each include a collection of methods which have reasonably wide recognition by both the public and professional consulting organisations. Some methods can be found in more than one set. For example, the Business Excellence Frameworks are in three sets: (1) Strategy Development Methods, (2) Measurement Methods and (3) Quality Methods.

The following diagram, Figure 15, lists the methods which this section of the literature review summarises so that readers have an understanding of what methods are available to organisations in their goal of a greater understanding of business processes. The complete set of assessment tables and further discussion is found in the Appendices. In the literature review the terms tool and method are used interchangeably to mean both software applications, the procedures which support them and for methods which are instructional only.

Figure 15- Some of the more well-known methods available to support process management

Each method was described using a set format which is summarised in Figure 16. In this there are the four areas for description (1.Resources required, 2.Decision support, 3.Purpose and 4. the final assessment used to include or exclude a method from use in the study.

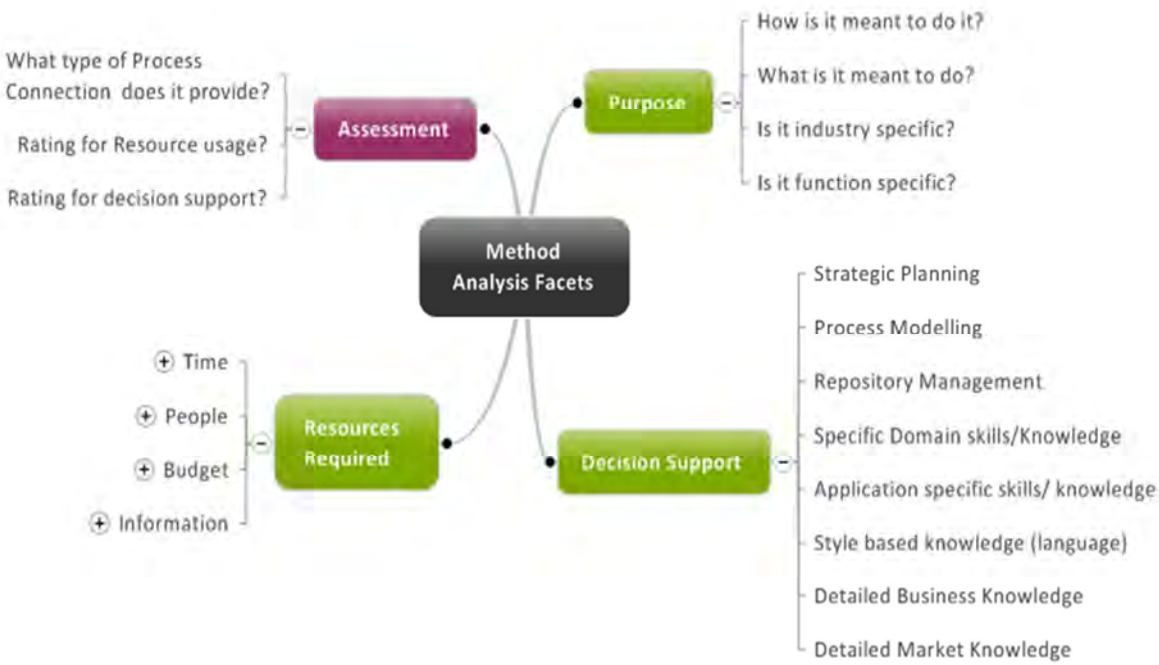

Figure 16- Method Analysis Elements

The following section provides a critique of the methods used in this investigation of methods and tools which might be suitable to support an improved business process understanding in SMEs.

2.8. Critique of Methods Used to Understand Business Processes

A method that might support the improvement of the organisational understanding of business processes is the completion of research. Based on the prior discussion of SMEs and the focus of the research (improving understanding of business processes), the method must;

- Be low on the need for resources of all types. That is, it must require few people, low demands on time, finance and information resources (MacGregor and Vrazalic 2005; Lees and Lees 1987; Raymond 1990; OECD 1998; Fariselli, Oughton et al. 1999; Poon and Swatman 1999; Holmes and Goibson 2001; De Lone and McLean 1992)
- accommodate the short term planning horizon of SMEs and consider their reluctance to take risks due to their inability or lack of information and planning resources (Fan 2003; Berisha-Namani 2009)
- be able to be used by dictatorial organisations with decision making processes which are intuitive and lack formal planning processes leading to a need for decision support and not decision complexity (MacGregor and Vrazalic 2005; Bharati and Chaudhury 2006)
- support the connection of the business objectives and business processes or some other type of improvement of business process understanding

The summarised table (Table 6) provides an overview of the assessment undertaken with each collection of methods.

Method	What type of Process Connection does it provide?	Rating for Resource usage?	Rating for Decision Support?	Comment
Performance Scorecard	Low, only through seeking to find performance measures	Low to Moderate	Moderate	Nearly no process understanding occurs
ITIL	Operational IT service Management focus only	Moderate	Low	Very narrow focus of activities
COBIT	IT Process only view	Moderate	Low to Moderate	Focus only on IT support processes

Method	What type of Process Connection does it provide?	Rating for Resource usage?	Rating for Decision Support?	Comment
BPM Maturity Methods	Level of maturity for BPM	Moderate	Low to Moderate	Must first have a good understanding of BPM to utilise this method
Kaizen	Isolated and unintegrated procedural level with a manufacturing focus	Moderate	Low to Moderate	Focus is on low level procedure understanding
Critical Process Targeting Method	High level to Operational if required	Moderate	Moderate	Appears to consider all business processes and their relationship to strategy
Corporate Scorecard	Low, only through seeking to find performance measures	Moderate	Moderate to High	Nearly no process understanding occurs
McKinsey 7S	None, the focus is on functions	Moderate to High	Moderate	Nearly no process understanding occurs
Balanced Scorecard	Mostly top layer (value chain) functional/process focus	Moderate to High	Moderate	Considers high level business processes related to strategy
John Thorpe DMR Approach	IT Systems only focus	Moderate to High	Low to Moderate	Ignores non system related processes
Business Excellence Frameworks	Procedural level only	High	Low to Moderate	Focus on procedure level understanding
Capability Maturity Models	Specific to software development	High	Low to Moderate	Only suitable for organisations which develop software
FMEA	Manufacturing processes only with a focus on risk	High	Low to Moderate	For Manufacturing design process understanding
TQM	Unlinked Operational and procedural level process managed	High	Low to Moderate	Moderate procedure level understanding occurs
Lean Manufacturing	Isolated and unintegrated procedural level	High	Low to Moderate	Moderate procedure level understanding occurs
Six Sigma	Isolated and unintegrated Operational and procedural level	High	Moderate	Moderate procedure level understanding occurs
ISO	None Policy and procedure focus	High	Moderate	Low level of procedure and policy understanding

Method	What type of Process Connection does it provide?	Rating for Resource usage?	Rating for Decision Support?	Comment
eTOM	Operational Telecommunications process focus	High	Moderate	Specific to communications companies
Enterprise Architecture	High level input across all areas (business processes, workflow and information)	High	High	Provides detailed understanding of business processes
Workflow Methods	Minor operational but detailed systems level	High	High	Systems focus only mostly at the procedure level

Table 6- Summary of the Assessment of the Methods

Table 6 is the summarised list of methods and their assessments. The list has been filtered to identify the methods with the least resource requirements and least decision complexity (decision support). Decision support has been used as an indicator of the need to bring in expert support or trained personnel to deliver and or facilitate the method or the need for management to have access to complex knowledge and skills in the implementation and ongoing use of the method or tool. This assessment item is taken from items assessed under the heading 'Decision Support' in the individual method assessment tables.

The Performance Scorecard method resulted in the lowest rating for resource consumption (Low to Moderate rating). This method has a strategic focus only and no clear procedure for improving process understanding so was not seen as a possible choice. Kaizen which has a Moderate rating for resource consumption also has an Isolated and unintegrated procedural level focus, which, does not support the business process view (Berger 1997; Bhasin & Burcher 2006).

ITIL and CoBIT which were rated as having a Moderate resource requirement have a focus on the IT area of the business only and would be ideal if they focussed on the whole business (Hill & Turbitt 2006; OMG 2011).

In addition, ITIL and eTOM are considered to be reference model only methods (Hill & Turbitt 2006). A reference model is a representation of 'best' or 'common' practice for a process. Chan and Rosemann (2001) state that reference models do not show if there is an alignment between a process and organisational business objectives (Chan & Rosemann 2001). Chan and Rosemann (2001) also report that reference models do not provide organisational specific information but that which is generic across many similar

organisations (Chan & Rosemann 2001). This issue with reference models precludes them from selection as a possible method. ITIL and eTOM are thus are not clear choices in this context for improving the business processes of an organisation.

The BPM maturity method appears initially to be one which would provide deep insights to process management within an organisation. However the method is Moderate in resource consumption and is highly complex for an organisation with little process understanding as is the case with SMEs (Curtis & Alden 2007).

The McKinsey 7S and John Thorpe DMR Approach each have a resource consumption rating of Moderate to high are. These two methods provide either no process understanding (McKinsey 7S) or an IT systems only view (John Thorpe DMR Approach) and are therefore discarded due to their lack of organisation wide process focus or no process focus.

The Balanced Scorecard (BSc) was also rated as Moderate to high for resource consumption and does include a process focus as part of the method. The processes included are those that impact on customers and thus financial outcomes. Whilst not including any support for how to understand the processes (Emale 2010; Kaplan & Norton 1992; Kaplan & Norton 1996; Kaplan & Bower 2000; Kaplan & Norton 2001) this remains as a possible method.

TQM is a good example of the quality focussed methods such as ISO and business excellence. There are many critics of TQM (Radin & Coffee 1993; Harari 1993). One of the many criticisms lodged is that TQM is a very resource heavy methodology to implement and use (Radin & Coffee 1993). Each of these methods (TQM, ISO & Business Excellence) was rated as high for resource consumption. The amount of documentation is large for each and it is this which prevents smaller organisations utilising many of the quality management methods available.

Radkin and Coffee (1993) say that because of the high level of skills required by the organisation to use TQM successfully some organisations trained many people and in one case more than 600 in particular areas. These TQM criticisms can be applied to Business Excellence frameworks with some authors suggesting that Business Excellence frameworks lack a strategic focus (Dean & Bowen 1994). McAdam (2000) found that Business Excellence frameworks, TQM and others such as six sigma method as developed in large organisations had a number of problems when applied to SMEs (McAdam 2000). Each of the methods has a process aspect but that does not alleviate the high resource requirements and thus these methods are disregarded for this study.

The six sigma methodology does not provide a good fit with SME's due to the extensive requirement for training in Six Sigma use (McAdam 2000). Six Sigma also is focussed on a single process for improvement or error reduction (Antony, Kumar & Madu 2005) with one author suggesting that even large organisations apply it where it does not fit (Hammer 2002).

> '*Six sigma was not well aligned with the strategy of the organization as a whole. Although each individual project was worthwhile, in the aggregate the projects did not contribute to larger corporate goals*.' (Hammer 2002, p.30)

The criticism of a method being too focused on a single area or process is one which can be directed at Capability Maturity Models, Workflow Methods and the FMEA methods. These methods have a focus on IT development, systems and automation, and product design and manufacture (Kinetic 1999; P.E. Lawrence 1997; Paulk et al. 1993). Each has a high rating for resource consumption and was disregarded for both the focus and resource issues.

A second possible method was the Enterprise Architecture method. This method was rated as high for resource consumption however it was included as a possible method due to its deep and whole of organisation process focus.

The Critical Process Targeting Method (CPTM) from a resource requirement rating was the best placed of the methods which provide a reasonable prospect of improving business process understanding through its linking of business strategy with business processes. The CPTM method has been shown to work with a range of strategic planning methods (Huxley & Stewart ; Huxley, Taylor & Stewart 2002; Huxley et al. 2002; Huxley 2003; Huxley & Stewart 2004; Huxley, Stewart & Jewels 2004b). For example the method has been successfully used with the Balanced Scorecard and various aligned methods such as the McKinsey 7s method. The CPTM has also been used with strategic planning methods such as the 'Planks and Platforms and a modified SWOT format (Huxley 2003). The CPTM also provides a link between the strategic views of the business and the process view along with the ability to identify the critical aspects of the process view (Huxley 2003).

The CPTM provides a holistic view of business processes across the organisation. It does allow for the organisation to use any method for defining strategy it wishes to and links business processes to business strategy. The method is Moderate rated for resource

consumption which places it ahead of the other possible methods, Balanced Scorecard and Enterprise Architecture, for use within the SME context on the scale used here.

Method	What type of Process Connection does it provide?	Rating for Resource usage?	Rating for Decision Support?	Comment
Critical Process Targeting Method (CPTM)	High level to Operational and systems if required	Moderate	Moderate	Appears to consider all business processes and their relationship to strategy
Balanced Scorecard (BSc)	Mostly top layer (value chain) functional/process focus	Moderate to High	Moderate	Considers high level business processes
Enterprise Architecture (EA)	High level input across all areas (business processes, workflow and information)	High	High	Provides detailed understanding of business processes

Table 7- Methods which may be suitable

Table 7 contains the three methods which were assessed as being possible suitable candidates for SME use in improving their understanding of business processes. The following sections relate the three possible methods to the facts of SME characteristics which were discussed previously in the literature review.

2.8.1. Decision Making Styles

Of the three methods described in Table 7 all have clear decision making procedures, however, the decision making complexity for each varies considerably with the CPTM being the least complex. The CPTM and BSc are both capable of being undertaken in a dictatorial environment or by a single person in line with the decision making environment within an SME. The EA methods require considerable understanding of the organisation which defies the ability of a single person to make decisions on their own. The BSc method is a strategic development method and thus focusses on the high level questions. The CPTM utilises strategic planning methods to facilitate the strategic level decisions and then provides support for operational decisions at the detailed level, resulting in the CPTM appearing to be a better choice from a decision making point of view.

2.8.2. Resource Constraints

Resource consumption is an important element of evaluation. Of the three methods, EA is considered a high consumer of resources with the BSc coming in second if used in the correct manner. That is, to define the strategy and effective measures of the strategy. The CPTM uses heuristic analysis to support the activities of implementation which can be modified to a combined qualitative/quantitative approach for those organisations with more resources available. In this respect the CPTM appears to be the choice of method when considering the resource constraints of SMEs.

2.8.3. Changing SME Environment

Due to the many influences which are changing the environment such as the growth in online stores (Rao, Metts & Monge 2003; Jeffcoate, Chappell & Feindt 2000) and technology use (ABS 2004b) the appropriate method should not impose a great burden on SMEs. Instead it should support their understanding of which processes are important, have high risk or are candidates for failure. Of the methods it might be said that only the BSc and CPTM offer an approach to identifying important processes. The EA method provides an approach to capture the information once decided but not make the decision.

Mass market and targeted communication have increased the need for greater integration of systems to monitor business activities. The effective utilisation and use of systems supports the competitive requirements of SMEs to be flexible and agile (Fan 2003; Berisha-Namani 2009). Only an understanding of what you do (the process view) supports flexibility (Kaplan & Norton 1992; Kaplan & Bower 2000; Kaplan & Norton 2000; Kaplan & Norton 2001; Kaplan 2004). The EA method in this instance provides a good planning base to capture the information required to support the decision making for the complex integration and systems selection problems of SMEs. Both the BSc and CPTM provide support for the decision making on a strategic level but only the CPTM provides support for the actual selection and integration decisions.

Thus from an environmental perspective the CPTM appears to be the choice of method.

2.8.4. Understanding of Processes

Within this area of the review there are many problems that are faced by SMEs in the conduct of their business that are different to that of large enterprises. In practice, the

primary focus of SMEs is on short-term operational rather than long-term strategic issues, and their decision-making is generally reactive and intuitive rather than proactive and deliberate (Stonehouse & Pemberton 2002; Mazzarol 2004; Jones 1982; Gaskill, Van Auken & Manning 1993; Brouthers, Andriessen & Nicolaes 1998). For those SMEs that do plan, planning is frequently ad hoc rather than formal (Wang, Walker & Redmond 2006; Kelmar & Noy 1990).

The literature review found that process support for SMEs is vital enabling SMEs to more effectively utilise information systems and respond to changes in laws and regulations. It also found that if they were to take advantage of the social media and compete with large enterprises they must be able to adapt to technology innovation and identify and prioritise those things which added the greatest advantage.

The evidence provided thus far supports the need for SMEs to have methods which support their understanding of business processes. The methods reviewed have all been able to offer some form of support to SMEs, with the CPTM appearing to be the method of choice based on this assessment in this instance.

2.9. Conclusions of the Review

The literature review has detailed the drivers of process understanding for all businesses describing these from a multi perspective approach to include:

- Economic Drivers
- Technological Drivers (Application Fit to Organisational Practice)
- Political and Legal Drivers
- Educational Drivers
- Environmental Drivers

To understand the area the literature review first defined a business process and then discussed a range of business drivers and their impacts on organisations. The chapter then undertook an examination of BPM research by considering publications from a range of popular journals and directly applicable conferences both commercially focused and academically driven. An analysis of this information surfaced that SMEs find very little direct benefit from current and recent research in the BPM field.

The chapter then undertook a review of literature in the SME space in relation to an understanding of business processes. The section considered the characteristics of SMEs, decision making styles, resource constraints and the changing SME environment as elements which would impact upon SME understanding of business processes.

Finally the chapter reviewed a collection of methods which may support the improvement of business process understanding. Four types of methods were considered: strategy development methods, governance focussed methods, workflow methods and process focussed methods. Of these twenty methods reviewed, three were considered possible options. A second analysis of the final three identified that the CPTM was the better choice given the constraints identified in the literature review. A brief description of the Critical Process Targeting Method is provided following. A full description of the CPTM is provided in the Appendices (Section **7.6** on page 340).

2.10. Research Question

The research question is an outcome of the literature review and the researchers existing understanding, knowledge and interests. The research was initiated through an interest in improving SME understanding of processes based on anecdotal knowledge and experience.

What would support SME understanding of business processes? This was a valid question but from a practical perspective why would SMEs want to improve their understanding of business processes? The literature review identified the growing incentives (EG: economic, technical, political) for SMEs needing a better understanding of their business processes (Antony & Banuelas 2002; Aron & Singh 2005; Conn & Yip 1997; Da Rold et al. 2007; Hill et al. 2006; Krammer 2002; Linton 2003; Mole et al. 2004; Sinur 2004).

The drivers of process understanding found in the literature were generally thought to be more of a forced driver (EG: BAS, GST, e-commerce) than a positive influencer (EG: increased customers and customer value or reduction in error). Thus a suitable method was identified from the literature that might support an improved understanding of business processes while at the same time meeting some of the characteristic needs of SMEs (De Lone & McLean 1992; Fariselli et al. 1999; Holmes & Goibson 2001; Lees & Lees 1987; OECD 1998; S. Poon & P.M.C. Swatman 1999; L. Raymond 1990). These were their lack of resources of all types (MacGregor and Vrazalic 2005), their informal decision making styles.

The literature review was initiated at this stage with two major goals:

1. What were the drivers of business process understanding generally?

2. What method might support this understanding?

The literature review identified many different drivers of business process understanding and the characteristics of SMEs in relation to large enterprises. The review needed to consider SMEs different characteristics, as much of the literature in relation to drivers is traditionally focused on large enterprises (Taylor, Dillon & Van Wingen 2008; Serenko, Cocosila & Turel 2008). The literature review considered methods which support business process understanding and eventually selected the Critical Process Targeting Method (CPTM).

The drivers of process understanding and the characteristics of SMEs in general suggest that in order to react to the drivers and work within the general constraints of their

characteristics an organisation can either change their spots (not act like a typical SME) or utilise an approach with creates a 'learning by doing' environment.

- Can a method create a worthwhile learning by doing environment?
- To what extent is business process understanding required by organisations?
- What elements of a method appear to be important to business process understanding?

This has led to the following exploratory research question.

How does the CPTM support a greater understanding of medium sized entity processes?

In this research question the following words are defined as follows:

Understanding is defined as the ability to explain, justify, extrapolate, relate and apply in ways that go beyond the basic knowledge and routine skill (Wiske & Breit 2010, p.5).

Support is defined as the ability to help, sustain or serve as a way of increasing business process understanding (Collins 1992).

How is defined as those activities which according to the analysis contributed to the understanding of business processes or detracted from it.

Greater is defined as meaning anything that can be shown to have contributed to both more and or better understanding.

Miles and Huberman (1984, p.35) stated that for qualitative research which was exploratory in nature that to "begin with a foggy research question and then try to defog it" was a viable and valid approach.

The research question thus explores the effect of the CPTM business process understanding within the organisation as observed and recorded within these case studies.

2.11. Description of the CPTM

A full description of the Critical Process Targeting Method can be found in the Appendices (Section 7.6). Following is a brief description of the method.

The targeting method has two main parts, 'identifying critical processes' and the 'selection of which identified critical processes to improve' (Huxley 2003).

The first triangle (bottom left hand side) in Figure 17 is made up of three factors;

1. Dependency; the consequence of a the failure of a process on the organisation
2. Probability of failure; the chance that a process will fail
3. Impact; the relative contribution of a process to achieving organisational goals.

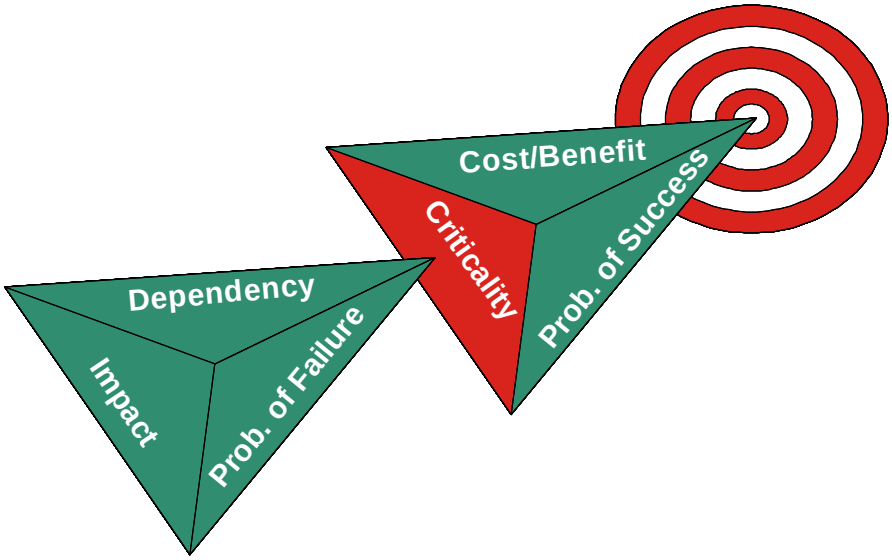

Figure 17- The two main areas of the Targeting Method (Huxley 2003)

These three factors combine to provide a rank order of processes, they are collectively named criticality. It is shown within the red area of the second triangle.

The second triangle contains this measure of criticality and two factors concerned with selecting which of the identified 'critical' processes should be improved upon first;

4. Cost/benefit; the analysis of the costs and benefits of improving the process
5. Probability of success; the chance that the process improvement project will be successfully completed

Once criticality is defined there is a rank order of processes, with the most critical at the top and least critical at the bottom. The most critical processes are then assessed for cost/benefit in order to ascertain if improvement will result in a positive cost/benefit. Those processes with a positive cost/benefit are then assessed for the probability that the organisation or project team can successfully improve the process and achieve the expected benefits. The assessments for criticality, cost/benefit and probability of successful improvement are then combined to allow the organisation to make a business decision on which process to improve first.

In order to undertake this targeting process an organisation will identify, at a high level, the major processes of the organisation or the area of focus. This can be accomplished by developing what might be called a process 'House' model (Aoyama Gakuin University 2003). The development of a process 'House' model (Ulrich 1977; Scheer & Nüttgens 2000; Aoyama Gakuin University 2003) is relatively simple in that it classifies the business across three areas. The strategic processes, the core processes and the supporting processes. In Figure 18, following, you can see that the model has three major sections: the strategic or roof section, the core or centre section and the enabling or supporting section at the bottom of the model. The strategic section contains executive management, financial management, knowledge management and product/marketing management processes. The core contains each of the processes related to the main activities. These are typically a unique set of processes for organisations based on market type, geographic location and size and structure. The enabling processes are those activities which are not strategic but are required to ensure that the core and strategic processes are able to function normally. For example in Figure 18 are finance, information technology and legal & compliance processes.

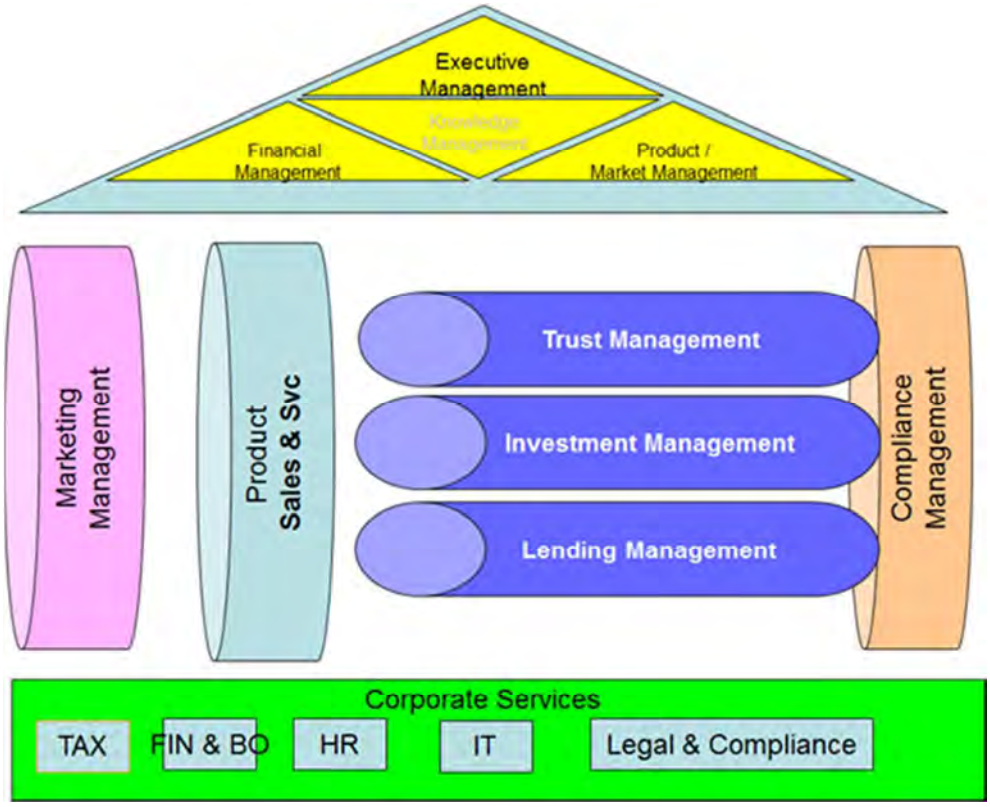

Figure 18- Process House Model as used in Case Study Two (see 4.4 on page 193)

The Targeting Method (CPTM) includes ten steps to support users in successfully implementing the method. The diagram on the following page is a representation of the ten step targeting method in process model form.

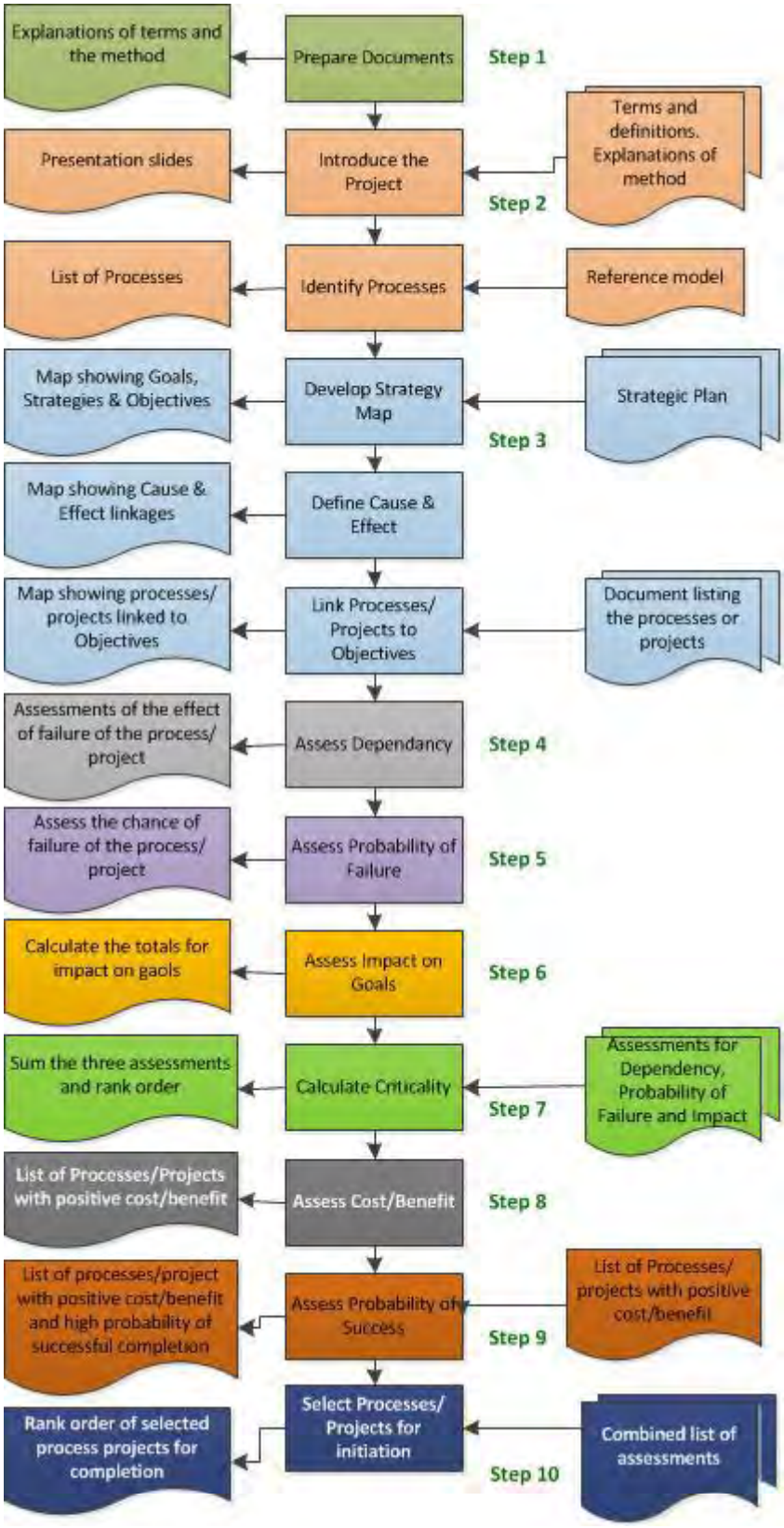

Figure 19- The Ten Step Critical Process Targeting Method based on (Huxley 2003)

Not only does the Targeting Method focus on business processes it identifies the critical processes for each organisation and thus provides a framework in which an organisation is able to focus their energies and build an understanding of business processes without

being overwhelmed by attempting to understand all the business processes of the organisation.

Chapter Three - Methodology

3. Introduction

> "In order to prepare the mind of the reader for the easier conceiving of what follows, it is proper to premise somewhat, by way of introduction, concerning the Nature and Abuse of Language..... Light and colours, heat and cold, extension and figures - in a word the things we see and feel - what are they but so many sensations, notions, ideas, or impressions on the sense? and is it possible to separate, even in thought, any of these from perception."
>
> A Treatise Concerning the Principles of Human Knowledge, George Berkeley, 1710

The purpose of this chapter is to introduce the methodological foundations of the research and to describe the methods used to collect and analyse the data as part of the investigation of the research question: How does the CPTM support a greater understanding of medium sized entity processes? This chapter will discuss the research philosophy, the data collection and analysis and will describe the options available to the research project, the choices made and the rationale for those choices.

The goal of this chapter is to differentiate the truth, from beliefs and appearances, through the use of a research design which selects appropriate methods for investigating the research problem and the environment in which it resides (Galliers & Land 1987). This chapter, through a three step approach, intends to discuss the methods used to collect and analyse the data gathered for this research project.

This chapter is divided into the following sections:

3.1 Summarises the challenges of the research area which need to be addressed by the research design. These challenges require the selection of the optimal solutions where there may be a number of viable alternatives approaches. The section also describes the aim of the research.

3.2 This section expresses the philosophical position of the author, which then dictates/influences the methods, tools and approaches used to undertake the data collection and data analysis. It communicates the values and beliefs surrounding what

constitute 'truth' as well as discussing the use of qualitative methods (Kumar & vanDiesel 1996; Barnett & Mackness 1983).

3.3 This section discusses and makes the argument for use of case study as the definition of scope for the study and then discusses the use of qualitative data collection methods within case study. Finally it describes the way these methods are used within the case studies.

3.4 This section describes the approach taken considering the iterative nature of data collection, the data sources and corroboration and validation through triangulation. The section then discusses the study protocol which includes the participatory case method, the case study design, how the case studies were expected to be conducted and the data collection procedures.

3.5 Describes the approaches considered for the data analysis from the perspective of an interpretive qualitative study. It then discusses the type of coding that might be employed and describes the selected method. Finally the section describes how the methods were used in this study.

3.6 The final section of this chapter provides of the issues in developing a methodology and supplies a checklist for the qualitative interpretivist approach. The checklist items are discussed and compared to the actual study design.

The following figure provides a diagrammatic view of the sections and sub sections of Chapter 3:

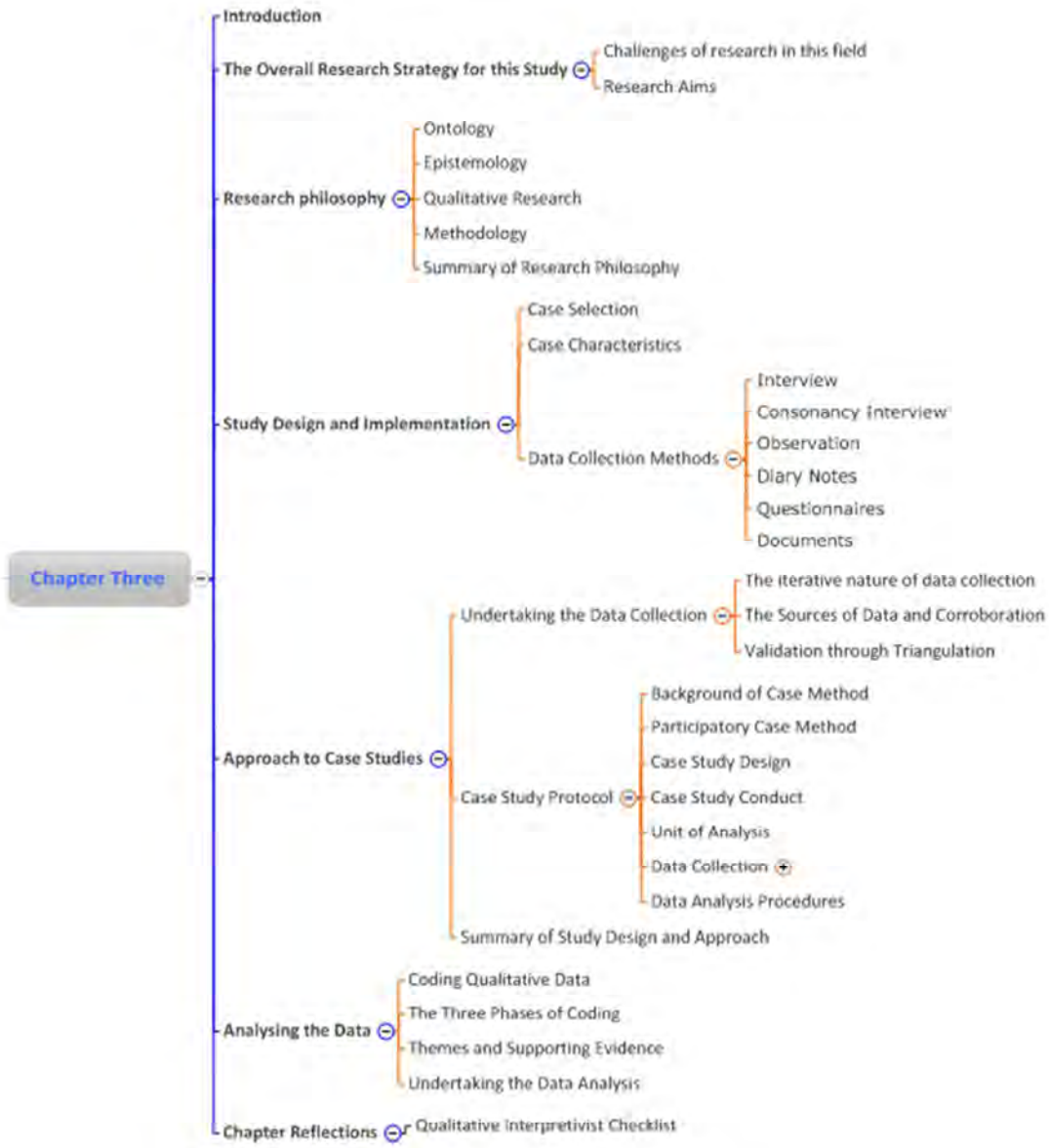

Figure 20- Chapter 3 Structure

3.1. The Overall Research Strategy for this Study

This section describes the research strategy with regards to the methodology and challenges in the field of Information Systems research.

3.1.1. Challenges of research in this field

This research project is the first to investigate the business process understanding of small and medium sized organisations as characterised by the number of staff. As an exploration of the impact of the CPTM on an organisations' business process understanding it is also the first to be undertaken. Research into business process understanding in general is limited by a focus on factors which impact upon specific aspects of business process management in general (Bandara 2007). An exploration (such as this study) of business process understanding provides an opportunity to more broadly understand the domain and results in a holistic view of business process understanding. A clear understanding and communication of the methods used add weight to the substantiation of outcomes.

Many of the research methodology challenges of prior researchers undertaking qualitative research within the Information Systems (IS) field are considered to be well supported (O'Driscoll, Carson & Gilmore 2001; Levy, Powell & Yetton 2001). Gone are the objections which used to be posed by positivist researchers that qualitative research is not 'hard facts'. Many respected qualitative researchers have demonstrated that their approach to research offers rigour, validity, cause and effect, precision in measurement and the pursuit of theory development (Denzin & Lincoln 1998; Stake 1998; Trauth & Jessup 2000; Carson, Gilmore & Gronhaug 2001; Orlikowski & Hoffman 1997).

Writers, who illustrate how to undertake qualitative research, such as Myers, Klien, Dey, Trauth, Travers, Strauss, Corbin, Cassell and Carson, provide increasingly clear instructions for both positivist and interpretivist researchers utilising qualitative methods.

To adopt a suitable research approach which allows the delivery of facts rather than a random collation of assumptions and ideas a researcher must theoretically understand the requirements of good research. A research approach that assists the exploration of issues while still providing a valid and reliable approach to IS research is required.

If as Myers (1997) suggests, all research is based on some underlying assumptions about what constitutes 'valid' research and which research methods are appropriate, a

researcher must at least provide sufficient information about the research methods to deal with the questions of rigour and validity. In order to conduct valid and reliable research, it is therefore important for the reader to be aware of these assumptions. The underlying philosophical assumptions adopted by the researcher and the subsequent research strategy employed throughout this project are explained in the following sub-sections.

3.1.2. Research Aims

The research project described here was conceived to meet an identified need in both the research field of IS and in the practice of business for practitioners. The research objective is to provide SMEs with a tool or method which improves their understanding of business processes. The tool or method should be developed to meet the needs and constraints of SMEs as defined by the literature and in practice.

3.2. Research Philosophy

This section explains some of the assumptions which underpin the decisions taken in the selection of tools and in the analysis of data. De Salas (2002) citing Burrell & Morgan (2001) and (Anderson, De Dreu & Nijstad 2004, p.30) states that "these assumptions, or ways of approaching the research, can be distinguished as a framework (*ontology*) that specifies a set of questions (*epistemology*) that are then examined (*methodology, analysis*) in specific ways". Essentially, ontology is 'reality', epistemology is the relationship between that reality and the researcher, and methodology is the techniques used by the researcher to discover that reality (Sobh & Perry 2006). The researcher is constrained to work with a conceptual framework regarded as the "basic belief system or worldview that guides the investigator" (Guba & Lincoln 1994, p.105).

The following sub-sections will explain the researcher's ontology, epistemology, chosen methodology and approach to analysis.

3.2.1. Ontology

Researchers such as Burrell and Morgan (2001), Tan and Gallupe (2003), de Salas (2002) and Orlikowski and Baroudi (1991) suggest that *ontological* beliefs deal with the matter of whether the social reality is assumed to be objective and therefore independent of people, or subjective and thus having an existence only through the actions of people in creating

and changing it. When studying social phenomena, a researcher is faced with choosing between these two views of reality. That is, is the social instance to be investigated external to the individual, or is it the product of individual consciousness (what they see and what they think)?

This researcher takes the stance (which is neither right nor wrong, but instead a perspective on a situation) from an ontological perspective that reality is the product of individual perception. That is, our understanding of our socially constructed environment is produced and reinforced by people through their actions and interactions.

This ontological view, as explained by Orlikowski & Baoudi (2001) and de Salas (2002), emphasises individual insights and explanations through which people construct their own view of the environment in which they operate, rather than as de Salas (2002, p.30) states, "the belief that the social and physical worlds are objective and exist independently of the human actors".

This researcher understands that personal experiences, morals, prejudices and other factors will impact on the interpretations of the events investigated. The researcher's interpretations though are still valid within the methodology being applied and the ontology selected.

3.2.2. Epistemology

> Epistemology is concerned with providing a grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate (Crotty 1998, p.8)

Epistemological assumptions within a research framework are concerned with the "criteria by which valid knowledge about a phenomenon may be constructed and evaluated" (Tan & Gallupe 2003, p.8).

In social science research there are essentially three main stances: positivist, interpretivist and critical social science being the three dimensions considered (Denzin & Lincoln 1998; Chua 1986).

The traditional view is what is now called the positivist view which suggests that researchers generally assume that "reality is objectively given and can be described by

measurable properties which are independent of the observer (researcher) and his or her instruments" (Myers 1997b, p.241). As a result, such positivist approaches commonly attempt to test theory in an effort to increase the predictive understanding of phenomena (Hirschheim 1985; Lee 1991; Myers 1997).

Over the last ten years there has been an increase in the number of social science researchers who have reported on a different way of thinking. De Salas (2002, p.31) states citing (Hirschheim 1985; Lee 1991; Myers 1997) "many researchers engaged in social science research are coming to the understanding that the tools and methods of natural science, with its positivist emphasis, are inadequate to the study of social reality".

As IS research often deals with people and social issues linked to technology some IS researchers have been moved to argue a similar line (Darke, Shanks & Broadbent 1988; Walsham 1995b).

This area of interpretation can be framed as either interpretivist or critical social science. In Myers and Avison (2002, p.7), *critical social science* or *critical* researchers assume that:

> social reality historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances critical researchers recognise that their ability to do so is constrained by various forms of social cultural and political domination critical research focuses on the opposition's conflicts and contradictions in contemporary society and seeks to be emancipator, that is, it should help to eliminate the causes of alienation and domination.

Myers and Avison (2002, p.7) suggest that critical social science research is seen as a critique of the social influences surrounding an event or circumstance, "where restrictive and alienating conditions are brought to light". People are thinkers and as such able to intentionally alter their actions based on what they learn and not just reproduce the same actions again and again. Thus this researcher has not considered that critical social science is a relevant epistemology. The researcher has an alignment with non-positivist research beliefs but in this situation the researcher is not critiquing social influences.

Interpretive researchers assume that access to reality (given or socially constructed) is only through social filters such as language, consciousness and shared meanings (Baskerville & Preis-Heje 1999). "Such interpretive research does not predefine dependent and

independent variables, but focuses on the full capacity of human sense making as the situation emerges" (de Salas, 2002, p.31).

This researcher for instance does not comprehend how understanding and illumination can be achieved by considering the individual or a small group of constructs/perspectives in an area when the reality of life suggests that all aspects (the holistic view) are involved, even if this is in a small way. This is especially true of situations in which the area under study involves new methods, situations and events, as this study does.

A model that is developed based on an interpretivist framework (typically resulting in a qualitative approach) will also be affected by the researcher's interpretation of the data collected. This should not be confused with lack of rigour or validity of understandings or interpretations (Walsham 1995a).

With increasing use of the interpretive approach to IS research (Trauth & Jessup 2000; Walsham 2006) and organisational research (Easterby-Smith, Golden-Biddle & Locke 2008), interpretive research is becoming more contemporary.

Chua (1986) acknowledges that the interpretivist view can have weaknesses. Where evidence is not conclusive from an analysis of data the interpretive approach does not generally offer the selection of alternative explanations. While each of the epistemologies discussed have both strengths and weaknesses, this researcher has chosen to use the interpretivist epistemology.

The interpretive view in IS research (Trauth & Jessup 2000; Walsham 2006), has been used in a variety of situations and tested through successful research outcomes and peer review. The interpretive epistemological perspective does not suggest causal relationships between dependent and independent variables nor does it seek to explain variance through statistical methods, but instead operates on the assumption that people create and associate their own personal and learnt meanings as they interact with people and the environment around them. Thus the research objective is the understanding and illumination based on clear description and analysis and not the quantitative analysis of a few constructs out of possibly hundreds.

Klein & Myers (1998) suggest that IS research can be classified as interpretive if it is assumed that knowledge of reality is gained only through social constructions such as language, experience, discussion, documents, tool use and other materials. This researcher

considers that the research being undertaken aligns closely with the Klein and Myers (1998) definition of interpretive research.

	Methodology	
	Positivism	**Interpretivism**
Focus of research	Concentrates on description and explanation	Concentrates on understanding and interpretation
Role of the researcher	Detached, external observer	Researcher wants to experience what they are studying
	Clear distinction between reason and feeling	Allow feelings and reason to govern actions
	Aim to discover external reality rather than creating the object of the study	Partially created what is studied, the meaning of the phenomena
	Strive to use rational, consistent, verbal, logical approach	Use of pre-understanding is important
	Seek to maintain clear distinction between facts and value judgements	Distinction between facts and value judgements are less clear
	Distinction between science and personal experience	Accept influence from both science and personal experience
Techniques used by the researcher	Formalised statistical and mathematical methods predominate	Primarily non-quantitative

Table 8- Differences between Positivism and Interpretivism ***Adapted from (Carson, Gilmore & Gronhaug 2001)***

Interpretive research attempts to understand and make sense of situations, activities and events through the meanings that people, assign to them. Interpretive methods of research in IS are aimed at producing an understanding of the context of the information system. If we agree that information systems encapsulate business process then interpretive research attempts to understand and interpret phenomenon in the context of business processes (Myers 1999; Walsham 1995a). It is important to note that the understanding sought is a shared understanding with those involved in the research or the objective of the research. Interpretation is the activity, the goal 'understanding' (Burrell & Morgan 1991; Nandhakumar & Jones 1997; Orlikowski & Baroudi 1991; Walsham 1995a).

Based on the views expressed the researcher does not align with the positivist approach which is the empirical testing using a 'rational', deductive and predictive approach. The focus of this thesis is exploring the business process understanding environment of the SMEs and their staff. Therefore the interpretive approach is the one that is most suitable.

Based on the context, beliefs and viable options available an interpretivist approach to undertaking the research project was selected.

3.2.3. Qualitative Research

The choice of research methodology largely depends on the research question and the underlying assumptions of the study. Based on the research gaps identified in the literature review the purpose of this research project is to explore whether the CPTM enables SMEs to gain an improved understanding of business processes. The process understanding will allow SMEs to undertake activities which require an informed knowledge of business processes as defined by the drivers in the literature review.

This research requires the study of the use of a method in its natural setting (i.e. within actual workplace(s)). The understanding of the situations and events studied will be based on perceptions and behaviours of the people and organisations involved. The importance of the context in which case study organisations operate (their current economic environment, their initial knowledge and skills, their attitude to risk, change and communication) and the perceptions of the researcher (how they interpret the information found and communicated to them, based on their current and progressive learning) suggest that the data to be collected will be predominantly qualitative in nature.
The goal of the research method is to collect evidence and interpret the data in such a manner as to display knowledge of the issues in the selection, collection and analysis of the data. De Salas (2002, p.33) succinctly and clearly states that the qualitative method "focuses on the participant's perspective on, and interpretations of, the situation, and recognises that these are of value in understanding behaviour". This is supported by authors such as (Easterby-Smith, Golden-Biddle & Locke 2008; Garcia & Quek 1997; Guba & Lincoln 1994; Leedy & Ormrod 2005; Markus 1997; Maxwell 1996).

The interpretivist approach differs from the positivist approach in that the interpretivist looks to develop a 'family of answers' that could explain the situation which occurred. In an interpretivist view of the world the social incidents under study are not fixed or repeatable and understanding them requires a holistic view of the environment in which they occurred (Walsham 2006). For the interpretivist undertaking a qualitative study the perceptions of the researcher are more of a window to the situation which can be filtered by the researcher's experiences (Healy & Perry 2000).

Interpretivist research is generally open to whatever the data reveals (Cassell & Symon 1995). Thus it follows that the methodology used should be capable of providing a holistic view of the context and issues at play.

Within the research project the collection of data seeks to identify the perceptions of involved actors. These are the actors who are important to the understanding being sought. It therefore suggests the use of a research method which requires an holistic understanding of context dependent perceptions of the actors and allows for a qualitative data collection.

> …the label qualitative method has no precise meaning in any of the social sciences. It is an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world (Van Maanen 1983, p.9)

Benbaset in Myers (1997) suggests that IS research is suited to qualitative research methods. The research approach for these non-positivist researchers has changed from empirical descriptions of reality, to 'understanding and interpreting' it (Myers 1997; de Salas 2002; Myers 2002).

3.2.4. Methodology

Qualitative methodologies include, ethnography, phenomenology, action research and action learning, grounded theory and case study (Cassell & Symon 1995). Qualitative research methodologies are used to collect of a variety of empirical materials (data) that describe activities, understandings and experiences in an individuals' or groups' existence (Yin 1994; Cassell & Symon 1995). These methods are used most often to develop theory and test theory. In this research project the outcome sought would be the development of a contribution to theory for later testing or further development (Eisenhardt 1989; Eisenhardt 1991).

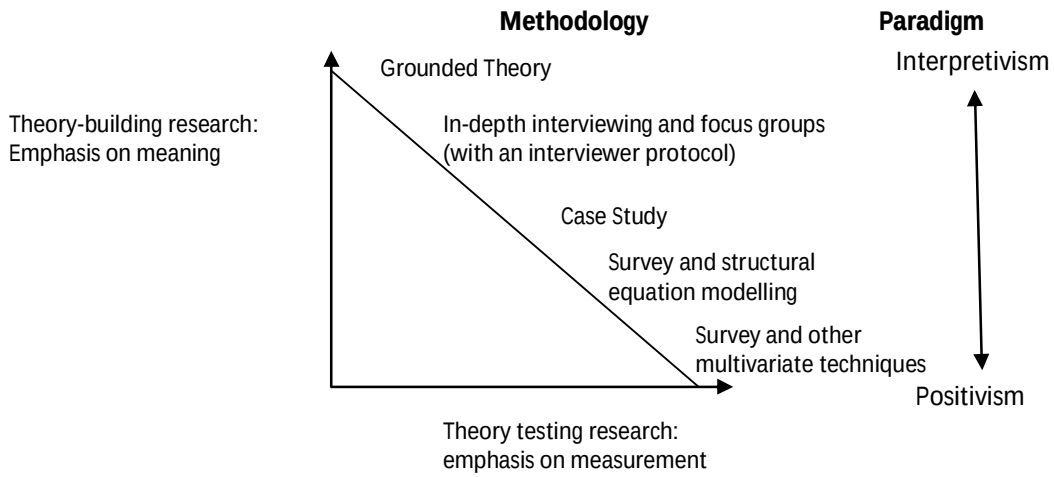

Figure 21-Representative range of methodologies (adapted from Healy & Perry 2000, p.121)

Healy and Perry (2000) developed a range of methods chart which has been adapted here to show the differences between some of the methods available to the qualitative researcher.

Leading authors in the IS field such as Myers and Avison (2002) and Denzin and Lincoln (2005) suggest that the choice of case study, action research or ethnography as an interpretivist aligned method which are common and accepted within the IS community.

The use of action research for this project was not considered as the best option as the research was concerned with the use of a single method within an organisation and this method was of a strategic nature. To use it in the cyclic approach required for action research would mean that the research should take place over at least three years (traditional strategic planning occurrences). Additionally the intent of action research is through cycles of action, reflection and change to improve the focus of the study (Kidd & Kral 2005; Lindgren, Henfridsson & Schultze 2004; Miles & Huberman 1994; Moody 2003). These activities in action research suggest a form of testing and not exploration as required of this study. For these reasons action research was not seen as a viable option as a tool in this research.

Ethnography requires emersion in the context, which means living, working or shadowing the focus of the study for a long period of time (Myers 1999; Rusli & Marshall 1995). In

addition ethnography is also concerned with the culture of a group or entity (Myers 1999) Ethnography is therefore discounted as a possible method for these reasons.

Case study is a common research method in Information Systems research (Yetton, Johnston & Craig 1994; Palvia & Jackson 2004) with many examples of case study being used for interpretive studies. (Fink & Disterer 2006; Kim & Kaplan 2006; Klein & Myers 1999; Muscatello & Parente 2006; Pawlowski & Robey 2004; Serafeimidis & Smithson 2000; Trauth & Jessup 2000; Travers 2001; Walsham 1995a; Walsham 2006). This body of research justified the use of case study over other methods of research.

This research project requires the investigation of a real life situation in which the data sources can be people, their context, actions and decisions, and documentation in addition to the thoughts and perceptions of the researcher. From this perspective (the contextual) the researcher must ensure that study is suitable to the research requirements.

The case study method investigates a phenomenon within its real-life context, where ideally multiple sources of evidence are used to construct or inform the situation (Yin 1994; Yin 2003). Case study as a qualitative research method enables interpretivist researchers to understand people or organisations within the social and cultural contexts in which they operate or reside.

Case study allows the researcher to focus on the contemporary or current situation and does not require the control of the participants (Yin 1994). It provides a framework in which historical data (documents) can be collected and analysed as well as that which is produced as part of the events which are observed or even participated in by the research team (Yin 1994; Yin 2003). This strategy can be particularly well suited to new research areas or research areas for which existing theory seems inadequate (Eisenhardt 1989).

As Yin (2003) states: “You would use the case study method because you deliberately wanted to cover contextual conditions believing that they might be highly pertinent to your phenomenon of study” (Yin 2003, p.13). De Salas (2002, p.34) concurs with “whatever the unit of analysis, case studies are generally put to use when the desire is to understand complex social phenomena”. “The case study is a research strategy which focuses on understanding the dynamics present with single settings” (Eisenhardt 1989, p.534).

That is, the researcher was interested in all perspectives and considered that while the positivist quantitative approach would be less risky for the novice researcher (as most PhD researchers are) this approach would ignore many of the concepts and understandings

which might be seen as important if no prior constructs are considered before any case study is undertaken.

Dyer and Wilkins (1991, p.616) also suggest that case study allows the researcher to 'go native' to gather data in any way that enables the researcher to get *as* "close as possible to the phenomena they are investigating". Some authors describe the situation where case study is undertaken where the researcher is an integral part of the organisation termed participative case study (Baskerville 1997b; Holmström 1998; Nandhakumar 1993; Nandhakumar & Jones 1997; Walsham 2002; Schein 1997) or Appreciative Inquiry (AI) (von Weltzien Hoivik 2011, p.1071).

Baskerville (1997) calls his paper "Distinguishing action research from participative case studies" because participative case study is a method available to researchers. Baskerville also differentiates between consulting, action research and participative case study. This suggests that researchers have trouble distinguishing between the different forms but that it is a form of valid research if not that common to IS researchers. Lack of heavy use of a method though should not be a reason to discard it. If a research method has all the elements of participative case study and is undertaken in the same way, but is called "participant observation" Nandhakumar and Jones (1997) and Yin (1994) or "process consultation" Schein (1997) or "Appreciative Inquiry" von Weltzien Hoivik (2011), then it is highly likely that it is "participative case study" by another name. Why these authors have called participative case study something else is unknown. The heavily cited and respected Baskerville (1997) provides evidence of action research being called action science without suggesting that it is not the same method.

As von Weltzien Hoivik (2011) states "this method [Appreciative Inquiry] involves the direct intervention of the researcher into an organization and is geared towards assisting the company in the actual learning process". Additionally even the positivist case study writer Yin (1994) discusses 'participant observation' as one of six sources of evidence in case study research. Yin (1994) states that it is a "special mode of observation" where you participate in the events being studied. Yin (1994, p.87) describes a number of examples of this approach to data collection in case study and one is the "key decision maker in an organisational setting". Yin's (1994) *Case Study Research: Design and methods* has been cited 63,114 according to Google Scholar, making it a very compelling reference.

These methods (including process consultation Schein (1997)) I argue here are similar if not the same as participative case study. Baskerville (1997) states the critical difference in his opinion between case study and participatory (participative) case study is that participatory case study has a biased interpretation of the results. This is why the researcher provides in the methodology chapter and in the research design chapter a description of the steps taken to show that bias was managed. Yin (1994) also states that participant observation (participatory case study) has the following distinctive opportunities:

- The ability to gain access to events and groups that are otherwise inaccessible to scientific investigation
- The ability to perceive reality from the viewpoint of someone on the inside rather than external to it. Yin suggests many have argued that this enables a more accurate portrayal of events
- The ability to manipulate events to uncover aspects which might not otherwise have been observable

Thus this researcher also participated in the case studies as a participant observer facilitating the implementation of the CPTM and observing the activities of the organisation. Baskerville (1997b, p.28) suggests that this type of close interaction is a form of case study and not action research and like action research "make no strong claims to being objective or uninvolved observers".

It is also worth mentioning that those involved in the case studies started this project with a set of preconceptions based on their individual experience. These preconceptions and importantly their perceptions of events and interpretations of documentary data has all has an impact on the outcomes and understandings of projects that a quantitative positivist approach would have difficulty considering. The research approach taken here provides a framework in which these associated aspects are an important data source.

3.2.5. Summary of Research Philosophy

To summarise the complexities of this section we have discussed and put forward substantive argument for the following decisions:

Ontology- (Guba & Lincoln 1994, p.206) say of interpretivism for "Realities are apprehendable in the form of multiple, intangible mental constructions, socially and experientially based, local and specific in nature". That is, (in the researchers own words) the authors ontology is that, nature is the product of the individuals perception of the

socially constructed environment and is produced and reinforced by people through their actions and interactions.

Epistemology- that this researcher takes an interpretivist perspective to the data collection, analysis and specifically to the approach to understand the situation under study. There is no comprehension as to how understanding and illumination can be achieved by considering the individual or a small group of constructs/perspectives in an area when their perspective of life suggests that all aspects (the holistic view) are involved, even if some of these elements impact in a small way. This is especially true of situations in which the area under study involves new tools, situations and events, as this study does.

Qualitative Data- The researcher discussed the choice of study in relation to type of data required. That is- the study needed to be able to focus on the participant's perspective and their interpretations of the situation (de Salas 2002). The discussion also identified that as it was in the IS space it should align with IS methods of which qualitative methods such as case study, action research, grounded theory and survey were examples (Benbaset in Myers (1997)).

Methodology- The researchers' interpretivist perspective will influence both the data collection methods and the data analysis. As Flyvbjerg (2006) states "in the study of human affairs, there appears to exist only context dependent knowledge" (Flyvbjerg 2006, p.219). Interpretivist research is generally open to whatever the data reveals (Cassell & Symon 1995). Thus it follows that the methodology used should be capable of providing a holistic view of the context and issues at play.

Leading authors in the Information Systems (IS) field such as Myers and Avison (2002) and Denzin and Lincoln (2005) suggest that the choice of case study, action research or ethnography as an interpretivist aligned method are common and accepted within the IS community. The researcher chose participatory case study as the envelope in which the data collection methods would be undertaken.

This section has described and explained the stance of the researcher in using a qualitative approach for the development of theory within an IS field.

The following sections discuss the research approach to case selection, case data collection, study protocol and data analysis.

3.3. Study Design and Implementation

Once the focus of this research was identified by the literature review the researcher defined the problem area, the research objective and the purpose of the research.

SMEs have unique issues in regard to their understanding of business processes. The literature review substantiates and describes in detail the scope and impacts of the problem area.

In brief, SMEs like large organisations are being driven to improve their understanding of business processes in order to:

- reduce the cost of doing business as competition intensifies and costs in the market in which they operate increase
- procure new systems which are more complex and cross many of the traditional functional silos of the business
- remain flexible in the face of increased change which is driven by such things as ongoing compliance requirements, regulatory change to business practices and new technologies which alter existing relationships, systems and market dynamics
- comprehend and make sense of the vastly increased amount of information that is available to managers from their information systems
- understand the connections and activities of the net-centric (participating as part of a continuously-evolving, complex community of people, devices, information and services) business communities in which they operate
- develop new organisational structures which take into account the complexity of the networks which are used to undertake their business activities.

SMEs however, have little support for improving their understanding of business processes. Lack of business process understanding support might result in the risk of continued high failure rates for SMEs and an ongoing impact on business economies.

<u>Research Objective:</u>

The research objective is to solve the problem identified by providing SMEs with a method which improves their understanding of business processes. The method (identified as the most suitable in the literature review) should meet the needs of SMEs as defined by the literature and from professional experience and practice.

Purpose of the Research

Based on the research problems identified the purpose of this research project is designed to explore whether the CPTM enables SMEs to gain an improved understanding of business processes.

In order to realise this purpose the research project investigated the literature to identify:

- the differences between SME's and large enterprises (literature search)
- the issues that SME's face in the problem area (literature search)
- the methods which might be used to support improved understanding of business processes (literature search)
- the changes to the method or hybrid method based on the use of it.

The research project sought to investigate using case study:

- the problems and business issues that were known to the case study participants
- the experiences of the participants with the CPTM
- the outcomes of the implementation of the CPTM.

These elements, which combine to be the purpose of the research project, explore the problem area of SME business process understanding. Thus answering the research question becomes the goal of the project.

Research Question

How does the CPTM support a greater understanding of medium sized entity processes?

3.3.1. Case Selection

Case selection is an important decision point in the development of any research study which uses case study. Without appropriate and considered selection it is possible that the data collected cannot be used to support the required outcomes. Typically there are two major factors which influence case selection and these are: **1**. the use of case study to test an event or **2**. to explore a situation or event (Denscombe 2007). Sufficient understanding of the case data collection requirements is needed to ensure that appropriate and sufficient data is collected to support any claims made.

The criteria used for case selection can be divided into two unique categories;

1. Practical Requirements
2. Research Requirements

The researcher used a number of perspectives to identify the requirements from a practical view. These were; the case study organisational resource perspective, the case study organisational access perspective, the case study organisational risk perspective and the case study organisational implementation perspective. These factors contributed towards the type of organisation who would participate sufficiently to provide the data the researcher considered would be required. Figure 22, below includes some of the reasons which were used to define the type of organisation considered to provide suitable case study data.

Denscombe (2007) identifies eight different reasons for which cases are selected. Figure 22 describes the different aspects considered in the case selection based on the Denscombe (2007) criteria and further issues which the research team considered in the case selection process.

Figure 22 following contain the criteria used for case selection.

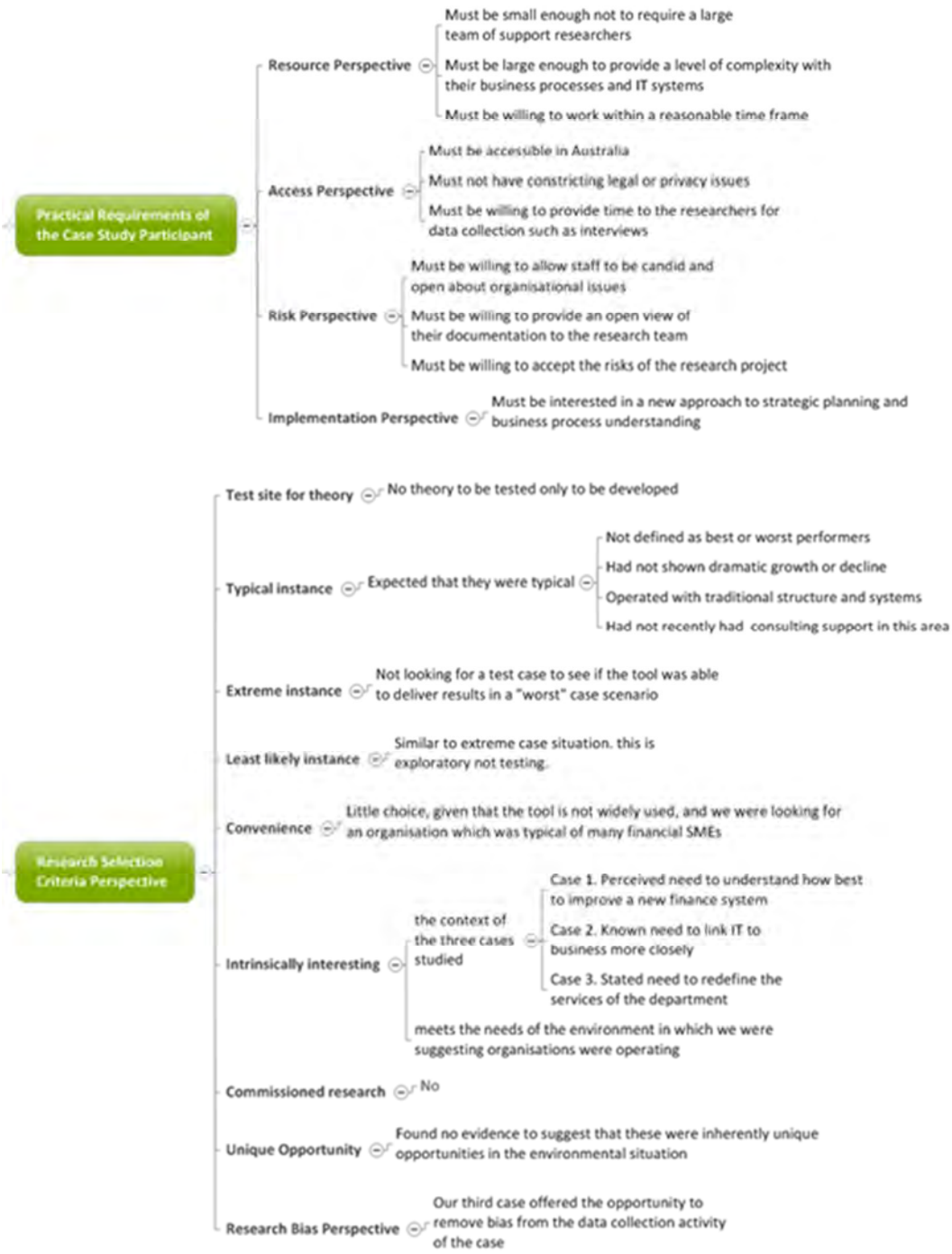

Figure 22 - Case Selection Criteria (Denscombe 2007, pp.38-42)

The case study participants must first have been willing to use a new methodology (CPTM) as part of their strategic planning in connection to the development of new systems, or in the improvement of existing systems. The tool is relatively young in comparison to methods such as the Balanced Scorecard (Kaplan & Norton 1992) and like any new method or tool requires clear explanation and understanding for its successful use.

The lack of methods available to organisations might be exemplified by the example organisation from Turkey sought information regarding the CPTM. This large automotive manufacturer in Turkey had recently completed a worldwide search for methods which might identify critical processes in support of their 'World Class Quality' goals. The result of the search was to contact the researcher for further information on the Critical Process Targeting Method (CPTM). Thus to an extent the selection process required a continual scan for opportunities based on organisations who aligned with the practical criteria first, rather than the theoretical research needs first.

Important Note: This study is not testing the CPTM. Instead it is exploring the use of a specific method in a contemporary environment for its support in improving understanding of business processes within an organisation. To this end the study did not seek to test theory instead to contribution to theory based on experiences within the cases. No such clear theory related to the method currently exists and as such testing was considered to be a follow on research activity. Perry (1998) also suggests that for interpretive qualitative case study an inductive theory development is the appropriate approach. An inductive theory development approach seeks specific observations or comments which lead to patterns (Perry, Riege & Brown 1998). Patterns become hypotheses and then possibly theories (Perry, Riege & Brown 1998).

Extreme and least likely case is typically used for testing constructs or hypothesis and as such is not suitable for this study (Markus 1989). The researcher used the typical example as well as the convenience pathways as the main criteria for case selection. Understanding of the environment existing at the time and at completion of the cases suggested that these organisations where typical of many similar organisations across Australia in this industry. The number of cases is also an important aspect of case selection which can be impacted by the difficulty of finding suitable cases.

A diagram from Perry (1998) compares the positions of two case study styles which is useful in indicating the number of cases which would be appropriate in the context of this research:

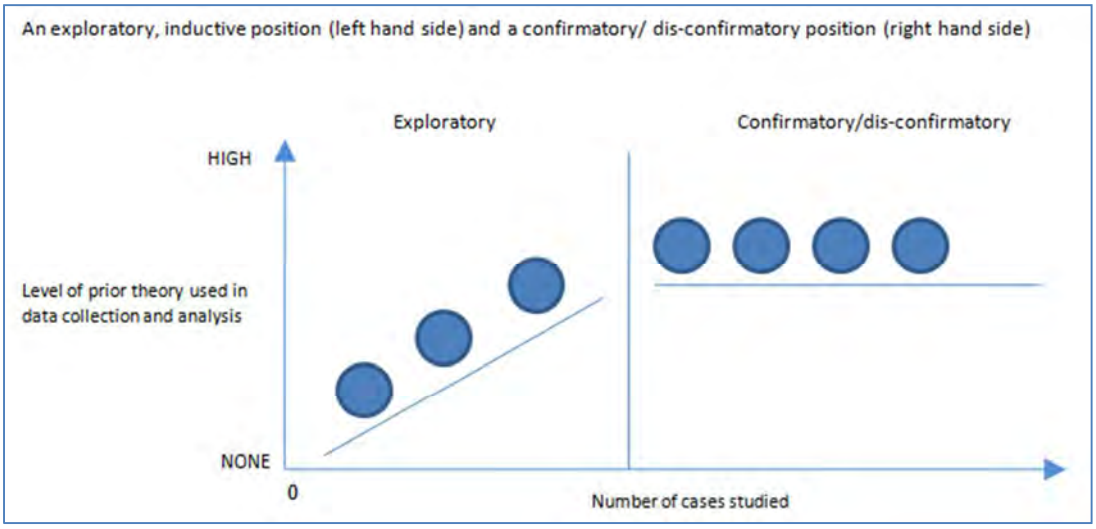

Figure 23- Comparison of the Positions of Two Case Study Styles (Perry, Riege & Brown 1998)

As the research project is exploratory in context Perry (1998) would suggest that one to three cases would be suitable. Eisenhardt (1989) has argued that when developing theory 'between 4 and 10 cases usually works well' (Eisenhardt 1989), however, Dyer and Wilkins (1991) dispute this and puts the case for a single case approach (Dyer & Wilkins 1991). Dyer and Wilkins (1991, p.613) argue that Eisenhardt's approach "is not likely to evoke as much new and better theoretical insights as have the 'classic' single case studies". Dyer and Wilkins, (1991) also suggest that Eisenhardt (1995) did not consider the benefits of deep versus surface descriptions and the "telling of good stories versus the creating of good constructs" in her argument for four to ten cases (Dyer & Wilkins 1991, p.613).

Dyer and Wilkins (1991) cite many classic single case studies which have advanced the knowledge of the fields they were in. They suggest that researchers should consider the trade-off between deep understanding of a particular social setting and the comparative insights to be gained from multiple cases using a cross case analysis (Dyer & Wilkins 1991). This is further emphasised they suggest by the ability of a single case (with supporting mini cases) to provide rich description on which theory is later developed and related to further studies.

"Theory building seems to require rich description, the richness that comes from anecdote"(Mintzberg 1979, p.587).

Theory which is a possible outcome of deep descriptions can be considered to be both more accurate and appropriately more tentative as the researcher considers the greater environment in which events occur (Dyer & Wilkins 1991). In addition there is the

consideration as Dyer and Wilkins, (1991, p.613) put it "telling of good stories versus the creating of good constructs".

The CPTM is a new tool to organisations of all sizes. Even though it is built upon the work of other research such as the balanced scorecard, the McKinsey 7S framework, Failure Mode Effects Analysis, cause and effect logic, and the method, as a single entity, is something which needs both introduction and support in its use at this stage of development (Huxley, 2003).

It was not possible in this study to identify the ideal case study or studies and look at what they did while using the method (CPTM). Instead, opportunities were looked for in which medium sized organisations were starting to see some of the pressure which large enterprises were experiencing. That is, the drivers (as discussed in the literature review) were influencing the organisation in such a manner as to exert new pressure on the business to understand their processes more clearly.

Buoyant at the time of the pre global financial crisis (GFC) of late 2008 small to medium sized organisations were performing well and thus were more open to research opportunities.

Three case studies were chosen by the researcher with support from fellow academics to identify suitable candidates.

3.3.2. Case Characteristics

All three organisations were delivering financial services to a range of customers or clients. Case Study One had approximately twenty staff, Case Study Two approximately ninety staff and Case Study Three approximately one hundred and twenty staff. Staff numbers are approximate due to the ongoing restructuring of roles and responsibilities.

In all three case studies the organisations provided financial services and thus required a similar technology environment. This also meant that many of the compliance processes were similar however Case Study Two as a provider of 'Trustee' services had an additional set of compliance requirements imposed. Each of the organisations were considered under the Australian Bureau of Statistics definitions (ABS 1999a; ABS 2004a) to be small to medium sized organisations. Each organisation had also recently undergone some major change in the structure, people or services provided.

Case Study One

Case Study One was an organisation which had undergone an upgrade of its large financial system. The major business issue with which the management team were grappling was how to decide from the many identified projects focussed on system improvement, which project they should undertake and in what priority. Many stakeholders were viewed by the organisation as clients, adding political and management pressure to the group of decision makers. Case Study One is a strand alone entity of a large organisation which is based in a single state within Australia but has multiple service sites within that state.

Case Study One is a financial services organisation providing services to its clients across the larger organisation. In January 2001, the parent organisation's executive body approved the formation of Case Study One. Case Study One was the result of combining the accounting & business services business unit and the planning and financial resources support services unit into one department.

Case Study One employed approximately twenty staff, undertook their own strategic planning, budgeting, human resource decision making and defined its own products and services. Case Study One also charged for services and sought funding and business collaboration outside of the parent organisation. Part of the driver for this change to structure was to improve the integration of financial and infrastructure planning. As such the researcher asserts the organisation was characteristic of a medium sized entity.

Case Study Two

Case Study Two was a provider of financial products and services. Established more than 100 years ago, Case Study Two is also an authorised Trustee manager. Case Study Two is geographically located in only one of the Australian States (or Territories).

Case Study Two provides general banking, estate and financial planning services in the locations for which it operates. At the time of conducting the case study the organisation managed more than $1.5 billion in funds on behalf of personal, business and wholesale investors, as well as nearly $1 billion of trust assets.

The organisation employed approximately 100 staff located in branches and administrative offices across their service areas. The organisation had four major departments, these being:

- Sales and Service Department (operating the client facing sales and service networks)
- Financial and Trust Asset Management Department (managing the client assets and investments)
- Corporate Services Department (providing back office support services such as compliance management and legal administration, internal accounting, human resources and information and communication systems)
- Marketing Department (providing product maintenance and development, pricing, promotional and customer communication support)

Case Study Two had two major office locations in major cities in which it separated the financial and trust asset management activities from the marketing, sales & service and corporate services administrative functions. The split locations for functions occurred due to a 2001 merger of two similar businesses. The organisation had many 'retail' sites across its market area.

Case Study Three

Case Study Three was identified in conversations with a range of consultants who were familiar with the Critical Process Targeting Method. In one of these conversations during the middle of 2006 it was mentioned that a client of one of these consultants had recently asked for support in moving a stalled Shared Services project forward. The Shared Services project had been ongoing for nearly two years and thus far there had been no agreement on how to provide a modern shared services function. The vision of a shared service function in this organisation was one in which the 'bundling of supporting processes and non-strategic activities' of a group of departments (part of a larger organisation) was captured in a new department which in turn treated these processes and activities as its core business.

There was approximately one hundred and twenty staff in this new department. This medium sized Australian organisation had decided in keeping with the current trend of the time to move from a 'divisional' stand-alone model to a shared administrative services model (Walsh, McGregor-Lowndes & Newton 2008).

The intrinsically interesting context of the three cases studied was:

1. Case Study One: Stated a need to understand how best to improve a new service support system
2. Case Study Two: Stated a need to link IT to business more closely and develop an IT strategy
3. Case Study Three: Stated a need to redefine the services and systems of the department in alignment with broader goals

The researcher believed that although different sufficient similarities existed to use all three case studies in a single research project.

Summary of Case Selection and Characteristics

In summary the case selection process was focused upon the practical and research requirements of the study.

It used the case selection criterion of Denscombe (2007) to consider the research facets of the selection process as well as the listed practical aspects. In addition there was an effort to identify a case which would provide evidence of the management of bias and influence which was created due to the close interaction of the 'deep involvement' participative case study approach.

The research takes an interpretivist approach, attempting to explore the context in detail looking for understanding from a holistic perspective.

3.3.3. Data Collection Methods

> A list is not a mistaken first step on the way to a more appropriate definition: it is the only adequate form of knowledge... One learns to use a list, and thereby becomes part of a practical tradition, by playing around with or applying the list in interaction with others (Smith 1993, p.141) cited in (Willis; 2007, p.294).

Data collection for an interpretivist can sometimes appear to be nothing more than lists of information to the perspective of the positivist researcher looking for what it means in more concrete terms. The list itself can tell the interpretivist researcher much about the

situation or event they are studying without the need to further condense and manipulate that data.

As a novice researcher the author read with unease the comments of other authors such as Denscombe,(2007) and Willis (2007) who appeared to be highly experienced and clearly excellent communicators of interpretivist research design using qualitative data. They suggested that "the whole process of qualitative research, including data analysis and interpretation, can be confusing and frustrating" (Willis et al. 2007, p.287).

For those readers who find interpretivist studies both difficult to follow and to understand the following comments are provided. The outcomes of the analysis and interpretation of the data in an interpretivist study can be difficult to understand for the post positivist researcher seeking black and white 'truths'. To be able to accept the outcomes as worthwhile (not expecting that any agreement with the philosophy will occur) the reader should consider the approach from the perspective of the writer 'standing in their shoes' and 'seeing with their eyes'.

This section investigates and describes the data collection of the study.

There are four major methods of qualitative data collection according to Denscombe (2007, p.133); "questionnaires, interviews, observation and documents". These methods assist in providing (Denscombe 2007);

- clarity of description for what is occurring
- an accurate approach to measuring events and elements which can be measured
- evidence rather than unsubstantiated opinion.

Denscombe (2007) identifies some considerations when selecting tools for use within research methods. All methods have particular strengths and weaknesses and all methods have typical or favoured tools. The researcher should not take these for granted and consider a wide range of methods and tools (Denscombe 2007).

This methodology chapter has already put forth the case for using an interpretivist case study approach.

Rather than looking for methods which are highly regarded or most frequently cited in academic journals tools should be considered which provide the most benefit to the research project. Of course academic regard and use within a field are important

considerations as they direct the novice researcher towards tools and methods which have provided assistance to many researchers before them.

Interview

In standard interviewing, the investigator defines the question and the problem; the interviewer is "only looking for answers within the bounds set by their presuppositions" (Leech 2002, p.663). In 'elite' interviewing, however, the investigator allows and even encourages the interviewee to teach the interviewer (Leech 2002). The interviewee provides the interviewer with the problem, the questions, the situation and the context (Leech 2002).

The 'elite' interview as espoused by Leech (2002) is it seems a form of unstructured or semi- structured interview technique. Fontana and Frey (2005) suggest three major types of interview (Fontana & Frey 2005):

1. Structured Interviewing
2. Group Interviewing
3. Unstructured Interviewing

Structured interviewing requires the interviewer asks all respondents the same series of pre-established questions with a limited set of response categories. There is generally "little variation or room for variation in responses except where open ended questions are asked and these are infrequent"(Fontana & Frey 2005, p.702).

Group interviewing is a "qualitative data-gathering technique that relies on systematic questioning of several individuals simultaneously in a formal or informal setting. Thus, this technique straddles the line between formal and informal interviewing" (Fontana & Frey 2005, p.703). The use of the group interview is normally associated with marketing research in the form of a 'focus group' (Fontana & Frey 2005).

Issue and Solutions with Unstructured Interviewing

The unstructured interview is also an important method within IS research with seminal papers by Benbasat, Goldstein and Mead (1987) and Myers (1997) in strong support for interview as a data collection method in IS contexts (Benbasat, Goldstein & Mead 1987; Myers ; Myers 1997).

Unstructured interviewing can provide greater breadth than do the other types given its qualitative nature. “This [the unstructured interview] is the open-ended in-depth interview” (Fontana & Frey 2005, p.705). “The [unstructured] interview is a contextually based, mutually accomplished story that is reached through collaboration between the researcher and respondent” (Fontana & Frey 2005, p.715).

Fontana and Frey (2005, p.716) also suggest that interviewers have come to realise that they "are not invisible neutral entities; rather they are part of the interaction they seek to study and they influence that interaction".

Myers and Newman (2007) list a range of problems and pitfalls in interviewing and also discusses how to resolve or mitigate these risks (Myers & Newman 2007).

PROBLEM: Artificiality of the interview, the qualitative interview involves interrogating someone who is a complete stranger; it involves asking subjects to give or to create opinions under time pressure.
SOLUTION: Situating the researcher and minimising social dissonance. As an active participant in the case studies all interviewees were known to the researcher and the researcher to them prior to interview. The use of conversations reduced the effect of the artificialness of interviews

PROBLEM: Lack of trust, due the interviewer being a stranger.
Solution: See previous solution plus use the of appropriate dress in meeting with interviewees, interviewees were able to see the interviewer at work and thus base trust decisions on their interactions prior to interview

PROBLEM: Lack of time, leading to invalid or incomplete data gathering
SOLUTION: requires flexibility, improvisation, and openness. The ability to use conversations plus the use of many data sources reduced the impact of insufficient time to complete interviews. This was not found to be an issue in practice

PROBLEM: Elite bias and level of entry to the organisation leading to inability to interview higher level staff or only having the views of top management
SOLUTION: Finding different subjects is called “triangulation of subjects”, where the idea is to try not to force one voice to emerge (Rubin & Rubin 2005, p.67). Interviews were carried out with a range of staff members across at least two levels of the organisation. As the

activity required the agreement of the leadership team the level of entry was considered suitable to move down the levels for interviews.

PROBLEM: Hawthorne effects, as discussed previously by Fontana and Frey (2005)
SOLUTION: Myer and Newman (2007) provide no guidance on this issue. This issue was accepted as part of the circumstances of the method. Mitigation was provided by a third case study in which an unbiased third party implemented the method and by triangulation of data to verify or refute the researcher's interpretations.
Constructing knowledge as the act of interviewing can lead to interviewee and interviewer

PROBLEM: Creating thoughts and opinions in reaction to the interview environment, "recognises that subjects are creative interpreters of their worlds as we are of theirs" (Myers & Newman 2007, p.17).
SOLUTION: The researcher used triangulation of data to verify or refute the researcher's interpretations. The use of multiple interviews on a single subject provided evidence or not of the interviewees interpretations

PROBLEM: Ambiguity of language leading to a lack of clarity of what was meant rather than what was said.
SOLUTION: The researcher used the audio files rather than transcripts to ensure that meaning was not lost in translation to text. The use of data triangulation was also used to support interpretation and the researcher was knowledgeable of the industry language and the area in which the research was being conducted.

This research project is exploratory and not intended to test theory. It is not intended to investigate particular aspects of the use of the CPTM, acceptance of the user or other pre-defined aspects. Thus the research requires an interview approach that has been variously categorised as semi structured (Jarratt 1996; Leech 2002a) or unstructured (Fontana & Frey 2005) or an elite (Leech 2002) interview type used to explore the understanding of respondents to the experience of using the CPTM.

The Conversation

Interview can describe more than the formal structure in which the interviewer attempts to explore a respondents thoughts, feelings, understanding, likes, dislikes and interpretations on a particular event or topic (La France 1989; Fontana & Frey 2005). In this instance the

CPTM is made up of a series of workshops in which discussion concerning the linkage of goals to strategies, strategies to objectives, objectives to processes and a multitude of assessments is discussed and agreed (Huxley & Stewart 2004; Huxley 2003).

These workshops allow for both formal and informal conversation which in these circumstances are forms of interview. Yin (1994) states that both casual social interactions and communication while undertaking a specific function in case study are valid methods of data collection. Like Gandz and Murray (1980) much of the important conversation (and thus data) occurs as social or casual conversation during meetings and 'water cooler' exchanges. More than sixty percent of all conversation of organisation related topics were occurring in casual conversations (Gandz & Murray 1980). Halliday and Webster (2009) also espouse the value of casual conversation.

Evidence thus suggests that in order to better explore business process understanding the use of 'casual conversation' during CPTM activities, as a form of interview, is a valuable data collection method. This type of interview is termed a conversation. In the conversation the interview and topic is agreed to by the participants and aligns with the requirements of the participants and with the needs of the researcher. Conversation as a variation of the standard interview provides researchers in the SME domain with the ability to gather valuable data with minimal impact on the organisation. The result is an interview approach which meets the needs of resource poor organisations involved in participant case study which aligns with their needs.

In the positivist aligned case study method as described by Yin (1994) the researcher is typically a non-involved or passive participant who may observe and interview or may only interview participants (Bandara 2007). In participant case study (von Weltzien Hoivik 2011; Walsham 1995b) the researcher is an active participant of the case study organisation. In this instance, Case Study One and Two the researcher facilitated the implementation of the CPTM within the organisation. In Case Study Three the facilitation was undertaken by a third party (Senior Consultant).

It is the researcher's belief that this type of participation is more than observation and is in fact a form of ongoing individual and group interview approach. The researcher is able to have semi-structured discussions with the participants (see case vignette schedules Table 12 and Figure 64) throughout the CPTM implementation activities of the case study. Semi-

structured discussions are those which are focused on a CPTM activity (for example assessing the effect of failure of a process or project in a group setting).

Unlike the positivist aligned case study approach this participative case study was undertaken from an interpretivist aligned perspective. Participants were therefore able to be interviewed during each of the numerous discussions held during the case studies.

Observation

The activities of the CPTM are typically conducted in workshops. They provide an opportunity to collect data through participant observation, where the researcher is working with the case study participants to complete a workshop, and non-participant observation, where the researcher is uninvolved in the workshop. A further data collection opportunity occurred in Case Study Two as the research team (five researchers) was involved in post workshop discussions of an informal nature. The research team undertook passive observations with only one researcher facilitating the implementation.

Observation has been described as the primary method of all research methods in the social sciences (Angrosino 2005). Even studies which employ interview as a data collection method can employ observational methods to note body language and other gestural cues that lend meaning to words (Jarratt 1996). Observations can be provided as descriptions in open-ended narrative or as checklists and field guides (Angrosino 2005).

Defining the type of observation is complicated by the discussions of authors such as Atkinson and Shaffir (1998). They suggest that the widely used typology of the complete observer, observer as participant, participant as observer and complete participant (Atkinson & Shaffir 1998) citing Gold (1958) and Junker (1960) while more subtle than the involved participant and uninvolved participant typology is practically participant observation (Atkinson & Shaffir 1998).

Participant observation has long been utilised as a valuable research methodology (Power 1989). Participant observation has been associated with action research (Bryant-Lukosius & DiCenso 2004; Costa, Herbert & Macaulay 2004; Gardner 2004; Kidd & Kral 2005) and with case study (Barrett & Walsham 1995; Broadbent 1991; Chetty 1996; Clemons & Weber 1990; Darke, Shanks & Broadbent 1988; Fink & Disterer 2006; Huxley, Taylor & Stewart 2002). This research study utilised participant observation as a data collection method.

Captured observations were recorded as diary notes both during the workshops and immediately after workshops, and were found to be an important method of capturing qualitative data.

Diary Notes

A fundamental benefit of diary notes is that they permit the examination of events and experiences in a natural context, providing information complementary to that obtainable by other methods (Reis 1994). Another benefit of diary notes when undertaken immediately after the event on which it is focussed is the "dramatic reduction in the likelihood of retrospection" (Bolger et al. 2003, p.585). While reflection is a valuable method of analysing data, in the capture of data, the length of time between an event and the recording of the event can provide a filter of the actual observations of the diary maker (Bolger et al. 2003; Reis 1994). The data captured in diary notes can be used to generate summary accounts without the biases introduced by retrospection over relatively long periods (Bolger et al., 2003). Diary notes were also the method of data capture for the conversations.

Questionnaires

> Questionnaires are not among the most prominent methods in qualitative research, because they commonly require subjects to respond to a stimulus, and thus they are not acting naturally. However, they have their uses, especially as a means of collecting information from a wider sample than can be reached by personal interview (Woods 2006)(Qualitative methods section, no page#).

It is worth noting that it was found that of the four major and well thought of books on qualitative research and qualitative research in IS not one included survey or questionnaires as a method of data collection (Seale et al. 2004; Denzin & Lincoln 1994; Denzin & Lincoln 2005; Myers & Avison 2002). While it appears that questionnaires are possible tools as Woods (2006) suggests they are applicable to situations where a wider sample is required which is difficult to access using interview methods. For these reasons the researcher did not use questionnaires as a method in the study.

Documents

The collection of empirical data in the form of documents (both historical and as output of activities) is one which can be achieved relatively easily. Typically for the historical and publically available documents it is normally a simple task to say 'yes' to all offered information by the case study organisation. Publically available electronic data concerning organisations is also a source of valuable documentation.

Documents collected in this thesis can include the following types;

- strategic plans and non-public documents which described the organisation, its activities, recent events and intentions
- organisational publications including public reports, web pages, financial reports, press clippings, presentations (EG: PowerPoint slides), minutes of meetings
- briefing notes to management
- post it notes from meetings with participant text
- white board content
- CPTM output materials both printed and electronic
- researchers diary notes
- research team notes
- research team publications relating to the research project.

Data collected as documentation was named and stored in a suitable file system based on which case study it applied (see Figure 24).

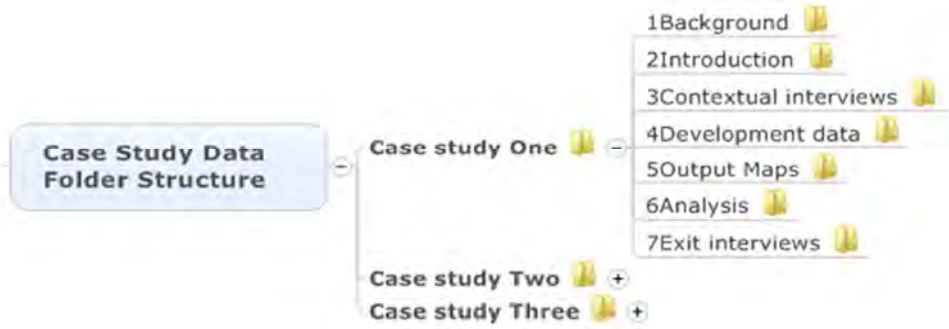

Figure 24- Documents Collected Folder Structure

Figure 24 above shows the folders for each of the three case studies and the sub folder structure for the case study. This structure is repeated for each of the case studies. Each of the folders was notated with the numeric order in which the data was relevant to the case

discussion in order to keep the file structure visual. Note the inclusion of folders for the interview data in order to preserve the timing of interviews.

Summary Qualitative Data Collection Methods

This section of the methodology chapter discussed the selection of methods for use within the case study environment. Ultimately the decision was made to collect any and all data to ensure completeness in the first instance. Of the four major data types ("questionnaires, interviews, observation and documents") (Denscombe 2007, p.133) only questionnaires were not used in this study due to the complexity they added to an exploratory study as well as the potential for directing respondents in areas where no direction was defined.

It should be noted that within case study and especially within interpretivist case study the selection of data sources can be influenced and changed due to the understanding gained through ongoing cyclical or the iterative nature of the data analysis and reflection (Myers & Avison 2002). The reflection on experience during a case study is critical in that it allows the researcher/s to question the situation or interpretation of events to ensure that the perceptions garnered are aligned with those being observed (Johnson 2011). Useful reflection drives the researcher to question initial interpretations by asking such questions as 'do the other sources of data support, refute or offer no indication of the alignment of perceptions?' (Johnson 2011).

Case study data collection summary is provided in diagrammatic form for each of the three case studies (Figure 47-Case Study One- Data Collection and Timings summary on Page168; Case Study Two- Data collection and timings summary on Page199; Figure 75- Case Study Three Data Collection and Timings on Page223).

3.4. Approach to Case Studies

This section of the Methodology chapter describes the case study data collection elements which include the case study protocol, the iterative nature of data collection in exploratory studies, the validation of data using the traditional approach to triangulation and finally a summary of the section.

3.4.1. Undertaking the Data Collection

> "If we knew what it was we were doing, it would not be called research, would it?" Albert Einstein (1879 - 1955).

As with most research and especially with interpretivist qualitative research of an exploratory nature, the planning of exactly what data will be collected when and how is like battle plans 'redundant the minute the battle starts'. As discussed previously an important facet of this type of research is that the focus is on understanding not 'truth' which in post positivist research tends to be defined by statistical assessment. Instead situated or contextual understanding, not truth, is the purpose of interpretivist research with the goal of the interpretivist researcher being to understand the particular context and effectively convey that understanding to the reader (Willis et al. 2007).

The Iterative Nature of Data Collection

An interpretivist aligned qualitative data collection and analysis is typically of an iterative nature (Hesse-Biber & Levy 2006) with data being analysed as it is collected and this then influencing the collection of further data. In much the same way as an interviewer will follow a thread which at the time appears interesting only to come back to the original set of questions but with new understanding of the context or situation. The interviewer's questions are now altered in delivery or content to improve the discovery outcomes or to seek more than was originally intended due to their iterative analysis of incoming data.

There is a "dynamic interaction" between data collection, data analysis and hypothesis formulation (Hesse-Biber & Levy 2006, p.76). This iterative cycle can lead the researcher to collect specific types of data based on iterative analysis cycles.

The data collection of the research project went through a number of iterative cycles. These were essentially across each of the three case studies with the first leading to a

deeper approach in the second and the third looking for evidence to support rather than new information.

The Sources of Data and Corroboration

The data collection was heavily influenced by the activities of the CPTM. The CPTM requires an agreed Strategic plan in whatever form the organisation typically undertakes it. It then takes this existing or developed strategic plan and reconfigures the information to communicate the cause and effect relationships of the information. If no existing plan exists the data outputs then include the working materials used to develop the plan, meeting and workshop outcomes as well as any associated communication in relation to how the workshops and meetings should be conducted and scheduled. Diary notes of the meetings were also taken and if other researchers were involved in the interactions, as recorded by meeting minutes, agendas and documentary outputs they provided diary notes from those interactions to incorporate with all other data. Diaries were simply used to support interpretation and not formally used in the analysis process.

This research project identified a broad range of data sources from which it was able to develop the understanding required to achieve usable outcomes. According to standard qualitative data sources the following table (#Table 9) illustrates; the case the data relates to; the type of data; what the data was used to corroborate; and the source of the data item. (See case Vignettes in chapter 4 for details of data collection and timing).

Case	Data Type	Data Description	Source of Data	Corroborated by item
1	Documentation **Validation Data**	Existing strategic planning documents, internal reports and communications	Organisation documents	Website published documents, interviews, observations
1	Interviews **Primary Data**	Interviews of participants	Assistant Director, Director1,	Cross interview analysis, researcher notes and actual outcomes/events
1	Conversations Support closing interviews and validates coding (Diary Notes)	Casual and semi-formal conversations with participants prior to, during and post method meetings. Used to support context and understanding	Director (CFO), Director 1, Director 2, Director 3, 8 x Managers (see Org Structure Figure 46)	Start-up interviews, closing interview and diary notes
1	Documentation (Diary Notes) **Validation Data**	Non-participant observations of workshops and meetings	Post workshops and meetings	Informal discussions with participants. CPTM output documents, presentations, email communication, workshop notes
1	Documentation **Validation Data**	Output of the CPTM	Created by the researcher and organisation while using the method	Interviews, diary notes
2	Documentation **Validation Data**	Existing strategic planning documents, internal reports and communications	Organisation document	Website published documents, interviews, observations
2	Interviews **Primary Data**	Interviews of participants	GM Corporate Services, GM Marketing, Company Secretary	Cross interview analysis, multiple researcher's notes and discussions between researchers. Published papers by members of the research team. Published documents for compliance by the organisation.
2	Conversations Support closing interviews and validates coding (Diary Notes)	Casual and semi-formal conversations with participants prior to, during and post method meetings. Used to support context and understanding	Company Secretary, Managing Director & CEO, GM Marketing, GM Corporate Services, GM Sales & Service and their direct reports except Asset Management (see Org Structure Figure 62)	Start-up interviews, closing interview and diary notes

Case	Data Type	Data Description	Source of Data	Corroborated by item
2	Documentation (Diary Notes) **Validation Data**	Non-participant observations of workshops and meetings	Post workshops and meetings	Multiple other researcher's notes and discussions between researchers. Workshop notes by researcher
2	Documentation **Validation Data**	Output of the CPTM	Created by the researcher and organisation while using the method	Interviews, diary notes
3	Documentation **Validation Data**	Existing strategic planning documents, internal reports and communications	Organisation document	Interviews, published organisational reports, newspaper articles
3	Interviews **Primary Data**	Interviews of the Senior Consultant	Senior Consultant	Consultant documentation in the form of output material and reports. Comparison with prior case studies
3	Documentation (Diary Notes) **Validation Data**	Observations	Post interviews	Comparison with prior case studies, internal documentation
3	Documentation **Validation Data**	Output of the CPTM	Created by the Senior Consultant and organisation while using the method	Interviews, diary notes

Table 9- Data collected for the case studies

In the case studies historical documentation was used predominantly to provide context for the vignettes and to ground the interview and CPTM output data. For example, understanding the prior history of the organisation added clarity to statements from interviewers such as "*Started off with our strategic plan for the division which had four arms to the strategic plan and each of these had sub objectives*" (Assistant Director Case Study One). If the researcher was not aware of the original strategic plan and the structure of the division in the enterprise there would have no understanding of why this was a complaint about the original strategic plan. A second example from Case Study Two "*In the past the conversations that had occurred had not been well received because there wasn't a lot of meat behind it*" (GM Corporate Services) was actually discussing the Chief Executive Officer and board members however without an understanding of the context the researcher may have taken many different interpretations.

Validation through Triangulation

Densscombe (2007) and Denzin (1998) describe triangulation from five perspectives (Denzin & Lincoln 1998; Denscombe 2007):

1. Methodological triangulation (between methods)
2. Methodological triangulation (within-methods)
3. Data triangulation (use of contrasting sources of information)
4. Investigator triangulation (use of different researchers)
5. Theory triangulation

This research project utilises data and investigator triangulation perspectives in the data collection and data analysis. The use of triangulation improves the case for validity as qualitative interpretivist studies are not able to be validated in the way that quantitative interpretivist or indeed positivist studies apply validation.

Methodological triangulation although suggested by some authors (Davies 2003; Gallivan 1997; Jick 1979; Kimchi, Polivka & Stevenson 1991; Denscombe 2007) to be appropriate to quantitative data or the development of research instruments is a source of validation when used across cases. For example the ability to see the same types of evidence across more than one case when using the same method for each provides further validation. It should be noted that in this instance it is not considered to be a strong validation as the three cases studied may have contextual issues which remain unknown which can affect any analysis (Willis et al. 2007). Bogdan and Biklen (1998) emphasises that triangulation for

qualitative interpretivist studies is not a core issue. They suggest that because interpretivist theory sees 'reality as socially constructed' multiple version of this reality provide more to manage, not necessarily greater validation (Denscombe 2007; Taylor & Bogdan 1998; Bogdan & Biklen 1998).

Although there is some argument against the use of triangulation with interpretivist studies it was found that there was a substantial amount of confidence gained with the addition of multiple sources of data. In an interpretivist perception this is considered an appropriate use of triangulation. Willis (2007), states that peer review is an alternative to triangulation but his description of this approach might be considered to be an extension of that described by Denscombe (2007) as investigator triangulation.

Data Triangulation was used extensively in the second case study with observation, interview and documentation being triangulated. The study suggests greater validation of results from the Case Study Two as there was also significant investigator triangulation and peer review with five researchers involved over the time of the case study. For Case Study One and Three only a single researcher was involved in the observation and interview aspects of the data collection.

The research project uses triangulation to check against bias in two ways: First it used multiple researchers in the second case which resulted in vigorous discussion concerning interpretation of the events and the use of an unrelated facilitator for the third case with the aim of providing a clear check of the bias identified at the confirmation stage of the PhD. Triangulation can provide a greater degree of accuracy of the data collection and a more complete picture of the data available (Denscombe 2007, p.138).

3.4.2. Case Study Protocol

This section describes the case study procedure, whilst implementing the CPTM, the data collection requirements and process and the data analysis procedures.

Background of Case Method

A case method approach is an appropriate way to research an area in which little prior research has been undertaken (Benbasat, Goldstein et al. 1987). "Case research is particularly appropriate for certain types of problems: those in which research and theory are in their early formative stages" (Benbasat, Goldstein & Mead 1987, p.369). In this study

the improvement of business processes understanding in organisations is a little investigated phenomenon. Bonoma and Wong (1983) state that case research is also aligned with "sticky, practice based problems where the experiences of the actors are important and the context of action is critical" (in Benbasat, Goldstein et al. 1987, p.369).

The exploration of the understanding of business processes during an implementation of the CPTM is one which requires a deeper type of case study approach. In order to successfully uncover the experiences, issues and problems of the participants and the organisation a deeper immersion than that which might be achieved by passive observation was undertaken.

Participatory Case Method

Nandhakumar (1993) claimed that his study of the design and development processes of an information system was enhanced by his role as 'participant observer'. The participant observer can take the role of "serving as a staff member in an organisational setting" (Yin 1994, p.87). Nandhakumar (1993) adds further support for his claim that it was possible for him to be involved in the day-to-day activities of the design team from the viewpoint of an insider and thus collect critical data not possible as a passive observer or via interview. Walsham (2002) has also identified two different roles for the interpretive case study in IS research. "Namely that of the outside observer and that of the involved researcher, through participant observation" (Walsham 1995b; Walsham 2002, p.107).

This 'involved researcher' role was taken by the facilitator of the CPTM as part of the organisational team. The experience provided many opportunities for casual conversation (conversations) and enabled a deeper and richer exploration of the case study event.

The study design is described using a series of diagrams in support of the text; these include a model of the high level aspects of the study (see Figure 25) and flow charts of the lower level more detailed aspects (Figure 26, Figure 29 and Figure 27).

Case Study Design

The first aspect of any research design is the major elements which in this study are the design itself (the different tools and methods have been constructed to explore the business process understanding of organisations after using the CPTM). Figure 29 illustrates the major elements of this research project as they relate to the qualitative interpretivist stance.

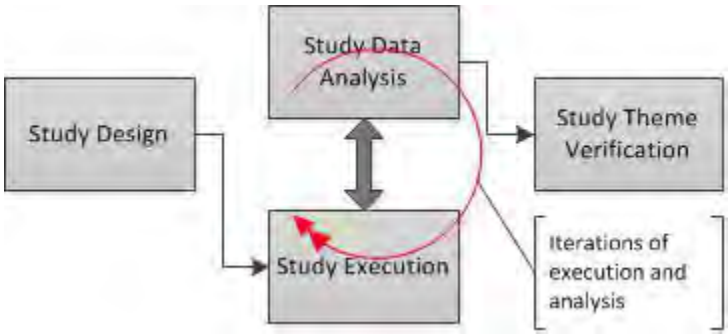

Figure 25- Study design model

Figure 25 above contains the design phase of the project with the execution or implementation of the design followed by the analysis of the data using the three phase coding approach, taken from data analysis in grounded theory. Shown in the diagram is the iteration that occurs between the study execution and study data analysis. The final aspects of the study design are the theme verification, undertaken by considering the themes and the original data from the case studies, and a discussion of the themes in the light of supporting literature.

The next diagram (Figure 26) contains five major activities of the study design phase.

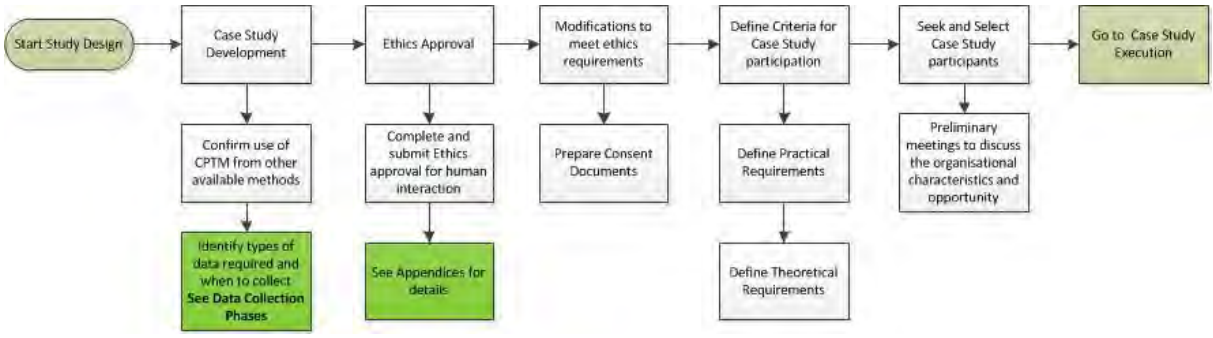

Figure 26- Study Design Phase

In Figure 26 these five major activities were undertaken in order to;

- define the requirements of the case studies
- define how to manage the case study
- manage data and case participant confidentiality
- define how to select which case study opportunities would provide the sought data and meet the selection criteria.

The case study design utilised the work of the literature review where a range of methods were assessed against the characteristics of 'typical' SME type organisations to identify if there were alternative and better methods to use for the study. In the literature review it

was shown that the CPTM was the preferred method based on the typical characteristics of SMEs also identified in the literature review.

Ethics approval was sought using the universities expedited ethics clearance for human related research. Documents were created to ensure that participation was voluntary and that participants were aware of the reason for the research, the study aims and purpose and the risks involved with participation from both an individual and organisational perspective. (See the appendices 7.5 for a copy of the informed consent document) A confidentiality agreement was signed with each of the organisations using standard confidentiality agreements with the choice of additional requirements or changes. Each of these indicated that agreement would result in no person of the organisation being identified or the organisation itself in any publication including this thesis.

The criterion for case selection was defined with a focus on both practical and theoretical considerations (See 3.3.1 for a full description of this section).

Case Study Execution

The following diagram (Figure 27) provides a visual model of the process of the case studies undertaken. Each case study was undertaken separately and followed the same process.

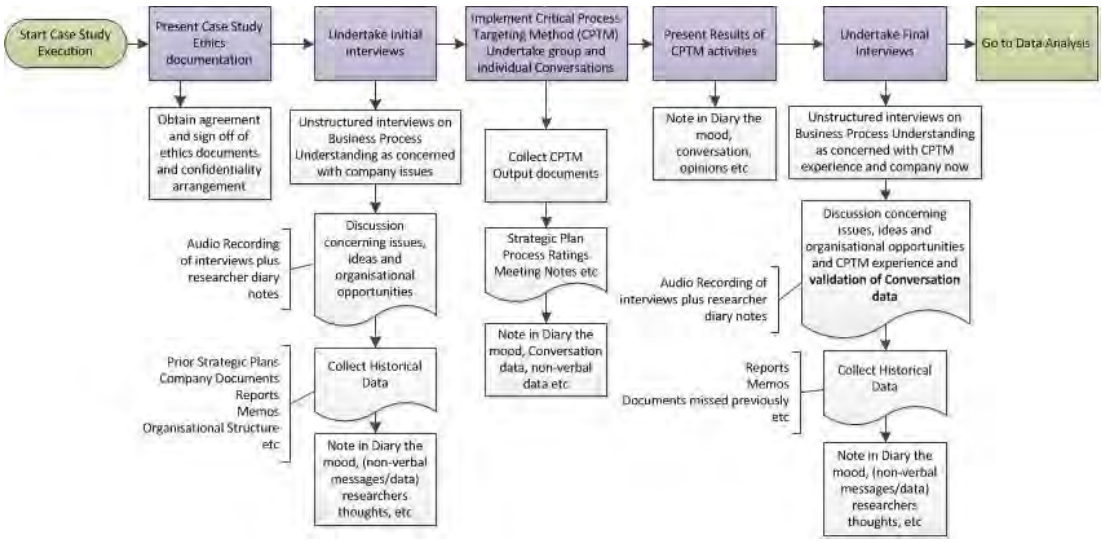

Figure 27- Case Study Execution

Due to the logistics of geography and resources required the case studies were undertaken sequentially. Both the major activities and the detail of these activities are described in the diagram. For example 'Present case study ethics documentation' is the major activity and the objects below are the detail containing the requirements to acquire agreement from

the participants for the case study activities. The participants may be those who were expected to be interviewed and those who may only be involved in the implementation of the CPTM. Each participant was asked to declare for themself that they were willing to participate in the study.

Unit of Analysis

The unit of analysis (Yin 2003) is the implementation of the Critical Process Targeting method in each of three organisations. These organisations while considered under the Australian Bureau of Statistics (ABS) definition to be medium sized entities are more accurately understood by their characteristics which are exampled by the following diagram (Figure 28).

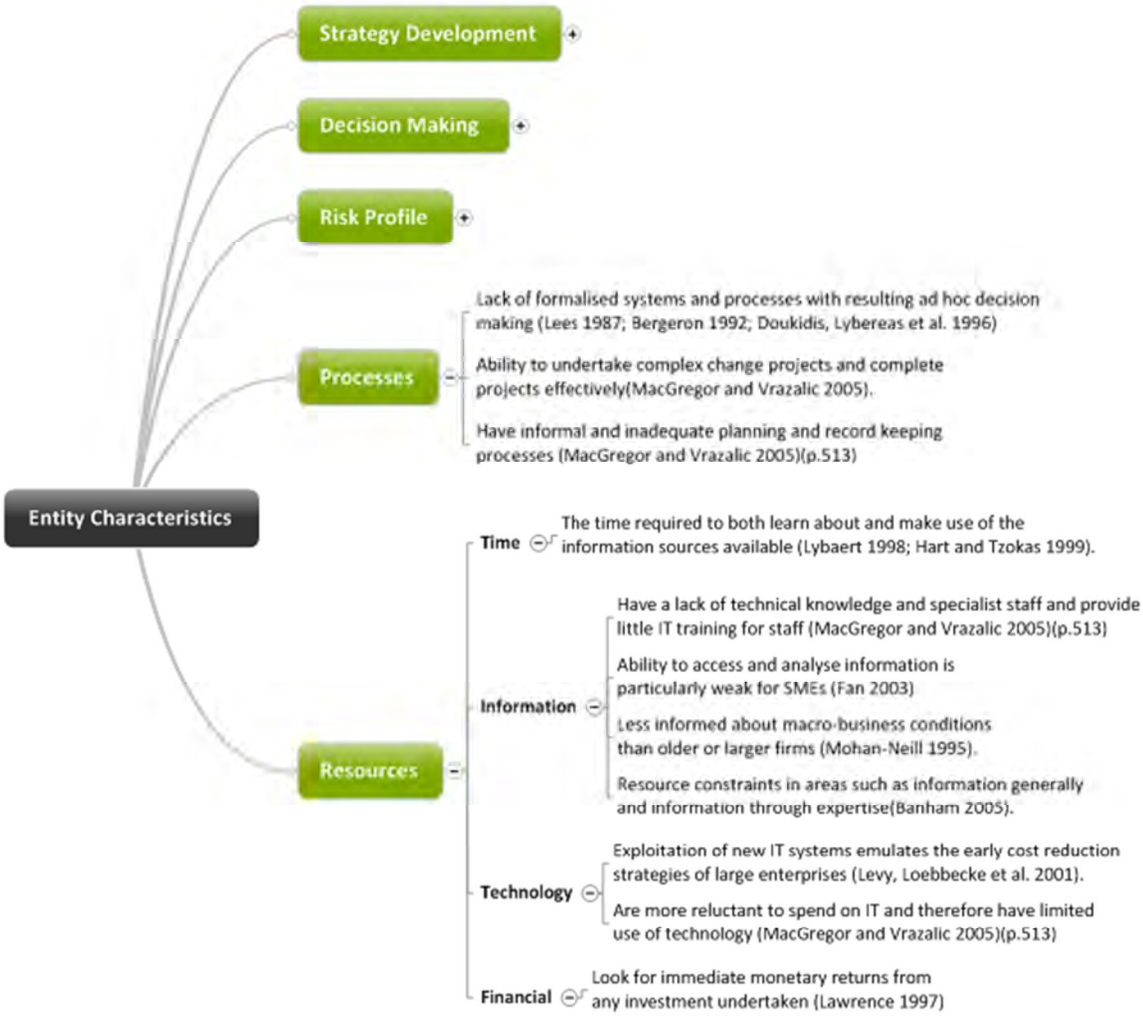

Figure 28- Case Study Entity Characteristics

In Figure 28 the researcher has distilled characteristics of small and medium sized organisations as reported in the literature and discussed in chapter two, into a subset of

those which appear to apply to the three organisations which were the case study participants. Of these the most relevant are the process and resource characteristics. While there were applicable characteristics for Strategy Development, Decision Making and Risk Profile these are not shown here, but can be seen in Chapter 2.

Participants were identified from the top management levels of each organisation. Organisational charts are provided in each of the case study vignettes in chapter four.

Data Collection

Figure 29 following describes the data collection as three phases of activity. That is, the start-up phase, the implementation of the CPTM phase and the closing phase.

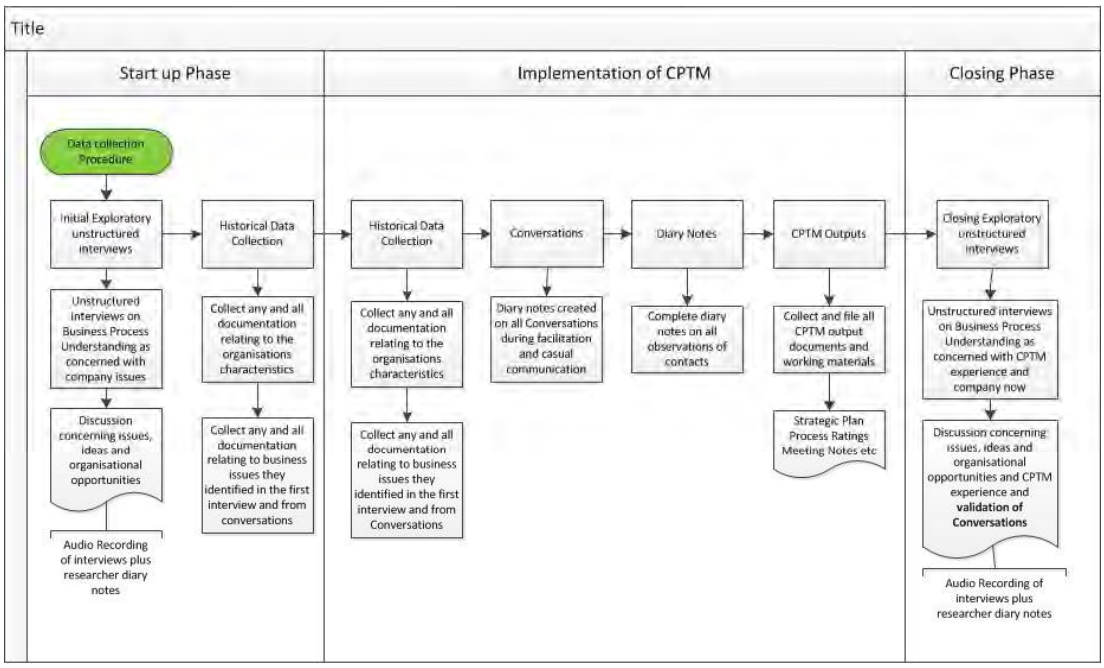

Figure 29-Case Study Data Collection phases

The start-up and closing interviews were the data which the researcher used for all coding. These interviews were audio recorded using a microphone and laptop computer. Informing the closing interviews was the historical, CPTM and diary note data which was to be used to triangulate where possible for credibility and confirmability (Lincoln & Guba 1985).

Conversation data was not recorded and thus was captured as diary notes and meeting minutes. The researcher was, in Case Study One and Two, the minute taker for meetings and the data recorder for CPTM outputs except where individual participants were tasked with completing assessment activities. Where participants recorded information and were

asked to complete an activity individually the researcher, where possible, collected this information as well.

The large body of conversation opportunities (all meetings with participants in the CPTM implementation) provided rich and deep understanding of the entity and the participants.

Interviews

Interviewee recruitment was based on firstly; the initial need to talk with participants who had participated in all the activities of the CPTM as their experience with the method was a critical aspect of the research. (How does the CPTM support a greater understanding of medium sized entity processes?)

There was also a perceived risk that a participant, interviewed in the start-up phase, might miss sufficient of the CPTM implementation experience as to be an invalid or sub-optimal interviewee for the closing phase where experience was a vital aspect of the unstructured interview. This risk was discussed with the main contact at each participant organisation prior to beginning any interviews in Case Study One and Two. The resultant discussion finished with agreement that at least two participants who were management or director level would commit to being available for interview at the start and closing stages and participate in all CPTM activities.

Arcury and Quandt (1999) suggest that for small populations all the members of a population should ideally be interviewed. For example they state that if "the list of possible participants is known and small enough that all potential participants can be included"(Arcury & Quandt 1999, p.128). Considering one of the major characteristics of SMEs is that they are resource poor (Banham 2005), interviewing all participants even in small populations is not practical or responsible. In addition, these case studies utilised participant observation, and conversations using the casual and semi-formal conversations occurring during, leading up to and after each of the CPTM meetings. See Data Collection Methods in section 3.3.3 for further discussion of how the researcher resolved issues identified by Myers and Newman (2007) for interviews.

In Case Study Three the senior consultant who implemented the CPTM was the conduit to the organisation and the researcher did not participate in the implementation activities. The senior consultant was the interviewee with his considerable insights over the six month implementation period.

Diary Notes

Diary notes were recorded where practical during conversations or immediately after each. Diary notes also included, where it was perceived useful, the behaviours of participants. Diary notes are summaries of the perceptions and interpretations of the researcher of the events occurring which are heard or observed (Reis 1994). Diary notes documented a time or time period, the names if necessary of the participants and brief context. Diary notes were typically bullet points of the researcher's thoughts and the participant's statements.

CPTM Outputs

The researcher collected all outputs of the CPTM activities. This was simply managed as the researcher was the facilitator of Case Study One and Two and was able to (within the terms of the research agreement) file copies including versions of all output documents. The senior consultant in Case Study Three collected all output documentation and this was provided to the researcher. These would include:

- original strategic plans (where available)
- strategic cause and effect maps
- strategic cause and effect maps with impact weightings
- strategic cause and effect maps with attached processes or projects
- strategic cause and effect maps with attached processes or projects and weightings
- list of processes or process projects and working materials
- calculation of the impact assessments noted on the strategic cause and effect map
- individual assessments of effect of failure, probability of failure, cost benefit and probability of project completion success
- presentation materials for final results
- presentation materials for introduction of the method and procedures.

These documents are digitised if in hardcopy and filed in the research database with descriptive names and sequentially numbered by time of output. For example; 'Processes in Financial Management 1'.

Documents

Historical documents were gathered when possible where they pertained to the character and history of the organisation. At the conclusion of the start-up interviews the researcher requested access to documents which described the organisation and those which may

provide relevant background information to the business issues. In addition any documents related to processes that the interviewee was allowed under the terms of the confidentiality agreement to see were also requested.

These included;

- original Strategic plans (where available)
- organisational Structure documents
- annual Reports of performance and outcomes
- project plans and reports
- external entity reports on structure, performance, systems and people.

In addition the researcher requested either copies of or access to any documents which were alluded to or spoken about during the time the researcher was present. While these documents did not add any support for the experience of users with the CPTM they did provide a vital contextual understanding of the present and prior situation. A more detailed description of the actual data collected, timing and people involved is provided after the schedule in each of the case vignettes (see Figure 47, Figure 65 and Figure 75).

Data Analysis Procedures

Data Analysis is discussed in detail in Section 3.5 and is briefly described here. Data Analysis followed the instructions of Strauss and Corbin (1990) and Dey (2005) in their approach to three phase coding analysis aligned with but not the same as that used in grounded theory (Charmaz 2005). Note that only the unstructured interview data was used in the coding.

The following diagram provides a combined data analysis and theme verification model. The model separates the data analysis into three streams of research activity by showing the streams of the research in which data analysis was undertaken.

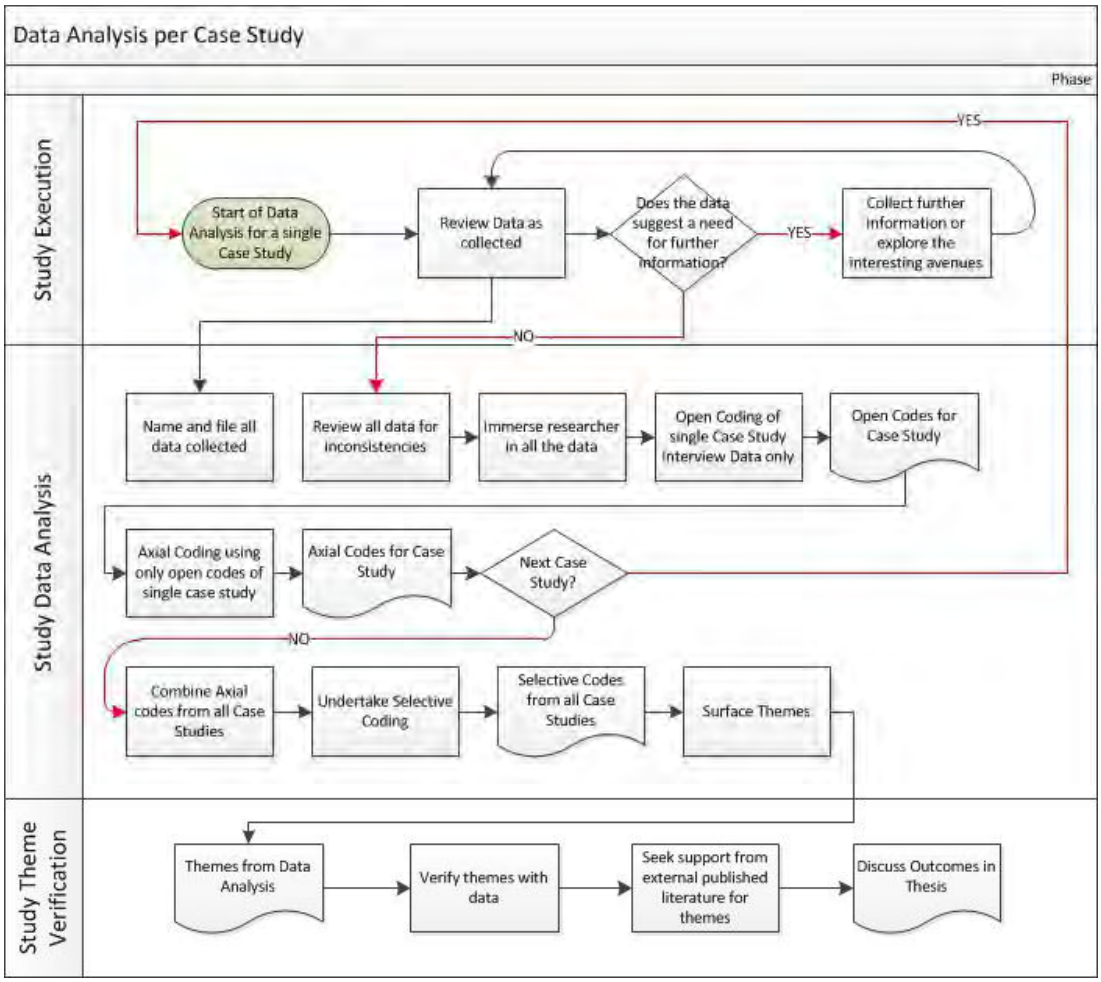

Figure 30- Data Analysis and Theme Verification Model

Data Analysis following the three phase coding approach aligned with grounded theory considers that analysis starts during the data collection (see the study execution stream) (Corbin & Strauss 1990; Dey 2004). During this time of the research the researcher can identify new avenues of data collection based on the ongoing analysis of the data as it is collected (Dey 2004; Díaz Andrad 2009). At the completion of the data collection the researcher then undertakes the coding of the data. This is open, axial and selective coding (Corbin & Strauss 1990; Dey 1999; Dey 2004). In this study the open and axial coding (see the study data analysis stream in Figure 30) was undertaken for Case Study One then Case Study Two then Case Study Three. Once each of the case study analysis for open and axial coding was completed the axial codes were combined from each of the case studies and the selective coding and theme verification was undertaken (Corbin & Strauss 1990; Dey 1999; Dey 2004). This is also modelled in Figure 30 above and spans both the study data analysis stream and the study theme verification theme.

In the study theme verification stream the researcher verified the surfaced themes with the original data from the case studies using all case study data combined. This approach ensured that the themes were appropriate for all three case studies (Corbin & Strauss 1990; Dey 1999; Dey 2004; Charmaz 2005). If suitable evidence is found to support the themes the researcher then investigates the literature to see if support for the themes can be identified. Once these two avenues of verification are complete the researcher then asserts that this new theory is ready for testing (Arcury & Quandt 1999; Charmaz 2005; Dey 2004; Eaves 2001; Goulding 2002 ; Strauss 1987; Strauss & Corbin 1997; Urquhart 2001).

3.4.3. Summary of Study Design and Implementation

This section has described the study design and implementation which included the case selection, case characteristics, data collection methods and the sources of data collected. Case selection considered the criteria required to select appropriate cases or a single case and based these decisions on two major criteria; theoretical criteria and practical requirements. Included in the practical requirements were; accessibility, available resources, willingness to accept research risks and a willingness to use the CPTM method to identify critical processes. The theoretical criteria were those identified by Denscombe (2007, pp.38-42). Case selection also discussed the issue of how many cases were required for this type of exploratory interpretivist case study. Between one and three cases were suggested to be suitable and the resultant choice of three as appropriate for exploratory studies was taken.

Case characteristics discussed the actual characteristics of the case studies such as their general locations, existing size and recent history. Case characteristics indicated that each of the organisations has an interest in resolving a business problem that was related to information systems.

The data collection methods were discussed for qualitative data collection and it was identified that of the four suggested by Denscombe (2007, p.133) as “questionnaires, interviews, observation and documents” the researcher would use all forms except for questionnaires. Each of the other forms were discussed and found to be appropriate and of value to the study.

In addition the researcher introduced and provided substantiation for the use of what has been termed conversations. These interviews which provide valuable data from 'casual conversation' and semi-formal meetings, whilst implementing the CPTM, are sympathetic to the needs of resource poor organisations. The conversation provides a harmonised approach to data collection whilst keeping to the requirements of responsible data collection, case study and interview methods.

The sources of data collected were also discussed from the perspectives of what type of data was collected, from whom or where and how it was corroborated. The iterative nature of data collection in these types of studies was also discussed and the use of triangulation using the data.

Section 3.4 also discussed the study protocol. The study protocol identified the high level approach to the study over four major steps (design, execution, analysis, verification). The protocol also provided detailed discussion of the intended approach to the case studies and informs the reader of whom from and when data would be collected. In brief the data collection was to be undertaken in three phases: start-up, CPTM implementation and closing. Start-up interviews with at least two participants would be conducted using unstructured (exploratory) approaches and these would then be supplemented with conversations, CPTM output, diary notes and historical documents during the implementation of the CPTM. To conclude data collection closing interviews were conducted with the two start-up interview participants. These final interviews provided an opportunity to explore the experiences and issues of the participants and to verify the data from the conversations.

Data analysis would follow the process of a three phase approach of open, axial and selective coding used by many grounded theory practitioners. The first two phases would be undertaken on a single case at a time with all axial codes analysed for selective codes together. Verification was to be undertaken using the original case study data for all cases and then the researcher would consider other published literature that might provide support.

The following section considers the analysis of the data using a three phase coding method.

3.5. Analysing the Data

This section of the methodology chapter discusses the practice of qualitative data analysis. Thus far the chapter has indicated that the researcher is taking an interpretivist stance using case study to set the boundary of the data to be collected using a set of qualitative methods. This section firstly considers the issue of coding the data and how this might be achieved. It then describes from the perspective of a single iteration the method of coding selected and undertaken. The section will then provide examples of the coding.

Figure 31- Section Five Data Analysis Structure

Figure 31 indicates the three main areas which are covered by the section on data analysis.

3.5.1. Coding Qualitative Data

This researcher encountered many 'interesting' forms of data analysis in their review of interpretivist case studies. For example some described by Willis (2007) in his text "Foundations of Qualitative Research; Interpretive and Critical Approaches" use poetry, narrative snapshots and highly detailed descriptive narratives as a form of interpretivist case study analysis.

This researcher is lured towards this type of analysis for its perceived low formalisation of the process used; the outputs are based purely on the writer's perceptions, which align well with the interpretivist view of the world. Further investigation uncovered the requirement for a similar process as that used by phenomenology. While the examples do not include a discussion or description of the process undertaken by the writers who used these approaches, an investigation (similar to reverse engineering) into how they arrived at their outcomes suggests at least an informal form of coding and analysis.

Ratcliffe (1994) identified fifteen approaches to data analysis which might be used on Qualitative data and Figure 32 briefly describes the fifteen approaches.

Types of Qualitative Data Analysis

1. Typology - a classification system, taken from patterns, themes, or other kinds of groups of data.
John Lofland & Lyn H. Lofland (1995). Analyzing social settings, 3rd ed.

2. Taxonomy (See Domain Analysis - often used together, especially developing taxonomy from a single domain.)
James P. Spradley (1980). Participant observation. Fort Worth: Harcourt Brace.

3. Constant Comparison/Grounded Theory (widely used, developed in late 60's)
Anselm L. Strauss (1987). Qualitative analysis for social scientists. New York: Cambridge University Press.

4. Analytic Induction
Jack Katz (1983). A theory of qualitative methodology. In R. M. Emerson (Ed.), Contemporary field research. Prospect Heights, Ill.: Waveland.

5. Logical Analysis/Matrix Analysis An outline of generalized causation
Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis, 2nd ed. Newbury Park, Cal.: Sage.

6. Quasi-statistics (count the # of times something is mentioned in field notes as very rough estimate of frequency)
Jack Katz (1983). A theory of qualitative methodology. In R. M. Emerson (Ed.), Contemporary field research. Prospect Heights, Ill.: Waveland.

7. Event Analysis/Microanalysis Emphasis is on finding precise beginnings and endings of events by finding specific boundaries and things that mark boundaries or events.
Frederick Erickson (1992). Ethnographic microanalysis of interaction. In M. LeCompte, et. al. (Eds), The handbook of qualitative research in education (chapter 5). San Diego: Academic Press.

8. Metaphorical Analysis (usually used in later stages of analysis) Try on various metaphors and see how well they fit what is observed.
Nick Smith (1981). Metaphors for evaluation. Newbury Park, Cal.: Sage.

9. Domain Analysis (analysis of language of people in a cultural context)
James P. Spradley (1980). Participant observation. Fort Worth: Harcourt Brace.

10. Hermeneutical Analysis (hermeneutics = making sense of a written text) Not looking for objective meaning of text, but meaning of text for people in situation.
Max Van Manen (1990). Researching lived experience. New York: State University of New York Press.

11. Discourse analysis (linguistic analysis of ongoing flow of communication)
James P. Gee (1992). Discourse analysis. In M. LeCompte, et. al. (Eds), The handbook of qualitative research in education (chapter 6). San Diego: Academic Press.

12. Semiotics (science of signs and symbols, such as body language)
Peter K. Manning (1987). Semiotics and fieldwork. Newbury Park, Cal.: Sage.

13. Content Analysis (Might be considered a specific form of typological analysis)
R. P. Weber (1990). Basic content analysis. Newbury Park, Cal.: Sage.

14. Phenomenology/Heuristic Analysis (phenomenological emphasis - how individuals experience the world) Emphasizes idiosyncratic meaning to individuals, not shared constructions as much.
Moustakas, C. (1990). Heuristic Research. Newbury Park, Cal.: Sage; and Moustakas, C. (1994). Phenomenological research methods. Newbury Park, Cal.: Sage.

15. Narrative Analysis (study the individual's speech) Discourse analysis looks at interaction, narrative is more individual)
Catherine K. Reisman (1993). Narrative analysis. Newbury Park, Cal.: Sage.

Figure 32-Ratcliffe (1994) Methods of Data Analysis in Qualitative Research

Taking the three types as defined by Leedy (1997) who stated that there were three approaches to analysing case study data:

1. Interpretational, the examination of the data for constructs, themes and patterns
2. Structural, the examination of the data for patterns with "little or no inference made as to the meaning of the patterns" (de Salas 2002, p.68).
3. Reflective, the use of insight and judgement to evaluate the event(s)

The researcher has rearranged the fifteen types of coding from Ratcliffe (1994) into the three types for case study from Leedy (1997). Figure 33 contains those coding types which the researcher believes fit within Leedy's (1997) first type (Interpretational) which is the examination of the data for constructs, themes and patterns.

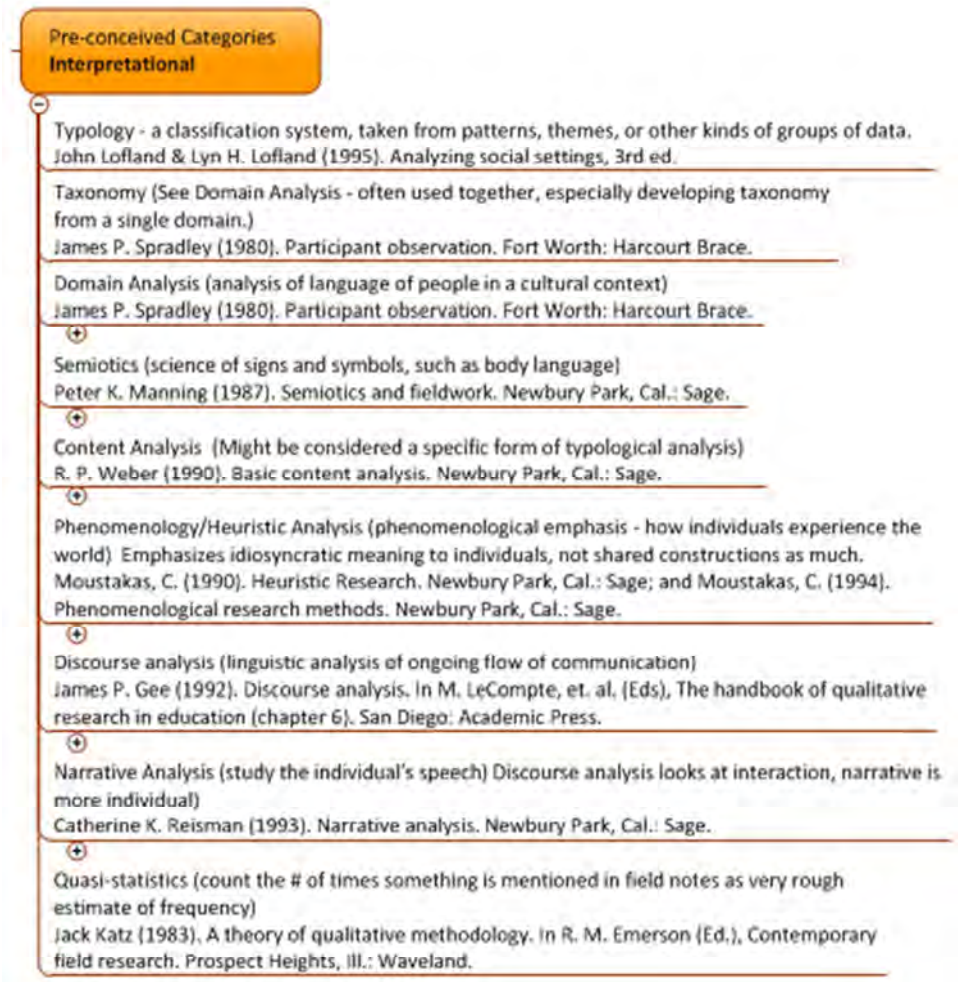

Figure 33- Interpretational coding types

Within Figure 33 there are nine types of coding of which the bottom type (Quasi-statistics) is suggested by Ratcliffe (1994) to be only a little related to qualitative analysis. Each of the other types seeks to uncover preconceived categories such as interaction, specific meanings in relation to an individual, language and patterns. The study reported on in this thesis is exploratory and as such does not start coding with preconceived categories and thus will not use these types of analysis.

The third of the three types suggested by Leedy (1997) is the reflective, which is the use of insight and judgement to evaluate the event. Figure 34 following contains those coding

analysis types from Ratcliffe (1994) which the researcher suggests fits within the Leedy's (1997) definition of reflective coding analysis.

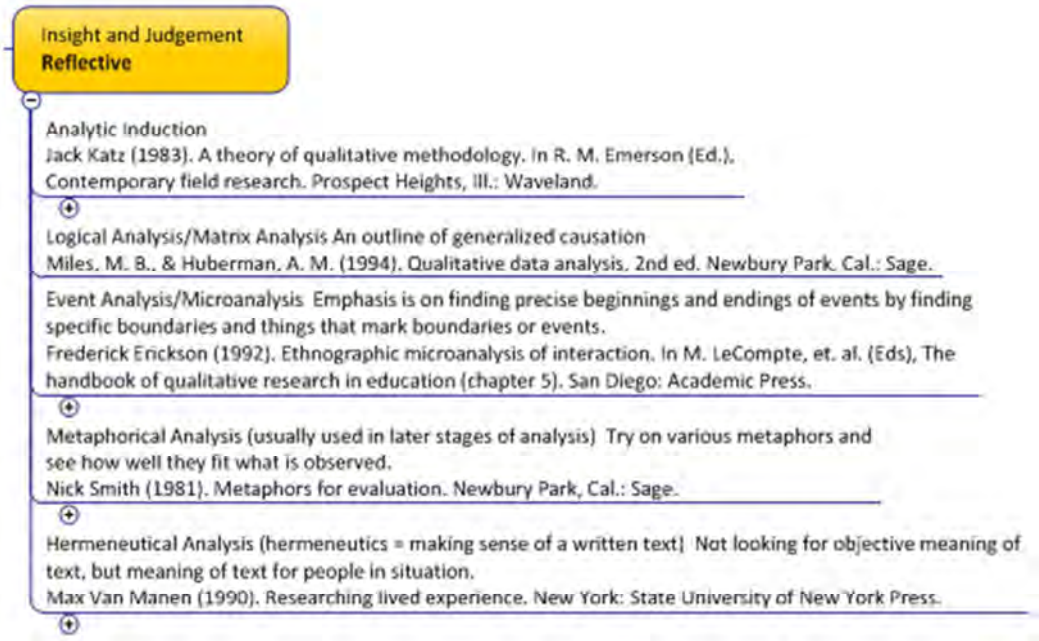

Figure 34- Reflective coding analysis types

In Figure 34 there are five types which appear to align with the use of insight and judgement to identify the categories in coding data. Insight and judgement is explained as a situation where the coder does not start with preconceived categories they openly and willingly allow their prior bias, knowledge and experiences to assist in the coding.

In the second of Leedy's (1997) types (Structural), which is the examination of the data for patterns with "little or no inference made as to the meaning of the patterns" (de Salas 2002, p.68) there appears to be the other end of the spectrum from the first (Interpretational) with 'reflective' being somewhere between these two points. Figure 35 contains what this researcher believes is the only coding type which fits within Leedy's (1997) definition of the structural type.

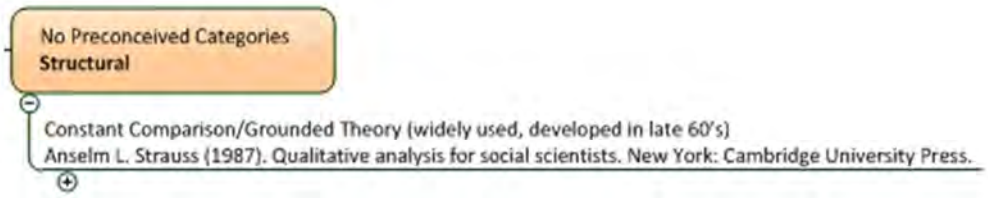

Figure 35- Structural coding analysis types

The grounded theory aligned data analysis method to coding is meant to be approached without any 'baggage' in order to allow the codes to surface from the data itself. This

researcher believes that it is not possible to completely remove prior knowledge and bias when attempting to follow the structural type even though the researcher attempts to do so. Thus there is a suggestion that the aim of the coding is to follow the structural type of coding (no preconceived ideas used or current insight and judgement) however, the actual outcome is that the researcher's bias, history and knowledge will have influenced the coding.

3.5.2. The Three Phases of Coding

Strauss and Corbin (1990; 1998) distinguish between three phases of coding; open, axial and selective (Strauss & Corbin 1990; Strauss & Corbin 1998). Dey (2004) describes these as, a "preliminary process of breaking down, examining, comparing, conceptualizing and categorizing data" for open coding (Dey 2004, p.81).

Axial coding involves a "set of procedures whereby data are put back together in new ways after open coding, by making connections between categories" (Strauss & Corbin 1990, p.116)... Selective coding involves "selecting the core category, systematically relating it to other categories and filling in categories that need further refinement and development (Strauss & Corbin 1990, p.116).

While the process of analysis was iterative (went through cycles of coding and recoding) in practice, for clarity the analysis is discussed as a single cycle.

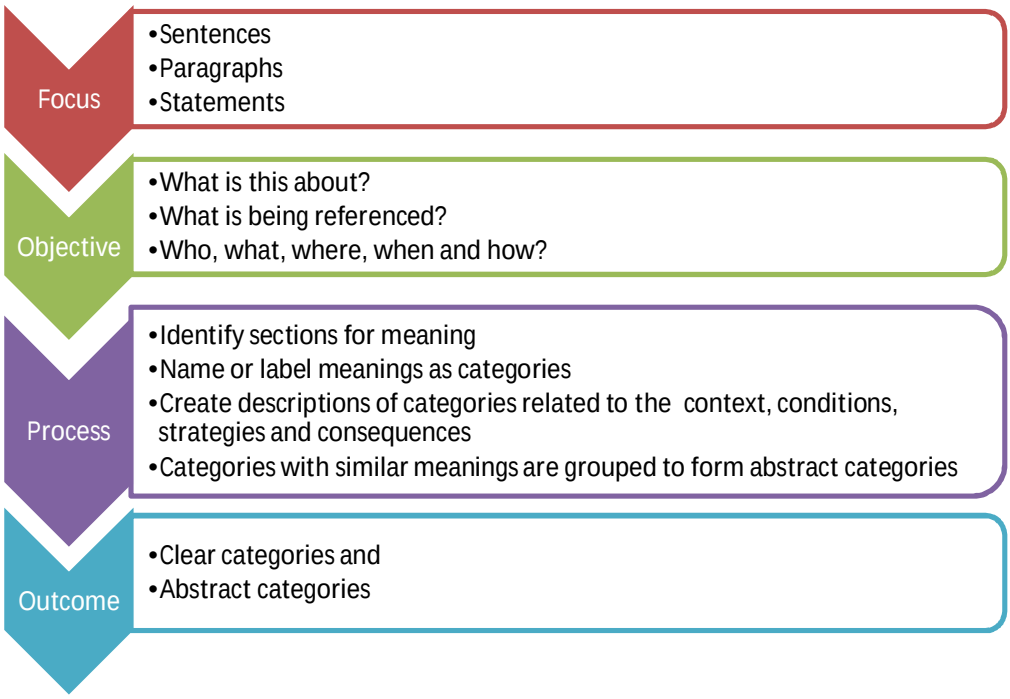

Figure 36-Open Coding (Strauss and Corbin 1990; Dey, 2005)

Open coding is the first phase of a three phase process in which the raw data can be categorised. Only the interview data was used in the coding for each of the case studies. All other data was used to support or disconfirm the coding outcomes.

There is a focus on a single section or piece of the data (sentence, paragraph or statement) at a time, the material is identified to come back to a specific item (for example pg 2 paragraph 4). The researcher then looks for meaning in that section of the data and as they do this activity they should record that meaning and then start to create categories by naming each of the 'meanings' that they have identified. Charmaz (1983) suggests that codes are shorthand devices used to label, separate, combine, and organise data. In this way the researcher is creating a set of codes which may mean very different things to each individual reader.

Meanings as categories can be 'very concrete' or they can be abstract (Dey 2004). That is, a concrete category might be 'reflection led to clearer understanding' and an abstract might be exampled as 'planning' (Dey 1999).

Multiple passes through the raw data occurs until the coder finds that they can apply no further codes to the data. This point is generally termed saturation (de Salas 2002).

The next step is axial coding which utilise the newly created open codes. Figure 37 following contains a view of the information required to describe axial coding which aligns with Strauss and Corbin's (1990) and Dey's (2004) guidance for axial coding.

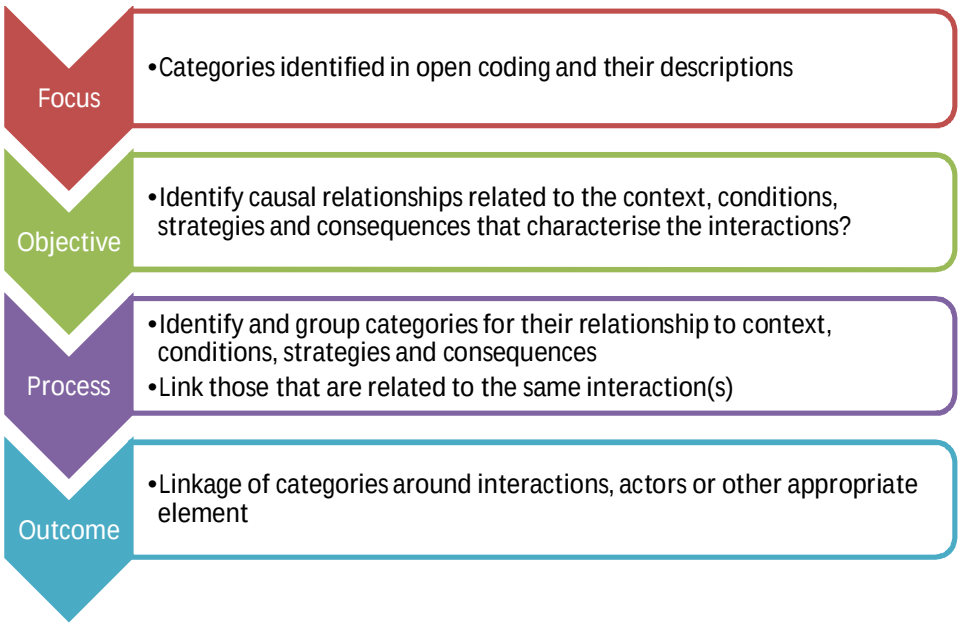

Figure 37- Axial Coding (Strauss and Corbin 1990)

Axial coding appears to be where the original developers of grounded theory disagreed (Glaser & Strauss 1967) and is focused on what Glaser suggested was 'privileging' one code over others in seeking to identify causal relationships (Charmaz 2005; Dey 2004). An inductive reasoning process enables the identification of causal relationships within the categories identified in the open coding phase. In some respects this might be described as a chunking up of the many categories identified in open coding which will enable categorisation of the causal relationships related to the interactions of the data (Dey 2004; Strauss & Corbin 1990; Strauss & Corbin 1998; Charmaz 2005).

Spradley (1979) identified a range of data relationship types as seen in Figure 38. These do not appear to provide the insights (what the data means in its context) but perhaps supports understanding of the data relationships.

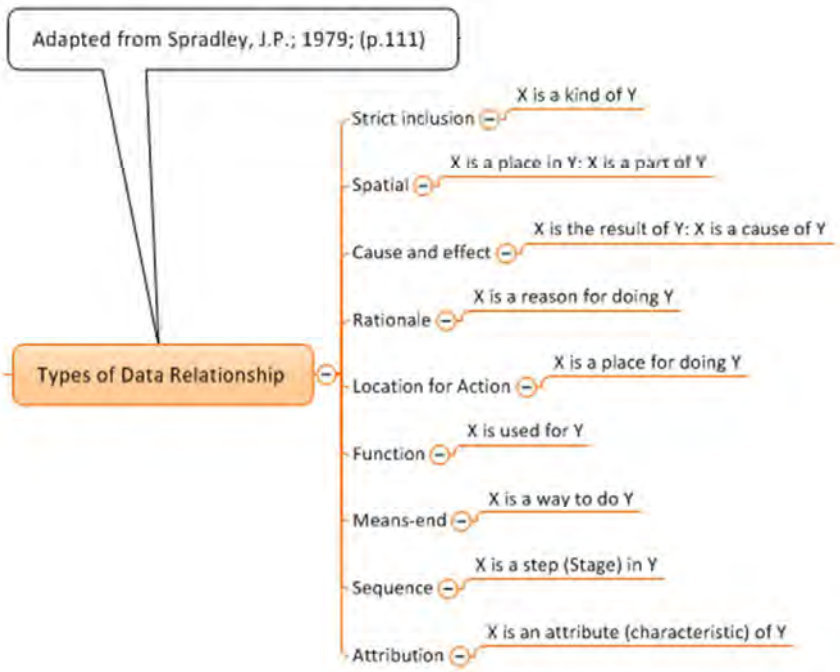

Figure 38- Spradley (1979) Data Relationship types

Causal relationships as described by Dey (2004) appear to consider all the types of relationship described by Spradley (1979). Relationships between the open codes were used to define the axial codes. An attempt to discard prior knowledge, bias and history in order to align with the structured method of coding analysis was again undertaken.

In order to document the process a software application called MindManager (*Mindmanager* 2011) which provides a clear visual approach to recording the relationships of the coding was utilised. Mindmanager is not like some applications such as NVivo or NUD-IST instead it is a system which offers the user the ability to record linked information and clearly show those linkages as shown in Figure 39.

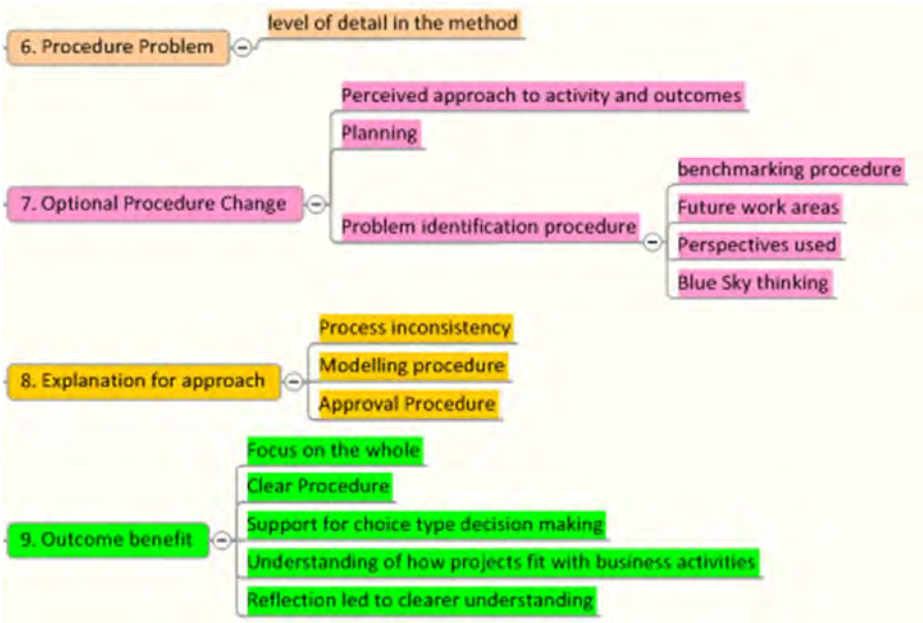

Figure 39-Portion of Case Study Two Axial Coding

The third phase of the three phases is the selective coding. Figure 40 following includes the major elements which describe the selective coding phase.

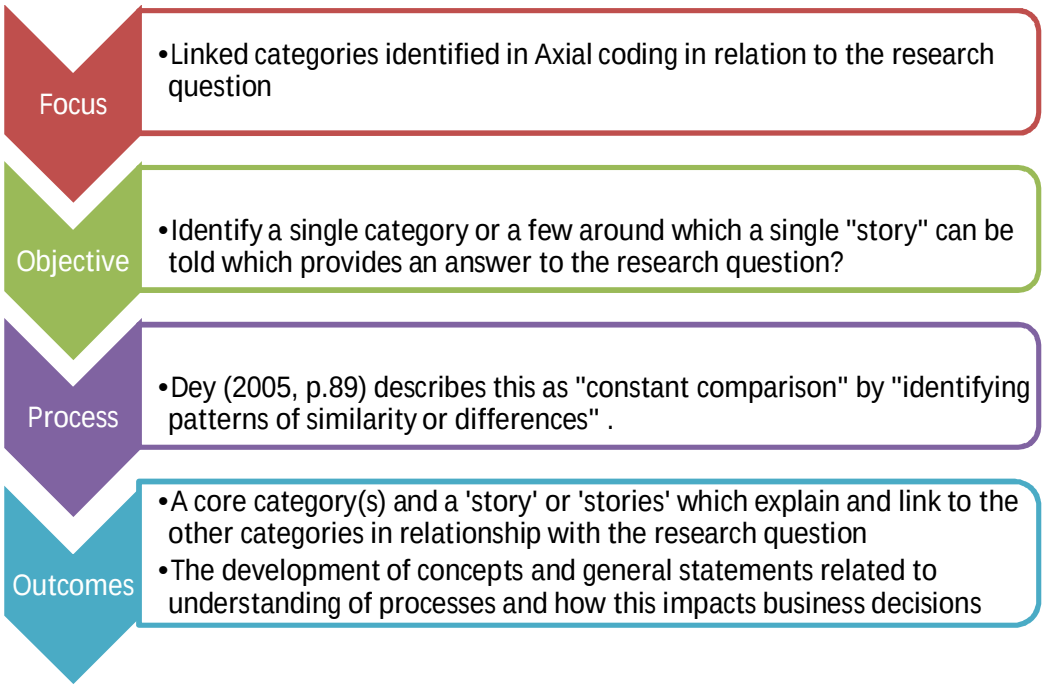

Figure 40- Selective Coding (Strauss and Corbin 1990)

It was at times difficult to find clear instruction on how to complete the selective coding activity. Selective coding or the "*acquiring of categories is subject to rules that are ambiguous and subject to continual revision in the face of ..confusable alternatives*"

suggests Dey (2004, p.87). Denscombe (2007, p.292) states that the essence of data interpretation is the undertaking of four tasks:

1. Coding the data
2. Categorising the codes
3. Identifying themes and relationships among the codes and categories
4. Developing concepts and arriving at general statements

The selective coding phase is concerned with the fourth task point provided by Denscombe (2007). That is the development of a story which can be told to provide an answer to the research question?

Lakoff and Johnson (1980, p.122) observed that categorisation "is primarily a means of comprehending the world and as such it must serve that purpose in sufficiently flexible way". Lakoff and Johnson (1980) go on to suggest that categories are never simple representations, since they depend on the researchers underlying contextual understanding of the case study. In this phase the researcher is undertaking a reflective approach to analysis as well in regards the requirement to relate the 'story' being constructed to the research question. How does the understanding of business processes relate to the selective codes and themes?

In practice the ability to discard bias, history and knowledge is (for this researcher at least) nearly impossible, the approach again was to attempt to use a structured approach. In this phase with the requirement to tell the story as it relates to the research question it is suggested that the balance between structural and reflective is leaning more towards a reflective approach.

3.5.3. Themes and Supporting Evidence

Once the three phases of coding were complete a 'story' told by the data in relation to the research question remains (Strauss & Corbin 1997). The next requirement in order to add robustness to the 'story' is to investigate the literature for supporting evidence. The literature was investigated in order to ascertain if the 'story' being told by the data was supported by published theory. The literature provided in some cases the linkage between the 'story' and the raw data.

In the following sections and chapters the use of the term 'story' is replaced by the term theme. While the goal of the coding was to generate a single story as suggested by Strauss and Corbin (1997) and Dey (2004) it was found two stories eventuated and thus the term themes better suits the actual outcomes.

Once the literature was investigated for supporting theory the raw data was again reviewed looking for support and linkage for the themes. Goulding (2002, p.91) suggests that the standard approach to supporting and telling the reader about the themes (Goulding (2002) uses the term core categories) is to "present data as evidence to conclusions, indicating how the analyst obtained theory from the data", or alternatively " quote directly from interviews or conversations, include dramatic segments of on-the-spot field notes, construct case studies of events or persons, or quote telling phrases dropped by informants" (Goulding 2002, p.91). Chapter Five of the thesis describes the theory generated from the study in detail.

3.5.4. Undertaking the Data Analysis

This section provides a brief overview of the actual practice of the data analysis which is described in detail in Chapter Four. This section describes, with examples, the three phases of coding and the final definition of the themes or 'story'

The approach taken to the data analysis follows that undertaken by interpretive researchers such as Dey (2005) and Strauss and Corbin (1990), and IS interpretive researchers such as de Salas (2002), (Carroll, Dawson & Swatman 1998; Tatnall & Gilding 1999). The project used three phases of coding as described by Strauss and Corbin (1990). The coding of the data was carried out by immersion in the data available (audio tapes of interviews, reflective notes, papers written on the case, developed documentation and historical documentation). This immersion was intended to enable understanding of the context of the data when coding of the interviews began.

The researcher labelled the data sources into three case areas Case Study One to Three and then within each case, each item of data is also labelled with the primary source data being the interview audio tapes and transcripts of the unstructured interviews. Conversations and other data collected were used to provide context and validate the coding. Not all interviews were transcribed as the researcher required more than just the words to understand the context, feelings and attitudes of the respondents. Only the audio (no video

was available) provided sufficient data to tell the difference between the same words being used within different contexts.

The following diagram (Figure 41) provides a simple model of the process used. The diagram does not show that each case study was analysed for open and axial coding independently, or the detail of the process (which can be reviewed in the diagrams and explanations associated with Figure 30 on page 138).

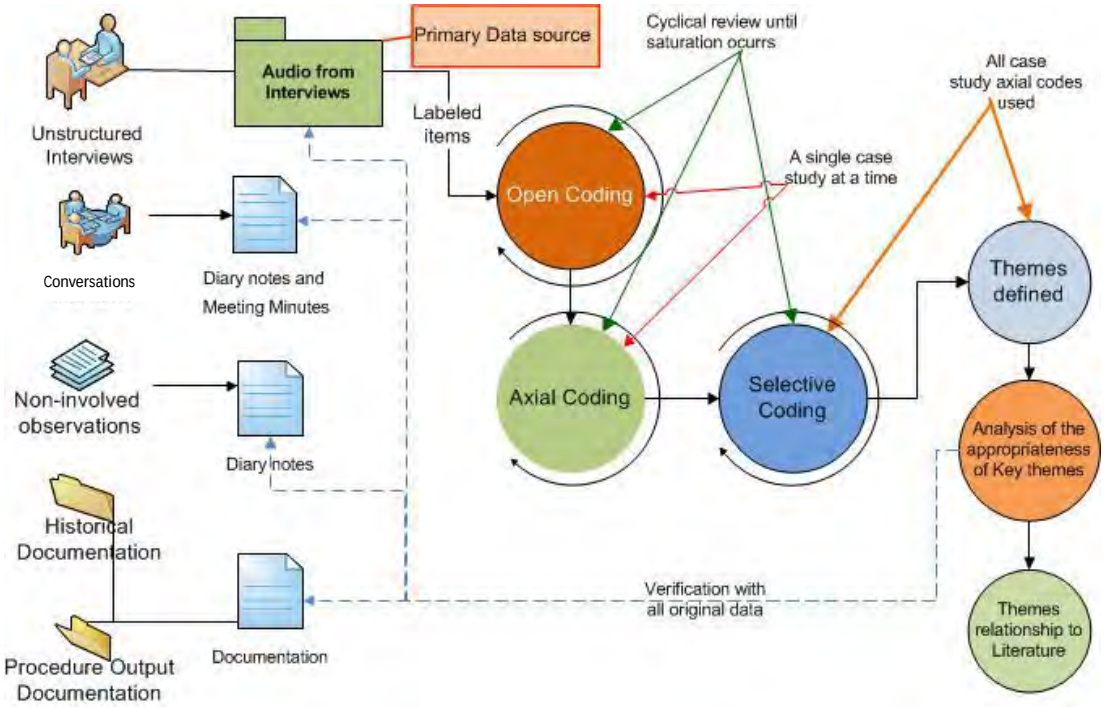

Figure 41- Data Analysis Process

The case studies were analysed sequentially from Case Study One to Three in regards the open and axial coding phases. Once the initial two phases were complete for all three case studies the selective coding and identification of themes was conducted with all three case study axial codes combined.

Open coding, as explained previously, was then undertaken using the other data sources as described in Figure 41 on page 152 to validate the codes generated in the axial coding phase.

An example of the use of non-interview data (recorded in diary notes) to validate codes taken from interview data is the discussion held with the executive team in Case Study One over the difference between the accounts payable processes as a service to clients and the similar process for internal management. While both processes should be similar the client

facing process has different priorities and even objectives to the internal process. The lack of understanding of the actual situation from a process perspective is related to an 'understanding of processes' (used as an open code).

The following table (Table 26) is an example of the coding from raw data to selective code. The table contains primary data from the interviews and the codes to which that data was linked.

Qualitative Data	Open Codes	Axial Codes	Selective Codes
Can it work in every organisation as we tried to apply it but probably works very well in government but probably less so in organisations which have an autocratic management	Contextual issue within management environments	Suggested Procedure Change	Using a Methodology
We took it in a bit of a different direction and I think that the process stacked up and fundamentally stacked up and could be applied in a wider context to that of IT.	Alternative use of CPTM		
In terms of disadvantages we went to too low a level of granularity. When we went to 5 levels	Use of detail in the method		
After the original project plan or project scoping had been done come back and have a discussion on what project resources are required.	return loop decision making		
What going wrong or what is critical should be given to people in those specific areas to identify and resolve at that level	Use of subject matter experts to take decision making at lower levels		
"we presented the gap analysis we had um the current state the decided future state"	Reflection led to clearer understanding	Outcome Benefit	Seeing Connections Between Factors
But thankfully because we had	Support for choice type decision		

Qualitative Data	Open Codes	Axial Codes	Selective Codes
gone through this consultation process and the other exec managers had all been involved by the time everyone was a bit put off because he is the GM and he was in full flight and they unfortunately they were a bit slow to back me up. But once they got going ”	making		
“Look I don't think they had previously worked with consultants certainly not from an IT perspective very heavily I think they certainly had the focus on the process mapping and that was probably a result of some of the work that you guys had done with them. But, how I wanted to use that information I don't think I would say were particularly clear on it.”	Focus on the whole		

Table 10- Example linkage between codes and data

Once the coding was complete work was then undertaken to define the themes which the selective codes surfaced. As with the coding an iterative cycle of review of the codes at times back to the axial level was required in order to understand the relationships within the data. Finally two themes were used and are discussed in detail in Chapter Five. The two themes and related selective codes are summarised in the following diagram (Figure 42).

Figure 42- Themes Identified from the Analysis

With themes identified, the literature was reviewed to ascertain any supporting theory for the themes. The original data both primary and other data (diary notes, historical and CPTM output documentation) were used to support or refute the themes using the topics as the focal point from a review of the published literature.

3.6. Methodology Chapter Reflections

This chapter has discussed and made the argument for the processes required to undertake the data collection and analysis phases of the research project. The analysis phase required the understanding of different views of the world taken by both researcher and participants and how the validity of these views can be argued. Making decisions on how to approach research would be simpler if the researcher was not influenced to look at methodologies which appeared less time consuming (by appearing less structured). These methodologies require an understanding of the grey areas within the process whereas the more structured methods of research (such as statistical analysis) enable the research to simply 'follow the bouncing ball'.

3.6.1. Qualitative Interpretivist Checklist

Table 11 describes what Denscombe (2007) suggested were the requirements for quality interpretivist qualitative research. It contains five elements which consider:

1. The use of multiple sources of influence to support an understanding of the context of the research
2. The seeking and use of more than just personal perspective in the research such as the perspectives of other researchers and the perspectives of the participants themselves
3. The use of multiple sources of data for example diary notes and the historical and CPTM output documentation
4. The iterative nature of the data collection and analysis which is the case for this study as it moved through many cycles of data collection and analysis
5. The deep involvement of the researcher as participant in the first two case studies and the mitigation of the issues of bias through the development of Case Study Three.

The researcher suggests that the use of a quality interpretivist research study was applied and completed according to Denscombe's (2007) criteria.

Item	Requirement	Compliance
Situated or contextual Understanding	Embracing the multiple sources of influence including past experiences of the actors being studied	Yes
Multiple perspectives are expected and sought	More than just the researchers perspective is required	Yes
Multiple sources of data	Data sources are greater than one	Yes
Iterative and emergent data collection and analysis	Utilisation of reflection to reconsider the possible data sources and how they should or might be analysed	Yes
Participatory Research	Deep involvement with expected review by other parties of outcomes	Yes

Table 11- Checklist for a Quality Qualitative Interpretivist Research Approach (Denscombe 2007)

Chapter Four –Data Analysis

4. Introduction

This chapter describes the outcomes of the data analysis. Each section starts with a vignette: Ely, Vinz, Downing, and Anzul (1997, p.70) used vignettes as a way of documenting data obtained from an author's research. Vignettes are brief descriptions which can be used to introduce players, highlight events and the research focus to come. It can also highlight particular findings from the analysis, or summarise a particular theme or issue in analysis and reflection. On reflection, the author suggests that vignettes might also provide the reader with both raw data and analysis information in a more contextual framework than might be drawn from raw data or that seen in the previous methodology chapter.

In this thesis the author has used vignettes to provide a background to the cases. The vignettes also provide a focus on the perceived important details of the cases and how they impact upon the research. As Ely, Vinz, Downing et al (1997, p.78) state "the aim is to let vignettes work for you to support your intended meaning". The vignettes also provide an avenue for the researcher to include some of the more interesting research outcomes of each of the cases.

All three cases used the Critical Process Targeting Method (CPTM) with small changes undertaken in each case to meet the needs of the organisation involved. These changes though, did not alter the essential theory behind the method and process of how the method was being used. The vignettes will explain the slight changes in detail. Each of the case studies contributed significantly from a data collection perspective while following the selected method.

Case Study One was the first case and provided the researcher with a good insight into some of the issues to be managed concerning data collection for the novice researcher. As such it may be considered to have provided valuable insights on the data collection and analysis activities across the cases. Case Study One provided a good demonstration of the organisations understanding of business processes.

Of the three case studies undertaken Case Study Two provided extra perspectives on the method, participant meanings and context data as there were five researchers involved in

the case during a three month period. This researcher though was the primary researcher for the CPTM implementation with the four supporting researchers. Case Study Two enabled the researcher to verify individual perceptions by discussing and comparing notes and thoughts with the other researchers involved.

Case Study Three, apart from providing a third source of data, provided substantial insight from a third party perspective. The bias' of the researcher were also mitigated by seeing the case study through the eyes of a second party thus mitigating some researcher bias risks attributed by the researcher's participation inherent in Case Study One and Two.

Thus, the data collected in each case study contributes to answering the exploratory research question. (How does the CPTM support a greater understanding of medium sized entity processes?)

This chapter uses vignettes to describe each of the case studies undertaken. These are discussed sequentially in line with the conduct of the cases. Each of the vignettes contains a description of the history and structure of the entity the environment in which the case study was conducted and the activities which were undertaken to implement the CPTM. This description and discussion of each case is followed by a description of the open and axial coding of the interview data for that case. The case discussion then considers the post case study data and how this appears to support the case findings. The following diagram provides an outline of the chapter by section:

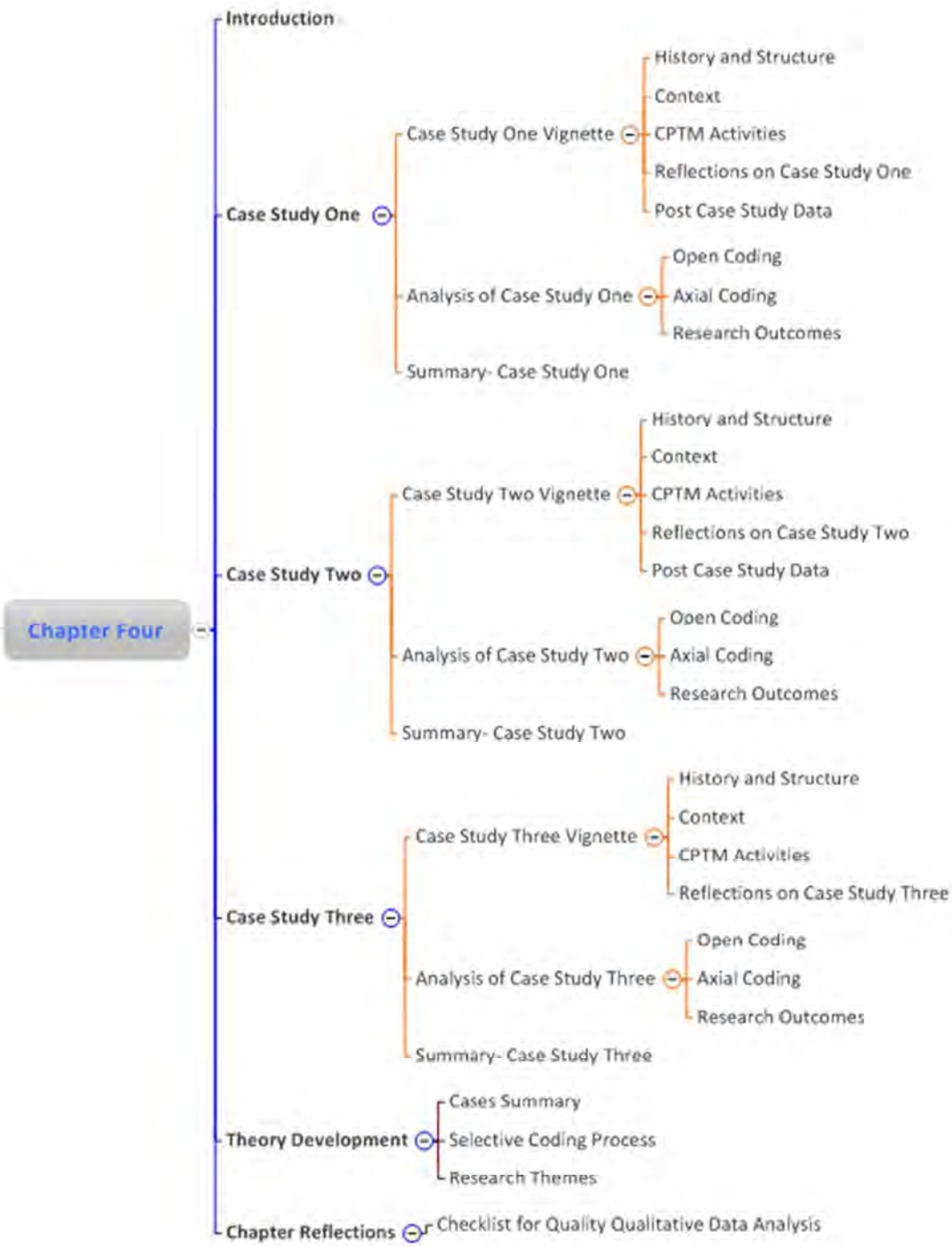

Figure 43- Chapter Four Structure

Figure 43 provides a diagrammatic view of the chapter by section and sub sections. Each of the case studies is described using the same approach. In the third case study you can see that no post case study data was collected. Otherwise each of the case studies has the same sections yet a different story.

The following diagram provides an outline of the approach taken to describing each of the cases (vignette). Each of the dark green shaded topics is a heading with subordinate topics seen in the diagram identified within each section of text by bold text:

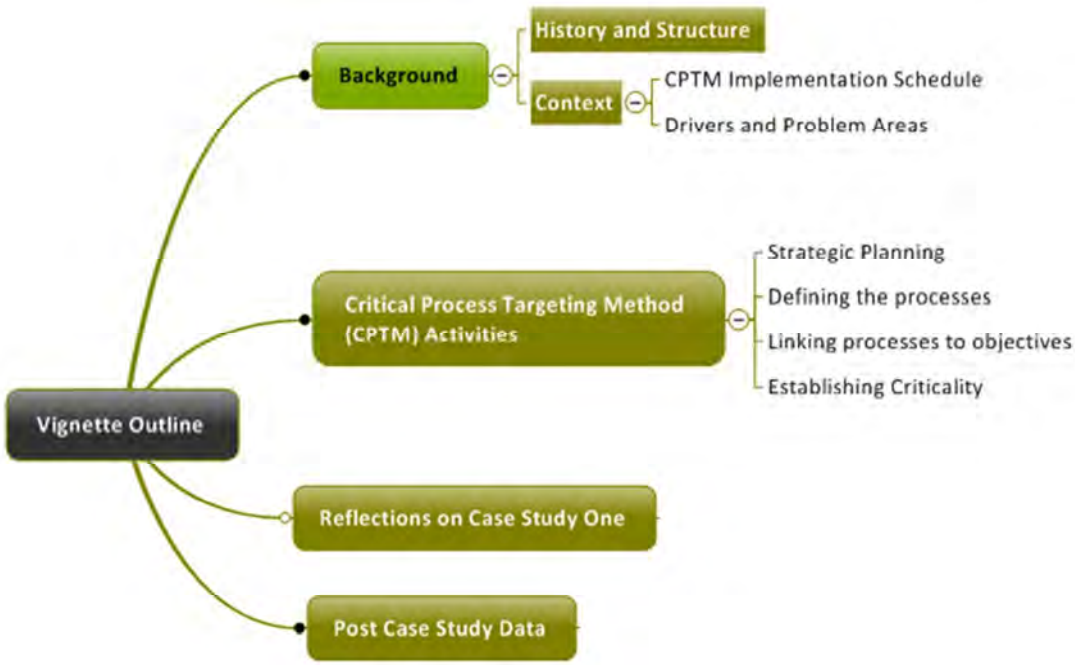

Figure 44- Vignette Outline

It was decided during the application for ethical clearance that it would allow the researcher to adhere to the needs of confidentiality for the participants and their organisations to not provide any information that might identify the participants of the research or their organisations. The decision means that each case has been given either a three letter code as an identifier and data has been anonymised where it is thought necessary to de-identify the participants and organisations involved. In some situations data is not presented as it may provide a risk of identifying the organisation.

The research project utilised the previously developed and tested Critical Process Targeting Method (CPTM) as an integral element on which the research question was posed. The methodology utilises ten steps which are shown in the diagram (Figure 45) on page 162 following.

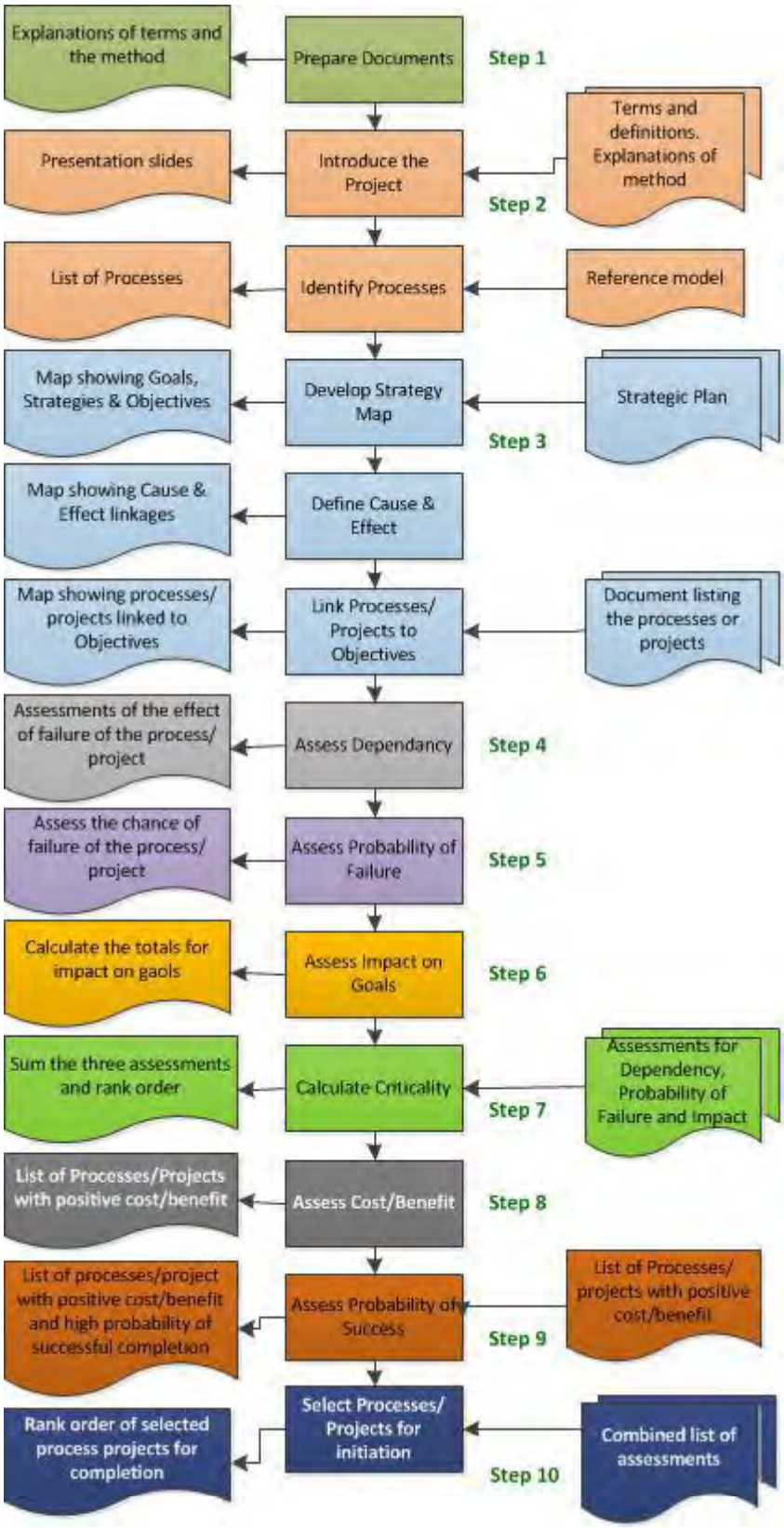

Figure 45- Ten Steps of the CPTM

In this chapter each case study section deals with the data analysis specific to that case study for the open coding and axial coding phases. Selective coding analysis is conducted

using axial codes from all three cases and that discussion follows the individual case study sections. The final section is the chapter reflections.

4.1. Case Study One Vignette

Case Study One was the first case study undertaken by the researcher. This case study provided the researcher with some valuable insights into the required approaches for collecting good data and capturing interview data especially. Complacency with the recording technology resulted in the first interview conducted being corrupted and the need for an embarrassed researcher to request a second interview and then hope that the interesting commentary was captured again. Future interviews were supported by notes and well tested technology. This case study was selected as a viable case study after being referred by a colleague who was initially looking to resolve a business problem and considered the researcher might be able to support the resolution. Initial discussions suggested the use of the CPTM as part of the research their participation in the study was agreed.

This case study starts with a description of the history and structure of the organisation. The aim of this information is to provide the reader with some insight into the thoughts and context of the researcher.

4.1.1. History and Structure

Case Study One described an organisation which had undergone an upgrade of its large financial system (a prior version to the latest version). The major business issue, with which the management team were grappling, was how to decide from the many identified projects (focussed on system improvement) which they should undertake and in what priority. There were many stakeholders (customers) adding political and parent organisation pressure to the group of decision makers.

Case Study One is a financial services entity with responsibility to provide financial services to its clients across the parent organisation. In January 2001, the parent organisation's executive body approved the formation of this new department. The Case Study One was the result of combining the accounting and business services and planning and financial resources support services into one business unit.

Part of the driver for this change to structure was to improve the integration of financial and infrastructure planning. Case Study one was now responsible for:

- Contribution to and membership of the corporate Executive team

- Support of the organisational planning process
- The organisations' resource and capital plans, budget framework and annual budgets for each department and strategic capital management
- Reviews of other departments
- Development and distribution of compliance data and analysis and reporting
- Compliance with relevant legislation such as the Financial Administration and Audit Act and Financial Management Standards
- Oversight of all accounting and business operations of the parent organisation.

Figure 46- Case Study One Organisational Structure

Each of the areas within Case Study One had a director and beneath these there were managers of individual functions such as payroll, purchasing and planning, quality and strategy. There was also an Assistant Director who operated across Case Study One in a quality improvement/ special projects role. Interviews were undertaken with Directors one and two and the Assistant Director. The people identified in Figure 46 are the people who were involved in the CPTM activities and the interviews.

4.1.2. Context

When the case study was undertaken, the current situation was that Case Study One had less than thirty staff and would utilise staff from outside the department on secondment to assist with special projects. This was also the situation during this case study with a business analyst on secondment from the Information and Communications Technology (ICT) department of the parent organisation to assist in the benefits realisation of a recently

upgraded financial system. In the post implementation period of reorganisation Case Study One pursued ideas and approaches which might enable them to understand what it should be doing and what priority needed to be placed on possible improvement projects.

The researcher was introduced to Case Study One in the latter half of 2004 in recognition of the skills of the researcher in the strategic planning process improvement fields. At that time the researcher had worked with a range of organisations to support their strategy development and process understanding. It was thought that the researcher might be able to support the resolution of what to improve within their newly upgraded finance system. The researcher assessed the opportunity and found that Case Study One aligned with the criteria for a case study organisation and raised the request successfully.

The researcher worked with Case Study One through the latter half of 2004 and the first half of 2005 to support their identification of critical processes using the CPTM. This they agreed would enable them to identify what projects for improving their finance system they should undertake.

CPTM Schedule

The original plan for implementation of the Critical Process Targeting Method (CPTM) was;

Schedule Activity	CPTM Step	Participants Involved
Introductory Workshop Monday (Day 1)	Step 1	The Senior Director (CFO) the three functional area Directors (1, 2 & 3) and the Assistant Director
Strategy development task Monday & Tuesday (Day 1 & 2)	Step 3	CFO, Directors 1,2&3, Assistant Director and all Managers
Confirmatory workshop Wednesday (Day 4) yielding cause and effect map	Step 3	CFO, Directors 1,2&3, Assistant Director and all Managers except Manager Financial Analysis
Process Identification & linking to objectives and strategy tasks for the team Wednesday, Thursday (Day 3 & 4)	Step 2	Assistant Director and Business Analyst for preparation then CFO, Directors 1,2&3, Assistant Director and all Managers except Manager Financial Analysis
Process Identification and Linkage confirmation Friday (Day 5)	Step 2	CFO, Directors 1,2&3, Assistant Director and all Managers except Manager Financial Analysis
Critical process identification Phase 1 (Day 6 to day 10)	Step 4, 5, 6 and 7	CFO, Directors 1,2&3, Assistant Director and all Managers except Manager Financial Analysis, Manager Budgeting and Planning
Confirmatory workshop Tuesday (Day 11)		Directors 1,2&3, Assistant Director and all Managers except Manager Financial Analysis, Manager Budgeting and Planning
Critical process evaluation Phase 2 (Day 12)	Step 4, 5, 6 and 7	CFO, Directors 1,2&3, Assistant Director and all Managers except Manager Reporting,
Confirmatory workshop Tuesday (Day 13)		At least four people from the CFO, Directors 1,2&3, Assistant Director and all Managers

Schedule Activity	CPTM Step	Participants Involved
Prioritised selection process (Day 14 to Day 19) in cycles leading to agreed projects (Day 20) (workshops scheduled during this phase as required)	Step 4, 5, 6 and 7	At least four people from the CFO, Directors 1,2&3, Assistant Director and all Managers

Table 12 – Case Study One Original CPTM Schedule

The activities described in Table 12 were the plan which was agreed at the first introductory meeting with the management team (The Senior Director (CFO) the three functional area Directors and the Assistant Director attended this meeting.) and was followed until the beginning of the process identification stage (Day 6 to Day 10). The table also includes the relevant step undertaken from the CPTM and who was involved at each of these contact points. From day fourteen onwards the group of people changed daily dependant on the varying schedules of the participants involved. At no time were less than four participants involved in the assessment steps (Step 3, 4, 5 and 6).

The following diagram (Figure 47) is a summary of the case study shown as a MindMap. The diagram includes information pertaining to the business focus, the business problem, implementation timings and the data collection quantum.

The diagram shows that the case study was identified in late 2004 and had a duration of twenty six days over three months. There were twenty eight meetings during this time in order to complete the strategic plan which was freshly developed and to implement the CPTM. Two exploratory unstructured interviews were conducted prior to the implementation of the CPTM followed by thirty two diary notes related to the same number of contacts. There were also four meeting minutes collected from early meetings.

The final interview was undertaken in the July of 2005 with post case study data collected via a conversation in Jan 2006.

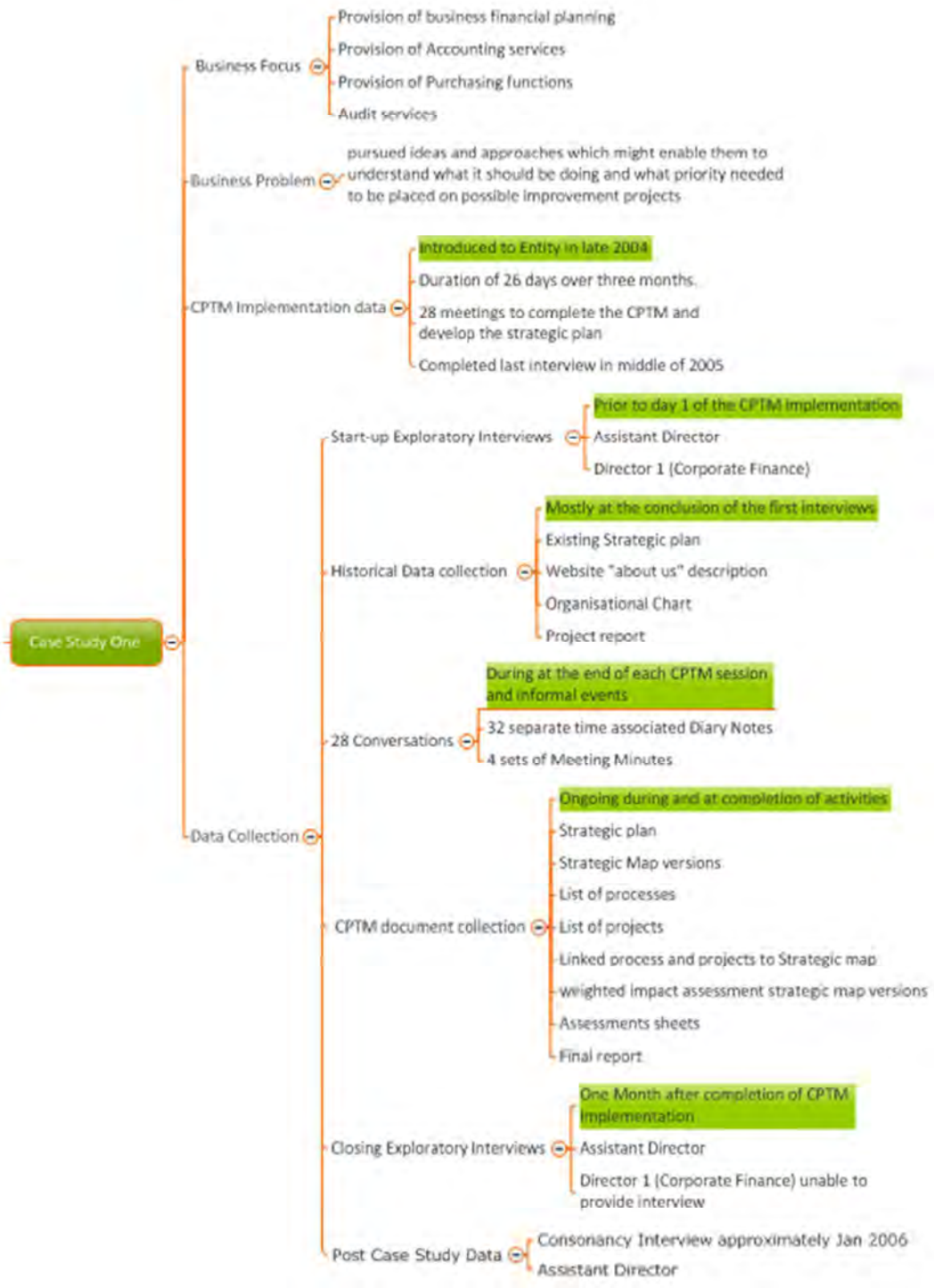

Figure 47-Case Study One- Data Collection and Timings summary

The initial case study activities started with a presentation of the methodology to the management team (CFO, Directors 1, 2 & 3, Assistant Director and all Managers) and a separate discussion with the two people (Assistant Director and Business Analyst) who would work closely with the researcher to facilitate the project completion outside of the workshops in the schedule. Workshops were typically of two hours duration as the directors and managers had busy and demanding schedules.

Drivers and Problem Areas

Case Study One pursued ideas and approaches which might enable them to understand what and how it should be improving the finance system. They also, given a restricted budget, needed to know what priority should be placed on the identified possible improvement projects. The root cause of this situation appeared to stem from two sources:

1. The lack of clear and expected leadership in the decision making process. Comments made appear to indicate that most of the management team expected the CFO to unilaterally make decisions on what processes for improvement should be prioritised. This led to the search for an alternative approach which resulted in the department accepting a proposal for this project.
2. The second source for root causes was the need to take a vanilla upgrade of the financial modules their finance application to the next phase of benefits realisation. That is, to define and achieve within an already set and agreed budget a set of improvements which would in part justify the upgrade of the finance system.

In chapter 2 (literature review) the measurement of performance was presented as a driver increased process understanding. Understanding how to rate performance in relation to providing and improving particular services was one of the drivers in this, Case Study One. A second driver of increased process understanding was that of the impact of mergers (in this case combining business units) with the not so recent creation of the department. In the after effect period of a reorganisation the business sought to understand what it should be doing and what priority needed to be given to ideas offered up. "*...not really knowing how to put the brainstormed list of projects into priority*" (Assistant Director).

A third source of driver for process understanding came from the need to communicate not only the outcome of an activity but to clearly communicate the process in order to achieve 'buy-in' or agreement. "*Not really needed the CPTM to identify the list of projects but a clear process to achieve it* [it being the list priority]*"* (Assistant Director). This socio-cultural driver was also extensively identified in the literature review.

Case Study One Directors agreed in conversation that the major problem area was the need to clearly decide which of their list of 29 projects they should do and how they would sell that list and priority to their external stakeholders. "*The projects came from our understanding of where in the division we lacked processes or systems and where*

improvements could be made such as activity based costing, revenue management. How to collect money in a lot more efficient and cost effective manner" (Assistant Director).

The problem from Case Study One's perspective was the difficulty in making decisions on the 29 project proposals submitted by Directors and Managers within and external to Case Study One for financial process changes. Which of these projects based on their limited budget should they be undertaking?

"*One thing which predetermined this was the Oracle upgrade to 11i*[2]*. It was the opportunity to implement new processes..... How do we decide which (process improvement) projects are more important and how do we sell the projects?*" (Assistant Director)

The prior comment from the Assistant Director was suggesting that not only was it important to choose the most appropriate projects it was also important to get agreement from the external stakeholders. The researchers' observation and interpretation of this matter was reinforced by what appeared to be some anxiety amongst the Directors and Finance Managers to the issue of being told what they should do by their apparently more powerful internal clients (researcher diary notes from workshops).

The AR Manager also appeared to perceive a lack of clear leadership on this decision making process "*Competing priorities with limited resources [*typical of companies*] was typically decided by the CEO, COO or CFO or sometimes by survey of staff and clients. Often [*the decision*] can come from the top. ... in hindsight this [*Needing to make a decision of what and when*] stemmed from a lack of leadership from our CFO*" (Director 1 Corporate Finance), which may have contributed to the request for support in this area and this case study being undertaken.

While the Directors and managers wrestled with the issue of how to decide what was important there was an understanding by the Assistant Director and Director 1 (Corporate Finance) that an 'open discussion' was an uncontrolled process with no ability to really justify the final decisions. One series of comments adds context to the situation- "*we needed more than an open forum or open discussion".... "all very well to talk about this*

[2] It has been pointed out to the researcher that an upgrade to Oracle 11i is a database upgrade and not a functional upgrade of the finance module. In this case the interviewee believes that an Oracle 11i upgrade is a functional upgrade of the finance module.

internally but it needed to go outside the division as well"…. "wanted a process rather than an open discussion" (Director 1 Corporate Finance).

4.1.3. CPTM Activities

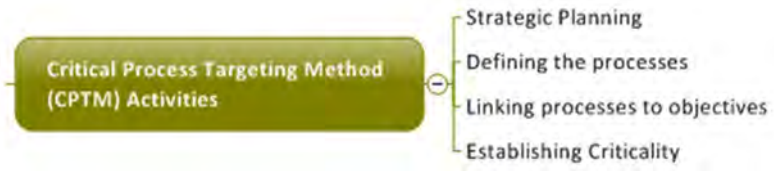

Figure 48- Structure of the discussion for this sub section

As discussed in the literature review, the methodology first looks at the strategic plan of the organisation to ensure that there is a high level of agreement for the plan. If there is no existing plan or as in this case study the plan was not suitable, then a new strategic plan activity is added to the list of tasks. Typically from experience with the method and organisational choices the development of a new strategy (added task) and creating the cause and effect linkages (step 3) is something which is then done prior to identifying the processes (step 2) and assessing them for effect of failure (step 4) and probability of failure (step 5). This case study followed the typical approach just described.

Strategic Planning (Step 3 of the CPTM)

The major reason for seeking a broad management approval for the strategic plan is that if there is dissension by a management team for the strategic plan then the outcomes of the Critical Process Targeting Method (CPTM) will be questioned as being focussed on a strategic plan which is not appropriate for the organisation. Thus the CPTM first seeks to verify the strategic plan. Verification normally entails a review of how the plan was constructed and what should be in it. This researcher uses a form of balanced scorecard approach for the development of strategic plans if asked for help in this area.

In Case Study One, one of the participants was heard to comment when he first looked at the current strategic plan "*well this won't be any good*" (Assistant Director) and seen to place it back on the shelf on which it had resided. It was agreed that the researcher would assist the management team (see Figure 46 page 165 for the members of the management team) in developing an updated strategic plan and that this should align with the corporate plan (parent organisation) currently in place. Director 1 (Corporate Finance) commented in interview that "*When we looked at the* [original] *plan outside of its need for compliance and*

took it in the context of what we really wanted to achieve, we probably needed to review it again..... so the process helped us look at what is critical to [Case Study One] *and identified that one of the four arms was minor. That was good in that sense*".

For each of the case studies the sequence of activities of the CPTM was also altered in order to complete the cause and effect mapping of the strategy (see step five) prior to identifying the processes (step two). The schedule shown in Table 12 on page 167 reflects the actual activities in the order undertaken as opposed to the order which the method describes in Figure 45 for the reasons discussed previously.

The strategic planning activity took place over two 3-hour sessions with the researcher acting as facilitator offering different views where it appeared to stall and ensuring all views of the management team were considered. The researcher is an experienced business consultant and has worked with many organisations around Australia to develop strategic plans of many different types as the facilitator.

The end result of the Strategy development and cause and effect mapping (Step 5 of the CPTM) was the agreed cause and effect strategy map. This map was then put aside until the processes were identified as described in the following section.

Defining the Processes (Step 2 of CPTM)

When the case study reached the process identification stage the researcher spent a number of hours in three sessions working with members of the department answering questions about the identification and naming of processes. The participants had trouble defining their processes so the researcher provided a list of processes from a similar type of organisation to support the process identification. The list of financial processes provided to Case Study One comes from a Government department with commercial activities using the well-known SAP system. There was also a problem with the participants understanding the difference between a finance process such as Accounts Receivable (AR) used as a product for customers and the internally used version for Case Study One AR process. The problem was resolved by using developed process models of their actual internal and external AR processes.

The original list of initial processes is exampled in the following partly complete diagram of processes.

1. General Ledger
   - Document entry
     - Enter G/L account document
     - Cash journal posting
     - Edit or park G/L account document
     - Post with clearing
     - Incoming payments
     - Outgoing payments
     - Foreign currency
   - Periodic Posting
     - Interest calculation
     - Automatic clearing
     - Recurring entries
     - Archiving
     - Closing
   - Reporting
     - Tax reports
2. Accounts Receivable
   - Document entry
     - Invoice
     - Credit memo
     - Edit or park invoice or credit memo
     - Incoming payment
     - Payment advice
     - Down payment
     - Bill of exchange
     - Internal transfer posting
     - Payment request
     - Outgoing payment (?)
   - Credit management
     - Exceptions
     - Sales and distribution documents
   - Periodic Processing
     - Scheduling
     - Dunning
     - Interest calculation
     - Payments
     - Automatic clearing
     - Recurring entries
     - Bill of exchange Processing
     - Payment cards
     - Archiving
     - Closing
   - Reporting
   - Withholding tax/GST
3. Accounts Payable
   - Document entry
     - Invoice
     - Credit memo
     - Park or edit invoice or credit memo
     - Payment request
     - Outgoing payment
     - Bill of exchange
     - Down payment
   - Periodic posting
     - Scheduling
     - Payments
     - Interest Calculation
     - Dunning
     - Recurring entries
     - Bill of exchange processing
     - Archiving
     - Closing
   - Reporting
   - Withholding tax/GST
4. Banking
   - Incomings
   - Outgoings
   - Periodic processing
   - Reporting
5. Fixed Assets
   - Posting
     - Acquisition
     - Transfer
     - Retirement
   - Asset
   - Periodic posting
     - Scheduling
     - Depreciation
     - Revaluation
     - Year-end closing
   - Reporting
6. Consolidation
7. Special Purpose Ledger
8. Funds Management
9. Travel Management
10. Treasury

Figure 49-Partial list of processes originally suggested for Case Study One

Using the process activities identified in Figure 49 Case Study One was able to define a list of the processes they were happy to use in the method. Figure 50 following contains the resultant processes identified by Case Study One.

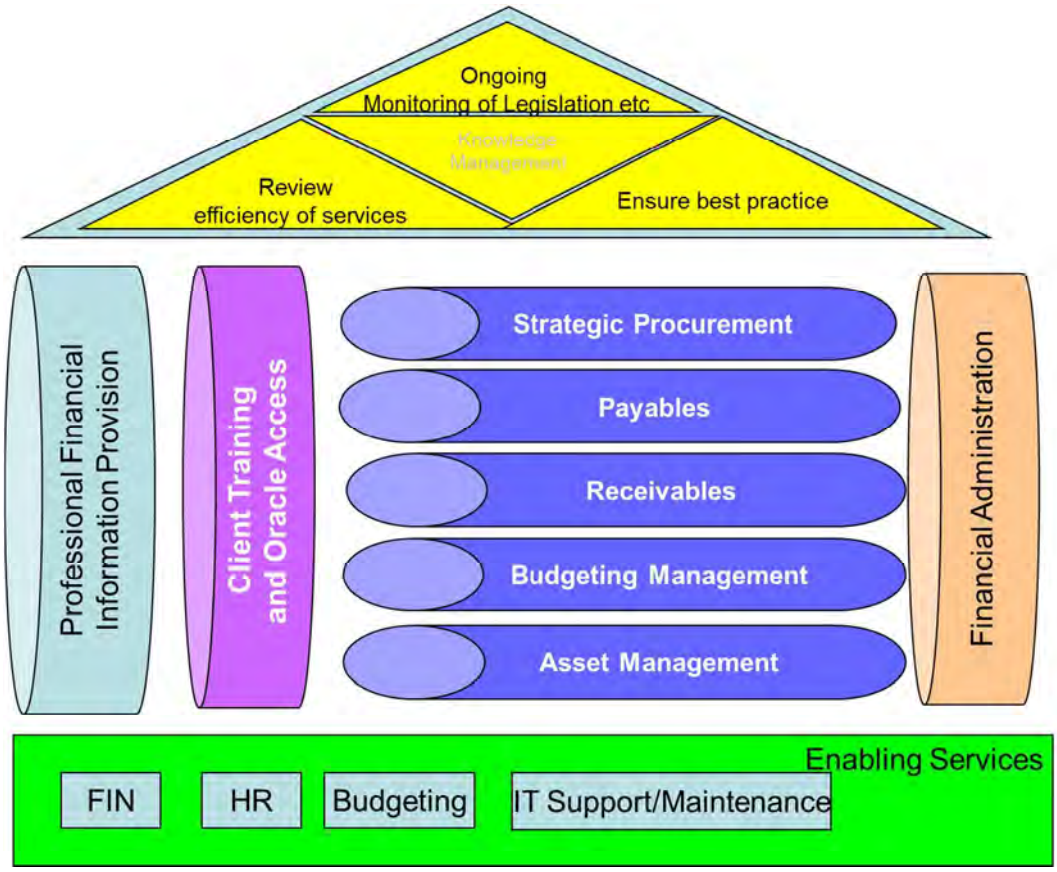

Figure 50- Major processes for CASE STUDY ONE

The house model or process house (Ulrich 1977; Scheer & Nüttgens 2000; Aoyama Gakuin University 2003) is used to define the major processes for an entity by breaking up the entity in three areas: 1. executive or management processes, 2. core processes and 3. enabling or support processes.

For the Management and enabling processes the researcher recorded Case Study One as defining the following as sub-processes:

Management Processes:

- Review/Examine the efficiency of each of the services provided.
    - Define service level agreement for each of the services
    - Measure performance against the SLA
    - Monitor client feedback/complaint
    - Review system usage
- Ensure best business practice for all the services provided by Financial Services
- Ongoing monitoring of changes in legislations/government/policies/standards

Other enabler processes:

- Financials
    - Purchase (for internal need)
    - Paperwork receiving process

  - Data entry process
  - Validation process
  - Storage & Archiving process
  - Archive retrieval process
- Human Resources
  - Staff recruitment and selection
  - Staff training
- Budgeting
- IT support/Maintenance
  - Systems (Oracle Financials, FlexiPurchase, ARMS etc) maintenance
  - Oracle Financials access maintenance

The following diagram is an example of the process modelling procedure used. It shows a value chain of the major processes at the top level with three further levels below in which each of the individual top level elements can be broken down into further and further detail. Typically this stops when the processes being described reach a work instruction or single person activity.

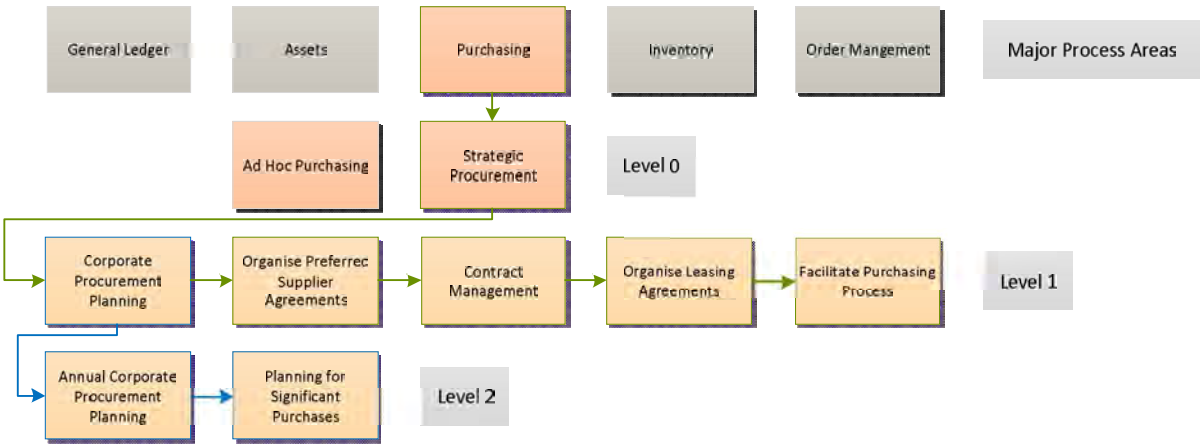

Figure 51-Example Description of the Process Modelling Procedure

The organisation agreed during the day five schedule activities (CPTM step two) to start with their defined list of Processes in Financial Management and to not develop process models to further than level three for any critical areas.

At this stage of the CPTM the organisation had developed and agreed a cause and effect strategic plan and a list of processes to be used in identifying the critical processes.

Linkage Processes to Objectives (Part 3 of Step 3 of the CPTM)

Linking the processes to the developed cause and effect strategy map is a critical aspect of the method. It enables the users to start to see the impact of individual processes on the

strategic plan. Figure 52 locates the linkage of processes to Objectives activity within the ten steps of the CPTM.

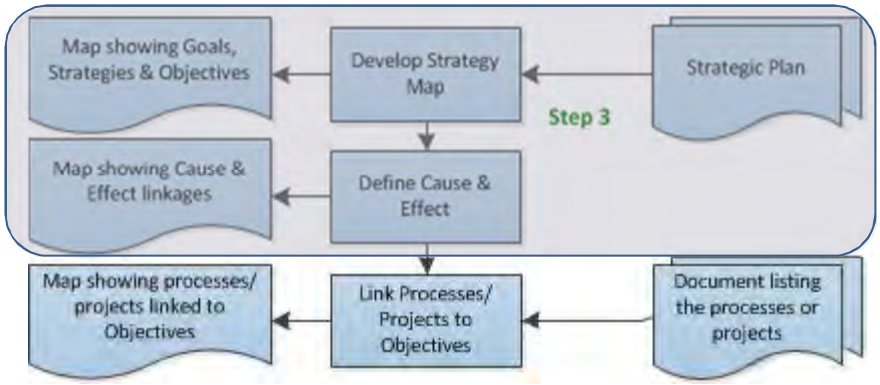

Figure 52- Location of the activity within the ten step CPTM

The first change in what was expected in the CPTM occurred at this point in the case study. The Assistant Director who was the principal point of contact requested that the method be used to rank an existing list of projects which had been created as process improvement projects. The logic of this activity remaining within the method was that the projects were all process improvement projects and thus related to the business processes.

Thus instead of linking the processes to the cause and effect strategy map the participants linked 23 process focused projects to the objectives in the strategy map.

While it may at first sound like a straight forward activity to connect a process or project to the objectives of a strategy by answering the question: Does this process support the achievement of the objective?

The cause and effect strategy map that was started with is shown in Figure 53. This diagram contains one of the four goals (support strategic ambitions) and the strategies in green text and objectives in black text.

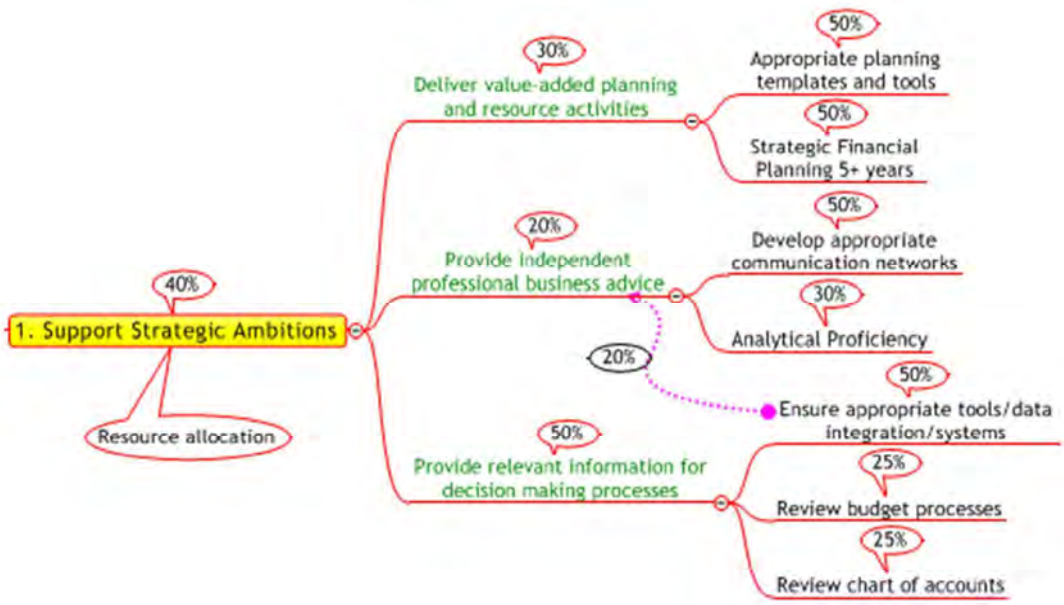

Figure 53- One portion of Case Study One Cause & Effect Strategy Map

The method requires that the list of processes identified in Figure 50 on is now linked to the objectives on the far right of the cause and effect strategy map. As discussed Case Study One requested that process improvement projects were linked instead of the identified processes. These projects were developed external to the CPTM by both the Management team of Case Study One and their Clients. Table 13 contains the projects as used.

1a. Travel Management
1b. Review of Purchasing Process (Including the review of Corporate Card and its integration with Oracle Financials
1c. Review of Payable Process
1d. Review of Receivables e.g.: Bank Reconciliation Process
1e. e. Review of Purchase Hierarchy and other hierarchies (eg. HR)
1f. Enterprise Planning & Budgeting module (replacement for OFA
1g. Improved integration between Oracle Financials and HR system
1h. Automation of Access Management process
2. Chart of Accounts Review
3. Payables
4. ABC Upgrade
5. Overseas Payments and Receivables review
6. ABC Replacement
7. ABCconnect Time-sheet Review
8. Critical Process Targeting Method
9. Evaluation of XYZ Clients' needs
10. Training and Development Analysis
11. External Services Program
12. E-commerce Review
13. Long Service Review
14. Portal Reporting Phase 2
15. XYZ Phase II
16. Reporting Review

Table 13- List of Process Focussed Projects Used

The result is shown in Figure 54 which shows the objective in black text (EG: review client needs) and the process projects in brown text which the participants agreed would impact on the object.

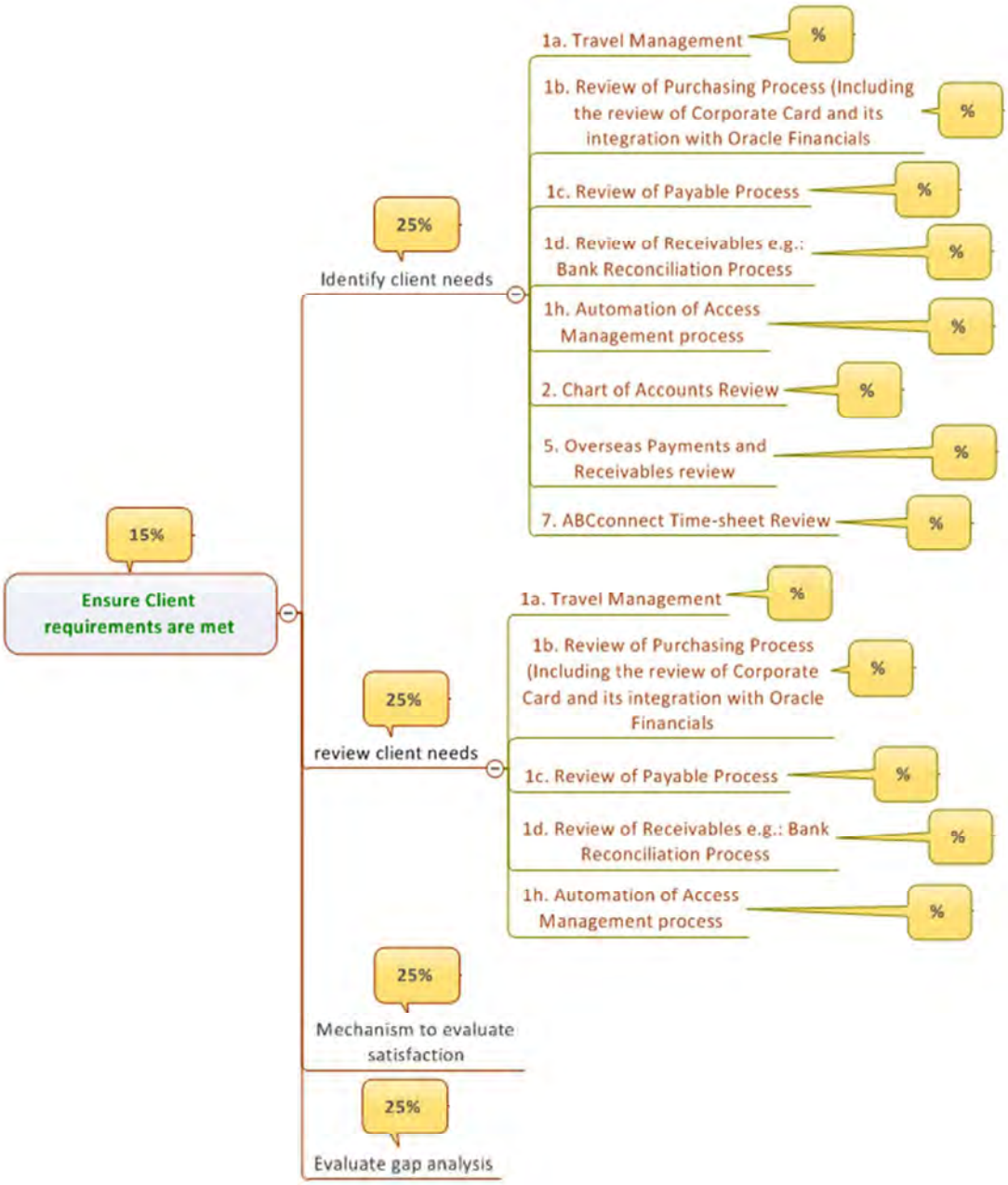

Figure 54- Case Study One Cause & Effect Strategy Map with linked Process Projects

The researcher's diary of meeting notes at this point in the implementation of the CPTM describes a reflection that the organisation was "Not necessarily willing to work through the process, but rather more interested in attempting to see the final results and thus give agreement to the process we were undertaking." One of the directors commented in that meeting that "*it was going to be very difficult to link the processes back to the strategic*

map." (Director, Corporate Finance) The Assistant Director may well have been using this opinion to request the change from using the processes to the projects.

Establishing Criticality (Steps 4, 5, 6 & 7 of the CPTM)

The management team added weightings to each of the cause and effect relationships developed in the strategic map. Some of the prior discussion in this chapter has indicated that this activity created a feeling amongst the participants that there was too much detail being sought by some participants. This led in one case to an objective being highlighted as 'detail to be added later' (Researcher's diary notes).

The two areas of criticality are shown in the following two diagrams (Figure 55 and Figure 56) which highlight only those areas of the strategic map which were 70% of the management team's priority areas.

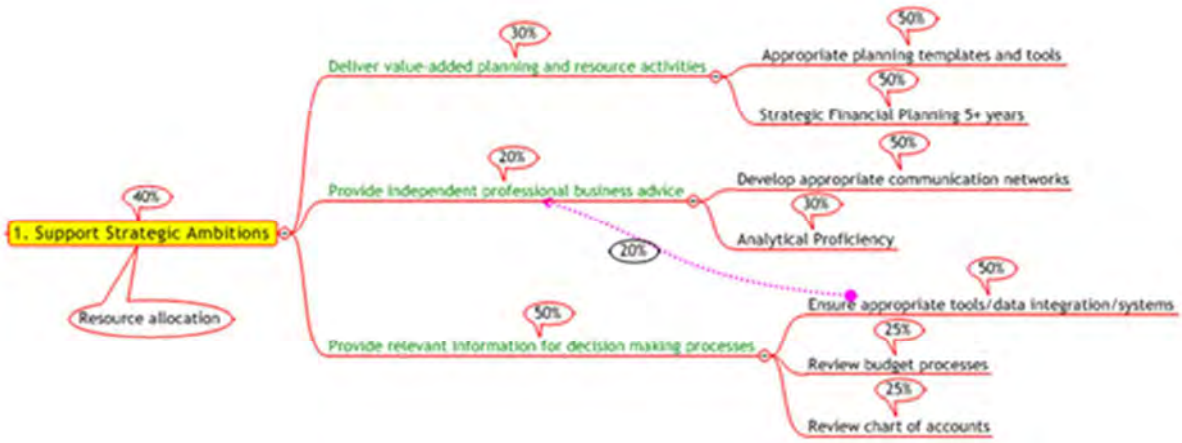

Figure 55- Strategy 1 of Case Study One

The first diagram (Figure 55) shows the priority department goal which is assessed as 40% impact of the entire strategic plan. The strategic plan is meant to support the corporate strategic plan. Impact is assessed as an agreement by participants of that elements impact on the following elements (reading right to left) when considering that and all other associated elements impacting on the one to the left. There is a cause and effect relationship (which we call impact) of each element to one or more others. In this case the strategy (green text) 'Provide relevant information for decision making processes' is rated as half the impact on the 'Support Strategic Ambitions' goal (yellow highlight). Of this 'Ensure appropriate tools/data integration/ systems' is the objective (black text no highlighting) and considered to be half of the impact assessed.

This emphasis on 'relevant information for decision making processes' strategy aligns with the statements of the interviewees and with the perceptions of the researcher as a major driver of the project itself.

The second priority area (Goal- highlighted yellow in Figure 56 below) was 'Ensure core business is effective and efficient taking into account that statutory requirements are met' with 30% of overall impact on corporate goals. This and the main priority area accounted for 70% of all perceived impact on corporate goals. The strategy 'Ensure business processes support core business' was assessed as 40% of the impact of the five strategies defined in Figure 56. Two objects (black text no highlighting) 'Business Process Review' and 'Understanding best practice (private sector/public sector)' were assessed as being 80% (40% each) of the effort required to achieve the strategy (green text).

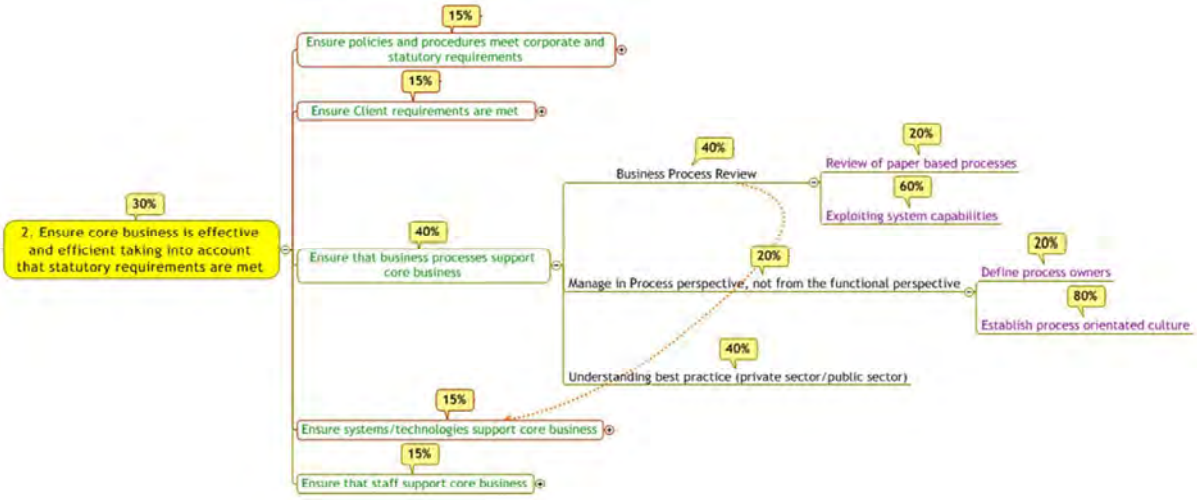

Figure 56- Strategy 2 Case Study One

These two priority areas identified that the process prioritisation project aims were well aligned with the developed strategy. Understanding and using processes as well as developing systems capability which is also process centric were the critical aspects identified and were related to the research question.

In each of the Case Study One and Two only the first seven steps were undertaken. The reasoning behind this decision was that in each of the organisations as a matter of policy, they undertook a similar process before the expenditure of funds for large projects. Thus they felt no need to involve the researcher in the final steps.

4.1.4. Reflections on Case Study One

This section provides a refection by the researcher on the case study from the perspectives of Case Study One's ability to use the method and it apparent or perceived utility in relation to their business problems.

The comments (interview quotes) supported the alignment of the method with the needs of the organisation in identifying critical processes and critical projects related to business processes. The resolution of the business problems is not the goal of the research question and provides only tentative support for the improved understanding of business processes.

The case study raised a number of issues related to the method itself. Director Corporate Finance was recorded as saying "*we should have stopped at 'yes this is a critical area' and gone away and done some finer project management.*" The Director's (Corporate Finance) comment was concerned with the number of levels which were process modelled to (see Figure 51 on page 175) obtain understanding by the participants of their processes. It also considered the mapping of projects to strategic plan elements (goals, strategies, objectives). The modelling depth or detail was difficult for the range of participants who were not highly familiar with some activities modelled and were perhaps not necessarily interested as it was not there area of responsibility.

The following comment from the Assistant Director add weight to the researcher's perceptions: "*What was going wrong or what is critical should be given to people in those specific areas to identify and resolve at that level*" and from Director (Corporate Finance) "*once you targeted those areas the question is what are you going to do about that and that is where you go to the finer levels of detail*". These two comments appear to support the researchers thinking that there did not appear to be sufficient incentive for the Directors' of Case Study One to gain a deeper understanding of their lower level processes.

The Assistant Director also commented that the method had uses outside of Information Systems with "*I think it has applications outside of the IT area*" and "*We took it in a bit of a different direction and I think that the process stacked up and fundamentally stacked up and could be applied in a wider context to that of IT*". A final comment on this aspect by the Assistant Director was "*I guess that it could be used in a whole range of contexts, my thought pattern is that it is used to identify anything that is critical to what you are doing.*"

The participants appeared to have followed the method (CPTM) and understood the reasoning for the steps in most cases. The Assistant Director commented that "*it is a fairly intensive process where you have to think about things, debate things and come up with a number. I don't have a problem with that*". One Director showed apparent understanding of the method suggesting an improvement saying that "*once you targeted those areas the question is what are you going to do about that and that is where you go to the finer levels of detail*" (Director Corporate Finance). It is not clear to the researcher from this experience if the detailed linkages activity/experience for participants actually provided some of the improved business process understanding.

These comments supported the alignment of the method with the needs of the organisation in identifying critical processes and critical projects related to business processes. This outcome though is not the goal of the research question and provides only tentative support for the improved understanding of business processes.

4.1.5. Post Case Study Data

Nearly a year after the interviews for this case study the researcher met with the Assistant Director who had resigned from the department. Diary notes of their comments are worthwhile being included here as supporting evidence of the increase in understanding of the management team for their business processes. The Assistant Director indicated that the 'process' (methodology) was a good experience which improved their knowledge of the critical aspects of the Oracle Finance module upgrade. The same person also indicated that process understanding in financial management was now an important aspect of their business skills.

Finally the Assistant Director commented:

> "*I would say that I would use this method again in another organisation*."

4.2. Analysis of Case Study One

The Methodology chapter (Chapter 3) described the process by which this study undertakes the data analysis. In Chapter Three (Methodology) the researcher stated that their ontology aligned with the view that, nature is the product of the individuals perception of the socially constructed environment and is produced and reinforced by people through their actions and interactions (Guba & Lincoln 1994). The researcher also took an interpretivist perspective to the data collection and analysis selecting a qualitative data collection preference.

The Chapter Three discussion also identified that as the study was in the IS space it should align with IS methods of which the qualitative method of choice was case study (Benbaset 1987 in Myers 1997). The data collection methods were unstructured interviews, conversations, historical and CPTM output documentation plus the researcher's diary notes of both observations and conversation data. The unstructured interview data is the primary source of data in the analysis with the other evidence being used to support or refute the perceptions of the researcher in the analysis. Case Study one utilised two start-up unstructured interviews and one closing unstructured interview as the primary data for the coding phase of the analysis. (See Figure 47 on page 168 for the detail of the data collection and timings.)

This study utilised a grounded theory aligned data analysis approach taken that used by Strauss and Corbin (1990) to identify the core codes and the patterns or themes within the collected data (Strauss & Corbin 1990). This section of the chapter will describe the outputs of the open coding and then the outputs of the axial coding for Case Study One.

The interviews used for the data collection were kept as audio files for this case study. Only the interview data was used for the open and axial coding. These interviews were not transcribed (as was done for the second case study) as the researcher considered that there would be further data to be found in audio format, which augmented data found in just a text transcription. Understanding of the audio data is greater than the written transcribed text because the listener is able to consider the Syntax (word order and sentence structure), the language within its social context (Pragmatics) and the Semantics (meaning based language) (Fulcher 2003). Phonology, which is the use of sounds to encode meaning, is especially important in improving understanding as only the audio recording can provide

the listener with the difference between the same words articulated using different tones to indicate potentially opposite meanings (Fulcher 2003).

This 'understanding of the explicit meaning of words and sentences' in spoken language as opposed to that which is understood in transcribed text is an advantage taken in Case Study One.

As discussed in Chapter Three (Methodology) the open coding followed directions as defined by Strauss and Corbin (1990) and Dey (2004). The following diagram (Figure 57) outlines the typical process undertaken (Dey 2004).

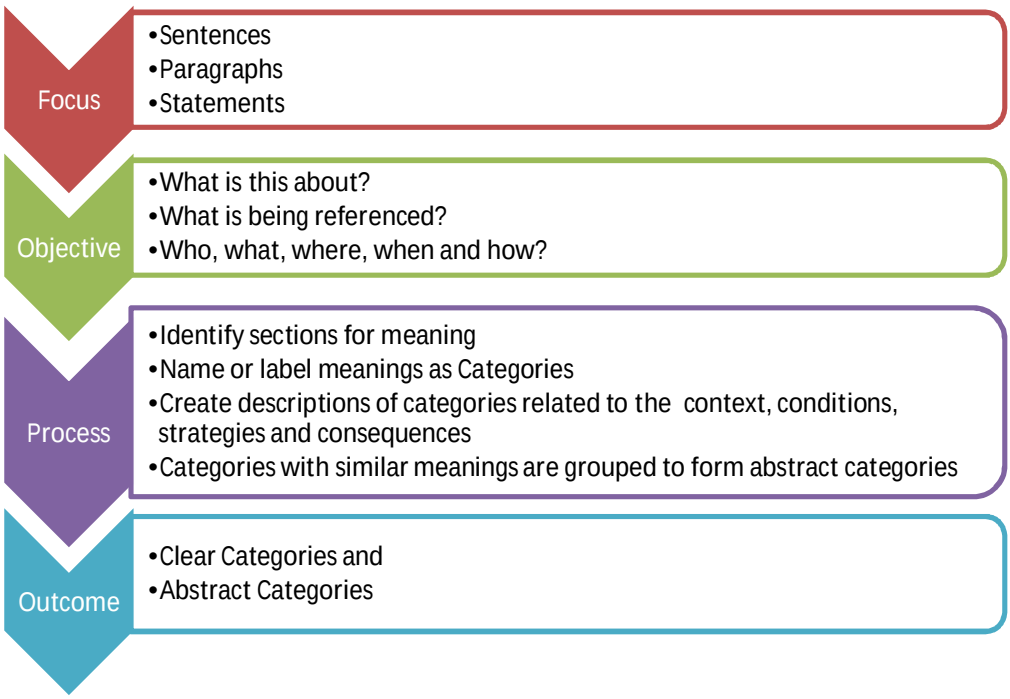

Figure 57- Open coding (Strauss and Corbin 1990; Dey 2005)

Open coding focusses on one or all of sentences, paragraphs and statements in the data being analysed. In these case studies it is the interview data only. The analysis seeks to identify the meanings within the text and to describe and then code or to code directly the meanings for the researcher. These meanings are influenced by the context of the data. As such the meanings in the data may not be those which a reader may understand or agree with.

4.2.1. Open Coding

The open coding undertaken in this research project did not seek to identify a set of predetermined codes or constructs. As the research was exploratory there were also no theories which were used to direct the researcher in the coding activities. This approach according to Leedy (1997) was a structural type of analysis. Open coding is the identification of meaning within the data set. The method used by the researcher is influenced by grounded theory and that discussed by (Leedy & Ormrod 2005). Initially the researcher considered that the approach used was to examine the data for codes related to the research question Leedy and Omrod, (2005) defined as *interpretational* analysis. On reflection it seems that the researcher has used elements of both *interpretational* and *reflective* analysis. Reflective analysis is defined by Leedy and Omrod, (2005) as the use of perception and judgement to code the data.

This coding was actually undertaking using the software application Mindmanager. An example of this is seen in Figure 58 with the raw data from the interview on the left and two open codes highlighted in green on the right.

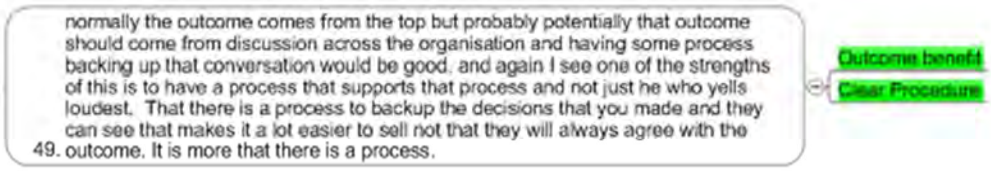

Figure 58- Example of coding captured using MindManager application

An example of the coding in Case Study One shows the selected pieces of data on the left and the codes on the right.

Selected data	Example open codes
I think what we should have done is stop at 3 or 4 levels four in some and 3 at most others.	Procedure Problem; level of detail in the method
Within that we should have stopped at "yes this is a critical area" and gone away and done some finer project management. *once you targeted those areas the question is what are you going to do about that and that is where you go to the finer levels of granularity.*	Optional Procedure Change; how to decide on level of detail in the method
How far we went was prompted by questions of why and trying to answer that	Explanation for approach level of detail in the method

Table 14- Examples of the open coding for Case Study One

In the first example shown in Table 14 the interviewee has said that they think the CPTM should have stopped identifying the linkages between objectives and process projects after three or four levels. These levels referred to were the cause and effect linkages in the strategic map. Each goal typically has a strategy or strategies linked to it and these strategies has an objective or objectives linked to it and those objectives may have other objectives linked to them and then the process projects linked to the lowest layer of the map. The interviewee is suggesting that this was too many layers and thus the researcher coded the text as being a procedure problem and a level of detail in the method code. A procedure problem is about understanding why certain activities are undertaken in the method. The second code is concerned with a specific issue within the method.

It took three passes through the data to be reasonably comfortable with both the coding process and that saturation was reached. The researcher was comfortable that their interpretation of the data was reliable (Charmaz 2005; Eaves 2001; Urquhart 2001).

Readers should note that individual perceptions of the data are always possible and that the researcher's perceptions and ultimately codes created are the result of both the data itself and the researcher's contextual understanding. The output of this first open coding activity were many open codes which were then used in the next phase which is the Axial coding.

4.2.2. Axial Coding

Based on Strauss and Corbin (1990) the following diagram (Figure 59) describes the process undertaken by the researcher in the axial coding phase. Strauss and Corbin (1990) suggest that axial coding is the chunking up of the open codes based on their causal relationships related to the context, conditions, strategies and consequences that characterise the interactions. Figure 59 describes the first activity, which was to group open codes together based on the similarities of the context, consequences or interactions.

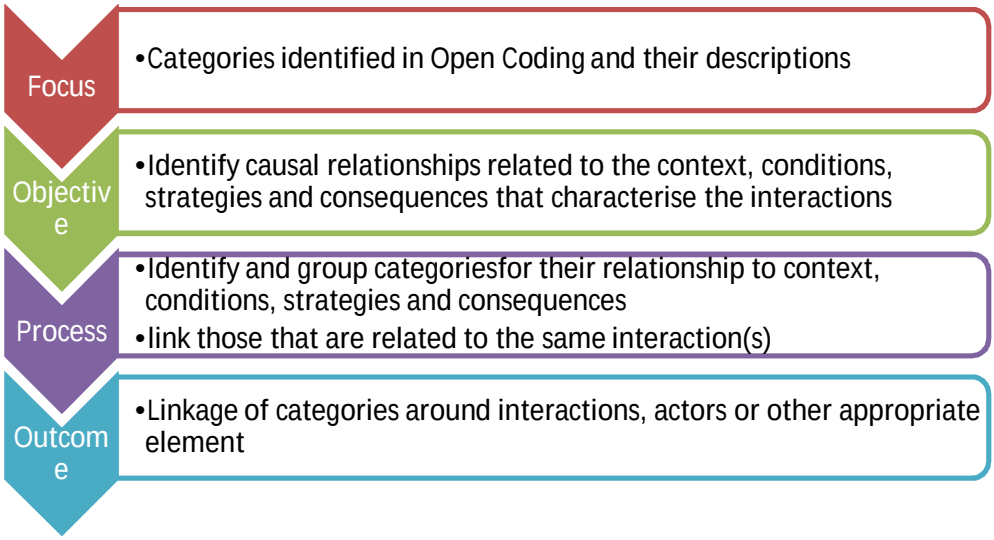

Figure 59- Axial Coding (Strauss and Corbin 1990)

An example of the axial codes is provided in Figure 60 where the axial code of 'Optional Procedure change' relates to comments by interviewees concerning the CPTM and how participants might alter the way the CPTM was implemented. The second example related to comments made in interview concerning the benefits of the CPTM to the organisation and the management team.

Open codes	Axial codes
Use of the method within different management environments	Optional procedure change
A return loop of information to help in the decision making	
How to decide on the level of detail in the method	
Use of subject matter experts to take decision making at lower levels	
Use of the method outside of the critical process identification	
Focus on the whole	Outcome benefit
Clear procedure	
Support for choice type decision making	
Understanding of how projects fit with business activities	
Re3flection led to clearer understanding	

Figure 60- Example of axial codes derived from open codes

The axial coding for Case Study One resulted in nine codes being identified:

- problem specification
- problem root cause
- problem realisation
- context building
- refection on past behaviour
- procedure problem
- optional procedure change
- outcome benefit
- confirmation of success

These codes were the result of 'chunking' up of the extensive number of open codes generated by the early passes through the data. These codes do not consider the data which was gathered outside of the interviews. Rather the interview data is reinforced in the researchers mind by association and validation with the diary notes, physical outputs and historical data.

The axial codes represent a range of different phenomenon related to decision making. Making good decisions requires that a person or organisation initially realises that a problem exists so it is positive for the case study that there are axial codes that relate to this Selective code. Decision making also requires problem understanding and analysis and there are categories such as *problem specification*, *problem root cause* that relate to this phenomenon. In order to verify if the decision making outcomes of the case study event are good or bad there is ideally categories surfaced that relate to the positive outcomes of the decision making such as *outcome benefit* and *confirmation of success*.

Figure 61 below is a representation of the method used for data analysis and the sources of data in this study.

Activity	Open Coding	Axial coding	Selective Coding	Themes Defined	Assess theme fit with original data	External Support for Themes
Focus	Case Study One Interviews	Case Study One Open Codes	All Case Axial codes	All Case Selective Codes	All Case Themes	All Case Themes
Focus	Case Study Two Interviews	Case Study Two Open Codes	All Case Axial codes	All Case Selective Codes	All Case Themes	All Case Themes
Focus	Case Study Three Interviews	Case Study Three Open Codes	All Case Axial codes	All Case Selective Codes	All Case Themes	All Case Themes
Data used	**Case Specific Interview data**	**Case Specific Open codes**	**All Case Study Axial Coding**	**Research Question**	**All data collected**	**Published Literature**

Figure 61- Data Analysis Process

Figure 61 indicates that the coding undertaken was performed only on the interview data. The diagram has three perspectives: 1. the left to right perspective which considers the activity focus and data used; 2. the top down focus which considers the data analysis activity being undertaken; and 3. the bottom up focus which considers the type of data being used in the activity.

In Case Study One other data included conversations, historical documentation and procedure output documentation. Conversations were recorded in the form of diary notes by the researcher (Atkinson & Shaffir 1998; Bryant-Lukosius & DiCenso 2004; Costa, Herbert & Macaulay 2004; Eaves 2001; Holkup et al. 2004). Historical documentation was sourced from the business unit's web site, original strategic plan and project documents related to the finance system upgrade (Kidd & Kral 2005). These were reviewed by the researcher in preparation for the case. Procedure output documentation included meeting minutes, agenda's, proposal documentation, written explanations of the CPTM process undertaken in response to questions and requests, process models and the mapping of processes and projects to the new strategic plan (Kidd & Kral 2005; Stewart 2001; Yin 2003).

As discussed the data (for example, historical documentation, diary notes and output documentation) was not used in the open and axial coding. The next section discusses the researcher's linkage back to the interview data to find support for the axial codes.

4.2.3. Research Outcomes

One of the more personally positive aspects of Case Study One was highlighted by the comment of the Assistant Director on the winning of external funding of more than 3 million dollars to improve specific processes from external stakeholders. When told of this development, the researcher questioned the interviewee (Assistant Director) as to the reasons for the success and was told "*due to the process, our understanding of the importance and impact of the processes was so clear we were easily able to communicate this to the external stakeholders providing the funds*".

The prior comment is further supported by a comment made during the same interview with the Assistant Director;

> "*I think that this process itself is very good at enabling people to understand why they are making decisions and helps them come to a decision. What was potentially in the past an open forum or where you get together in a facilitated forum this gives a clear step by step process to work your way down from your organisational strategic plan*."

Positive support for the CPTM was articulated, but not necessarily in support of understanding business processes was the comment by the Assistant Director:

> *"For whatever you do across the business you could use this process to look at what are the critical areas. For whatever you do across an organisation you use the methodology and process to look at what people think are key areas of priority and what the key areas are, what is core to the area, what is core to the organisation.... what potentially should we be doing."*

Support for their understanding of business processes was also evidenced with Director Corporate Finance commenting that:

> "*the process is there to gain a good understanding of what the critical areas are.. it is not to try and resolve all ills. What it is, is a process which was the biggest benefit that we got out of it and we followed a process. What were the main areas for us and where potentially in the future would there be potential issues?*"

Overall, it appears that the experience articulated by interviewees and supported by diary notes suggests that the CPTM enabled the department managers to gain a beneficial insight into the linkage of business processes to strategy. Diary notes of meetings in which the linkages processes to strategy were undertaken (four major meetings of the management team) highlight the discussion in which individual managers described the detail of a process to those around the table in order to justify the weighting and linkage of a process to a particular strategy. This evidence the researcher believes increased their understanding of business processes from a business perspective in a similar pattern in which working in different areas of a business increases understanding of how each of the elements of the business integrates and operates.

4.3. Summary- Case Study One

The major business issue in Case Study One, with which the management team were grappling, was how to decide from the many identified projects (focussed on system improvement) which they should undertake and in what priority. The steps undertaken in case study using the CPTM to identify critical processes in relation to the defined strategic plan, enabled the participants to develop a richer understanding of the relationships between processes & strategy and projects & strategy. The projects were process focussed improvements to the way the system operated.

The CPTM made clear to the participants the linkages between business processes in the financial area of operations and the agreed strategy map developed at the beginning of the case study. The experience enabled the participants to successfully pitch for a large grant to undertake some of the process improvement identified. In order to do this the participants had to show how this grant funding would provide direct benefits to clients and the industry generally. Prior decision making as evidenced by diary notes of the researcher appeared to be based on organisational political influence and those stakeholders who made the loudest noise.

In addition the Assistant Director commented at interview that it "*normally comes down to the CEO, COO, CFO deciding what is important and the priority*". This comment indicates to the researcher that the Assistant Director expected that the more senior people in the department or organisation should unilaterally make these types of decisions. That comment contrasts towards the end of the interview with another by the Assistant Director which indicates to the researcher that the CPTM changed the decision making processes and that at a minimum the Assistant Director thought it beneficial.

> "*I think that this* [the CPTM] *process itself is very good at enabling people to understand why they are making decisions and helps them come to a decision. What was potentially in the past an open forum or where you get together in a facilitated forum this gives a clear step by step process to work your way down from your organisational strategic plan.*" (Assistant Director Case Study 1 interview)

The analysis of Case Study One provided an insight into the way an organisation working within the complexity of a financial management area of a business might:

1. Utilise the CPTM to support their short term aims, which was to ensure that stakeholders were in agreement with the decisions being made as they were clear and logical and based on previously agreed business goals.
2. Start making connections between business process knowledge and the financial systems they were trying to rapidly gain benefits from by showing the structure of processes within the business as opposed to being silos of functional areas.

The participants importantly were able to derive direct feedback from clients and sponsors that this new knowledge had valuable business benefits. Evidence of this is found in the

successful and outstanding response to a proposal to stakeholders for substantial grant funding for further improvements to the processes used in the finance department.

The selecting coding and coding validation of each of the case studies is discussed once each of Case Study Two and Case Study Three vignettes and their respective open and axial coding is discussed. The individual case codes are compared with emerging themes and supporting evidence from each of the cases is identified. Selective codes are assessed in the light of the research question and any emergent theory is then compared to the literature where available in the literature review.

The next section is Case Study Two. This case study was somewhat more complex in that the activities undertaken by the researchers resulted in more data sources as there were five researchers involved in the larger research project of which this case study was an element.

4.4. Case Study Two Vignette

This case study provides the researcher with excellent data from five interviews plus extensive documentation both historical and CPTM output. In addition the researcher collected many diary notes from the experience which included the opportunity to test the researcher's perceptions against those of the other four researchers' involved in other aspects of the research with the organisation.

4.4.1. History and Structure

Case Study Two is a major provider of financial products and services. Established more than 100 years ago, Case Study Two is also an authorised Trustee Company. They are geographically located in one Australian State (or Territory).

Case Study Two provides general banking, estate and financial planning services in the locations for which it operates. At the time of conducting the case study the organisation managed more than $1.5 billion in funds on behalf of personal, business and wholesale investors, as well as nearly $1 billion of trust assets.

The organisation employed approximately 100 staff located in branches and administrative offices across their service areas. The organisation had four major departments, these being:

- Sales and Service Department (operating the client facing sales and service networks)
- Financial and Trust Asset Management Department (managing the client assets and investments)
- Corporate Services Department (providing back office support services such as compliance management and legal administration, internal accounting, human resources and information and communication systems)
- Marketing Department (providing product maintenance and development, pricing, promotional and customer communication support)

The organisation had two major office locations in major cities in which it separated the financial and trust asset management activities from the marketing, sales & service and corporate services administrative functions. The split locations for functions occurred due to a 2001 merger of two similar businesses.

Figure 62- Case Study Two Organisational Structure

In the organisational structure the Corporate Services General Manager (GM) was responsible for the provision of support services such as compliance and legal, taxation and accounting, human resources and information technology. The GM of Marketing was responsible for the provision of product, pricing, promotional and customer communication support. The GM Asset Management was responsible for the assets and investments of the organisation. The GM Sales and Service was responsible for the retail network of branches and online services. Each General Manger had at least one manager which will be called a middle manager. These managers were present at workshops as indicated by the schedule Figure 64 on page 198.

The organisation still operated in functional silos with many of their systems applicable to one functional area or two at most. Some of their systems had considerable outside support and evidence of the situation was supported by the focus of the then two point five full time equivalent (FTE) IT staff on desktop and printer support activities.

4.4.2. Context

The Case Study Two organisation approached the research team of the university with a view to obtaining guidance in determining an IS strategy for their organisation. There was a view among some members of the Senior Management Team of Case Study Two that the

current information systems did not provide the business functionality required for continued growth. Not all Senior Managers were in agreement with this view and that conflicting view appears to have led to the request for the senior researcher to support the organisations review of their IT and the development of an IT strategy.

Planning by the initial research team of the university led them to believe they needed to consider a process perspective. Discussion with this researcher resulted in the opportunity for a second case study. The researcher used the case study criteria to assess the case study opportunity and found that it fulfilled the requirements.

The practical requirements of Case Study Two selection were that they were:

- of sufficient size to have a reasonably complex IT systems environment and were a medium sized organisation (Resource Perspective)
- located in Australia, willing to allow reasonable access to strategy, documents and people and willing to allow staff to be interviewed and used to undertake the CPTM. Willing to work through the CPTM in a short period (Access Perspective)
- understood that the project was a research project and were willing to accept the risks of the research project (Risk Perspective)
- interested in a new approach to strategic planning and business process understanding (Implementation Perspective).

From a research selection criteria view the case study was considered to be a typical instance of the type of organisation. It was certainly partly a case of convenience in that it met the practical requirements. It was intrinsically interesting with a known need to link IT to business more closely and was similar to the Case Study One characteristics.

This researcher's role (from the lead researcher's perspective) was to use the Critical Process Targeting Method (CPTM) to;

- to identify the major processes in the organisation
- to identify the major process challenges (critical processes)
- to identify the major process opportunities
- to identify the opportunities for systems enhancement (IS and other).

A paper published in the PACIS 2007 Proceedings used the following model to explain the larger project (de Salas, Marshall & Young 2007).

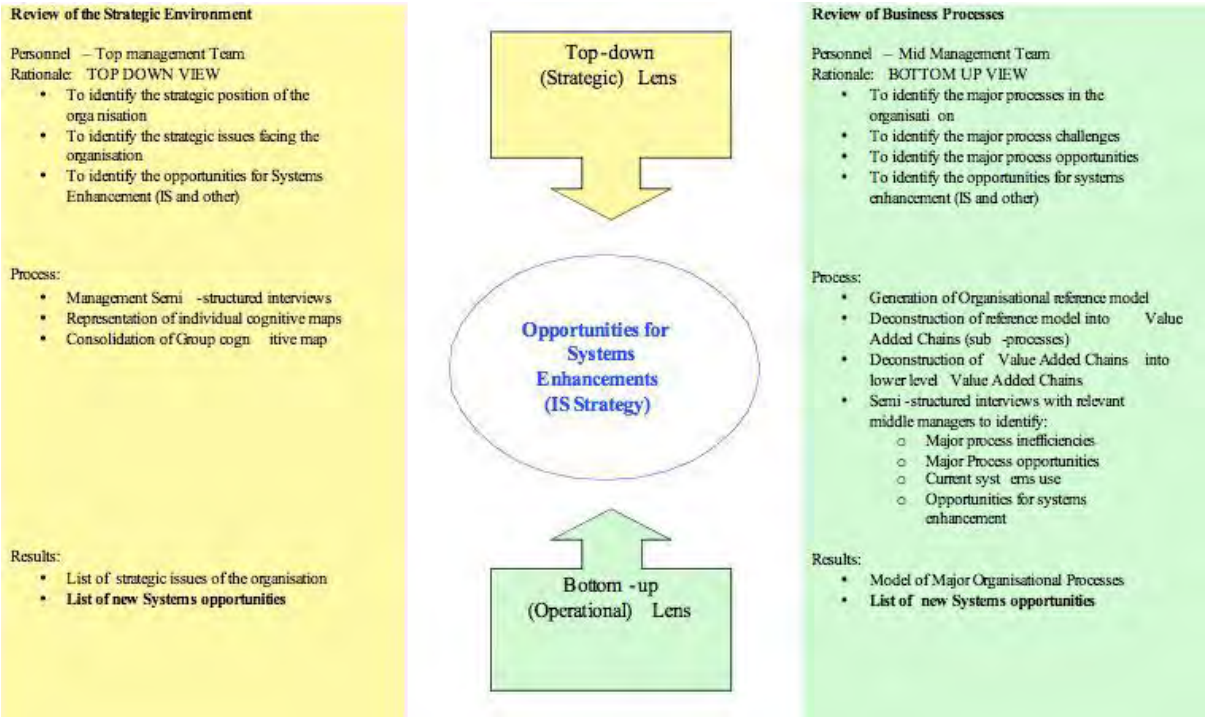

Figure 63- Larger research project undertaking a dual lens approach to IT strategy development (de Salas, Marshall & Young 2007)

This researcher was concerned with the activities being described as 'bottom up-operational' lens.

When the case study was undertaken in the last quarter of 2005, the organisation had recently completed a two day strategic planning activity and reported a 53% increase in profit for the previous financial year. In 2003 the Australian Government Reserve Bank Board published a document titled "Risk-Focused Consumer Compliance Supervision Program" which proposed a review of financial lending organisations in Australia. As part of this program Case Study Two was reviewed by the Australian Taxation Office (ATO) and this review identified a need for improvement in the collection, entry and management of customer data.

The ATO review appears to have influenced a period of activity focussed on improving the compliance requirements of the merged entity. The focus on compliance activities then appears to have led to questions being asked by executives of the suitability of the existing information systems. Informal comments by the CEO (recorded in researcher diary notes)

indicated that he was comfortable with the way the organisation now managed their compliance needs. Conversations captured in diary notes of the researcher suggested that executives other than the CEO were unhappy though with the current situation in relation to the efficiency of their customer facing information systems. Senior executives saw inefficient information systems as the element which could be improved to support the business and improve on the issues identified by the ATO. Their starting point was to develop an Information Technology (IT) strategic plan.

Exploratory start-up interviews were conducted with all the senior executives (see Figure 62 on page 194 for the executive hierarchy) except for the GM Assets. The role of the GM Assets was to manage the maintenance of physical assets related to assets as part of estates and to manage the investment of deposits for clients of the business. This role description meant that the GM Assets was not involved in the client facing operational aspects of the business. His department could have been an outsourced provider and in some respects the different geographic location reinforced this impression.

CPTM Schedule

The original plan for implementation of the Critical Process Targeting Method (CPTM) was;

Schedule	Step	Participants
Day 1 Introductory workshop on Targeting Method for Case Study Two Organisation	Step 1	CEO, Company Secretary and General Managers
Day 1 to Day 3 Researcher to finish versions of strategic maps for research team consideration (an existing strategic plan existed)	Step 1 & 3	Researchers
Day 4 Send versions of completed strategic maps to other members of the research team via express post as well as soft copy	Preparation	Researchers
Day 5 to day 14 Research team to complete and confirm one version with Case Study Two organisation	Step 3 Part 1 & 2	CEO, Company Secretary and General Managers and some Middle Managers
Day 5 to day 14 Research team to confirm list of processes with Case Study Two organisation	Step 2	Marketing, Sales and Corporate Services Middle Managers
Day 15 to day 18 Researcher to complete final strategic map and produce large copies (A0 size)	Preparation	Researcher
Day 20 Conduct linking of processes to objectives	Step 3 part 3	Marketing, Sales and Corporate Services Middle Managers
Day 20 Researcher to draw up links in Mind manager application and get printed locally	Preparation	Researcher
Day 22 Research team to support completion of impact on goals weightings with Case Study participants	Step 4, 5, 6 & 7	Marketing, Sales and Corporate Services Middle Managers

Schedule	Step	Participants
Day 24 to day 25 Research team to support completion of effect of failure and probability of failure assessments	Step 4, 5, 6 & 7	Marketing, Sales and Corporate Services Middle Managers
Day 26 Research team to formally deliver list of critical processes and refresh Case Study Two organisation about steps 8, 9 and 10 of method	Step 7	CEO, Company Secretary and General Managers and some Middle Managers
To Be Advised Research team to facilitate steps 8, 9 and 10	Steps 8, 9 & 10	
To Be Advised Process improvement projects selected and process modeller arrives to support modelling projects		

Figure 64- Original Case Study Two Plan

Figure 64 identifies the original plan used to define the major steps of the research case study. The researcher did not need to undertake, as in Case Study One, a development of the strategic plan. The existing plan was taken and turned from a silo focused plan (one in which each area of the business had an unintegrated list of goals, objectives and measures) to a strategic map which showed the cause and effect aspects of the integrated enterprise level strategic plan.

The research plan was followed as described apart from a delay of a few weeks between the first meeting and the development of the strategic map and then the agreement of the case study executives (CEO, Company Secretary and General Mangers) with the strategic map. The case study organisation did not undertake steps 8, 9 and 10 of the CPTM instead it sought proposals from large vendors to supply a team of process modellers to undertake a large scale process modelling project with the objective of providing insights into areas identified as critical in the CPTM. This is not perceived as a failure on the part of the researcher to successfully implement the CPTM. Instead it is a realisation that organisations have extensive experience in assessing cost-benefit and risk for investment decisions and did not feel the need to include the researcher in this aspect of the decision making.

The 'Middle Mangers' were part of all workshops but did not participate in every workshop as a complete group. Instead only the corporate services sales and service and marketing functions managers were consistent participants. The middle managers from asset management did not participate in any workshops due to their location in a different city.

The following diagram is a summary of the data collection quantum, the business focus and the business problem of this second case study.

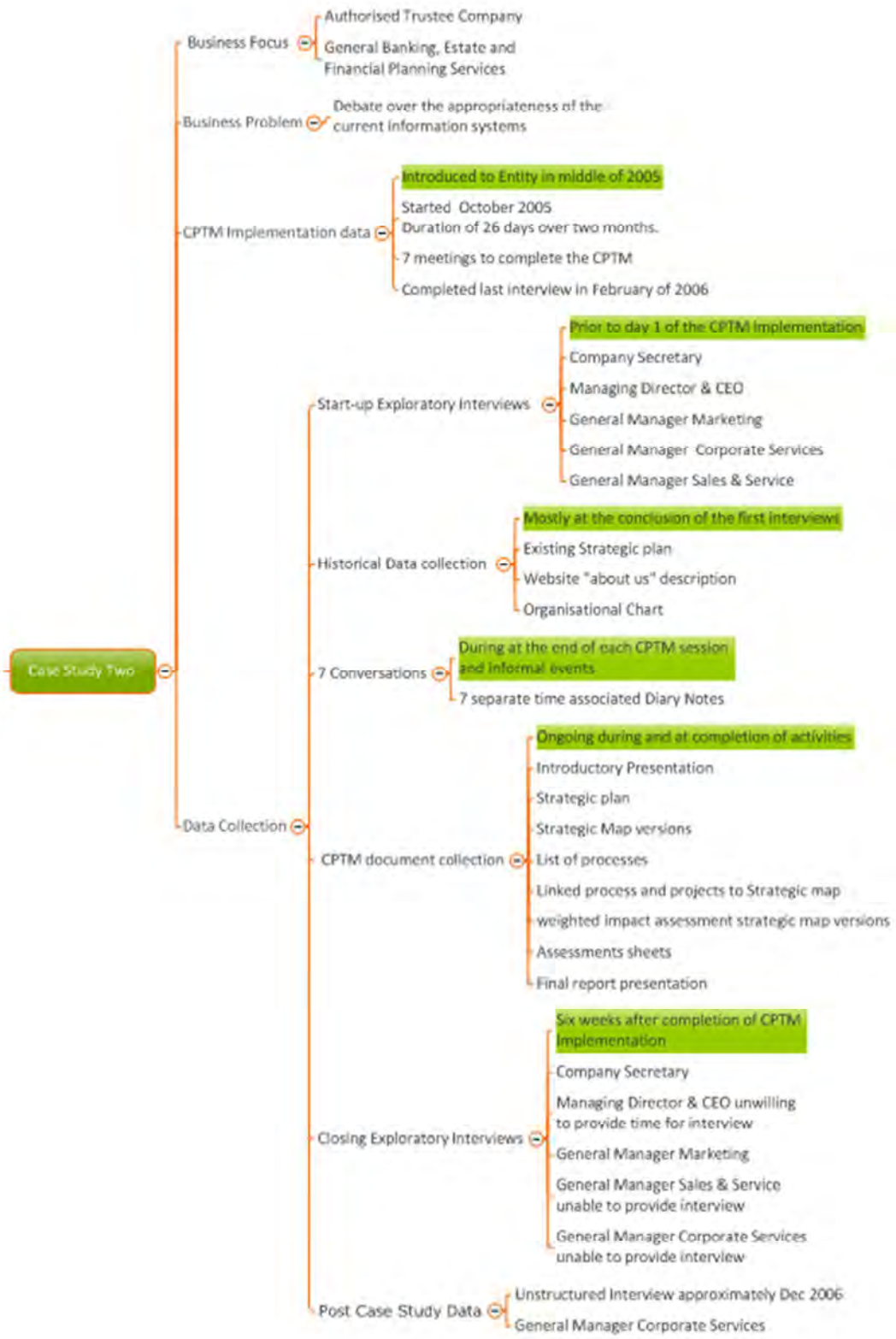

Figure 65- Case Study Two Data Collection and Timings

Figure 65 shows that the case study was identified in the middle of 2005 and started in October 2005. It had a duration of twenty six days over two months. There were seven meetings during this time in order to implement the CPTM. Five exploratory unstructured

interviews were conducted prior to the implementation of the CPTM followed by seven diary notes from conversations related to the same number of contacts.

The final interviews were undertaken in the February of 2006 with post case study data collected via an unstructured interview in December 2006 with the GM Corporate Services.

Drivers and Problem Areas

In the literature review, discussion was undertaken on the major drivers which would motivate organisations and or individuals to require a greater understanding of their processes. Figure 66 is the diagram used in the literature review which summarises the discussed drivers.

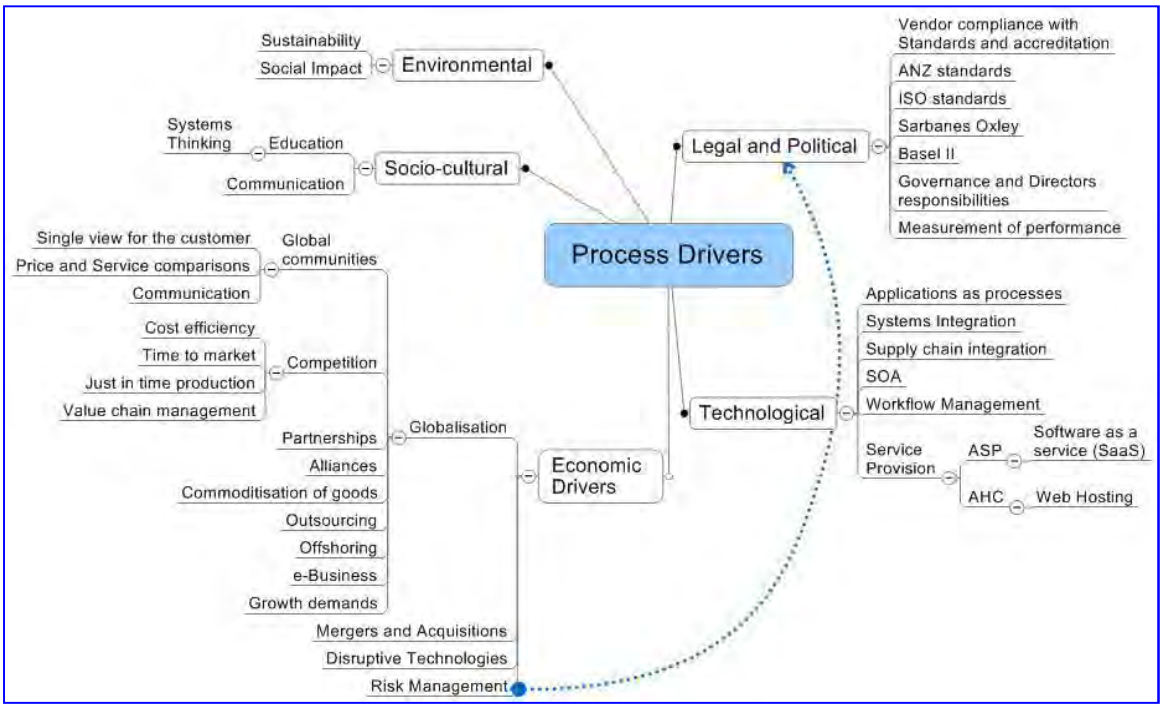

Figure 66- A Multi-perspective view of the drivers of a process view for business –(First used in the Literature Review Chapter 2)

One of the drivers of process understanding identified within the economic category was the impact of mergers. Case Study Two had undertaken a merger in 2001, and in 2005 was still working through some of the impacts of that merger. In addition the organisation had enacted an alliance with an external partner organisation which may have required an improved understanding of the cross-business processes in place in order to integrate joint support activities and to manage the implementation of new joint products and services. Annual reports indicated that this alliance was profitable and growing in scale.

While the public communication of the organisation indicated that the business was profitable and growing, the interviews with the major executive team highlighted that they constantly assessed their activities against similar companies across Australia. This type of communication with peers led them to question the effectiveness and efficiencies of their information and business systems. Thus socio-cultural and technological drivers were also active within their environment.

The organisation had focussed on the improvement of compliance within its operations as a result of the report from the Australian Tax Office (ATO). This type of driver has been designated as a Legal and Political driver and resulted in a one year focus on compliance improvement. The focus on compliance improvement led to an increased understanding of compliance processes and a growing interest in the improvement in information systems and data management in support of compliance processes and data quality. For example an internal report commenting on the ATO report stated:

> "*Will require new processes for staff as to naming issues"* and
>
> *"will need to put into place correct practices for staff as to loading client information onto* [removed word] *e.g.(as) ATO require multi word surnames to be separated by one space not a hyphen etc*"

The comments prior identified a need to improve the processes used to capture data. Case Study Two interview data had indicated that participants thought improved systems would support the ongoing improvement of the data collection. For example the following comment was made in the context of what was now available but not yet used within the organisation:

> "[larger financial institutions] *have got to the point that data warehousing has in actual fact reached a point of success where the front end systems that they have inbuilt for all of their staff across the organisations are incredibly sophisticated with full customer relationship management capability and using a whole series of sort of customer intelligence and knowledge that is built in about the individual customer*" (source: GM Marketing)

These drivers (economic, socio-cultural, technological, legal and political) led to the researcher undertaking the use of the CPTM to identify critical processes as part of the larger project which was to develop a new information systems strategy for the business.

4.4.3. CPTM Activities

This case study was different to Case Study One and Case Study Three in that the researcher was part of larger team of researchers. This researcher had responsibility for implementing the CPTM with the case study organisation. In both Case Study One and Two the organisations had a deep interest in their IT systems and believed that the CPTM would be able to supply understanding for the decisions they needed to make in this area.

Strategic Planning (Step 3 of the CPTM)

The strategic plan of the organisation was originally built around six goals that then had 'strategies' and 'actions' but there was no analysis of the effect of concurrent implementation of the strategy set. A cause and effect map on the other hand seeks to describe the interrelationships between each of the goals, strategies and actions. This interrelationship deals with the major or more obvious cause and effect relationships.

The CPTM generates a cause and effect map, which can be used to determine the interactions of the strategy map. An example section of a cause and effect map is shown in Figure 67, which was produced by the researcher in preparation for the participants to review strategy interactions.

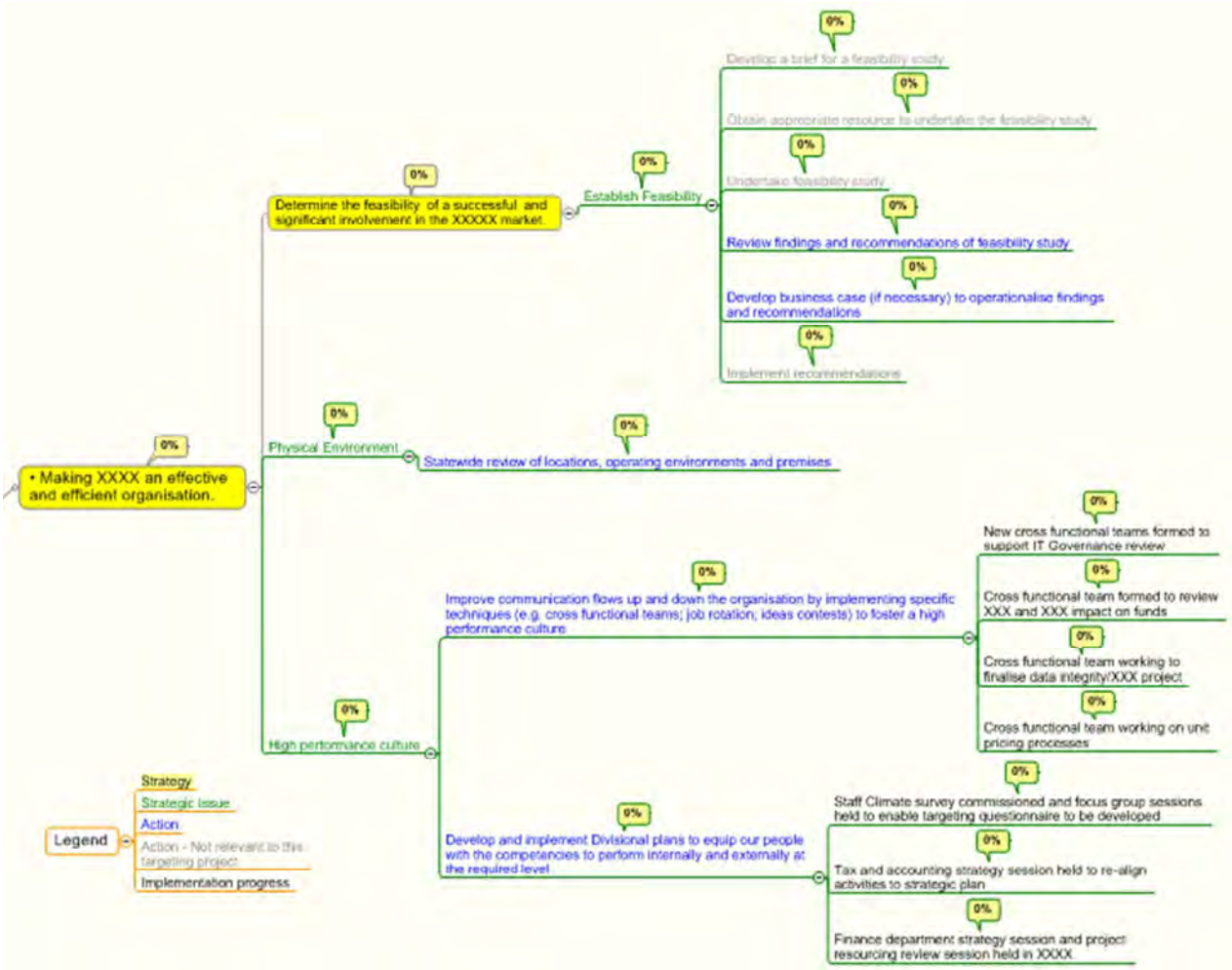

Figure 67- Example of Cause and Effect mapping of the Case Study Two Strategic Plan

Actions (**blue** or **light grey** text) in the strategic plan are related to stated strategic issues (**green text**) and to one or more strategies (black text with gold highlight).

The map in this configuration was presented in A0[3] size format to the CEO, Company Secretary and General Managers for review. The review was undertaken in a group forum with the researcher as facilitator. Forum participants were five middle managers, with two researchers facilitating interaction. The objective was to review each of the cause and effect linkages, correct any mistakes and to then add weightings for each of the linkages.

Defining the Processes (Step 2 of the CPTM)

When the case study reached the process identification stage the researcher first worked with the other members of the research team to provide instruction concerning the approach to identifying the processes which would be used to connect to the strategic map.

[3] 1189 x 841 mm or 46.8 x 33.1 inches

The following process reference model shows the high level initial processes of Case Study Two.

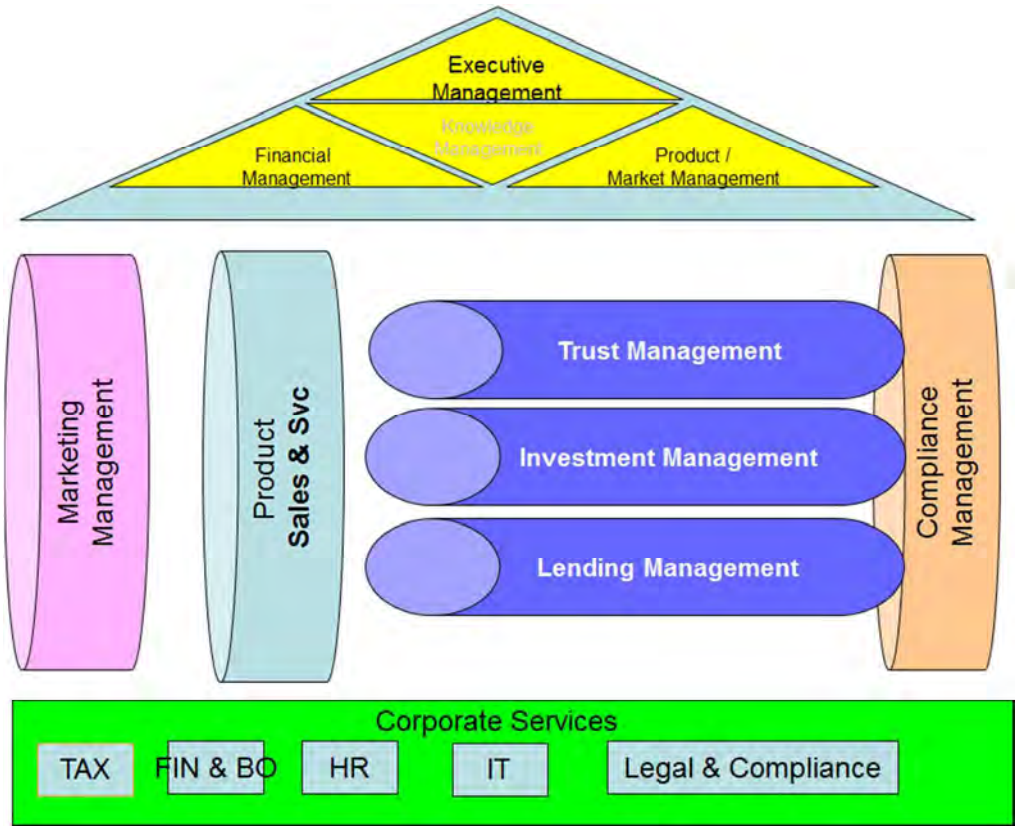

Figure 68- Process Reference Model originally suggested for Case Study Two

The process reference model (Ulrich 1977; Scheer & Nüttgens 2000; Aoyama Gakuin University 2003) was based on prior work in Case Study One and was put together by the research team as a way of initiating the organisations thoughts when it came to identifying the major processes present in Case Study 2. The structure of the process reference model is in three main parts. The top of the model is a set of triangles and these are the strategic processes of the organisation. The centre of the model contains the 'core' or major activities of the organisation and the bottom rectangle contains the support or enabling processes. The centre or core processes tend to be read from left to right but this is not a mandatory aspect of the model. In this case, while all elements will in practice take place simultaneously the customer will see the first two (marketing management and product sales & service) but not necessarily the remaining four. This type of process reference model is often called a 'Process House' because it looks like a house (Aoyama Gakuin University 2003).

The Company Secretary and General Managers agreed with the house model. Each of the top level processes were then decomposed into second level value chains, as shown in Figure 69.

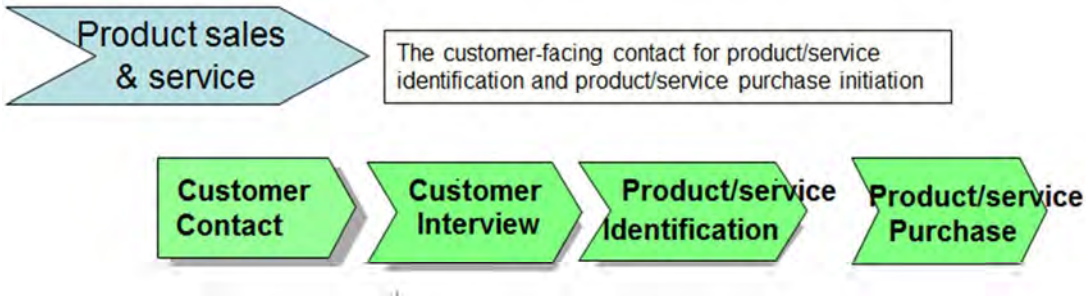

Figure 69- Product Sales and Services within the 'core' process area of Case Study Two

The resultant process list is described in the list below; there are fourteen identified major processes which were used in the identification of Case Study Two critical processes. These are a range of strategic, core and enabling processes.

Process #	Process Name	Type of Process
1	Executive Management	Strategic
2	Financial Management	Strategic
3	Product & Market Management	Strategic
4	Marketing Management	Core
5	Product Sales & Service	Core
6	Trust & Estate Management	Core
7	Investment Management	Core
8	Lending Management	Core
9	Compliance Management	Core
10	Financial Control & Back Office	Enabling
11	Human Resources Management	Enabling
12	Information and Communications Technology	Enabling
13	Tax	Enabling
14	Legal and Compliance	Enabling

Table 15- Case Study Two Identified Processes

Where necessary for further clarification of the process or where identification of the boundary (the process started and stopped) of the process was required additional models at the next layer down were developed.

For example Figure 69 describes the Product Sales and Service process as a value chain, showing the process and the value chain from customer contact to product or service purchase.

Figure 70 is an example the marketing management process and is given a description in text shown in the top right box and below the line there is a value chain model which shows

the four major aspects of the process (existing market review, existing product review, market construction/re-development and market implementation). You will also see that a sub level for 'existing product review contains two value chain elements also.

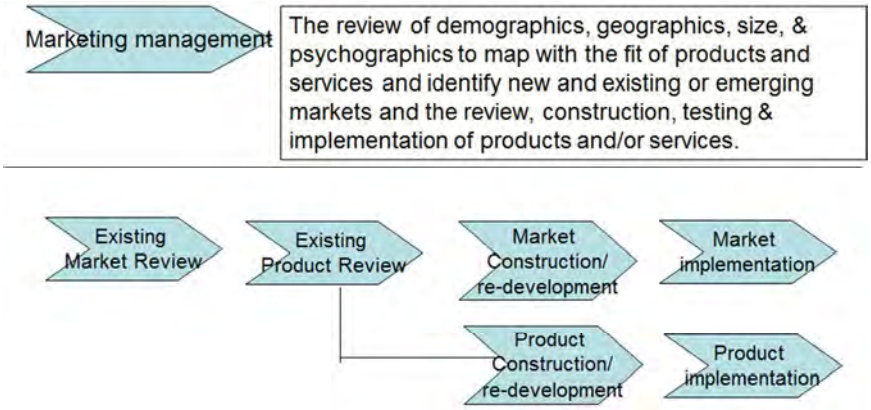

Figure 70- Example lower layer process for Case Study Two (Marketing Management)

As with Case Study One, the researcher modelled this level 1 representation and lower levels sufficiently to enable the staff who would participate in the linkage of process to objectives and strategies to understand what the process involved and to mitigate the confusion of text only. An example of this confusion might be the end point of the process which in this case is the purchase of the service or product but in some cases may be the delivery of the service or product.

It was important for participants to clearly understand what a process as named was meant to do. Linking these processes to the strategic objectives required clear understanding of each of the processes which in some cases was outside of the functional responsibility area for the participants.

Linkage of Processes to Objectives (Part 3 of step three of the CPTM)

Prior to this phase being undertaken, the researcher worked with the participants to identify the cause and effect elements of the strategic plan. The researcher worked with the middle managers over the course of two days to link the identified processes to the objectives or strategies of the agreed cause and effect style strategic plan. It was considered by the research team and accepted by the senior management that this group of middle managers was best able to understand the impact of individual processes on the strategic map. The researcher initially took all processes identified by the participants and

linked all of them to every objective in the strategic cause and effect map. In this way all were considered 'in play' until they were discounted by the managers.

The linkage of process to objectives or strategies appeared to go smoothly with sufficient discussion to ensure that the participants were actively participating. Once the linkages had been made, the middle managers were then asked to provide weightings which, while quantitative in measure, were qualitatively arrived at as they are based on perception or heuristics.

Establishing Criticality (Steps 4, 5, 6 & 7 of the CPTM)

The middle management team added weightings to each of the cause and effect relationships in the strategic map developed. This outcome is shown as on overview in Figure 71. Figure 71 is intentionally not clear but is shown in full view to enable the reader to understand the layout and cause and effect relationships. The map is laid out in the same fashion as is described in the paragraph below Figure 67 on page 203.

Once the weightings had been agreed and added by the participants, the cause and effect map was then printed in A0 size and a number of A3 and A2 sizes to provide each of the participants with their own copy but a clearly visible working version.

Figure 71 provides an overview of the type of layout typical of a cause and effect strategy map. This diagram is intentionally too small to read for the stated privacy concerns of each of the case studies undertaken.

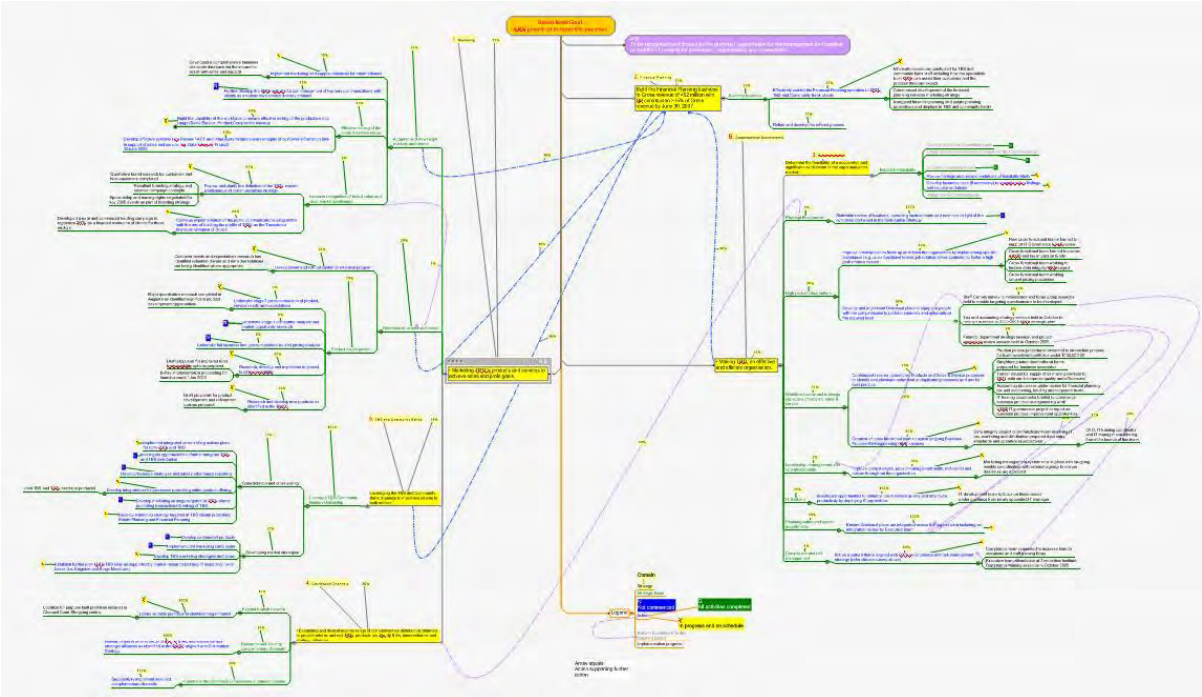

Figure 71- Strategy of Case Study Two without processes linked but showing the cause and effect

The following diagram (Figure 72) provides a view of a completed strategic cause and effect strategy map with the weightings and processes added by the participants. Like the previous diagram this is also intentionally not possible to be read for confidentiality reasons.

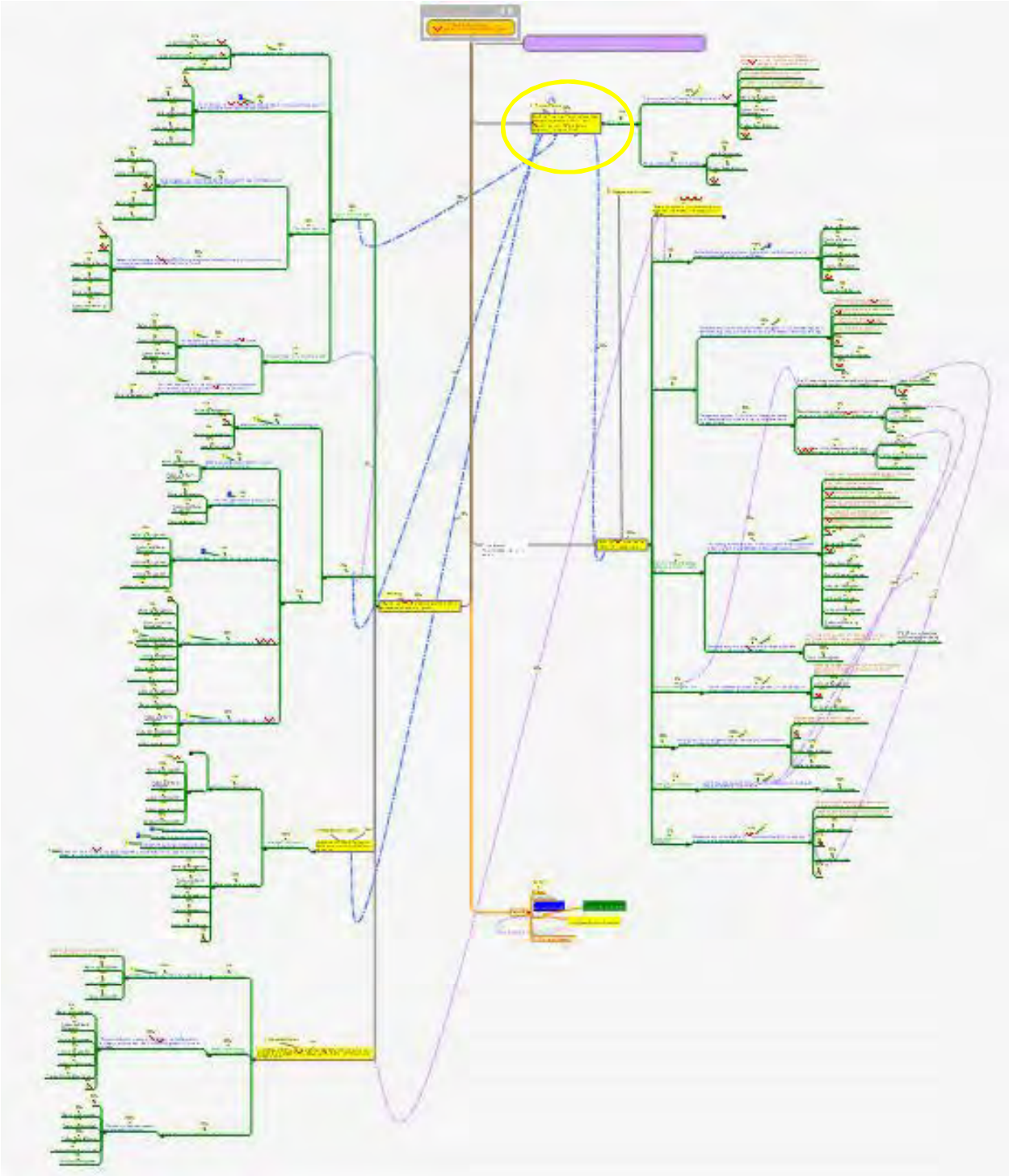

Figure 72- Strategy with linked processes for 2 Case Study Two

Figure 72 shows multiple cause and effect relationships on the financial goal (within gold circle) in addition to those shown by solid line attachment in green. These purple and blue dotted lines also indicate a cause and effect relationship. This type of relationship is discussed by Kaplan and Norton (1992) where they show cause and effect using the four balanced scorecard perspectives: The *learning and knowledge of staff*

impacts on processes which in turn impacts on customers which in turn impacts on financial elements. In this way the impacts are assessed and visibly shown on the map.

Once completed the different assessments were calculated to identify the rating for criticality of each of the processes involved.

4.4.4. Reflections on Case Study Two

The case study raised a number of issues related to the method itself. Diary notes of the researcher identified one major element which caused concern during the implementation phase of the CPTM. During the case study the middle managers were requested by senior management to undertake the assessments of impact on goals, probability of failure and effect of failure. Some of these more junior managers who were given the task of working with our research group felt that they could not critique the activities of the most senior executives. In particular, where the processes were 'Executive Management' or 'Financial Management 'the more junior executives felt that to identify a high probability of failure of these two processes was to criticise their senior managers who were responsible for the processes strategically. At the time based on the little we know of the culture, we accepted this situation and changed the assessment to one that read 'probability of success'. While this is a superficial change to the assessment it seemed to provide the required change of focus for the participants.

A further issue which was identified once the assessments were completed was the acceptance by the senior management team of the results. One particular manager felt that they were best able to identify the critical processes and that, as the outcomes did not match their opinion, the resultant map from middle management must be flawed. GM Corporate Services, commented in an interview though that the staff were happy with the outcomes after discussions; "*With the exception of the MD .....I think it would be fair to say he decided to remain uninvolved*". This same executive commented on a second GM Marketing "[person's name] *loves your outputs he talks about them often*." Although it appeared that the MD was not vocally agreeable to the outcomes of the critical process identification it seems that he was prepared to allow the organisation to use the results.

4.4.5. Post Case Study Data

Nearly eight months after the data collection phase, a post case interview was conducted with one of the senior executives to see if there was any evidence of value of the CPTM to the organisation.

The GM Corporate Services highlighted the benefits of the case study to the organisation in relation to business process understanding when he said:

> "*yeah we thought .. it* [methodology] *was right on target and when I had a conversation with him* [Managing Director (MD)] *last year, he was um very pleased with the process very pleased with the outputs and was really confident about going and having a detailed conversation with the board about it. In the past these conversations had not been well received because there wasn't a lot of meat behind it, …… He* [MD] *felt much more favourable about the type of response so that is fantastic*."

Over time the GM Marketing was able to utilise the knowledge gained through using the CPTM as solid evidence in support of decisions concerning new major IT systems. He was able to use the knowledge to present convincing proposals to the board.

4.5. Analysis of Case Study Two

The Methodology chapter (Chapter 3) described the process which this study undertook for the analysis. The research utilised a grounded theory aligned data analysis approach developed by Strauss and Corbin (1990) to identify the core codes and the patterns or themes within the data collected. This section of the chapter will describe the outputs of the open coding and then the outputs of the axial coding for Case Study Two. This case study had five early case interviews with each of the senior executives (MD, GM's and Company Secretary) and two major interviews at completion of the case with the Company Secretary and the GM Marketing. A further unstructured interview was carried out in December 2006 as post case study data collection with the GM Corporate Services.

The interviews used for the data collection were transcribed for this case study. Only the interview data was used for the open and axial coding. The researcher did not do all the interviews used for this case study and thus could not utilise the audio files in the same way as that done for the first case study. In order to keep some consistency in the interpretation of the data all interview data for this case study was transcribed into text and then analysed.

4.5.1. Open Coding

An example of the coding which was continued in Case Study Two shows the selected pieces of data on the left and the codes on the right.

Selected data	Example open codes
There were some fairly glaring things that arose in the process maps and the workshop discussions a lot of inconsistencies between branches and within the organisation.	confirmation of success Reflection problem realisation Process inconsistency
when you really look at what has happened over the last 10 years in terms of system development within the larger institutions, that has just been enormous effort	Context building Problem root cause
It has been an enabler it helps us with what we need to do but probably not as efficiently as it could.	Problem root cause IT systems problem

Table 16- Examples of the open coding for Case Study Two

It took three passes through the data to be somewhat comfortable that most important codes had been defined due to the increased amount of interview data compared to Case Study One. The researcher understands that more passes through the data may have identified more open codes and that in the light of having coded the remaining case study

possible further codes may have been identified within the Case Study Two data (Goulding 1999). This though does not mean that those codes would have changed the outcomes of the research. The researcher believes though that saturation was reached (Eaves 2001). The researcher was comfortable that their interpretation of the data was reliable (Charmaz 2005; Eaves 2001; Urquhart 2001; Goulding 1999). The completion of open coding resulted in more than 50 codes being used for this case study.

4.5.2. Axial Coding

An example of the axial codes is provided in Table 17 where the axial code of 'Problem specification' relates to comments by interviewees concerning their issues prior to the implementation of the CPTM. The second example is related to comments made in interviews concerning the way the senior management team identified or did not identify issues related to the performance of the organisation.

Open Codes	Axial Codes
Creating requirements	Problem specification
Clear communication needed	
Stability of revenues	
Have a problem	Problem realisation
Looking for understanding	
Continuous improvement and an internal focus	

Table 17- Example Axial codes derived from Open codes for Case Study Two

Table 17 contains open codes (left hand side) derived from the interview data for Case Study Two and axial codes derived from the open codes in the right hand column. As an example of the interpretation of the researcher the open code creating requirements is derived from comments made by the interviewee concerning the interviewee's thoughts on what the outcomes of the CPTM should support. This in the axial codes is defining the problem space for the interviewee and thus related to the axial code 'problem specification'.

The codes identified in the axial coding were:

1. Problem specification
2. Problem root cause
3. Problem realisation
4. Context building
5. Refection on past behaviour
6. Procedure problem
7. Optional procedure change
8. Explanation for approach
9. Outcome benefit
10. Confirmation of success

The codes called; 1) Problem specification, 2) Problem root cause and 3) Problem realisation are phenomenon related to the need and process of decision making. To make quality decisions an organisation must be able to clearly understand the issue at hand (Drucker 2001; Eisenhardt 1999; Huitt 1992; Mintzberg & Westley 2001) and realise that it is a problem initially (Drucker 2001). In order to verify if the decision making outcomes of the case study event are good or bad there is ideally codes surfaced that relate to the positive outcomes of the decision making such as 9) *outcome benefit* and 10) *confirmation of success*. These codes suggest that senior executives (those interviewed) were pleased with the experience and knowledge that they had at the end of the CPTM implementation.

4.5.3. Research Outcomes

One of the differentiating aspects of this case study was that the data was collected by the five researchers involved. Five different data collections resulted in a multi perspective data view which helped to reduce bias in the writers' perceptions. There were ongoing and regular discussions with the other researchers involved. These discussions focussed on what they thought was occurring and why.

The case study was a beneficial activity for the organisation with GM Corporate Services stating during interview about the benefits of the process that "*there were some fairly glaring things that arose in the process maps and the workshop discussions*". This comment can be perceived as an increase in business process understanding which led to confidence that they could identify a suitable set of information systems which would support the critical areas of the business.

Justification of the need to improve the processes and IT systems to the board and general manager was made easier, (as GM Corporate Services stated) "*because we had gone through this consultation process and the other exec managers had all been involved*" in identifying the important processes.

This executive also commented that some of the outcomes of the case study were the identification of issues not specific to the company or its industry. The executive observed that the outcomes made them realise that broader business issues could also be their issues.

For example:

> "*we found a lot of the issues that were coming out were not necessarily [company] or even financial services industry-specific they were things around, customer management relationships things around work flow, electronic document management and things like that*" (GM Corporate Services).

Case Study Two appears to have provided more valuable evidence of improving process understanding.

4.5.4. Summary- Case Study Two

Case Study Two was initiated with the objective of reviewing their IT and to develop an IT strategy. There was a view among some members of the senior management team that the current information systems did not provide the business functionality required for continued growth though not all senior managers were in agreement with this view. This researcher's role (from the lead researcher's perspective) was to use the Critical Process Targeting Method (CPTM) to:

- To identify the major processes in the organisation
- To identify the major process challenges (critical processes)
- To identify the major process opportunities
- To identify the opportunities for systems enhancement (IS and other)

The researcher successfully implemented the CPTM with the support of the organisation and the research team.

Favourable outcomes were evident from comments in the post case study unstructured interview from GM Corporate Services.

> *"we thought it was right on target and he when I had a conversation with him last year was very pleased with the process very pleased with the outputs and was really confident about going and having a detailed conversation with the board about it. In the past the conversations had had not been well received because of there wasn't*

a lot of meat behind it, if you like …. He felt much more favourable about the response so that is fantastic. So well done to you."

The analysis of Case Study Two provided an insight into a number of valuable areas. This insight included:

- Highlighting the context of the case study through open codes such as the drivers that resulted in the organisation requesting support, the strategic environment and the level of clear communication within the GM level executive team.
- Highlighting the way problems were realised within the GM level executive team through activities such as continuous improvement projects. It particularly highlighted how often these executives realised there was an issue but could not identify the cause of the problem or an agreed solution.
- The case study added further weight to the belief that the CPTM does indeed assist in managers gaining an improved understanding of business processes.

The analysis also provided insights into the way the organisation made use of the CPTM to make connections between business issues and business processes. They importantly were able to utilise this new knowledge to persuade dissenting board members of the need for considerable change in their information systems domain. This decision making process used by the managers was improved by the provision of valuable insight into the processes of the organisation. These processes included those supported by information technology systems and led to requests by the senior management team for a major refresh of the applications used in the business.

The third phase of analysis of the case study data is discussed in the section after Case Study Three. The next section contains the Case Study Three vignette and the open and axial coding of Case Study Three.

4.6. Case Study Three Vignette

Case Study Three provides the researcher with excellent data from two interviews plus extensive documentation both historical and CPTM output. In addition the researcher collected diary notes from the experience. The case study differs from Case Study One and Two in that this case study was undertaken by an independent business consultant who was competent with the CPTM. The Researcher identified this case study in conversations with a range of business consultant colleagues. One of these conversations highlighted the possible start of a project to support a stalled shared services project. The organisation was providing financial services to internal and external clients and had a focus on requiring an improved process understanding. When the project was further investigated it was found that the process understanding was also related to information systems issues.

The researcher was able to identify that the project would meet the research criteria and though it was a consulting engagement for the colleague would be a suitable case study with the additional benefit of providing research data from the non-participant perspective as this researcher was not involved in the implementation of the CPTM. Bias is not excluded though as their remains the bias of the Senior Consultant's interpretation of events. There was considerable documentation collected which was used to support or refute the perspectives and opinions of the Senior Consultant and those formed by the researcher.

Having an implementation of the CPTM occur without the need for the researcher to be present provided some benefits to the researcher. Considering the case study selection criteria for the practical requirements the location of the case study was not an issue though it was located in one state of Australia. The organisation was willing to provide full access and for an extended period of time to the Senior Consultant and to the researcher for the documents both historical and as outputs of the CPTM. The case was intrinsically interesting in that it was focused on Shared services development which included a need to understand both business processes and information systems. It was not an extreme instance instead being considered a typical instance. That is, it was:

- Not defined as the best or worst performer in the services it provided
- Not shown to have dramatic growth or decline
- Not operated with untraditional structures and systems
- Not recently involved in consulting support for process improvement or using the CPTM

Thus the case study was assessed as being suitable for inclusion in the study.

4.6.1. History and Structure

Case Study Three was identified in conversations with a range of consultants who were familiar with the Critical Process Targeting Method. In one of these conversations during the middle of 2006 it was mentioned that a client of one of these consultants had recently asked for support in moving a stalled Shared Services project forward. The Shared Services project had been ongoing for nearly two years and had thus far not been able to come to an agreement on how to provide a modern shared services function. The vision of a shared service function in this parent organisation was one in which the 'bundling of supporting processes and non-strategic activities' of a group of departments was separated off into a new department which in turn treated these processes and activities as its core business (Walsh, McGregor-Lowndes & Newton 2008).

This medium sized Australian organisation had decided in keeping with the current trend of the time to move from a 'divisional' stand-alone model (decentralised) to a shared administrative services model. Figure 73 following contain the basic descriptors on the differences between a centralised, decentralised and share services models of organisation. Overlapping elements of each circle indicate the aspects which are similar.

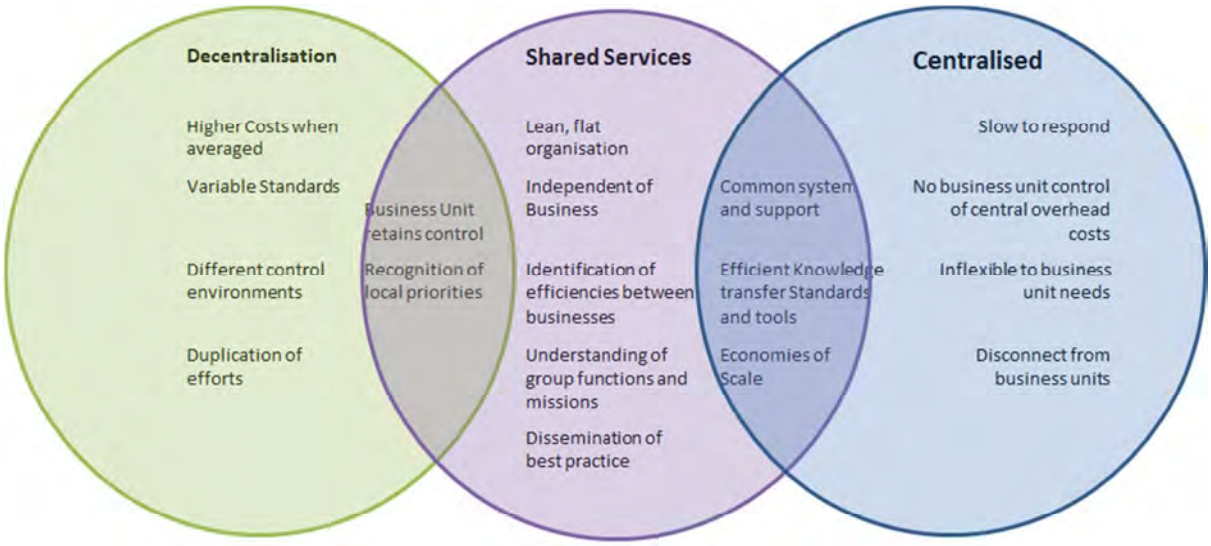

Figure 73- Differences between decentralised, shared and centralised models (Deval & Murray 2010)

A report from a large international consulting firm had identified many issues and a range of goals soon after the start of the project in November 2005. These goals were, for example:

- Increased focus on efficiency and value for money;
- Support for contestability of work by external outsourcing organisations;
- Support to pursue external opportunities with the priority to be internal customers;

Some of the issues identified at this time were:

- Limited capital available for investment in the new structure;
- Many difficulties in seeking corporate consistencies and a level playing field;
- Internal profits were acceptable but unlikely to be retained earnings in the new structure.

Operational issues were identified as:

- Timeliness and responsiveness to customer needs;
- Cost management for time and materials work;
- Patchy quality;
- Valuing internal customers;
- Poor communications;
- The need to do more for less;
- Business processes impair customer service
- Internal customers don't perceive best value outcomes from new model;
- Likely that both key internal customers would outsource if they could.

The major recommendation by this firm to resolve the issues identified and achieve the goals was to outsource non-competitive activities.

The business functions undertaken by the new shared services group within Case Study Three were from departments such as financial services, facilities management, design services (which included infrastructure design) and financial auditing. The operational areas in which the staff worked were:

- Financial Management & Support and Auditing
- HR Management & Support

- Information Technology and Knowledge Development & Support
- Integrated Management Systems
- Work Place Health and Safety
- Risk
- Environment, Quality and Compliance
- Strategy, Business Development and Marketing
- Administrative Support
- Project Support

Source: Historical Documents of the project (Mid 2006) (document #8)

Case Study Three with their seemingly disparate group of activities was tasked with finding a path towards a shared services model. The financial and auditing services were the largest elements with the facilities and design services being quite small by comparison. There was also more than 100 full time staff involved in the reorganisation of Case Study Three.

The organisational structure suggested by the international consulting firm and implemented, is described in Figure 74 following. This structure can be described as following a traditional model of functional departments or business areas.

Figure 74- Case Study Three Top Level Organisational Structure (document # 2)

4.6.2. Context

Following the recommendations and then the departure by the international consulting company in November 2005, the project 'stagnated' for many months before a new Senior Consultant from a second consulting firm (mid 2006) was called in to support a review of the situation.

The new Senior Consultant adopted and adapted the CPTM to the needs of the project. The Senior Consultant sought to:

> "*realign current outputs to match the new Services structure; improve process delivery of key activities to achieve process efficiency and consistency across all product groups; and implement improvements to achieve process efficiency and the elimination of process duplication.*"

Source: Version 0.1 of the project business case (document # 13)

In particular they used the CPTM to "*highlight a range of projects and asked them* [the organisations management] *to rate these for their impact on the business plan*" (Interview 2 Senior Consultant).

The Senior Consultant worked with staff across Case Study Three to support their actions in achieving "*process efficiency and consistency across all product groups; and implement improvements to achieve process efficiency and the elimination of process duplication*".

Source: Version 0.1 of the project business case (document # 13)

CPTM Implementation Schedule

Schedule	Step	Participants
Initial meet and greet to agree the major objectives	Step 1	Enabling Services Manager, Business Services Manager, Systems Accounting Manager, Management Services Manager, HR & Communication Manager, Integrated Management Systems Manager
Develop direction (strategic plan)	Step 3	Management team as above
Develop cause & effect relationships	Step3	Management team as above
Identify processes	Step 2	Business Services Manager and Coordinators
Identify processes	Step 2	Systems Accounting Manager
Identify processes	Step 2	Management Service Manager
Identify processes	Step 2	HR & Communication Manager
Identify processes	Step 2	Integrated Management Systems Manager
Link Processes to Strategy	Step 3 part three	Enabling Services Manager, Business Services Manager, Systems Accounting Manager, Management Services Manager, HR & Communication Manager, Integrated Management Systems Manager
Risk assessments	Step 4, 5, 6 & 7	Enabling Services Manager, Business Services Manager, Systems Accounting Manager, Management Services Manager, HR & Communication Manager, Integrated Management Systems Manager

Schedule	Step	Participants
Assess Solutions	Steps 8 & 9	Enabling Services Manager, Business Services Manager, Systems Accounting Manager, Management Services Manager, HR & Communication Manager, Integrated Management Systems Manager
Solution Options	Step 10	Business Services Manager and Coordinators
Solution Options	Step 10	Systems Accounting Manager
Solution Options	Step 10	Management Service Manager
Solution Options	Step 10	HR & Communication Manager
Solution Options	Step 10	Integrated Management Systems Manager

Table 18- Schedule for Case Study Three

Case Study Three was undertaken over a period of approximately eight months. Activities were undertaken on a weekly basis by the Senior Consultant but not necessarily with staff from Case Study Three each day or week. A review of the substantial historical documentation provided to this researcher and the results of two extensive interviews has identified the following drivers for why Case Study Three needed to understand more about their business processes.

The following diagram (Figure 75) is a summary of the data collection quantum, the business focus and the business problem of this third case study. The case study was identified in Late June of 2006 and started in August of 2006. There were forty eight days of consultancy undertaken to implement the CPTM, the change management and risk management plans and the initial review of the current situation. One exploratory unstructured interview was conducted prior to the implementation of the CPTM in October 2006.

The final interview was undertaken in the May of 2007 with no further post case study data collected. All interviews were with the Senior Consultant.

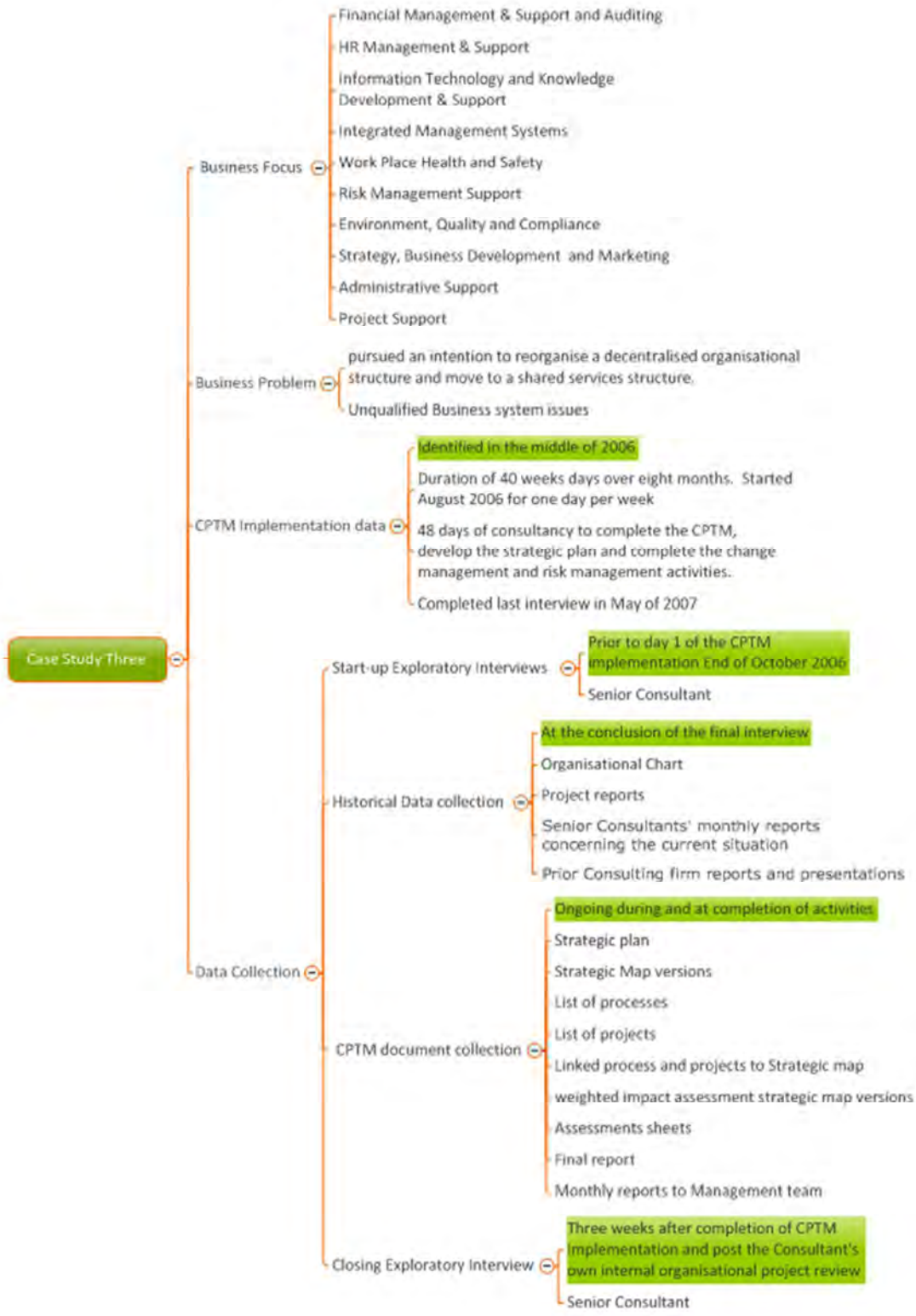

Figure 75- Case Study Three Data Collection and Timings

Figure 75 above provides further information on the quantum of data collected in Case Study Three and the timings of the data collections.

Drivers and Problem Areas

In Figure 76 the drivers from the literature review are shown as a reminder of the types of drivers the researcher considered when initially trying to clarify Case Study Three motivation for undertaking the use of the CPTM.

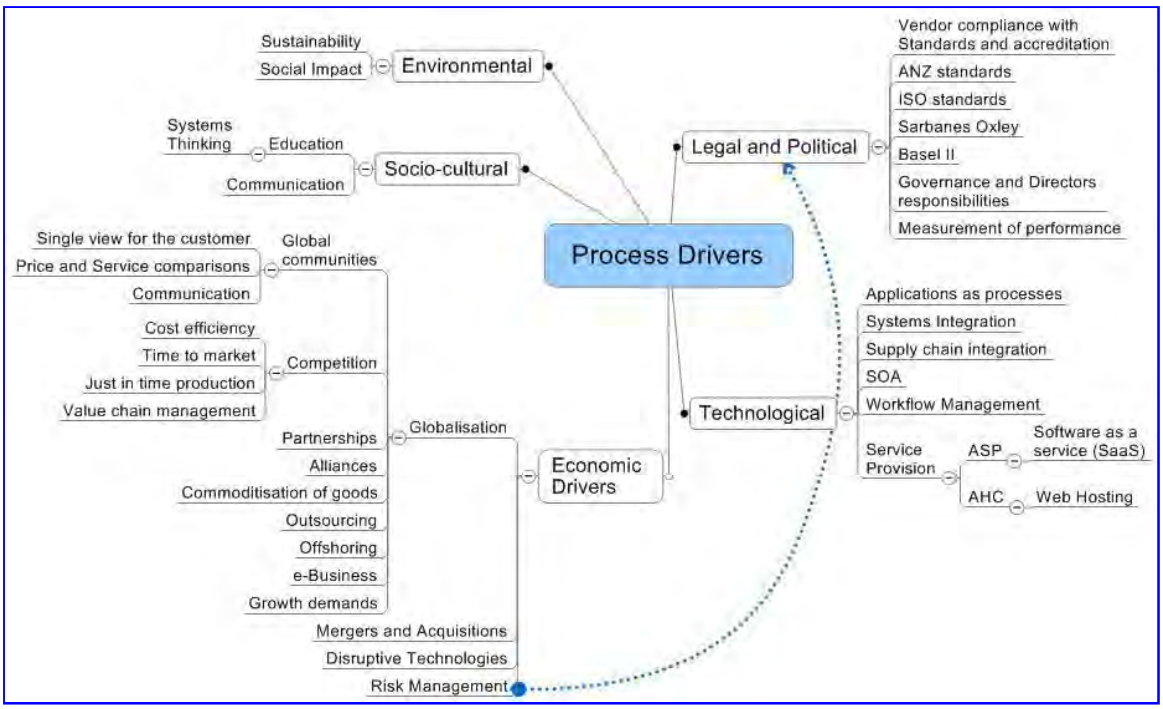

Figure 76- A Multi-perspective view of the drivers of a process view for business – (First used in the Literature Review Chapter 2)

The drivers for Case Study Three appeared to be more extensive than those identified for the prior two case studies. It is possible that this may have something to do with the amount of available information developed by two different consulting sources in this case study. The researcher found five drivers which the literature review identified as motivating organisations to improve their understanding of business processes. These drivers were:

1. Understanding how to measure performance (Measurement of Performance)
2. Impact of Mergers
3. Outsourcing
4. Sustainability
5. Cost efficiency

In addition the researcher identified that the objective of 'one business, one process, one team, one system' and the statement that Case Study Three wanted to standardise their

processes were all motivational factors in Case Study Three's efforts to understand their processes more effectively. The following paragraphs discuss these drivers and motivators.

One of the issues raised by the Senior Consultant for Case Study Three was their requirement to understand how to measure their own performance. Measures of performance were in the context of providing particular services which required that they be effectively defined and delivered.

The issue was identified as the poor performance of the organisation in providing what their clients (internal and external) saw as "*best value outcomes*" (Case Study Three Historical Document #1 Nov 2005)(Slide 8). The issue was reinforced with the comment by Case Study Three managers that it was "*Likely that both key customers would outsource if they could*" (Case Study Three Historical Document #1 Nov 2005)(Slide 8). This issue is related to the 'measurement of performance' driver for process understanding. The use of performance measures to provide factual or agreed qualitative evidence would reduce or remove the poor perceptions of customers and the Case Study Three management team.

A second driver was that of the impact of mergers with the context being the creation of Case Study Three: "*As a department,* [CSS] *is actively working toward the strategic aim of: One business, one process, one team, one system*" (Case Study Three Historical Document #13 July 2005). This merger of support activities from many different business units in the parent organisation resulted in a situation in which the Case Study Three management team grappled with integration issues.

For example one objective from the Senior Consultants review report was; "*clearly realign outputs across the Enabling Services structure where each team member is only performing activities for which they are responsible for*" (Case Study Three Historical Document #19 July 2006, p.4).

One of their approaches to dealing with this issue was to identify candidates for standardisation of processes. Evidence of this comes from one of the critical success factors reported on which identified "*Process duplication removed*" (Case Study Three Historical Document #19 July 2006, p.4).

A third driver was that of 'outsourcing'. The international consulting firm recommended that all activities of Case Study Three have at least 5% of it as an outsourced service. "*Outsource and manage proportion of our competitive services and products to benchmark*

costs and quality" (Case Study Three Historical Document #1 Nov 2005) (slide 14). In addition "*All Business Managers (internal) required to outsource an additional 5% (by value) of all competitive services to allow for benchmarking comparisons to be completed*" (Case Study Three Historical Document #1 Nov 2005) (slide 15).

Driver three (outsourcing) may also be related to the driver described as sustainability (Driver four) within the business environment. Sustainability in this context is the long term viability of Case Study Three. Documents reviewed by the researcher suggested that there was some concern within the staff of Case Study Three that if improvements were not achieved, full outsourcing may occur and Case Study Three dissolved (Case Study Three Historical Documents #1 and #3). Thus sustainability of Case Study Three was dependant the organisation's ability to provide quality services at a level near or the same as that of outsourcing competitors in order to keep operating.

Driver Five was considered to be cost efficiency and was identified as a strategic goal by the international Consulting firm. Evidence of this driver is seen in requests in the documentation for 'efficiency plans' and "*to identify opportunities to reduce controllable costs as a percentage of revenue by ….*" (Historical Document #1)(Slide 13).

The development of the organisation, when the Senior Consultant started work, was nearly stationary as evidenced by comments such as the "*project had been kicking along for a while and not had made a lot of progress*" (Senior Consultant interview #1).

Interviews with the Senior Consultant raised one major problem area for Case Study Three in relation to their situation. That is, they [managers] had "*no real idea of how to go about doing it*" [developing a shared services arrangement] (Senior Consultant interview #1). In this same interview the Senior Consultant also commented that "*I got a lot of 'yeah yeah" but just going back to what they were doing*" (Senior Consultant interview #1). This behaviour may have been understandable given a later comment that "*they* [Parent organisation management] *had ripped all these people out of business areas and shoved them together and said "make it happen"* (Senior Consultant interview #1).

There was an apparent lack of knowledge of how to develop the shared services within the management team, based on the small improvements and comments such as "*the attitude and mindset of the managers was not ready to take on the full view of a what a process is*" (Senior Consultant interview #1).

The Senior Consultant suggested that their understanding of processes was very immature with comments such as "*The 'processes' the business were looking at were function areas*" (Senior Consultant interview #1). These comments suggest that the root cause of these problems was a lack of understanding and knowledge of processes and how they crossed functional areas.

The following section describes the experience and activities of the Senior Consultant from mid-2006 to early 2007. The case study description does not include the activities of the international consulting firm or Case Study Three prior to the involvement of the Senior Consultant. The case study though does utilise data developed by the business and the international consulting firm as historical evidence for context and to support or refute the researcher's interview data. The case study describes the events during the time which the Senior Consultant was implementing the CPTM as the research focus.

4.6.3. CPTM Activities

The researcher in this case study was moving into an experience unlike the other two case studies. The implementation was being undertaken by a different person and the researcher was personally interested in the way they implemented the method. There was of course some risks here that the Senior Consultant might deviate from the method and make the case study unsuitable. Thankfully that did not occur and the CPTM with minor alterations was implemented in a similar manner to that in Case Study One and Two. A different strategic planning method was undertaken though the CPTM has been shown to work with many different types of strategic planning methods (Huxley 2003; Huxley & Stewart 2004; Huxley, Stewart & Jewels 2004b).

The Senior Consultant did not use the same names for the three different measures (probability of failure, effect of failure (dependency) and impact) but this was done to improve understanding of the measures and has no theoretical impact on the outcomes. The approach taken to identifying the processes was also different but still resulted in an agreed list of processes and may have been due to the level of process understanding. Otherwise the CPTM appeared to be implemented appropriately according to the discussions with the Senior Consultant and supported by the documentation.

Strategic Planning (Step 3 of the CPTM)

The first plan for achieving the outcomes required was an eight step plan with three optional extra parts as identified in Figure 77. The Critical Process Targeting Method (CPTM) was used in addition to a further series of activities. In this case study the inclusion of risk management activities was mandated and part of the culture of the organisation. The steps described as 'Risk Assessment', 'Identify Symptoms' and 'Identify Root Cause' were focused upon risk management.

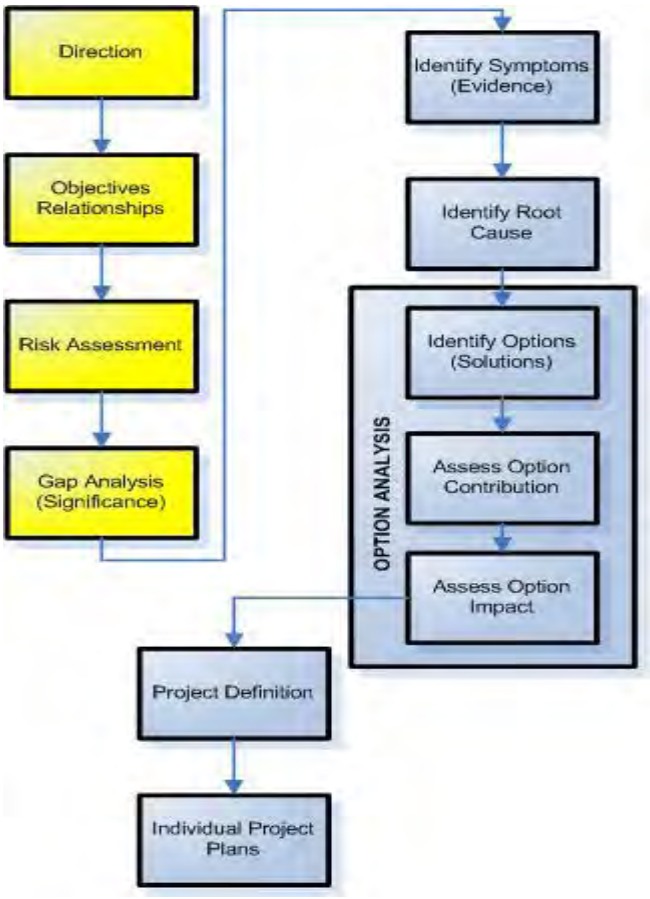

Figure 77- Case Study Three High Level Plan of Engagement (document # 13)

The steps shown in Figure 77 follow that of the CPTM in that they create a strategy map then link processes to the strategy with an assessment of risk (failure and effect of failure) and impact. Once the linkages and effect are calculated there is a completed ranking of processes to be improved as individual projects.

The Senior Consultant undertook a top-down and bottom-up planning approach to the development of the linkage between strategy and process which is described in (Figure 78) following. This diagram shows a broad view of the business units for the top down process

which is similar to that used in the CPTM. The bottom up view is a finer approach which deals with the more operational issues of the situation. This can be likened to the approach used in large organisations where a strategic plan is developed and an operational plan is developed to support the strategic plan. The operational plan is intended to provide the analysis (analyse root cause) and the planning required defining the details of the activities required to undertake the project tasks.

Figure 78- Top down bottom up planning process (document # 13)

The top down view as suggested follows an approach based on the CPTM in that the strategy is verified followed by linkage of strategy elements using cause and effect logic. This is shown in Figure 79 and Figure 80 following as based on the balanced scorecard method. The outcome risk assessment activity is used to define; 1) The impact on goals, 2) The effect of failure and 3) The probability of failure as seen in the CPTM.

The researcher has taken the two diagrams (Figure 77 and Figure 78) developed by the Senior Consultant during Case Study Three and created Figure 79 to show the outcome should a strategy map as completed in cases one and two been completed. Some elements have been omitted to ensure anonymity of the organisation.

The diagram is based on the Balanced Scorecard (Kaplan & Norton 1992) planning but with some subtle differences (Kaplan & Norton 1992). The balanced scorecard like strategic maps in the CPTM uses cause and effect linkages between goals, strategies and objectives. In this case the goals are defined as the 'Performance dimensions' and the strategies are defined as the 'enabling dimensions'. (See the legend in Figure 79)

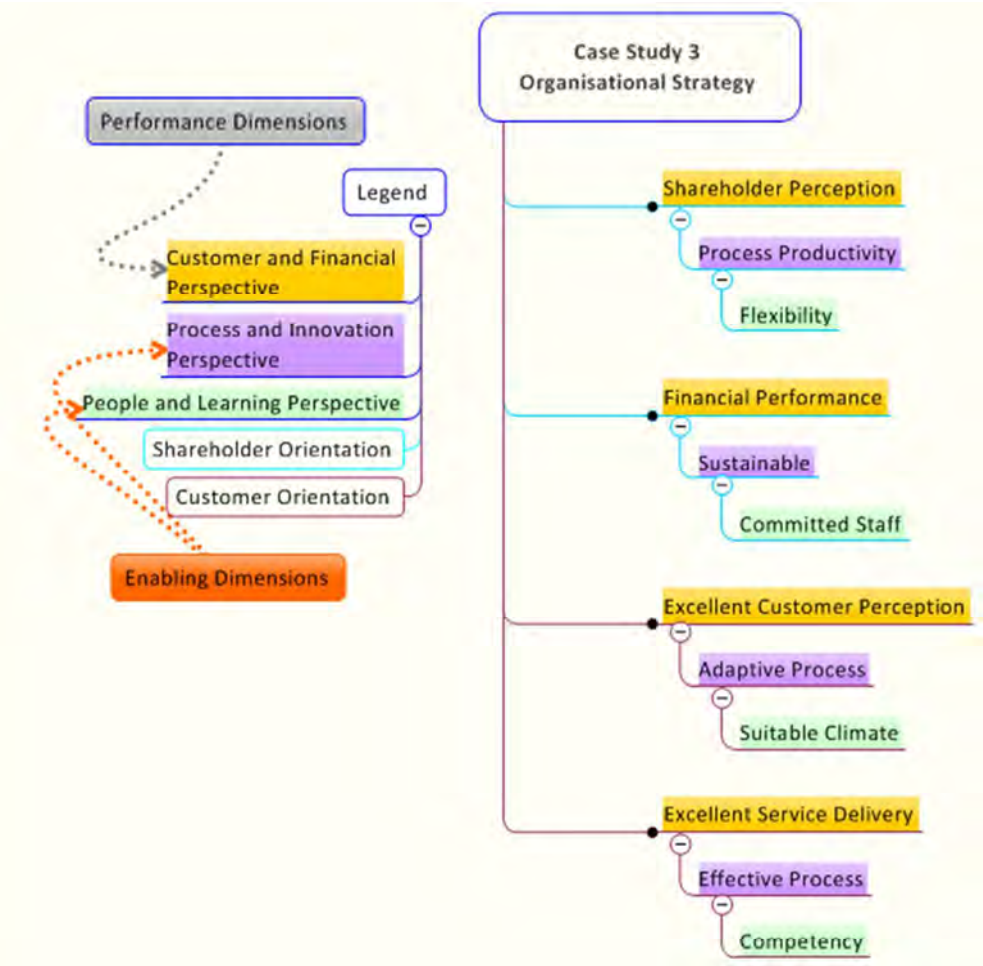

Figure 79- Case Study Three Strategy excluding Objectives ('drivers')

The case study participants used the term 'drivers instead of objectives for the strategy which was developed. Examples of the objectives are shown following, in Figure 80.

Figure 80-Case Study Three example Strategic Objectives

Similar to the objectives shown in plain text in Figure 80 (eg: conformance to standards) further objectives were developed for all the goals and strategies shown in Figure 79. In total there were forty one objectives identified which were linked to twelve strategies and four goals.

The next activity to take place was the identification of processes which supported the achievement of objectives and was in line with the CPTM activities.

Defining the Processes (Step Two of the CPTM)

When the case study reached the process identification stage, the Senior Consultant took a different approach to that of the researcher in case studies one and two. The Senior Consultant had the staff list all their major tasks and this resulted in a list of nearly ninety tasks (Table 19). From that list the organisation and Senior Consultant defined 23 processes (Table 20). The identification of processes also follows the procedures for the CPTM.

Filing - General General Administration Mail Petty Cash Cab Charge Board Report analysis Board Report production Divisional Monthly WHS Report Development Divisional Quarterly ENV Report Development Divisional Quarterly WHS Report Divisional Response to CEO (ENV Report) Divisional Response to CEO (WHS Report) Financial reporting HR Reporting (Div, Bus, Board) Management Report analysis Management Report production Ad Hoc Reporting Quarterly Risk Report Statistical Reporting Work Request Works Planning Acceptance of sales request Evaluate - Feasibility Quote / Tender response Sales order loaded Sales Requests Create Work Order Schedule Work Order Track Work Order Progress	Goods Receipting (delivery docket) Invoice Received and Delivered Load the receipt Match receipt to invoice Purchase Order Set Up Raise the Purchase Requisition Supplier identified Load creditors invoice in system Pay creditors AP Reconciliation Approval to pay labour & materials Assess Cash-flow Creditor Enquiries Filing – AP General Administration - AP Meetings – AP Billing reports and data extractions Billing validation and corrections Build invoice - Pick Slip Load Invoice (billing) Match to Sales Order Reconcile to estimate Release Invoice (Invoicing) AR Bank reconciliation AR completion reconciliation Debt Management Reports Debtor Enquiries General Administration - AR Meetings – AR	Monitor Payment Status Receive Customer Payment Variations Management EOM Process (Accruals / Journals) Ad Hoc Analysis Financial Analysis Approve billable hours to project General Administration - Labour related Labour Acquisition (requitement & selection) Labour cost Variations Management Labour Supplier Evaluation Match all billable hours to project costs Match billable hours to individual Projects Monitor Timesheet completion Payroll reports Register employee Timesheet Approval Budget Preparation Budget Reviews Budget variances Central Budget Coordination HR Records/ Files/ Documentation HRIS Business Analysis, needs analysis and requirements identification Process Analysis regarding a change initiative [System 1] extract [System 2] extract Other business systems Report writing (Specialist Reporting Tools)

Table 19- List of tasks identified in Case Study Three (Historical Document #9)

In Table 20 below, there are twenty three defined processes which was the result of firstly identifying the major tasks of the organisation and then redefining these from a process perspective. These processes were then considered to be the focus of projects to achieve a range of business outcomes.

Processes
Reporting - Board/Divisional
Reporting - Management
Reporting - Ad Hoc
Budget - Development
Works Order Management - Ordering/Requests
Financial - Analysis
Office Admin - Records Management
Office Admin - General
Office Admin - Petty Cash
Office Admin - Cab Charge
Office Admin - Facility Management
AR - Billing
AR - Debt Management
Financial - EOM (Accruals/Journals)
Data Extractions
Financial - Labour Reconciliations/Billable Hours
Procurement – Ordering/ Requisitioning
HR - Documentation
Procurement - Invoice Load/payment
Procurement - Other
IT Business Analysis
Office Admin - Mail

Table 20- List of Processes used based on task list for Case Study Three (Historical Document #9)

Once these processes had been identified they were then linked to the elements of the strategic plan as listed in Figure 79.

Linkage of Processes to Objectives (Step 3 Part 3 of CPTM)

The linking of processes to the strategy was undertaken by the Senior Consultant in a series of workshops with the management team. These meetings focused on a single process at a time in order to use their best judgement to consider which of the outcomes or goals would be impacted by the processes. In order to achieve greater acceptance each of the different

organisational areas seen in the organisational structure (Figure 74) were assessed separately and then collated for an average rating.

These organisational groups were:

- Integrated Management Systems
- Human Resources & Communications
- Management Services
- Systems Accounting
- Business Services

As explained previously, the processes were also assessed in an activity called a risk assessment. This informed the phases calculating the *effect of failure* and the *probability of failure* (Step four and Step five of the CPTM). The resultant ratings were then processed as for previous case studies resulting in a rank order of processes. The rankings in this case were displayed to one decimal point only.

The change in format for the rankings, (the researcher believes) does not impair the CPTM process or outcomes. In this case study the ranking showed a close cluster of criticality for all the processes ranked. The processes in this case were all going to be reviewed and improved whereas in prior case studies only those most critical top few were focused upon.

Establishing Criticality (Steps 4, 5, 6 & 7 of the CPTM)

The following table (Table 21) is the resultant list of rankings for the CPTM outcomes for Case Study Three. Reporting was considered the most critical process even when considered as three separate processes (Reporting – Board/Divisional; Reporting – Management and Reporting - Ad Hoc). Budget development was the fourth ranked process with Administration of the mail ranked the lowest at 3.1.

Processes	Ranking
Reporting - Board/Divisional	8
Reporting - Management	8
Reporting - Ad Hoc	8
Budget - Development	7.8
Works Order Management - Ordering/Requests	7.1
Financial - Analysis	6.8

Processes	Ranking
Office Admin - Records Management	6.5
Office Admin - General	6.2
Office Admin - Petty Cash	6
Office Admin - Cab Charge	6
Office Admin - Facility Management	6
AR - Billing	6
AR - Debt Management	6
Financial - EOM (Accruals/Journals)	6
Data Extractions	6
Financial - Labour Reconciliations/Billable Hours	5.8
Procurement – Ordering/ Requisitioning	5.5
HR - Documentation	5.1
Procurement - Invoice Load/payment	4.3
Procurement - Other	4.3
IT Business Analysis	4
Office Admin - Mail	3.1

Table 21- Rank order of processes for Case Study Three (Document #8)

Once the organisation had developed the ranking of process projects these were then assessed by the individual organisational groups for which process in their area of responsibility they should undertake first.

Project Selection (Steps 8, 9 & 10 of the CPTM)

Cost/Benefit was undertaken on each process after an initial investigation of the process and expected improvements were identified. Each organisational group was tasked with selecting their first project and the Senior Consultant prepared and delivered a report on the shared services project to the organisation. With the processes listed and ranked according to their criticality, processes selected for improvement the CPTM activities were complete.

The following section discusses the researcher's reflections on this case study.

4.6.4. Reflections on Case Study Three

The case study raised a number of issues related to the method itself. Some of these issues were supportive of the methodology while others were critical of the methodology.

The terminology of the CPTM was a point of contention in Case Study Three as in Case Study Two. It was an area of concern for clear communication in Case Study Three. In Case Study Three the organisation was familiar with the balanced scorecard method of strategy development using cause and effect. Rather than goals, strategies and objectives they preferred and were familiar with Performance dimensions (goals), enabling dimensions (strategies) and drivers (objectives). In Case Study Three the common understanding of driver was not used as exampled by these two 'drivers' (objectives in the strategic plan): *transparency/ value for money* and *compliance with standards*. These examples can be considered objectives without measures.

The different terminology is not seen as a methodological issue; instead it is more about clear communication by Senior Consultant.

The assessments of effect of failure and probability of failure covered each of the different activity areas:

- Integrated Management Systems
- Human Resources & Communications
- Management Services
- Systems Accounting
- Business Services

This meant that the staff from each of these areas was closely involved in evaluating the assessments. The method typically called for the management team to undertake this set of evaluations as the assessment was conducted across functional areas and thus required a broader understanding and experience. In Case Study Two 'Middle Managers' conducted the assessments successfully and so in this case the use of general staff was also considered valid for the CPTM.

There were many examples of the lack of direction and understanding of both processes and of what the shared services function was by both managers and staff alike, such as;

"*They were still in the treadmill of what they always did*", "*IT functions are across all functional areas but not integrated or aware*" and "*there was still a lot of debate over what belonged to the business and what belonged to shared services*" (Senior Consultant – interview 1). This lack of direction appeared to be resolved by identifying the critical aspects of the business, ("*The first attempt at showing what was really broken by looking at what was critical and what they did not do [*gap analysis]").

The Senior Consultant also commented that "*If you are not a structured thinker then you have a lot of trouble*" with the method. The Senior Consultant considered that it was at times difficult for participants who did not think logically to easily undertake the activities.

4.6.5. Post Case Study Data

The researcher did not get the opportunity to conduct a post case study interview in a similar situation to the prior two case studies. In this case study the Senior Consultant did not undertake any further work with that client to enable a follow up interview of outcomes. An interview with the Senior Consultant was conducted three weeks post implementation of the CPTM.

The following section is the coding of the interview data and the section explains and examples the open and axial coding for the case study.

4.7. Analysis of Case Study Three

The interviews used for the data collection were kept as audio files for this case study. Only the interview data was used for the open and axial coding. These interviews were not transcribed (as was done for the second case study) as the researcher considered that there would be further data to be found in audio format, which augmented data found in just a text transcription. Understanding of the audio data is greater than the written transcribed text because the listener is able to consider the Syntax (word order and sentence structure), the language within its social context (Pragmatics) and the Semantics (meaning based language) (Fulcher 2003).

Phonology, which is the use of sounds to encode meaning, is especially important in improving understanding as only the audio recording can provide the listener with the difference between the same words articulated using different tones to indicate potentially opposite meanings (Fulcher 2003).

This 'understanding of the explicit meaning of words and sentences' in spoken language as opposed to that which is understood in transcribed text is an advantage taken in Case Study One.

4.7.1. Open Coding

As discussed in Chapter Three (Methodology) the open coding followed directions as defined by Strauss and Corbin (1990) and Dey (2004). The researcher approached the open coding without any preconceptions (Leedy & Ormrod 2005). That is, as discussed previously the researcher attempted to disregard any prior knowledge and understanding apart from the information pertaining to the context of the study. The researcher applied a structural coding approach which is the examination of the data for patterns with "little or no inference made as to the meaning of the patterns" (de Salas 2002, p.68).

Open coding focusses on one or all of sentences, paragraphs and statements in the data being analysed. In Case Study Three only the interview data is used in the coding. The analysis seeks to identify the meanings within the text and to code the meanings for the researcher. These meanings are influenced by the context of the data. As such the meanings in the data may not be those which a reader may understand or agree with.

Unlike the prior two case studies Case Study Three was undertaken by a Senior Consultant working for a business consulting service. Due to this difference the researcher undertook the data collection at the end of the implementation of the case study. Two extensive interviews were conducted with the first being predominantly a discussion of the events of the case study and the second the opportunity for the researcher to investigate up any areas of interest and to clarify comments or other information. The Senior Consultant provided widespread and detailed documentation concerning the case study, the prior work of the previous consulting firm and the Senior Consultants notes.

Without the benefit of having been on site to physically be involved in this case study the researcher found the coding more difficult. The previous case studies provided the researcher with what became apparent in this case study was an enormous amount of tacit material. This tacit material was available in the researcher memory in many cases to provide valuable context to the interview data. In this case study (Case Study Three) the researcher had to rely on the extensive documentation and the explanations of the interviewee.

The result was that the researcher undertook four passes through the data to get to the point of saturation (Charmaz 2005; Eaves 2001; Urquhart 2001). The researcher used the structure defined in the methodology chapter (Chapter 3) of folders to locate and support understanding of the more than forty one documents containing more than four hundred megabytes of data. Once again the coding was undertaken using MindManager software but the examples provided here are given in tables for clarity.

An example of the coding which was continued in Case Study Three shows the selected pieces of data on the left and the codes on the right.

Selected data	Example open codes
Was able to look across the business areas to question why functions were doing certain processes	Process perspective Problem realisation Have a problem and looking for a solution
The attitude and mindset of the organisation was not ready to take on the full view of a what a process is	Problem realisation Immaturity of process knowledge Political motivations leadership problem
The prioritisation produced a number of issues which enabled other projects to be started to resolve major issues	Explanation for approach Confirmation of success Clear Procedure Outcome benefit Alignment Support for choice type decision making

Table 22- Examples of the open coding for Case Study Three

In Table 22 the final (left hand column) raw data piece has six codes related to the data. These are: 1. Explanation for approach; 2. Confirmation of success; 3. Clear Procedure; 4. Outcome benefit; 5. Alignment; and 6. Support for choice type decision making. The raw data in the understanding of the researcher is concerned with the outcome of the CPTM where the results are a rank order of projects which would resolve the major issues and risks identified in the CPTM. The open codes relate to:

1. The interviewee explaining the process of the CPTM (Explanation for approach),
2. The interviewee suggesting that the CPTM has indeed delivered useful outcomes (Confirmation of success),
3. Indication by the Senior Consultant (at least) for understood the procedures of the CPTM (Clear Procedure),
4. The benefits of being able to start resolving major issues and prioritisation of those issues (Outcome Benefit),
5. The perceptions that the CPTM was suitable to the task which it was used and thus associated with their process understanding needs (Alignment)
6. The ability of the case study managers to make clear choices for what to do first, then second etc. ;(Support for choice type decision making)

The other open codes revealed show a similar logic as was undertaken in Case Study One and Case Study Two.

The next step then was to undertake the axial coding for Case Study Three.

4.7.2. Axial Coding

Based on Strauss and Corbin (1990) the following diagram (Figure 81) describes the process undertaken by the researcher in the axial coding phase. Strauss and Corbin (1990) suggest that axial coding is the chunking up of the open codes based on their causal relationships related to the context, conditions, strategies and consequences that characterise the interactions. As the model in Figure 81 describes the first activity was to group those open codes together based on the similarities of the context, consequences or interactions.

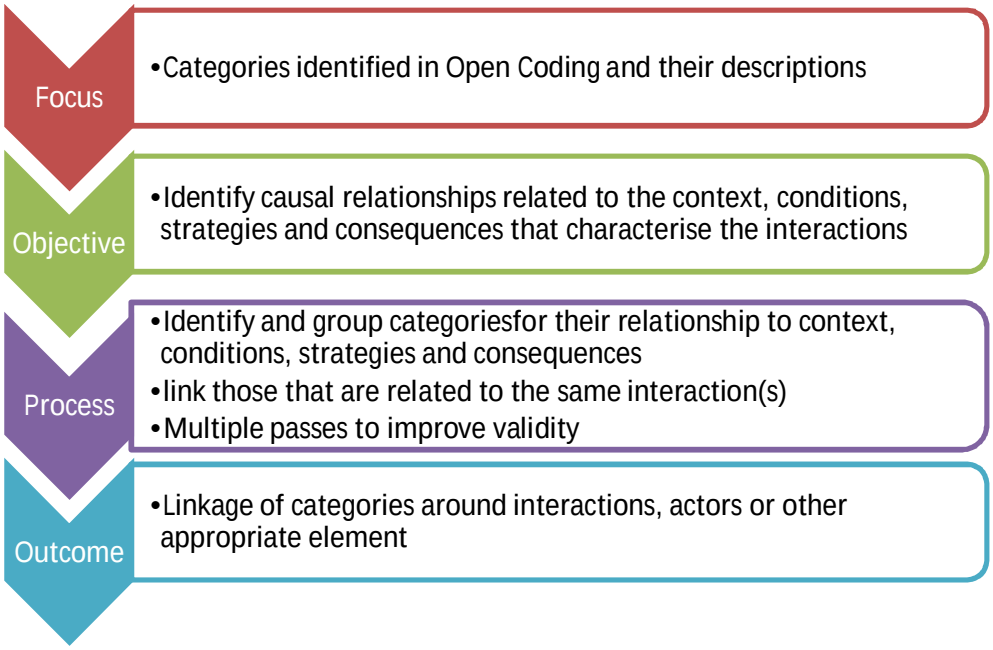

Figure 81- Axial Coding (Strauss and Corbin 1990)

Multiple passes through the open codes creating and removing relationships were required before the researcher felt that saturation was achieved (Eaves 2001). The researcher was comfortable that their interpretation of the data was reliable (Charmaz 2005; Eaves 2001; Urquhart 2001).

The Axial Codes for Case study Three were:

- problem specification
- problem root cause
- problem realisation
- context building
- Refection on past behaviour
- Procedure Problem
- Optional Procedure Change
- Explanation for approach
- Outcome benefit
- confirmation of success

Case Study had the same axial codes as those surfaced for the prior case studies plus one extra axial code (Explanation for Approach).

An example of the axial codes is provided in Table 23 where the axial code of 'Problem Root Cause' relates to the research question by way of the decision making needed to understand the problem for quality decision making to occur. The second example (Explanation for approach) draws the relationship with the research question through the need to understand the method in order to make the decision process repeatable. Not only

is this important to decision making it is important that participants who make decisions can defend the process as being clear and logical.

Open Codes	Axial Codes
Realisation	Explanation for Approach
Information	
Clarification	
Affirmation of Outputs	
Justification of Outputs	
Strategy Clarification	
Consideration	
Alignment	
Strategic Review	
Procedure Analysis	
Process Perspective	
Questioning Strategic Approach	
Decision Process Order	
Procedure Approach	
Alignment Of Systems	Problem Root Cause
Forced Change For Compliance	
Have A Problem And Leadership May Be The A Contributing Factor	
Knowledge Of Critical Business Processes	
Services Support Competitive Stance	
Duplication Of Processes Across Departments	
Immature View Of Processes	
Immaturity Of Process Knowledge	
Political Motivations Outweigh Further Understanding	
Lack Of Business Knowledge	
Lack Of Commercial Business Measures	
Duplication Of Processes	
Lip Service Responses To Requested Change	
Efficiency Equated To Process Sharing	
Lack Of Integration	
Unwilling To Change Historical Ties	
Unwillingness To Change	
Lack Of Understanding Of What Shared Services Entailed	
Lack Of Operational Understanding Of Existing Activities	
Actual Practical Knowledge Rather Than Theory	
Poor Use Of Resources	
Poor Understanding Of Service Levels	
Lack Of Understanding With Strategic Tools	

Table 23- Example Axial codes derived from open codes (left) in Case Study Three

The next section describes some of the research outcomes of this case study.

4.7.3. Research Outcomes

Case Study Three was the only case in which the researcher was not involved in the implementation of the CPTM. This case study utilised the work of a Senior Consultant employed by a professional consulting firm. The method was not followed in exactly the same manner as that for Case Study One or Case Study Two though the researcher believes that the approach taken to implementation of the CPTM did not remove the validity of the case study. The two key differences in approach taken were related to the terminology used in the method and the approach taken to identifying the processes used.

In Case Study One and Two the processes were identified from a selection of standard processes. In Case Study Three, processes were identified by collecting a list of the activities of the staff and then reducing these to an appropriate list of processes.

Benefits of the method for improving process understanding started to appear with the Senior Consultant relating manager comments such as "*you are right* [name] *we should combine all those similar customer fulfilment processes*" (Senior Consultant interview #2) and "*At the end of the day it made logical sense and gave us direction*".

The Senior Consultant also commented that post the CPTM implementation that "*management understood that there was more to the shared services changes than moving people around*" (Senior Consultant interview #2).

The CPTM had a positive impact on process understanding based on comments such as: "*We got buy in because we were able to show an agreed strategy which linked to processes*" and "*It was a form of process review which was linked to direction*" (Senior Consultant interview #2).

Decision making was improved across the management team based on comments by the Senior Consultant such as "*they had some direction*" and "*the teams themselves knew what was critical and understood which things were unnecessary*" [due to the CPTM] (Senior Consultant interview #2).

Cost savings were achieved with the changed processes with one senior department manager claiming that "*we saved six million dollars*" (Senior Consultant interview #2).

4.8. Summary- Case Study Three

The analysis of Case Study Three provided an insight into the way an organisation made up of different skill areas within the financial management area of a business might:

1. Utilise a version of the CPTM to support their short term aims and
2. Start making connections between business process knowledge and the structure, services and priorities of a shared services organisation.
3. Make decisions that provided valuable outcomes based on knowledge derived from using the CPTM.

They importantly, were able to derive direct feedback from internal clients, their own staff and parent organisation Directors that this new knowledge had valuable business benefits.

The researcher's' review of the activities conducted by the Senior Consultant considers that the implementation of the CPTM was such that it undertook the necessary steps required. In fact this case study was the only case study to complete the final three steps while the facilitator was in place. While there were some differences in the approach taken such as the strategic planning method these were believed to have little impact on the CPTM method from a theoretical perspective. Case Study Three provided extensive data and some new insights into the area of business process understanding.

Evidence of the benefits of using the CPTM was seen in comments such as "*The value that occurred was that they had some direction. The teams themselves knew what was critical and understood which things were unnecessary*" and "*We got buy in because we were able to show an agreed strategy which linked to processes and aligned with root cause analysis*" Senior Consultant.

Case Study Three management also found an increased level of understanding for the changes that a shared services focus would have on their organisation, "*Management understood that there was more to the shared services changes than moving people around*" Senior Consultant.

A strong link to the process understanding was the comment that the CPTM experience was "*a form of process review which linked to direction*" Senior Consultant. Finally the CPTM in this case study provided large financial savings for the organisation "*We saved six million dollars"* Senior Consultant.

It cannot be said that the entirety of the savings achieved were the result of the CPTM or that a different method may have achieved similar or more savings. Too many factors are in play in these situations to clearly link the use of the CPTM to the savings made. But there is at least a link to the fact that the CPTM improved understanding of business processes and this understanding influenced decisions which resulted in the large savings.

4.9. Theory Development

This section discusses the final phase of coding, the selective coding (Strauss & Corbin 1997). The section first though discusses the three cases with a view of their CPTM activities and brief discussion of the process understanding.

4.9.1. Cases Summary

Table 24 below is a cases summary of work undertaken in relation to the major activities in the CPTM. It should be noted only case three carried out the final three steps of the method (8, 9 & 10). The strategic plans were either facilitated or an existing one was used (2 were developed with participants and 1 was provided by the participant organisation) and all three were reconfigured with participant support to create a cause & effect logic to the plan. The characteristics of the case studies based on those identified in the literature review revealed that regardless of size and business problem the entities were more similar than dissimilar.

The diagram following (Figure 82) provides an overview of the characteristics which applied to all the case studies. The diagram categories the characteristics into process, resource, risk, decision process, strategy development and leadership types. Of the characteristics identified by the literature review some were not able to be assessed even after the time spent with the organisation (for example: 'Less informed about macro-business conditions than older or larger firms' (Mohan-Neill 1995)). Other characteristics such as "Have poor management and business skills" (MacGregor and Vrazalic 2005, p.513) could not be effectively assessed as there was no bench mark and no valid data collected that provided evidence of this situation.

Figure 82 following, contains the ten characteristics which the researcher considered were applicable to all three case study entities. The assessment of the applicability is based on the understanding by the researcher of the entities from first-hand experience while with the entity or from data collected. These characteristics suggest that while the entities had different business problems and varying business focuses that they were moderately similar.

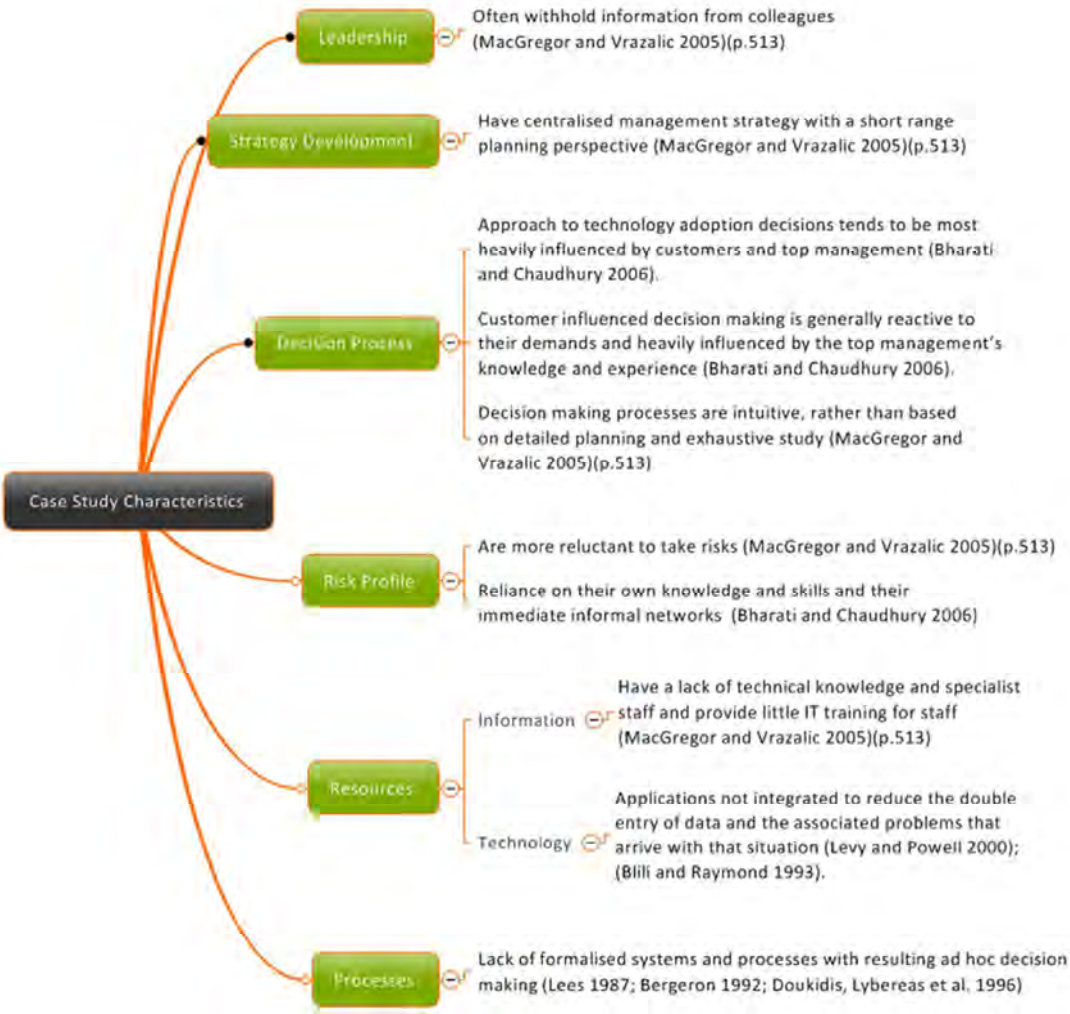

Figure 82- Characteristics found in all the Case Studies

The following table provides a comparison of the three case studies in relation to the implementation activities of the CPTM.

CPTM Phases	Case Study One Outcomes	Case Study Two Outcomes	Case Study Three Outcomes
Strategic Planning	A new strategic plan was facilitated	A recent existing strategic plan was used.	A new strategic plan was facilitated
Defining the Processes (Step 2 CPTM)	Started with a reference set of Financial Processes	Facilitated the participants to identify core, supporting and strategic processes	Started with core activities and defined processes from these
Linkage of Processes to Objectives (Part Three of Step 3 of the CPTM)	Linked processes to objectives and strategies using cause and effect logic	Linked processes to objectives and strategies using cause and effect logic	Linked processes to objectives and strategies using cause and effect logic
Establishing Criticality (Steps 4, 5, 6 & 7 of the CPTM)	Participants agreed ratings for impact, effect of failure and chance of failure	Participants agreed ratings for impact, effect of failure and likelihood of success	Participants agreed ratings for impact, effect of failure and likelihood of failure

CPTM Phases	Case Study One Outcomes	Case Study Two Outcomes	Case Study Three Outcomes
Selecting Projects (Steps 8, 9 & 10 of the CPTM)	Undertook this post the case study	Undertook this post the modelling of processes by an external supplier	Selected processes from the organisational group areas and implemented changes post the case study.

Table 24- Summary of the three case studies by activity

As shown in Table 24 the processes were identified in different ways in each case study; however the researcher believes that this did not have any adverse effect on the resulting outcomes. The different approaches to identify processes were used to suit the context of the cases and the understanding of the participants and their areas of work. All case studies followed the same approach and achieved the same outcomes when linking identified processes to strategic plan objectives and strategies. All three case studies identified the elements required to assess the impact of a process on strategic intentions, the consequence of the failure of a process and the probability of a process failing. While the wording used in each of the case studies varied this was done to increase participation and to decrease communication issues.

Case One, Two and Three Axial Codes

The researcher has taken the data analysis outcomes of the first two phases of coding (open and axial) and considered these in a single table (Table 25).

Of the ten unique axial codes developed in the analysis only Case Study Three has the full ten codes related to the open codes. The result can be considered from two directions:

1. That the case studies are similar (same industry, same method applied, positive outcomes for the organisation) and thus the codes might be expected to be similar or the same.
2. That the coding is built case upon case and efforts by the researcher to remove prior 'baggage' have proved futile resulting in each analysis bringing the preconceptions of the prior cases to the next.

Klein and Myers (1999, p.71) on interpretivist qualitative studies stated that "we come to understand a complex whole from preconceptions about the meanings of its parts and their interrelationships". It is according to Klein and Myers (1999) reasonable for the researcher to bring preconceptions to the analysis and thus the researcher believes that the outcomes of the analysis are reasonable and expected.

The Axial Codes for the case studies were:

Case Study One	Case Study Two	Case Study Three
problem specification	problem specification	problem specification
problem root cause	problem root cause	problem root cause
problem realisation	problem realisation	problem realisation
context building	context building	context building
refection on past behaviour	refection on past behaviour	Refection on past behaviour
procedure problem	procedure problem	Procedure Problem
optional procedure change	optional procedure change	Optional Procedure Change
		Explanation for approach
outcome benefit	outcome benefit	Outcome benefit
confirmation of success	confirmation of success	confirmation of success

Table 25- Cross Case Axial codes

Considering the axial codes in Table 25 there appears to be no discernible difference in the analysis outcomes between Case Study Two and Case Study One. There is what appears to be a quantitative difference (one extra axial code) in Case Study Three.

The final analysis of all the case study data is discussed in the following section. This analysis focussed upon the third phase, the selective coding. In this phase all the axial codes from each of the case studies are considered as one data set.

4.9.2. The Selective Coding Process

Each case was initially analysed as a separate entity for the open and axial coding phases. These have been discussed in the previous sections. In Chapter 3 (Methodology) the researcher provided a diagram on 'Selective Coding' (Strauss and Corbin 1990) in which the focus, objective, process and outcome of Selective Coding was described based on the work of Dey (2005), Strauss & Corbin (1990) and Denscombe (2007).

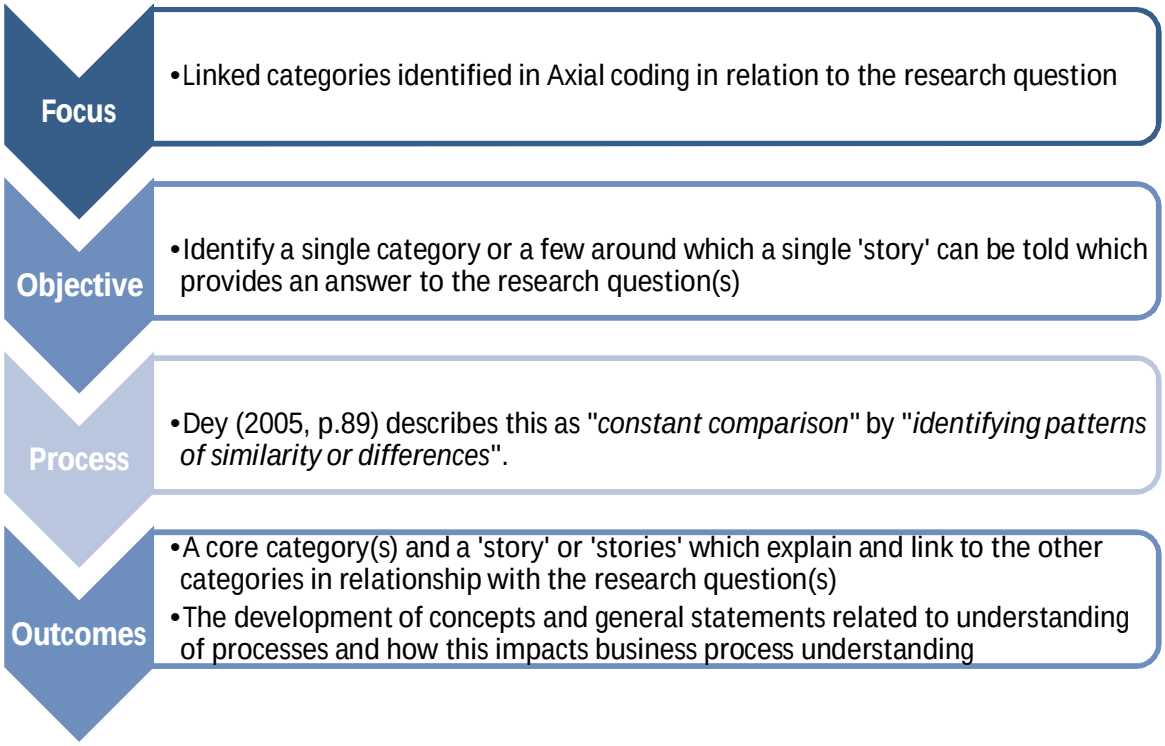

Figure 83- Selective Coding (Strauss and Corbin 1990)

Based on this information, the researcher will, in order to complete the selective coding, link or chunk up axial codes that appear to have similar contexts, goals and patterns based on their relationship to the research question. In completing this task the researcher analysed the axial codes on three separate occasions with the third analysis being some six months after the second. Each of these passes through the data resulted in slightly different outcomes. A review of these versions showed only that this slight difference appeared due to word changes and interpretation of those words.

The following table (Table 26) is an example of the coding from raw data to selective code. The table contains raw or primary data from the interviews and the codes to which that

data was linked. The interview data is on the left side with the selective codes on the right side of the table.

Qualitative Data	Open Codes	Axial Codes	Selective Codes
Can it work in every organisation as we tried to apply it but probably works very well in government but probably less so in organisations which have an autocratic management We took it in a bit of a different direction and I think that the process stacked up and fundamentally stacked up and could be applied in a wider context to that of IT. In terms of disadvantages we went to too low a level of granularity. When we went to 5 levels After the original project plan or project scoping had been done come back and have a discussion on what project resources are required. What going wrong or what is critical should be given to people in those specific areas to identify and resolve at that level	Contextual issue within management environments Alternative use of CPTM Use of detail in the method return loop decision making Use of subject matter experts to take decision making at lower levels	Suggested Procedure Change	Using a Methodology
"we presented the gap analysis we had um the current state the decided future state" But thankfully because we had gone through this consultation process and the other exec managers had all been involved by the time everyone was a bit put off because he is the GM and he was in full flight and they unfortunately they were a bit slow to back me up. But once they got going " "Look I don't think they had previously worked with consultants certainly not from an IT perspective very heavily I think they certainly had the focus on the process mapping and that was probably a result of some of the work that you guys had done with them. But, how I wanted to use that information I don't think I would say were particularly clear on it."	Reflection led to clearer understanding Support for choice type decision making Focus on the whole	Outcome Benefit	Seeing Connections Between Factors

Table 26- Example linkage between codes and data

The following diagram is the outcome of the selective coding. This diagram contains four selective codes of which the researcher believes the lower two codes 'Obtaining collaborative agreement' and 'Seeing connections between factors' are those which enhance the theory of business process understanding in SMEs. The small + signs in a circle at the end of the axial codes are indicating that there are further connections in the diagram and in this case these are the open codes. Displaying these would not add value to this diagram.

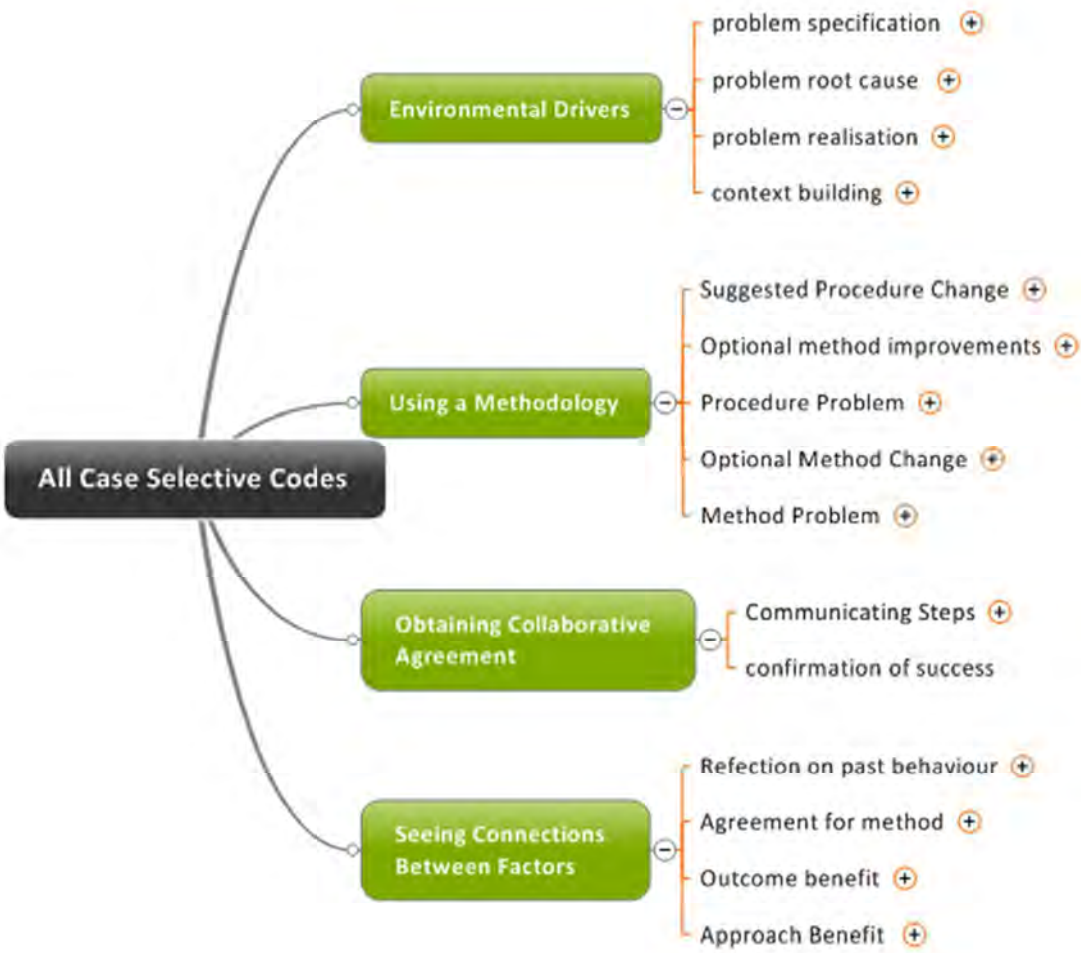

Figure 84- Selective coding results of case axial codes

4.9.3. Research Themes

As suggested by Strauss and Corbin (1990) the outcomes of this phase of the analysis is to develop concepts and general statements related to understanding which are explained by creating a 'story' or 'stories' which explain and link to the other categories (Strauss and Corbin 1990; Dey 2005). The story should provide insights to the research question.

In order to clearly identify the aim of the research, the research question, is provided:

How does the CPTM support a greater understanding of medium sized entity processes?

The researcher considered the results of the selective coding and the research question along with undertaking consultation with members of the research team to identify relationships between the codes and the question.

The results provided two themes which were surfaced from the analysis and provided what is described as the emergent contribution to theory. This is summarised in the following diagram and discussed in Chapter Five.

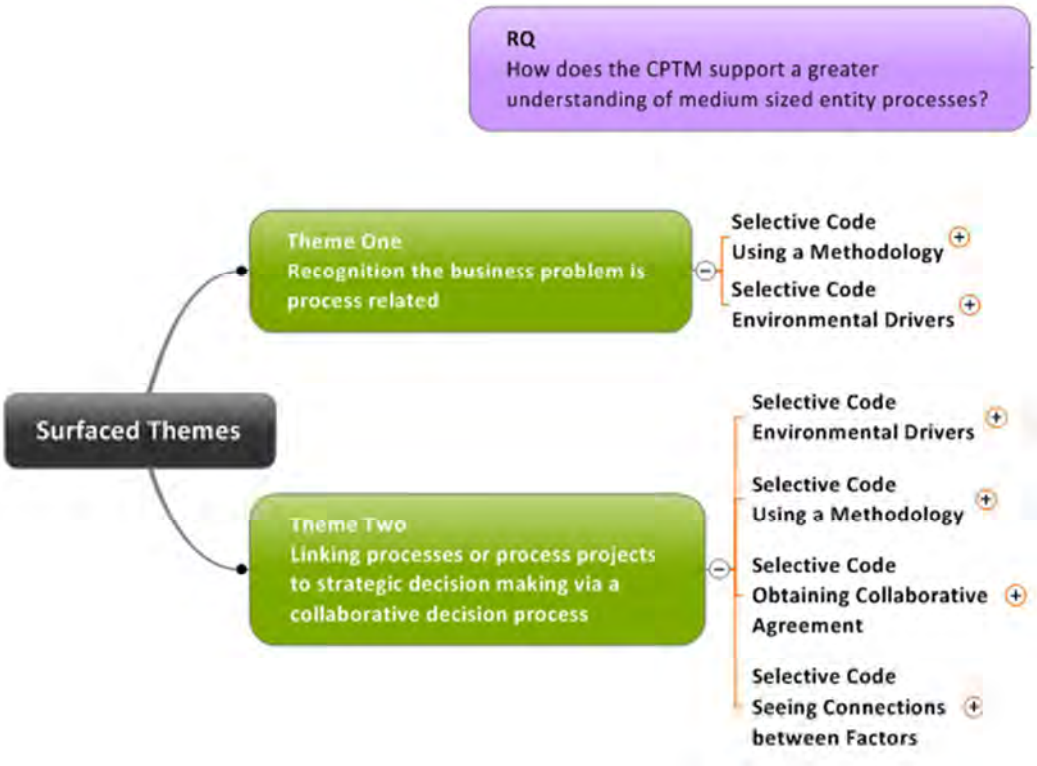

Figure 85- Themes Identified from the Analysis

These two emergent themes relate to the research question and provide the ability for the researcher to 'tell the story' of the data. The themes and their explanatory stories provide

understanding concerning the question that the CPTM does indeed improve the SME understanding of business processes. How much improvement is a question requiring further research. The theme of 'decision making' surfaced in the analysis of all four categories and suggests good support by the CPTM for at least the strategic types of decisions.

Although these two themes will be unpacked further in Chapter Five the researcher's explanations here of the two themes will aid the readers understanding of their meaning.

Theme One "Recognition the business problem is process related"

Two selective codes are related to this theme (*Using a methodology* and *Environmental Drivers*). The researcher has used the following logic to surface the theme from these two selective codes. The logic rises from the data itself and from the context within which it was collected. The logic considers the relationship of themes to the research question (RQ).

The selective code Environmental Drivers bring together axial codes such as *problem specification*, *problem root cause*, *problem realisation*, and *context building*. These suggest that the business process understanding gained from using the method (CPTM) is related to the recognition of the root cause of the problems faced by the business and that these are process related. That does not mean that processes are the only root cause but that they are a factor. The selective code Methodology is considered to be expected in this context as the use of a method itself has many benefits and is used in the research thus expected to appear in the data sufficiently to be a factor.

Theme Two "Linking processes or process projects to strategic decision making via a collaborative decision process"

The second theme is 'Linking processes or process projects to strategic decision making via a collaborative decision process'. This theme has relationships to all four selective codes: 1. using a methodology, 2. environmental drivers; 3. obtaining collaborative agreement; and 4. seeing connections between factors. Theme two is about the elements of making transparent and collaborative decisions in relation to having a method for making the decisions, understanding what is driving the problem space, obtaining collaborative agreement from those involved and finally realising the connection between processes and what their drivers were as well as their strategy. The connection to the research question

for this theme is strong in that the theme links strategy to business processes and business processes to decisions.

A detailed discussion of the themes and supporting categories is provided in Chapter Five following.

4.10. Data Analysis Chapter Reflections

"Knowledge and theory are inextricably interlinked" (Goulding 1999, p.6)

This chapter more than any other chapter has required of the researcher a much greater investment in learning new things and in implementing that new knowledge. The complexities of this analysis did not appear until the researcher was immersed in the data and the analysis process. The approach though not necessarily 'fun' or swift does leave the researcher believing that the outcomes are valid. In this respect the researcher has used Lincoln and Guba's (1985) post positivist assessment criteria to validate the outcomes.

Credibility is the 'truth' of the findings, as viewed through the eyes of those being observed or interviewed and within the context in which the research is carried out. The approaches to ensuring credibility are:

- The use of triangulation of the data making use of multiple data sources. In this research multiple data sources were used to aid credibility such as the views of the multiple investigators, the historical data from the organisations and CPTM outputs
- The search for disconfirming evidence was undertaken based on data collected in the post case interviews and observed activities post the case studies.
- The subject review was used in two of the case studies as this was to solicit participant review of the researcher's interpretation of the findings. Feedback from the participants indicated that the researcher's interpretations of events and outcomes were similar to those of the participants spoken to.

Transferability is the extent to which findings can be transferred to other settings. In order for findings to be transferable, the contexts must be similar. Therefore, it is the role of the researcher to identify key aspects of the context from which the findings emerge and the extent to which they may be applicable to other contexts. The researcher posits that the contexts of the case studies were similar to many other areas of SME domain. Transferability the researcher believes is supported by comments from the participants themselves that they would use the method in other situations ("*In this case I would say that I would use this again in another organisation*" Assistant Director Case Study One).

Only one comment was identified as suggesting it would not have much chance of being applied ("*probably less so in organisations which have an autocratic management*" Assistant Director Case Study One).

Transferability also included providing a detailed description of the context which was provided in the manner of a vignette for each case study. The chapter also provided a clear and detailed description of the researcher's role in the context.

Dependability, the third assessment criteria, is the extent to which the research would produce similar or consistent findings if carried out as described, including taking into account any factors that may have affected the research results. Lincoln and Guba (1985) suggested that a clear and accurate method of recording data and observation must be provided as an audit trail (Lincoln & Guba 1985). The researcher captured audio recordings of interviews from case studies and used a researcher's reflections document to capture the researchers thinking and ongoing analysis during case studies.

Data was archived in a clear file system which enabled ease of reference to the data(see Figure 86 below). Where there were many documents the researcher created a clear naming convention.

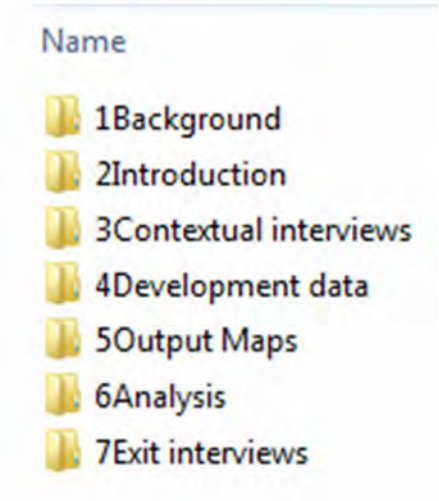

Figure 86- Data Storage from Case Studies and Analysis

Lincoln and Guba (1985) also suggested that sceptical peer review was an activity that would assess dependability. The researcher during Case Study Two was privileged to have supervisors who participated in the broader study being undertaken. (Case Study Two was one aspect of a broader study.) These same supervisors and the one other researcher

involved in the larger study provided sceptical peer review of the data collection and the interpretations of the researcher' perspectives.

The fourth assessment criteria used was **confirmability** which was the need to provide evidence that corroborates the findings. This confirming evidence should come directly from subjects and research context, rather than the researcher's biases, motivations, or perspectives. Lincoln and Guba (1985) suggest that triangulation, sceptical peer review, and the search for disconfirming evidence are three approaches to ensuring confirmability.

Each of these later aspects has been discussed and the use of Case Study Three where perceptions and bias were not the researcher's lends weight to the researcher's ability to state that confirmability was managed.

4.10.1. Checklist for Quality Qualitative Data Analysis

This checklist has been adapted from various checklists identified in the literature and from papers published by accepted authorities on qualitative data analysis (Guba & Lincoln 1994; Guba & Lincoln 2005; Lincoln & Guba 1985; Spencer et al. 2003; Klein & Myers 1999).

1. The checklist requires that the researcher show that the analysis method was sufficient to the task required of it. The method of coding was one which was capable of being used to code the data collected. The data appeared to be sufficient as the coding produced many codes. The method was also able to be executed by this researcher without too many learning issues.
2. The problems of credibility, transferability, dependability and confirmability were discussed in detail in the previous section (Chapter Reflections) and it appears that these quality assessments indicated that quality analysis occurred within the constraints of the studies.
3. Bias sources were well managed: all three case studies utilised data triangulation to reduce the impact of researcher bias in the interpretation of interview data. The third case study was undertaken by a different person who provided a separate perspective on the case study and the results appeared to agree with those of the first two case studies. In Case Study Two there were four other researchers who were able to provide feedback to this researcher on perceptions and insights.
4. The assumptions of the method of analysis were highlighted with the discussion on the type of coding approach undertaken (*Structural* according to Leedy (1997)) to be with "little or no inference made as to the meaning of the patterns" (de Salas 2002, p.68). But understanding that the researcher did indeed bring 'baggage' to the coding in the form of prior history and knowledge. The assumptions of the method also included the requirement that the researcher immersed themselves in the data. This meant that the contextual data was also important in understanding the data used in the coding.
5. This fifth checklist item is perhaps the most difficult to assess. That is, the 'demonstration of imagination and creativity in identifying and analysing emergent properties of the data is clear where appropriate'. In this study there did not appear to be opportunities to demonstrate creativity and imagination. Thus the researcher asserts that the item was met.

6. The following chapter (Chapter Five) discusses the strong links of the analysis to the research question.
7. Both summaries and re4flections sections in each of the case studies highlight the more important data and its relationship to the coding and eventually the research question.
8. The case studies follow the same structure with description of the cases to support the reader's contextual understanding followed by the analysis with examples and explanation of the logic from the researcher's perspective in developing the relationships and defining the codes.

The Data Analysis chapter checklist is derived from publications of Lincoln and Guba in 1985, 1994 and 2005 and a publication from the UK Government's Office of Research. These elements are what are suggested by these authors as being quality qualitative research.

#	Analysis of Data Items	Result
1	The analytic methods used were shown to be sufficient for the task.	Yes
2	The problems of credibility, transferability, dependability and confirmability and were well managed.	Yes
3	The problem of sources of bias was well managed	Yes
4	There was an understanding of the assumptions behind the analysis method used.	Yes
5	Demonstration of imagination and creativity in identifying and analysing emergent properties of the data is clear where appropriate.	Yes
6	The analyses are clearly linked to the research questions which formed part of the stated research problem.	Yes
7	There is a demonstrated judgement of key data in the presentation of summaries within the body of the text.	Yes
8	The data is presented in a well-structured manner, so that a clear presentational sequence unfolds.	Yes

Adopted from (Guba & Lincoln 1994; Guba & Lincoln 2005; Lincoln & Guba 1985; Spencer et al. 2003)

Based on the checklist discussed the researcher asserts that the analysis thus far and fully explained across both Chapter Four and Chapter Five is a quality analysis of the data.

The following chapter discusses the results of the selective coding, the themes derived from the selective codes and the supporting data and published literature.

Chapter Five –Research Outcomes

5. Introduction

"Facts do not cease to exist because they are ignored." — Aldous Huxley (1927)

Regardless of personal beliefs the interpretations of the outcomes presented in this chapter should not be ignored due to the view of the methodology used. The goal is not to create belief in facts, but instead, understanding of the outcomes based on a belief that the methodology as implemented was suitable to the task.

This chapter discusses the research analysis outcomes. It considers each of the two themes identified and where appropriate, the selective codes which make up the theme. These are discussed in relation to the research question, linking the theme to the experience of participants and the RQ. The chapter considers the use of the CPTM and its impact on the business process understanding aspects considered in the light of the research question;

How does the CPTM support a greater understanding of medium sized entity processes?

Linkage to the Literature

This chapter investigated the literature to answer a number of questions related to the findings. Were the findings unique? Were the findings significant? Were the findings supported by existing theory?

It should be noted that this research includes a critical assumption: that there is a link between business processes and business problems. This assumption is supported by extensive theoretical argument (Armistead, Pritchard & Machin 1999; Box & Platts 2005; Cantara 2009; M. Earl, J. Sampler & J.E. Short 1995; Fargnoli 2006; Feurer et al. 2000; Gartner 2006c; Gartner 2007b; Hammer 2003; Hill et al. 2006; Margulius 2005; Maull et al. 1995) and some empirical evidence; for example (Herzoga, Tonchiab & Polajnara 2009).

The logic of this argument is;

An important business decision in any entity or organisation is the development and agreement of a strategic plan. A plan is the decision outcome to a problem. As Huitt (1992) states "Problem solving is a process in which we perceive and resolve a gap between a present situation and a desired goal", and in contrast he suggests that, "decision making is

a selection process where one of two or more possible solutions is chosen to reach a desired goal" (Huitt 1992, p.33). Both problem solving and decision making have similar steps but typically problem solving precedes decision making.

Business processes are the fundamental blocks with which a business initiates and undertakes the achievement of the plan (operationalises) (McBride 2011). A plan, even one which dictates no change from normal operations (business processes are unchanged) assumes an understanding that what currently occurs is the right solution. Thus business processes are affected by, in these case studies, the strategic business decisions identified in the strategic plans (McBride 2011). The case study plans required changes to business processes in order to be successful which at the time of developing the strategic plans the organisations were unaware of. The research outcomes suggest that the CPTM improves organisational understanding of business processes through strategic business decision making linked to processes or process focused projects.

The following diagram (Figure 87) provides an overview of the chapter sections. These sections provide the linkage back to the data surfaced using the grounded theory aligned data analysis approach. The sections discuss each of the two themes by describing the meaning of the theme and further to explain what understanding the selective codes provide.

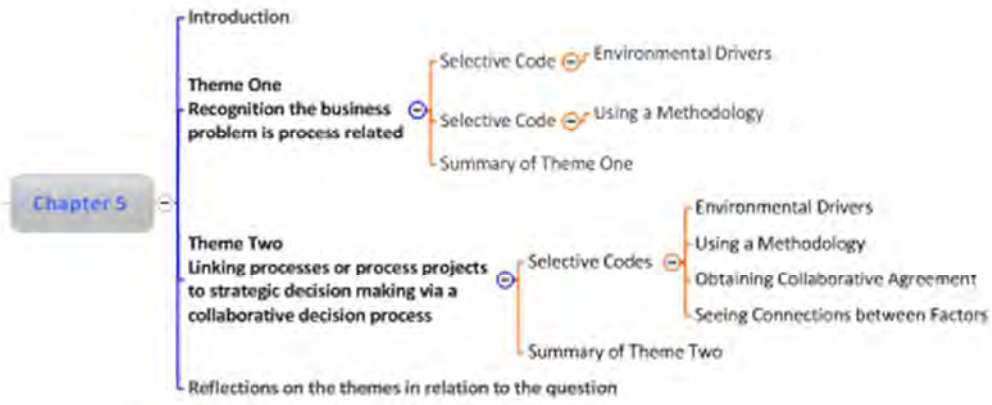

Figure 87- Structure of Chapter Five

5.1. Theme One- Recognition the business problem is process related

This theme was identified in relation to the codes 'Environmental Drivers' and 'Using a Methodology'. Understanding from a cognition perspective can be simplified to 'knowing what' and 'knowing how' (Brown, Collins & Duguid 1989). The CPTM was able to support the 'knowing what' and 'knowing how' aspects of understanding of business processes by providing both the what and how.

Knowing what is driving the situation is critical to making the method directly applicable. Understanding the issue at hand (the environmental driver) is also critical to knowing where you need to go to either resolve a problem or achieve a stated need (Zikmund & J. 2007). These benefits are, in no way helpful to an organisation if there is no recognition that part of the business problem and business solution is process related. A method in the context of this theme is a tool or set of procedures which supports a person or organisation in reaching an objective. The second selective code 'Using a Methodology' is concerned with the support given to people who may not fully understand how to deal with a situation, but can use a method to simplify the task. This method aspect is the 'knowing how' aspect of understanding of business processes for this theme.

5.1.1. Selective Code- Environmental Drivers

The CPTM facilitates user understanding of business processes by ensuring that users understand the environment in which they operate, identifying those business processes that are failing to support their business goals.

Case study participants considered that the CPTM supported the identification of which processes supported their business goals, and which processes were failing to support their business goals. Linking this new knowledge of business processes provided a deeper understanding and recognition that the business issues were process related. Raw data validated the analysis suggesting that the participants "*were quite clear on why and clearly understood how this* [decision] *fit with our business model and the gaps we had in the division*" (Assistant Director Case Study One). The same participant also suggested that "*this process* [CPTM] *itself is very good at enabling people to understand why they are making decisions and helps them come to a decision*" (Assistant Director Case Study One).

Understanding what it is that you are trying to resolve or achieve is critical to correctly defining a viable and effective solution (Zikmund & J. 2007). How do you know that the business problem is a process problem? The short answer is that it may not be a process problem however in today's businesses and with the increase and pervasiveness of information systems it is likely that the majority of business problems are strongly related to process (Zikmund & J. 2007). If every business issue is an information problem then as information systems are information focused and based on processes every business issue is related to process (Flower & R. 1980; Zikmund & J. 2007).

Outcomes of the CPTM led to commentary from participants such as *"you are right* [Senior Consultant] *we should combine all those similar customer fulfilment processes*" (Case Study Three Dairy Notes of Senior Consultant) which reinforced the belief that the CPTM improved understanding by firstly seeking out the business problem or problems. In Case Study Two the GM of Corporate Services, commented at the end of a session that "*there were some fairly glaring things that arose in the process maps and the workshop discussions a lot of inconsistencies between branches and within the organisation*." This again leant support to the claim that the CPTM's process enabled the organisation to identify the business issues. In Case Study One the Assistant Director commented that "*the process helped us look at what is critical to the division and identified that one of the four arms [of the strategic plan] was minor.*" In each case study there was difficulty identifying the underlying problem or issue, ultimately however, the new understanding of business processes, garnered through the use of the CPTM, resulted in an agreed solution and action activities to move the business forward.

The discovery or definition of the business problem is the product of new insights at the end of a "complicated intellectual process" (Kent 2003, p.21). Yet the CPTM was considered "*so clear we were easily able to communicate this* [knowledge] *to the external stakeholders providing the funds*". Holstrom (1998) suggested that understanding business problems were at the heart of resolving the more complex problems of the product range demand forecasting, which is a business process for supply or production departments.

To summarise, the CPTM provides support for the definition of the business problem (when related to processes) as a critical part of understanding the environment and recognising that the problem being resolved is process related. This also lends credible support to the RQ that the CPTM does improve business process understanding.

5.1.2. Selective Code- Using a Methodology

The CPTM links processes to strategic goals which reduces the subjectivity of previous patterns of decision-making (black box thinking) through a transparent process leading to a greater understanding of business processes.

Following a transparent process, such as used in the CPTM, removes much of the 'black box' thinking characteristic of SMEs. The CPTM provides a clear set of steps which is transparent to participants and stakeholders. "*At least people could see when things were going to happen*" (Assistant Director Case Study One). The Assistant Director (Case Study One) stated that the CPTM process meant "*it was a lot easier to explain how we arrived at the outcome and this was more easily accepted*."

One participant said of the activities of the CPTM that "*because we had gone through this consultation process and the other exec managers had all been involved we could justify to the GM our needs*" (Company Secretary Case Study Two). Thus it appears that the removal of black box thinking by following the procedures of the CPTM led to a transparent process and a greater understanding of business processes. The clarity of the linkage between processes and strategic goals led to statements such as "*very pleased with the out puts and really confident about going and having a detailed conversation with the board about it*" (GM Corporate Service Case Study Two).

Black box thinking describes a situation where decisions are made without communicating the process of the decision. That is, it might be the latest fad solution, the brainchild of the CEO's biggest supplier or one of many other decision pathways (Sia & Soh 2002). Following an open process for decision making, such as used in the CPTM, removes the majority of 'black box' thinking. Typically stakeholders who understood and agreed with the process approved the outcome of the process (Green & Jack 2004).

A process must also provide more than just transparency. The Assistant Director Case Study One said that "*we need a proper process to determine the priority and the schedule*". The need for clear and transparent processes for decision making were seen in the comment by the Company Secretary, (Case Study Two) that "*we tried to put those processes (developing an IT strategy and business case for new systems) in place and they were thrown out the window*". The CPTM then provided a clear and transparent process as confirmed by the GM Corporate Service and the Company Secretary (Case Study Two) "*we thought it was right*

on target and he [GM Corporate Services] *when I had a conversation with him last year,* [he] *was very pleased with the process very pleased*".

Having a method by which to undertake an activity is the heart of a successful repeatable activity (Margulius 2005; Melnyk 2000; Shields 2008). Using a methodology provides a step by step guide to the participants in the method, as well as providing a basis for managing the individual elements of the process (Pestorius 2006). A method provides the understanding of a procedure undertaken to control scope change, establish responsibility, accountability, and authority (Meredith & Mantel Jr 2000) whilst reducing the risks of informal or unplanned activities (SAI Global 2004).

Substantiated outcomes were beneficial ensuring that people were involved and time was not wasted. The Company Secretary (Case Study Two) stated that "*because we had gone through this consultation process and the other exec managers had all been involved we could justify to the GM our needs*".

A method allows for formal review and improvement as the processes of the method were defined and understood making it repeatable, and to some extent, producing a substantiated outcome (Meredith & Mantel Jr 2000).

To summarise, this process provides for the reduction of black-box thinking characteristic of SMEs and thus leads to a greater understanding of business processes. The CPTM links processes to strategic goals utilising a transparent and repeatable process of decision making.

5.1.3. Summary of Theme One: Recognition the business problem is process related

Both selective codes discussed when combined surfaced the theme of '*Recognising the business problem is process related'.* The codes which made up the selective code 'Environmental Drivers', were related to elements such as defining the root cause, understanding the problem and seeking the problem when only the symptoms were clear. The selective code 'Using a Methodology' was defined from codes such as optional method improvements and procedure problems. These indicated that the methodology was to the participants an important element as was the outcome.

This section has identified and drawn the linkages of the theme '*Recognising the business problem is process related'* discussing the evidence that shows the CPTM does indeed support improved business process understanding by assisting in the 'knowing what' and 'knowing how' of understanding. The 'knowing what' is supported by the CPTM's ability to support the identification of business problems, in any environment, when related to business processes. The 'knowing how' is validated through the discussion of the benefits of having a method to support transparent and clear decision-making. In addition the raw data verified 'Using a Methodology' as an appropriate selective code with issues related to not having a clear decision and/or problem clarification highlighted. Furthermore the published literature also supports the elements of defining the issue or problem to successfully provide the appropriate solution. Published literature also supported the aspect of identifying that a method was a valuable and repeatable process and this type of method prevented 'black box' thinking which often results in poor decision making and unsuccessful efforts for change.

The following section discusses the second theme which includes both selective codes from theme one and the two additional selective codes; *Obtaining Collaborative Agreement* and *Seeing Connections between Factors*.

5.2. Theme Two- Linking processes or process projects to strategic decision making via a collaborative decision process

Theme two is derived from all four selective codes which were surfaced using a grounded theory aligned data analysis approach. Two of these selective codes have been discussed in relation to theme one though in this theme the selective codes are considered from a different focus or viewpoint. The CPTM was able to support the 'knowing what' and 'knowing how' aspects of understanding of business processes by providing a clear and agreed process that defined the what and the how of strategic decision making. This process (the CPTM) enabled and supported the organisations improvement in business process understanding. This section discusses how by *Linking processes or process projects to strategic decision making via a collaborative decision process,* using the CPTM was able to improve business process understanding.

The CPTM provides improved understanding of business processes by ensuring that strategic decisions include a holistic understanding of the critical business processes, and this understanding is vital when in a collaborative decision making process.

5.2.1. Selective Codes- Using a Methodology, Environmental Drivers, Obtaining Collaborative Agreement and Seeing Connections between Factors

The CPTM improved business process understanding through the use of a collaborative and transparent decision process that supported users by linking processes or process projects to strategic decisions resulting in a clearer understanding of what was critical to business needs.

The Senior Consultant in Case Study Three stated that the CPTM "*was a form of process review which was linked to direction*". Linking strategic direction to business processes was critical to a clear understanding of which business processes were more important to the business. As the Assistant Director (Case Study One) stated "*the process helped us look at what is critical to the division*." This comment suggests that the CPTM provides support for the business decision-making through the CPTM leading to improved business process understanding. Further evidence is seen in Case Study Three with the Senior Consultant stating that "*management understood that there was more to the shared services changes than moving people around*". This comment suggests that understanding of their problem is related to process, based on the linkage of processes to strategic decision making. In Case Study Two the GM Corporate Service stated that "*there were some fairly glaring things that arose*" during the CPTM implementation which identified the process issues across the organisation providing a clearer understanding of the business problem at hand.

McBride (2011, p.9) also suggests that strategies “literally frame organizational action and decision-making”. Strategies require an understanding of the current situation and Drucker (2001) considered the current situation to be related to the definition of the problem. ‘What is this all about?’ ‘What is pertinent here?’ ‘What is the key to this situation?’ (Drucker 2001). The CPTM takes a holistic view of the organisation pushing the user to consider all the processes, without considering where these processes sit within an

organisation. Understanding the environment or situation is the first step of decision-making (Drucker 2001; Drucker 2008; Spetzler & Stael Von Holstein 1975).

The CPTM provides a process for strategic decision making. The Senior Consultant in Case Study Three was pleased with the CPTM saying that "*We got buy in because we were able to show an agreed strategy which linked to processes*". In Case Study One the Assistant Director commented, the CPTM purpose for them was that

> "*the process is there to gain a good understanding of what the critical areas are it is not to try and resolve all ills. What it is, is a way to make decisions. What were the main areas for us and where potentially in the future would there be potential issues*."

This support for the CPTM's ability to facilitate the development of an agreed and collaborative strategy and link this to an improved understanding of business processes is also supported by the Director Corporate Finance (Case Study One) advocating comments "*I would use it in other contexts and it will probably be used in the division again as well*".

Drucker (2008) suggests that the right thing to do in decision making is to "*ignore what might or might not work and decide what is the best decision*" (Drucker 2008, p.126) without considering political, social, religious and other influences which tend to reduce the decision to one which decision makers believe will pass the assessment of stakeholders.

The CPTM provides a transparent method of communicating decision choices and surfacing those influences which might produce poorer decisions. For example in Case Study Two participants were reluctant to use the measure 'probability of failure' due to the perceived criticism of the top level executives. Diary notes of conversations by the researcher record the event with the quotation "*we cannot be seen to be critiquing senior management's decision making*".

The participant reluctance was surfaced during one of the method workshops, participants were reluctant to provide measures related to the executive or strategic level processes. It was also noted by one of the other researchers (not the writer) in the daily post activity informal discussions. Changing the name of the measure to 'probability of success' reduced the concerns of the participants without changing the outcome.

A method can remove transparency issues related to 'black box' thinking and also provides an environment in which process improvement is more easily undertaken (Armistead,

Pritchard & Machin 1999; Cantara 2009; M. Earl, J. Sampler & J.E. Short 1995). 'Black box' thinking is highly susceptible to bias, external influence and internal preferences (Goldsworthy 1988). Ensuring that there is a clear method by which decisions are taken provides a 'white box' method that results in both understanding of the decision and agreement with the logic at least of the decision. Goldsworthy (1988, p.508) also suggests that differentials in power amongst decision makers using 'black box' decision making results in "little or no likelihood of positive-sum outcomes with gains to all participants". Howe (2004) looks at black box thinking in relation to data analysis in research and states that "understanding of causal mechanisms requires substantive knowledge of the contents and workings of the black box" (Howe 2004, p.47).

Using a methodology enabled the case study participants to (in most cases) deliver 'what's right'. The methodology in most cases is able to be the excuse for following a process which may have political or other unappetising connotations. In Case Study One the Assistant Director stated that one of the useful outcomes from his perspective was that "*the process helped us look at what is critical to the division and identified that one of the four arms [of the strategic plan] was minor*." Having a process enabled a review of existing strategic goals in a logical manner resulting in agreement of what was important and what was less important.

Further evidence of the methodology delivering outcomes which may have been previously compromised was the experience in Case Study Two of the GM Marketing that finally he was able to show the Chief Executive Officer (CEO) that "*marketing was critical to achieving the CEO's strategic plan*" (Researchers diary notes). As the Assistant Director in case study one commented "*this process itself is very good at enabling people to understand why they are making decisions and helps them come to a decision*." Data such as this suggests that the method is a 'white box' process.

Collaborative agreements in law (Christian 2002) are promoted on the basis that disputes are resolved with respect, important relationships are kept intact, and the focus is on the future. Making decisions obtaining collaborative agreement is critical to obtaining the consent to action the decision (Paulus, Woodside & Ziegler 2010). Collaboration enables the decisions made to be turned into action. Turning a decision into action is what Drucker (2008) suggests is a critical element of any good decision.

In addition Lapadat (2009) states that collaboration delivers a rich knowledge to participants, shared through interactive writing and the organic nature of collaborative

processes. Her (Lapadat's) experiences and those of her students who have participated in collaborative activities have resulted in the development of strong group bonds, and specifically while it appeared risky "stepping out from behind the masks of our roles. In some degree, for each of us, it was also personally, socially, and intellectually transformative" (Lapadat 2009, p.965).

In Case Study Two the GM Corporate Services stated that "*there were some fairly glaring things that arose in the process maps and the workshop discussions* ". This comment adds support for the collaborative approach taken in developing the process and strategy maps. Discussions were at times passionate when it came to why an individual process had greater impacts on objectives than another. Even, it seems, in medium sized organisations individuals are not aware of the needs of others or the impact of their actions on others. The process perspective was able to, during the workshop discussions, highlight and educate the participants.

Pontecorvo (2007) said of collaboration that the group members original point of view was "substantially enriched and changed" by comparing and discussing it with the other members within the group (Pontecorvo 2007, p.186). Pontecorvo (2007, p.181) also found that new knowledge can be generated and discovered when the more "expert and academically oldest ones become conscious that they are learning something new from the group". The CPTM appears to achieve this learning for the more senior executives where they start to understand the processes on a more detailed level.

As the Assistant Director for Case Study One stated "*it* [CPTM] *is trying to achieve a better understanding of where the critical areas turn the organisation*".

In summary the second theme 'Linking processes or process projects to strategic decision making via a collaborative decision process' provides an answer to the RQ by showing that the CPTM improves business process understanding though the provision of;

- a collaborative process for decision making and learning
- a process for removal of most black box thinking resulting in transparent decision making
- a 'good' process for strategic decision making related to business processes
- a process for 'knowing what' in relation to the context and problems of the business

5.2.2. Summary Theme Two- Linking processes or process projects to strategic decision making via a collaborative decision process

In this theme the researcher has shown that there is support derived from the analysis, the original data, and from the published literature. The discussion also identified that the answer to the RQ based on this theme was that the CPTM does improve business process understanding through the use of a collaborative and transparent process. This process is one which supported users in linking processes or projects to strategic decisions resulting in clearer understanding of what was critical to business needs.

The outcomes also suggest that the CPTM provides a valuable collaborative decision process which has strong data and published literature support. Part of the answer to the RQ is that the CPTM process provides the participants with processes to define the problem space and consider the context of the process problems faced.

The CPTM enables participants to 'decide what is the best decision' without considering other influences and to turn decisions into actions. These elements eventually provide the participants with an improved understanding of their business processes and this appears to lead to if not improved outcomes then positive outcomes.

5.3. Reflections on the Themes in relation to the Research Question

Chapter Five communicated the outcomes of the data analysis through many cycles of review, reassessment and clarification in order to clearly describe the themes and how they related to the RQ and whether they were supported or otherwise by the literature.

The two themes *Recognition the business problem is process related* and *Linking processes or process projects to strategic decision making via a collaborative decision process* have aligned with current published theory and tell a valid and useful story, that of a significant relationship between the understanding of processes and successful business outcomes.

The two themes identified were surfaced from unstructured interview data and supported by a triangulation of data such as conversations, documents, published literature and the researchers experience and knowledge as outlined in chapters 3 and 4 of this thesis. The two themes that have been identified are significant to the question of How does the CPTM support a greater understanding of medium sized entity processes?

The research question can now be answered in that the CPTM method supports business process understanding by supporting, undertaking and suggesting a range of activities as part of the method. This method provides a structure which deters participants from the use of SME characteristic 'black box' thinking and supports and emphasises the use of collaborative strategic decision making. Understanding is provided by the 'knowing what' and 'knowing how' with the use of aspects of the method which require contextual understanding of business processes and environmental understanding of those processes in a holistic way. The CPTM is also seen to be a method which is a valuable and repeatable process thus adding to process understanding.

The following chapter outlines the research outcomes, limitations of the research and some of the possible future research related to this body of work.

Chapter Six -Research Summary and Further Work

6. Introduction

This chapter provides a summary of the research project itself and importantly the contributions and implications of the research to theory and practice. The chapter also discusses the limitations of the study for the understanding of readers from both academic and industry perspectives. The chapter includes a section on the avenues for further research in this area that might build upon the work described in this thesis. The final section is a quality checklist of the research project in total based on work by Hesse-Biber and Levy (2006). The following diagram (Figure 88) provides a description of the chapter.

Figure 88- Chapter Six Structure

6.1. Research Summary

This research study was initiated with the researcher's interests (existing knowledge and experience) in improving SME understanding of processes based on the researcher's anecdotal knowledge and experience as a BPM consultant. The research problem was the growing necessity to improve the organisational understanding of business processes. The research goal was to explore the effect of the use of a method to increase the understanding of business processes within SMEs. The literature review provided evidence of the research gap and the importance of the area under investigation, and was initiated with five major objectives:

1. Substantiate the importance of understanding business processes
2. Identify the major characteristics of SME's today and their changing needs
3. Identify and briefly describe and assess a collection of methods that may support an understanding of business processes in organisations with characteristics of an SME
4. Describe the selected method
5. Specify the research question

The literature review found substantial evidence of the need for organisations of all types to improve their business process understanding. Many drivers of business process understanding were identified and discussed. The literature review investigated the characteristics of SMEs and found that they had unique characteristics in comparison to large enterprises. In addition it was noted that departments within large enterprises could in some instances be considered similar to medium sized enterprises.

The literature review considered many methods which might support the business process understanding of SMEs and eventually validated the original choice of the Critical Process Targeting Method (CPTM). This method, it was believed, would improve the understanding of business processes within medium sized entities. The final outcome of the literature review was the following research question:

How does the CPTM support a greater understanding of medium sized entity processes?

This question seeks to gain insights into how, through the use of a method improvement in business process understanding in smaller sized organisations can be achieved.

In Chapter Three a broad range of methods were considered for the research project. A qualitative interpretivist method was sourced based on the researcher's view of the world (Guba & Lincoln 1994), the context of the case studies and the research question (Myers & Avison 2002; Denzin & Lincoln 2005). Three case studies which fit the requirements of the study were accepted as suitable (Denscombe 2007) and undertaken (Stake 1995; Denzin & Lincoln 1998; Willis et al. 2007; Stake 1998). In each of the case studies the Critical Process Targeting Method (CPTM) was implemented and data collected from participant observations (Angrosino 2005) as diary notes, (Bolger et al. 2003): unstructured interviews, (Fontana & Frey 2005): conversations recorded as diary notes (See page 114), published historical documentation and output documentation from the CPTM (Denscombe 2007).

Data analysis utilised an aligned grounded theory data analysis approach which required a three phase coding activity (open, axial and selective) involving a multi pass review of the data at each phase of coding (Dey 2004; Leedy 1997; Strauss & Corbin 1990; Strauss & Corbin 1997). Multiple passes of the data in each coding phase were undertaken until no further codes were identified (saturation) (Eaves 2001). From the resultant four selective codes two themes were identified:

1. *Recognition the business problem is process related*
2. *Linking processes or process projects to strategic decision making via a collaborative decision process.*

Theme One (*Recognition the business problem is process related)* was surfaced from the categories of 'Using a Methodology' and 'Environmental Drivers'. Theme one suggests that it is important to business process understanding (knowing what) that the participants recognise the drivers of process change and can see the linkage between the business processes and the business problem. It also suggests that the CPTM reduces the subjectivity of previous patterns of decision-making (black box thinking) through a transparent process leading to a greater understanding of business processes.

Theme Two provided an encompassing 'story' for all four selective codes identified. These were 'Obtaining Collaborative Agreement', 'Seeing Connections between Factors', 'Using a Methodology' and 'Environmental Drivers'. Theme two suggests that the CPTM improved business process understanding through the use of a collaborative and transparent decision process that supported users by linking processes or process projects to strategic decisions resulting in a clearer understanding of what was critical to business needs.

These themes provided an answer to the RQ which was **how** the CPTM might improve the business process understanding of medium sized entities.

The CPTM was found to advance the 'knowing how' and 'knowing what' facets of understanding in respect to the business process understanding of the organisations in which it was implemented (Brown, Collins & Duguid 1989). Both themes were verified by triangulation to the raw data and the published literature.

A review of the data for disconfirming evidence was completed of which only the expressed desires to see changes in the tool used might be loosely related to disconfirming evidence. It was not perceived as being sufficient to refute the stronger evidence identified of direct support as described in the two themes.

Confirming or disconfirming literature were identified where possible and in the method area published literature on the use of, development of, and management of, methods as a tool was found to be substantively lacking. There was instead substantial literature on different methods for different activities which did not add much to the theory developed. Collaborative decision making literature supplied some strong supporting evidence of reputable and reliable decision making processes developed by prior researchers.

6.2. Contributions

This exploratory research project makes four distinct contributions to Information Systems (IS), Business Process Management (BPM) and SME sector practice and knowledge, research focus, research method, theory and practice related contributions:

1. Research focus contributions
2. Research method contributions
3. Theoretical contributions
4. Contributions to practice

<u>Research focus contributions</u>

This study is the first to explore business process understanding utilising a method in the medium entity financial sector. This is a little explored area of IS and BPM. There is considerable research published on specific business process areas of organisations of all sizes but none that this researcher could find of a holistic perspective within the small and medium sized entity set.

Research Method Contributions

The study has also responded to what Dyer and Wilkins (1991, p.613) said were "strong and repeated calls for more qualitative, contextual, and interesting research". This study has undertaken three case studies using qualitative data collection and analysis methods. The cases provide interesting and contextual knowledge about medium sized entities in the financial services space in Australia.

Participative Case Study

This study employs a variation of existing research methods, which has enabled the exploration of medium sized entities' business process environment. One of these methods was participative case study (Baskerville 1997b; Holmström 1998; Schein 1997; Yin 1994), where the researcher was the facilitator of the method used. Little has been published in this area and this work and its outcomes provide support for the value of participative case study.

There is considerable controversy to be found in discussions with researchers over the existence of participative case study as a viable information systems research method (Baskerville 1997b). Some researchers may have distanced themselves from the controversy by creating new names for their version of the participative case study, "participant observation" Nandhakumar and Jones (1997) or "process consultation" Schein (1997) or "Appreciative Inquiry" von Weltzien Hoivik (2011) or simply "consulting" by Baskerville (1997). This thesis provides strong argument for future researchers to use the participative case study (PCS) (Yin 1994) as described by Yin (1994, 2003) with less risk of criticism.

The researcher has found that PCS is a method which provides valuable benefits over that found in traditional case study where the researcher is an uninvolved onlooker. As an uninvolved onlooker the researcher Myer and Newman (2007) state that the researcher creates an artificial environment in which observing alters the reality. As a participant the researcher blends with the case participants and activity and it is argued more effectively reduces the artificial impact of being present. This blending with the case participants provides less intrusive and less opportunities for data collection.

These opportunities accrue through actual participation in meetings, work activities such as creating a business strategy within a team and identifying and describing business processes within a team. Being part of the team that undertakes these activities reduces

the impact of being present and must result in the data being collected having less artificial 'taint' thus better more 'real' data then when an uninvolved onlooker collects the same data.

In some instances the researcher as a participant observer in these case studies had a role which facilitated the collection of data that would have been more intrusive for an uninvolved onlooker. Thus it might be possible to say that more quality data might be collected from participant case study than from traditional case study. Yin (1994, p.80) stated that participant observation has the same strengths as direct observations (covers events in real time and covers contextual situation) but also has the opportunity to gain insights into interpersonal behaviour and motives.

Additionally the researcher asserts that to be a participant observer requires the observer to have the skills and knowledge required to effectively participate and offer value to case study participants. This will logically result in the collection of data which is filtered through a deeper understanding based on both the knowledge brought to the case study to participate in the activities as well as the experience of actually doing the activities rather than only seeing them done.

As a tool for use within participative case study the researcher has also substantiated a new method of interview style called here the *conversation*.

Conversation

The study has substantiated a new method of interview style (conversation) harmonious with the needs of the SME sector and resource poor organisations generally. The writer asserts that the use of causal (such as 'water cooler' meetings) and semi-formal interactions (such as workshops and briefings) are a valuable and viable form of data collection. These opportunities though are more than observations as seen by (Gandz & Murray 1980; Hines 2000; Yin 1994; Yin 2003) and provide opportunities for data collection within a range of research methods.

The researcher asserts that these are a form of interview found in circumstances where the interviewer has little control (from a research perspective thus are not part of an experiment) over events, but is able to interact as in an unstructured interview. In the conversation the interview is agreed to by the participants and has a harmony with the situation of the participants and with the needs of the researcher. The author asserts that this variation of the standard unstructured interview provides researchers in the SME

domain at least with the ability to gather valuable data with minimal impact on the organisation.

The conversation can be viewed as having the following characteristics:

- May be found in either 'water cooler' situations of informal and ad hoc communication or in less informal meetings, briefings and work activities where the researcher is close enough for informal conversation
- an ad hoc approach to the timing of the interview with interviewees in that, the 'water cooler' variety occurs as an unplanned opportunity in the same way that 'water cooler' meetings occur
- an unplanned and to some extent an uncontrolled approach to the topic of interview which may even be on things which have no immediate relevance to the research
- an uncontrolled approach to the length of interview based on the same reason as for subject matter discussed, but typically for the 'water cooler' variety of short duration but perhaps reasonable frequency dependant on social interaction elements
- may be considered as a one-on-one or one-on-many interview with no real control
- the data may be in the form of outputs of work activities as well as the working notes and minutes of meetings as support for diary notes taken after and not during an interview and is also not recorded during interview
- that the location, topics discussed, participants and length are fluid and not visibly controlled except for the more formal business meetings and interactions

The researcher suggests that the conversation has the following benefits to researchers. From the context of the research the conversation has specific benefits in relation to the needs of resource poor SMEs. That is the conversation provides data without needing to request that already busy staff remove themselves from their daily activities to participate in more formal research interviews. Conversation data is collected from both formal and informal communication which is part of the everyday activities of the business.

The research area considered most suitable for researchers using this method are exploratory research such as grounded theory research, exploratory action research and exploratory participant case study.

By considering the list of issues identified by Myer and Newman (2007) the researcher suggests that conversation would provide the following improvements on the traditional formal interview style:

- offers opportunities to gather data not normally collected in formal interviews
- this data may be purely contextual or related to issues that the researcher did not consider or uncover in formal interviews with agreed time frames
- provides opportunities for interviews which are not constrained by length or the issues of formality
- can be initiated by participants and controlled by them so providing possibly more reliable and consensual data and this may be a partial solution to Myer and Newman's (2007) issue of the 'artificiality of the formal interview'
- may be less affected by the 'hawthorne effect' Myer and Newman (2007) due to the closer tie with normal business activity
- may be a solution to Myer and Newman's (2007) issue of interview bias where scheduled meetings and work activities provide opportunities to interview at all levels of an organisation without obvious adverse effects on the organisations resources
- may be a solution to Myer and Newman's (2007) issue of 'trust' in interviews as the interviewer in conversations is considered part of the team for work activities and 'water cooler' type meetings can be interviewee initiated when used in conjunction with participant case study method
- may be a partial solution to Myer and Newman's (2007) issue of 'Lack of time' leading to insufficient data collection. The extra opportunities for data collection may provide a complete or partial solution and possibly a greater range and depth of data collected when used in conjunction with traditional interviews
- may be a partial solution to Myer and Newman's (2007) issue of 'Ambiguity'- the informality of the conversations as well as the interviewer being a participant in the work activities reduces the risk of poor interpretation of conversations and other data when used in conjunction with participant case study

While there are number of benefits that have been identified though specifically tested for in this research there are some cautionary elements to using conversation as part of a research project. The researcher is unable to guarantee that the method will result in needed data collection to any further extent than that of unstructured interview approaches. The conversation may not be suitable on its own for other types of research such as the testing of constructs or case study replication where specific data is to be collected.

In the use of conversation the researcher is cautioned that attempts to steer the direction of the interview may signal that the research agenda is being given priority over the business or social agenda of the conversation and this may lead to bias in the outcomes. Finally though this is not necessarily the only cautionary words which might be needed is that the 'water cooler' type meetings relied on the interviewer capturing data with notes post the conversation and may lead to missing data or lesser quality data capture.

In the environment of the case studies for this research project (medium sized entities) the writer suggests that the organisations have many issues with resources. The more formal interviews traditionally used for data collection can be a drain on the resources (both people and time) of these organisations and thus where appropriate the researcher can utilise a conversation as an additional data source to that of the formal interview method.

This conversation is a valuable contribution to research data collection methods in the SME domain.

Clear Direction for Grounded Theory Aligned Data Analysis

The study has also provided clear process for the future use of a grounded theory aligned data analysis approach. Published direction did not support a clear understanding of the data analysis approach taken; there was difficulty in defining the necessary activities to effectively undertake the task. The writer has therefore provided improved guidelines for novice researchers within Chapter Three and briefly here in support of the readers understanding of what was provided in published media and what the researcher actually did.

In the research methodology the researcher used the three phase approach of Strauss and Corbin (1990; 1998) for the data analysis. The researcher is a novice researcher and the method was new.

In support of using this data analysis method the researcher sought direction from Strauss and Corbin (1990; 1998) and they distinguish between three phases of coding; open, axial and selective (Strauss & Corbin 1990; Strauss & Corbin 1998). Dey (2004) describes these as, a “preliminary process of breaking down, examining, comparing, conceptualizing and categorizing data” for open coding (Dey 2004, p.81). Little more direction than this is provided by these authors who are the seminal authors in the area of coding data in a way which is aligned with grounded theory.

Axial coding involves a "set of procedures whereby data are put back together in new ways after open coding, by making connections between categories" (Strauss & Corbin 1990, p.116)... Selective coding involves "selecting the core category, systematically relating it to other categories and filling in categories that need further refinement and development (Strauss & Corbin 1990, p.116).

The process of analysis is meant to be iterative (cycles of coding and recoding) this is also not made clear from the authors who publish on the method. Only through the iterative cycle of coding does the researcher reach both saturation of themes derived and a greater understanding of what the data 'means'.

Leedy's (1997) coding analysis type called Structural, is defined by Leedy (1997) and de Salas (2002, p.68) as the examination of the data for patterns with "little or no inference made as to the meaning of the patterns".

This researcher believes that it is not possible to completely remove prior knowledge and bias when attempting to follow the structural type even though the researcher attempts to do so. Thus there is a suggestion that the aim of the coding is to follow the structural type of coding (no preconceived ideas used or current insight and judgement) however; the actual outcome is that the researcher's bias, history and knowledge will have influenced the coding.

The information provided here is the basis on which the researcher started to try to understand the coding process.

What the researcher did was to provide three diagrams which contain more specific instructions for the novice researcher in this method of data analysis. These are shown below and in the methodology chapter.

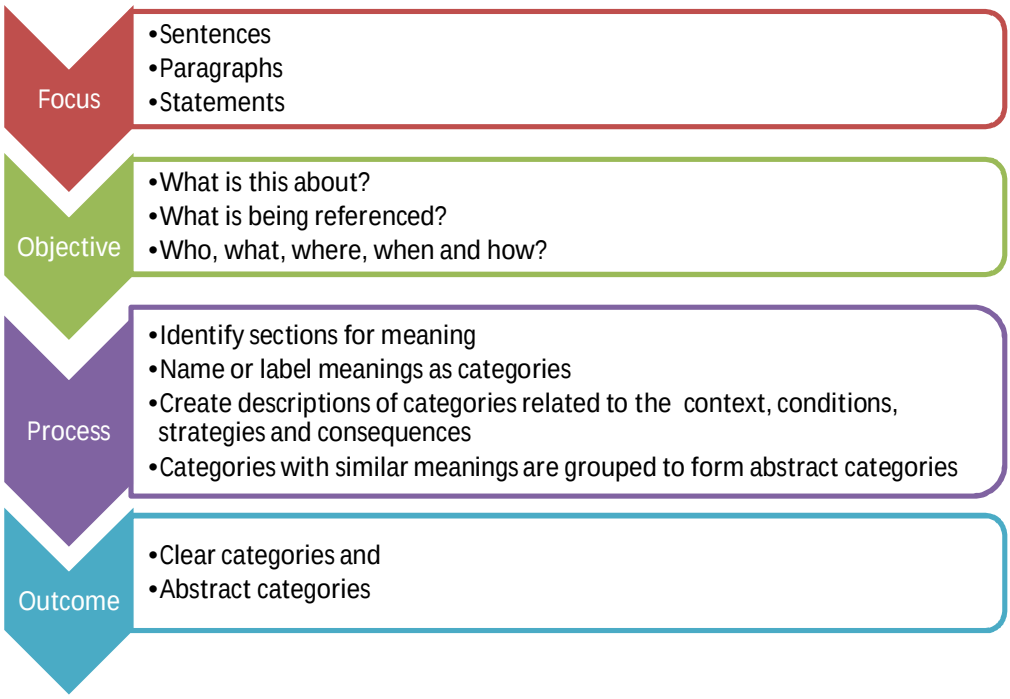

Figure 89-Open Coding (Strauss and Corbin 1990; Dey, 2005)

Open coding is the first phase of a three phase process in which the raw data can be categorised. Only the interview data was used in the coding for each of the case studies. All other data was used to support or disconfirm the coding outcomes.

There is a focus on a single section or piece of the data (sentence, paragraph or statement) at a time, the material is identified to come back to a specific item (for example pg 2 paragraph 4). The researcher then looks for meaning in that section of the data and as they do this activity they should record that meaning and then start to create categories by naming each of the 'meanings' that they have identified. The researcher used the method of initially identifying who, what, where, when and how to start the coding until some codes became more obvious. The researcher also ensured that he was very aware of the other supporting or disconfirming data (immersion in data) which had been collected as this data helped understand the context and meaning of the text or audio which was being coded. Charmaz (1983) suggests that codes are shorthand devices used to label, separate, combine, and organise data. In this way the researcher is creating a set of codes which may mean very different things to each individual reader.

Meanings as categories can be 'very concrete' or they can be abstract (Dey 2004). That is, a concrete category might be 'reflection led to clearer understanding' and an abstract might be exampled as 'planning' (Dey 1999).

Multiple passes through the raw data occurs until the coder finds that they can apply no further codes to the data. This point is generally termed saturation (de Salas 2002). No further codes suggest that pieces of text can have multiple codes applied to them.

The next step is axial coding which utilise the newly created open codes. Figure 37 following contains a view of the information required to describe axial coding which aligns with Strauss and Corbin's (1990) and Dey's (2004) guidance for axial coding.

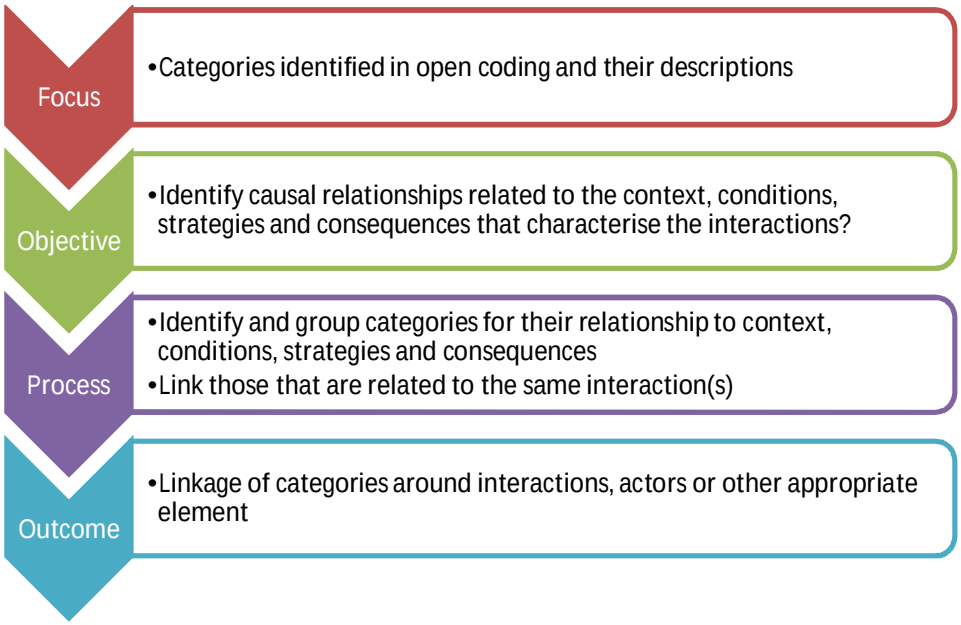

Figure 90- Axial Coding (Strauss and Corbin 1990)

Axial coding appears to be where the original developers of grounded theory disagreed (Glaser & Strauss 1967) and is focused on what Glaser suggested was 'privileging' one code over others in seeking to identify causal relationships (Charmaz 2005; Dey 2004). An inductive reasoning process enables the identification of causal relationships within the categories identified in the open coding phase. In some respects this might be described as a chunking up of the many categories identified in open coding which will enable categorisation of the causal relationships related to the interactions of the data (Dey 2004; Strauss & Corbin 1990; Strauss & Corbin 1998; Charmaz 2005).

Relationships between the open codes were used to define the axial codes. An attempt to discard prior knowledge, bias and history in order to align with the structured method of coding analysis was again undertaken.

In order to document the process a software application called MindManager (*Mindmanager* 2011) which provides a clear visual approach to recording the relationships

of the coding was utilised. Mindmanager is not like some applications such as NVivo or NUD-IST instead it is a system which offers the user the ability to record linked information and clearly show those linkages as shown in Figure 91.

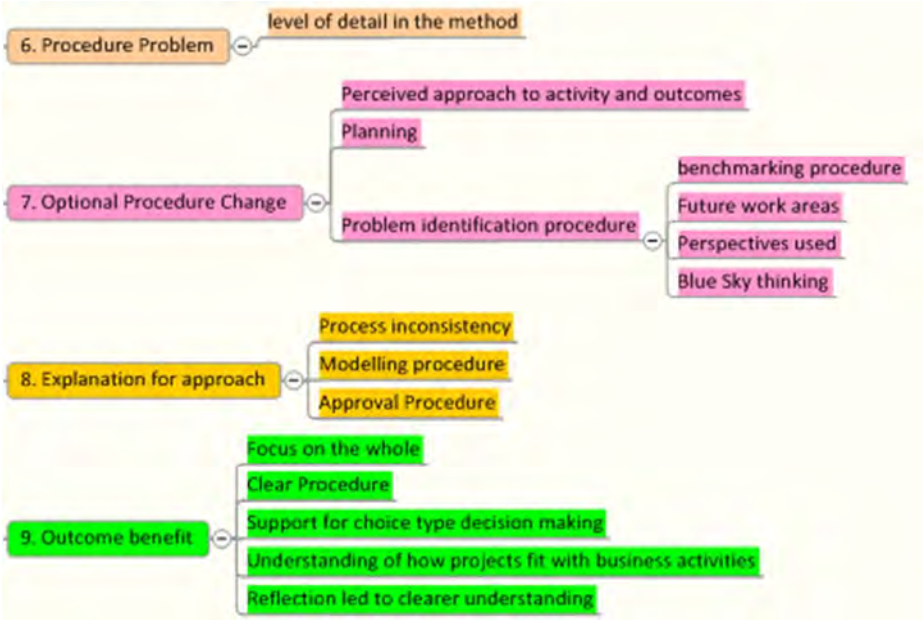

Figure 91-Portion of Case Study Two Axial Coding

The third phase of the three phases is the selective coding. Figure 92 following includes the major elements which describe the selective coding phase.

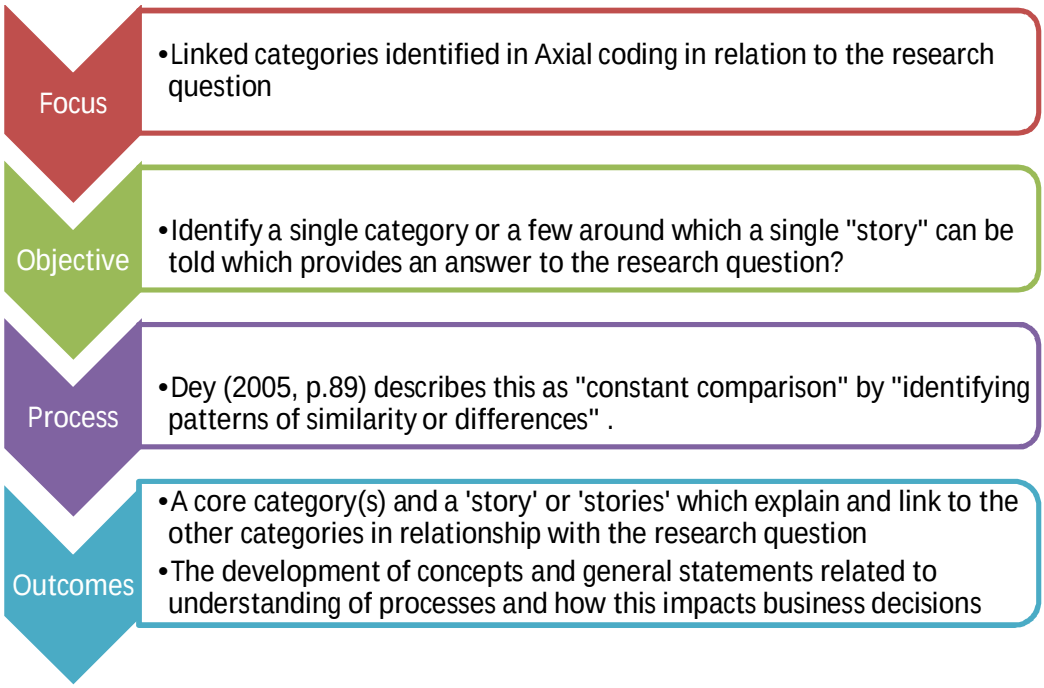

Figure 92- Selective Coding (Strauss and Corbin 1990)

It was at times difficult to find clear instruction on how to complete the selective coding activity. Selective coding or the "*acquiring of categories is subject to rules that are ambiguous and subject to continual revision in the face of ..confusable alternatives*" suggests Dey (2004, p.87). Denscombe (2007, p.292) states that the essence of data interpretation is the undertaking of four tasks:

5. Coding the data
6. Categorising the codes
7. Identifying themes and relationships among the codes and categories
8. Developing concepts and arriving at general statements

The selective coding phase is concerned with the fourth task point provided by Denscombe (2007). That is the development of a story which can be told to provide an answer to the research question?

Lakoff and Johnson (1980, p.122) observed that categorisation "is primarily a means of comprehending the world and as such it must serve that purpose in sufficiently flexible way". Lakoff and Johnson (1980) go on to suggest that categories are never simple representations, since they depend on the researchers underlying contextual understanding of the case study. In this phase the researcher is undertaking a reflective approach to analysis as well in regards the requirement to relate the 'story' being constructed to the research question. How does the understanding of business processes relate to the selective codes and themes?

In practice the ability to discard bias, history and knowledge is (for this researcher at least) nearly impossible, the approach again was to attempt to use a structured approach. In this phase with the requirement to tell the story as it relates to the research question it is suggested that the balance between structural and reflective is leaning more towards a reflective approach.

Mitigation for Bias

The study has used a mitigation approach for bias through the use of a third case study facilitated by a third party. While many interpretivist researchers (Goulding 1999; Howe 2004; Rusli & Marshall 1995; Schwandt 1994) suggest that bias is inherent in all qualitative research as even surveys and structured interviews are designed by people, therefore the intrusion of the researcher's biases is inevitable (Shenton 2004, p.72). The objective for interpretivist researchers instead is to ensure as far as possible that the outcomes are the

result of the events studied, rather than the ideas and preferences of the researcher (Shenton 2004). Utilising a third party to implement the method enabled the researcher to see the case study through their eyes. The resulting outputs were seen as similar to those for the previous two case studies and thus suggest that bias was mitigated from the research.

Theoretical Contributions

This exploratory research project has contributed to theory on:

- how the CPTM might be used to support recognition by the business that most business problems are process related
- how the CPTM uses open and transparent discussion to make collaborative decisions resulting in a greater understanding of business processes
- how the CPTM might support the linking of business processes to strategic business decisions
- how collaborative decision making using the CPTM might result in a greater understanding of business processes from a holistic perspective.

The contribution to theory is suitable for medium sized organisations in the financial services domain in which it was observed.

The contribution to theory identified that the use of activities which included a need to understand the drivers of business decisions and the environment in which the decisions were being made (the CPTM) supported a greater understanding of business processes. This greater understanding has in these case studies resulted in positive outcomes beyond that which normally occurred in those organisations. The contribution to theory suggest that the CPTM does indeed support improved business process understanding by assisting in the 'knowing what' and 'knowing how' of understanding related to business processes.

The theory contributed to, has provided insights into the behaviour of medium sized organisations which use the CPTM which aligns with good decision making (Drucker 2001; Hines 2000; Mintzberg & Westley 2001; Scherpereel 2006). Good decision making is characterised by the removal of the reported 'black box' thinking of SMEs instead encouraging the use of open and transparent discussion to make collaborative decisions.

This new contribution to theory adds significant and critical support to academia and practice in business process understanding where current methods are found to be too

resource heavy for even some large organisations (Delen, Dalal et al. 2005; Dane and Pratt 2007; Yang, Zheng et al. 2009).

Practice

This exploratory research has provided support for struggling management teams being overwhelmed by the need to understand business processes within their organisations. Published literature and the case study experience both suggest that medium sized entities have difficulty understanding their business processes (Sinur, 2004).

The literature review identified a range of SME characteristics that were used to support the selection of a suitable method for use in this study. The following diagram is a list of these characteristics and their sources:

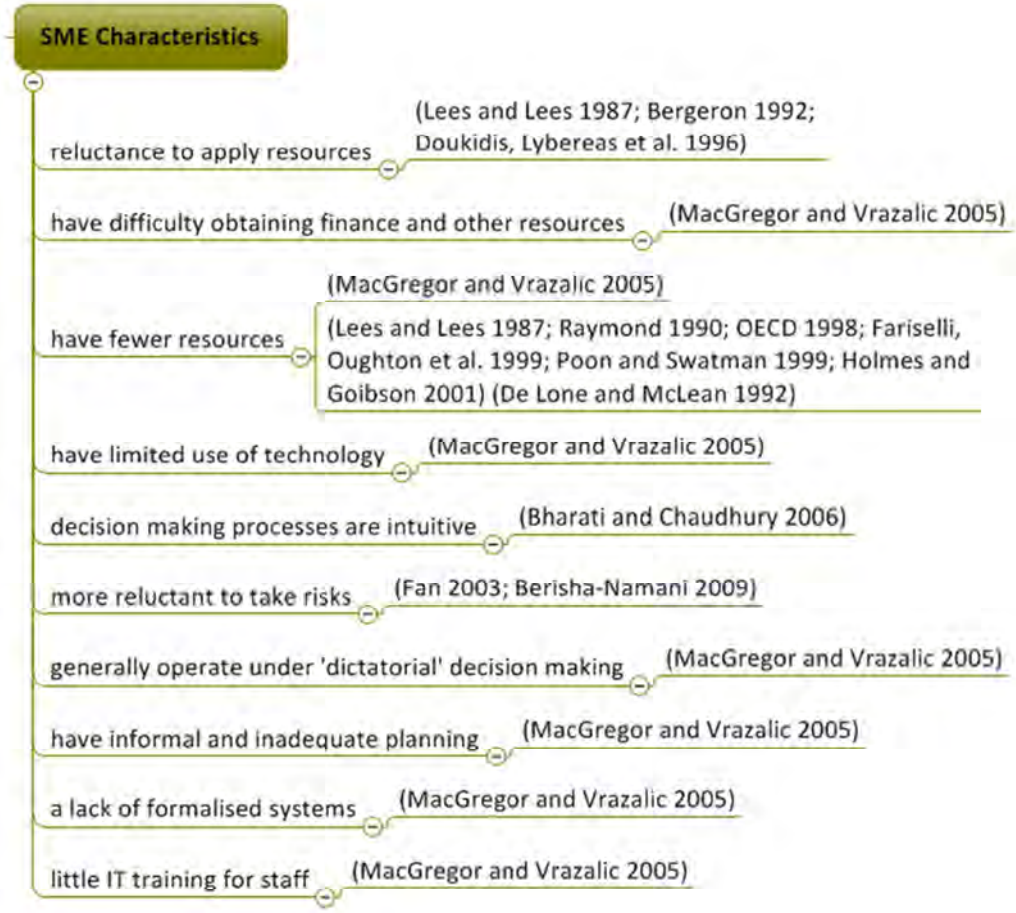

Figure 93- SME Characteristics and their sources

The majority of these characteristics are related to a lack of resources which include, people, finance, time and technology. The CPTM was able to mitigate or resolve the impact of many of these resource related characteristics. The method requires no financial investment to purchase it as it is freely available to any user and it is a low consumer of

labour cost for participating staff in comparison to methods such as six sigma and enterprise architecture. The method did not require special technology and has been completed using standard printers and word and excel applications. These applications might also be removed for businesses that do not have any IT systems and standard paper would suffice.

The method typically included at least four staff in a management team of six or eight thus representing a low requirement for staff resources and low also for consumption of their time. It was also seen that unlike some of the more well-known methods such as Enterprise Architecture (Department of Veterans Affairs 2002a; Fujitsu Consulting 2004; Koch 2005; Opengroup.org 2006; Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007) and quality assurance (Pestorius 2006; Stenzel 2011) successful use may be due to the lower resource and complexity requirements of the CPTM.

SMEs suffer from an inability to link their business operational activities (business processes) to their strategic intentions (MacGregor and Vrazalic 2005). The CPTM provides users with a method by which they can successfully link business processes to strategic business decisions. The study provides evidence of the value of a method which can support a holistic understanding of business process in resource poor entities of all sizes. In one case study the organisation identified savings of "*6 million dollars*" (Senior Consultant Case Study Three) from the implementation and completion of activities decided using the CPTM. In another case the organisation won a competitive grant worth more than one million dollars.

> "*We were quite clear on why and clearly understood how this fit with our business model and the gaps we had in the* business*, and that clarity helped us win the productivity grant which was quite substantial*." (Assistant Director Case Study One)

Key literature on business process management suggests both that organisations can enhance their overall performance by adopting a process view of business and that business-process orientation (BPO) has a positive impact on business performance (Davenport 1993; Hammer & Champy 1993; McCormack & Johnson 2001; Burlton 2001; Harmon 2003, 2007; McCormack 1999; Seltsikas 2001; Aysar & Johnson 2003). This study is in agreement with the current literature. Higher levels of maturity in any business process result in: better control of results; improved forecasting of goals, costs, and performance; greater effectiveness in reaching defined goals; and improving managements' ability to

propose new and higher targets for performance (Lockamy & McCormack 2004; McCormack 2007; Poirier & Quinn 2004). The results from two of the three case studies certainly suggest that these organisations have improved their understanding of business processes and thus their business process maturity.

The study also provides evidence of the value to these same entities that collaborative and transparent decision making related to business process understanding is achievable and has successful outcomes. Examples such as "*What it is trying to achieve is a better understanding of where the critical areas turn the organisation*" (Assistant Director Case Study One) One participant commented that they lacked a cross fertilisation of ideas across the business and the CPTM provided the opportunities to understand other managers thinking. Using the CPTM provided users with the 'know how' and activities to 'know what' to gain deeper understanding of their business processes. These benefits to SMEs and large enterprises are mitigating solutions to authors such as Bharati and Chaudhury (2006), MacGregor and Vrazalic (2005), Fan (2003) and Berisha-Namani (2009) who all identify decision making issues within the SME organisations and a reluctance to take risks.

The method might be improved in the following two ways at least:

- The method could benefit from the addition of a range of house model templates that would be in the form of a starter pack for new users.
- The method also needs to have included more information on the differences between processes and functions.

These two recommendations are based on the researcher's thoughts and feedback from the users. It was not in the scope of the research to investigate improvements to the method thus there is no detailed discussion of this facet of the study.

6.3. Study Contributions Related to Prior Research

This study has built upon prior research in a number of areas. These include the research on decision making, using a methodology and black box thinking which is discussed in detail in chapter five. The researcher considers that there are two areas of prior research in which the study discussed here contributes to further knowledge and understanding. These are the:

- use of methods by organisations (discussed in chapter one also)
- the approach to learning by doing (Hess 1999)

The use of a method to support process understanding is one way in which the personnel of organisations might improve the business process understanding of their decision makers (Das, Zahra & Warkentin 1991; Davidson & Griffin 2000; De Loof 1997; Dekkers 2000; Eisenhardt 1999). The use of methods though can be fraught with issues as well (Tucci 2011; Weerakkody, Janssen & Hjort-Madsen 2007). As Zachman (1987) suggests a method is not an answer but the tool for thinking about the problem.

This study has increased the knowledge of method users and those whose role it is to select appropriate methods for use by their organisations. Decisions made in this sphere have been enhanced by this empirical study and researchers now have further evidence in support of the needs, characteristics and possible outcomes to be gained by SMEs using methods to improve 'understanding' of business processes. Perhaps this will motivate researchers in the BPM space to undertake further research in support of SME needs.

The second area of research improvement on prior research is that which is undertaken in learning and specifically the learning by doing area. Hess (1999) suggested that the required characteristics of learning by doing were:

- frequent contact to sustain motivation when things are difficult
- good collaboration leading to team and group support, improved thinking skills
- individual activities that allow the learner to apply their knowledge
- frequent opportunity for feedback
- high expectations of the outcomes that raises the efforts of participants (Hess 1999)

The researcher asserts that the study has provided further evidence of the validity of the learning by doing characteristics as described by Hess (1999). This additional data source may be used in support of further studies which focus specifically on the use of methods as a vital element of 'learning by doing'.

6.4. Implications of the Research Findings

This new contribution to theory adds significant support to academia and practice. The connection between business decision making and business process understanding is an important area of research which has been little investigated. SMEs that develop a greater understanding of their business processes and follow a quality method for linking processes to business goals should make improved business decisions.

6.4.1. Implications for Theory

In Chapter Two the literature discussed identified that the SME organisation faced a range of challenges which the large enterprise did not (Banham 2005; Krammer 2002; Kuhberger 1998; McAdam 2000; Wiesner, McDonald & Banham 2007). The literature also identified that SMEs were being driven by a range of forces to improve understanding of business processes within their own business and into their supplier' and customers' (Lee & Dale 1998; Leech 2003; Linton 2003; Margulius 2006; O'Neill & Sohal 1999; Sinur 2004; Sowa & Zachman 1992; Wickramasinghe 2003).

The SME segment provides greater than 70% of employment in many countries and can represent over 90% of all businesses in a country and is a vital part of at least the economic health of most countries and demands the support of research specific to its needs (Kueng, Meier & Wettstein 2000).

Gasse (1990, p.103) states that "management skills are important to the survival of the new firm". While not always the case, SMEs are characterised early in their life by a strong entrepreneurial leader (Dalglish 2004). These people generally operate in a dictatorial fashion (Doukidis, Lybereas & Galliers 1996; Lees & Lees 1987; Thong, Yap & Raman 1996) and generate strategy as an operational necessity rather than a formal activity (Bergeron 1992; Doukidis, Lybereas & Galliers 1996; Lees 1987).

De Salas (2002, p.18) states that "many small organisations operate on a short-term 'survival' strategy, rather than a long-term 'future prosperity' strategy that is more aligned to larger organisations".

SMEs generally look for immediate monetary returns from any investment undertaken (K.L. Lawrence 1997) thus making longer term 'strategic' decisions and purchases less likely.

The pace of change in IT, manufacturing and communications combined with the expansion geographically of markets and the requirements in many industries for 24x7 business hours has resulted in the traditional handing down of knowledge from father to son, mother to daughter and master to apprentice as insufficient to sustain a business.

This exploratory research has contributed to theory in an area of research in which theory appears lacking. Perhaps its best contribution to theory is that the study has shown that the CPTM supports improved decision making where those decisions are related to business processes. In the current environment the areas of a business related to business processes is the increasingly large investment area of information systems. A better theoretical understanding of how a method can improve decision making related to business processes is a valuable addition to the body of knowledge in the BPM and IS fields.

Three case studies were undertaken and data collected from each, the data for the unstructured interviews were analysed using an aligned grounded theory method and this surfaced two themes. These themes were validated by searching for disconfirming and confirming evidence in both the published literature and the original raw data collected.

6.4.2. Implications for Practice

This study raises important questions about the level of understanding in SMEs practice of both business processes and by implication their decision making. Does the management team of medium sized entities make decisions in the right way (unilaterally) or should they be utilising collaborative agreement methods and 'white box' thinking processes (Armistead, Pritchard & Machin 1999; Cantara 2009; M. Earl, J. Sampler & J.E. Short 1995)?

This study has contributed to theory which identified that the CPTM helps to link processes or process projects to strategic decision making via a collaborative decision process. That suggests that by implication this may mean that the CPTM can support the information systems decision making processes of medium sized entities. Such an outcome would provide meaningful support to management team's decision making in a collaborative manner.

The study also contributed to theory that medium sized organisations can now use a method that will help them to recognise that business problems are process related. This by implication may now mean that medium sized entities can use the CPTM to recognise information systems problems also. Information systems are constructed to follow and

support business processes thus a method which can support the recognition of business processes also does the same for information systems problems.

Process understanding is critical to all organisations not just SMEs (Hammer 2002). Organisations of all types are influenced by the legal and political drivers such as needing to comply with national and international standards (Barber et al. 2003; Biazzo & Bernardi 2003; Hill et al. 2006; Hill & Turbitt 2006). They must also be influenced by globalisation and e-commerce which stretch many organisations to both understand the impact and know how to react (Amit & Zott 2001; Hammer 2002). One of the more problematic drivers is that of information systems (Vilpola & Kouri 2005; Bernroider & Koch 2001) with the decision of which system to select made more difficult by the increasing complexity of the applications (Ojal, Vilpola & Kouri 2010).

This study has practical implications for organisations offering theoretical and methodological support for collaborative decision making that reduces the 'black box' thinking typical of SMEs (MacGregor & Vrazalic 2005) in both the business process and information systems domains.

6.5. Overall Study Quality

"Social research is a craft skill," (Seale 1999)

Due somewhat to the nature of qualitative social research the quality of the research is a difficult area of assessment for most researchers but in particular to the more positivist researchers who prefer the traditional scientific measures of quality and the more black and white results which statistics provide (Lee 1991).

"Explicit discussions of quality in social research, though, began from concerns designated with words such as validity and reliability, developed within the quantitative or scientific tradition" (Seale 1999, p.465). In this research project as an interpretivist qualitative social study the issue of quality was one which the researcher has reflected on since choosing the data analysis method.

To assess quality the researcher has used Lincoln and Guba's (1985) post positivist assessment criteria to validate the outcomes. Lincoln and Guba's (1985) work discussed the issues raised when attempting to use traditional scientific quality assessment criteria in qualitative post positivist social studies. The authors developed what they suggested were

quality assessment criteria for qualitative social studies whereas traditional studies have used (Yin 2003; Atkinson & Shaffir 1998):

- Internal Validity- the degree to which findings correctly map the phenomenon in question;
- External Validity- the degree to which findings can be generalised to other settings similar to the one in which the study occurred;
- Reliability- the extent to which findings can be replicated or reproduced by another investigator; and
- Objectivity- the extent to which findings are free from bias.

The assessment criteria for this social study were discussed in Chapter Five and included:

- **Credibility** is the 'truth' of the findings, as viewed through the eyes of those being observed or interviewed and within the context in which the research is carried out.
- **Transferability** is the extent to which findings can be transferred to other settings. In order for findings to be transferable, the contexts must be similar.
- **Dependability** the third assessment criteria is the extent to which the research would produce similar or consistent findings if carried out as described, including taking into account any factors that may have affected the research results.
- **Confirmability** the need to provide evidence that corroborates the findings, confirming evidence should come directly from subjects and the research context, rather than the researcher's biases, motivations, or perspectives.

Each of these aspects has been discussed in Chapter Five and the use of Case Study Three where the perceptions and bias were not the researcher's lends weight to the ability to state that confirmability was managed.

Klein and Myers (1999) also provided a set of 'principles with which qualitative interpretivist studies might be assessed.

#	Assessment Principles	Meaning	Comment on Cases
1	The fundamental Principle of the Hermeneutic Circle	That the sum of all the other principles must be considered as well as the individual parts must be considered	The principle is implied but not expressly described in each of the three studies
2	The Principle of	Setting of the subject	Each of the studies includes a description

#	Assessment Principles	Meaning	Comment on Cases
	Contextualisation	matter in its historical, political and economic context	of the historical and economic situation in which the organisations found themselves. The political view is lacking.
3	The Principle of Interaction between the Researchers and the Subjects	The researcher places themselves in the research as a subject and considers how they have influenced the subjects	The researcher does not explicitly describe the interaction though there is evidence of this in the interviews for case study one and two and it is not expected in case study three.
4	The Principle of Abstraction and Generalisation	Generalise findings to theoretical constructions	The case study outcomes are generalised to theory (decision theory and process understanding theory)
5	The Principle of Dialogical Reasoning	The researcher makes the historical intellectual basis of the research as transparent as possible	The researcher has described the background of the researcher and the areas in which the researcher may provide bias to the study.
6	The Principle of Multiple Interpretations	Include more than one subjects explanations	Case study three was the only case study in which multiple interpretations were not available.
7	The Principle of Suspicion	Do not take their informants views at face value	The other sources of data (documents and diary notes) were extensively used to assess the comments of the interviewees

Table 27- Klein & Myers (1999) Principles for Interpretive Field Research(Klein & Myers 1999)

Assessment against the principles for interpretive field studies in information systems suggests that while the case studies are not exemplars of high quality they have achieved an appropriate level of quality.

6.6. Limitations of the Study

The methods, researcher, focus or topic of research and the context can all result in limitations for the outcomes of the study either which are inherent in the method or based on the combination, sequence or environment of the activities undertaken (Bryman 2008; Díaz Andrad 2009; Stevenson 2002).

The delimitations (those characteristics selected by the researcher to define the boundaries of the study) were the industry (financial services), the geographic location (Australia), the size of the entity (medium sized entities) and the focus on the use of the CPTM during one implementation. These delimitations enable the researcher to complete a study within the time period and budget provided on a topic of interest and identified as a gap in current research activity.

Design

The research methodology is based on an ontology that nature is the product of the individuals perception of the socially constructed environment and is produced and reinforced by people through their actions and interactions (Guba & Lincoln 1994). The researcher's epistemology is of an interpretivist view of the world, which influences the data design, data collection and data analysis methods and their interpretations (Flyvbjerg 2006). The study uses a participant case study to bound the research focus using unstructured and conversations, observation, historical and CPTM output documentation as the data collection methods. The data was analysed using a grounded theory aligned data analysis approach (Strauss and Corbin 1998; Dey 1999). The outcomes were then validated using triangulation of the raw data and published data where available.

The researcher understands that the study may have limitations of design but asserts that a sound argument for the design as appropriate to the needs of the study was developed and implemented. Evidence of the credibility and confirmability of the results was managed through the use of previously tested and validated methods as described in the case study protocol (See 3.4.2) and alternate sections of Chapter Three.

Study Specific

In any study over a constrained period a limitation of that study is the risk that the period during which data was collected is unique and not representative of the 'norm' (Stake 1995; Denzin & Lincoln 1998; Willis et al. 2007; Stake 1998). The researcher asserts that in this

situation, the ability to easily define the nature of the event being studied enables practitioners to make comparisons thus providing an avenue for transferring the knowledge gained here rather than being seen as a limitation.

It is also possible that the economic and social environment has changed sufficiently from the time when the study was undertaken to make the results less valuable today or at least questionable for applicability in current or the near future environment. Only data collection over an extended period of time can provide some mitigation of these issues and in this study, time was not an open ended resource (Grigg et al. 2004; Myers 1999). Instead the researcher, in two of the case studies, returned to the case study organisation to collect further data thereby extending the data collection period in an attempt to mitigate the issues related to environment.

Location

The Australian geographic location and focus may also be a limitation of the study impacting on the transferability of the results to other geographic locations. Australia has a similar financial market to that found in many other first world countries such as the European Union, North America and Canada, New Zealand, Iceland, Greenland and Scandinavia (Bollen 2007). These similarities suggest that the location of Australia does not diminish the transferability of the findings to similar markets internationally.

Bias

The researcher has discussed the issue of bias which has been raised by a number of people who provided feedback on the thesis and also in the literature. Interpretive studies expect and argue that bias is part of every study (Myers & Newman 2007). The management of the bias or its mitigation is the aim of the researcher (Atkinson & Shaffir 1998; Bolger et al. ; Flyvbjerg 2006; Hodgkinson et al. ; Jarratt 1996; Myers & Newman 2007).

The researcher used a range of methods to mitigate bias:

- Case Study Three was undertaken by a third person
- outcomes of the case studies (axial codes) were compared for differences to see if the bias of the researcher were substantially different to those of the third party implementer
- interpretations of raw data in Case Study Two were discussed with four other researchers present

- the researchers' prior knowledge and experiences were provided so that the reader would understand the source of possible bias in the interpretations of the raw data.
- the researchers' interpretations were validated by considering confirming and disconfirming evidence in the raw data and the published literature (triangulation).

These approaches were used to mitigate against bias in the many areas in which bias may have occurred.

Overall the limitations of the study were well managed using a range of strategies and checked using the assessment checklists provided throughout the document. (See sections, 3.6.1, 4.10.1 and 6.5)

6.7. Possibilities for Future Work

There are three major areas of research related to the CPTM and the research outcomes which would add value to this study and be of value to both academia and practitioners. These are issues around collaborative decision making, further work on enhancing the understanding of SMEs of their business processes and exploration and theory development using the CPTM in other domains of business.

Questions that arose in the researcher's reflections identified possible exploration of the apparent disagreement with the experiences of the researcher and supported by the data analysis surrounding the selective code termed 'obtaining collaborative agreement'. This selective code appears to disagree with the literature (Bergeron 1992; Doukidis, Lybereas & Galliers 1996; Lees 1987) which indicates that SME's do not typically seek to have collaborative agreement in their decision making. Perhaps this is only applicable in organisations which are of sufficient size to have organisational political influence or where there is a leader that is not entrepreneurial or dictatorial. Alternatively it may be that the changing environment has resulted in SME leaders and managers who are more willing to obtain collaborative agreement on decisions.

The researcher believes that more work is required to further enhance the understanding of business processes by SMEs in general. Little evidence was found in the literature of research in this area or of any reasonable understanding by SMEs of this facet of their businesses. Theory development on process understanding is also lacking and further work can extend that completed here to identify specific constructs or factors which influence business process understanding within the SME domain.

This research study explored the effect of the CPTM on medium sized entities understanding of business processes. Testing of the CPTM in other domains would add considerable value to both academia and practice. With SMEs more vulnerable to risk than large enterprises, having the CPTM's effect on business process understanding in different domains before use in practice would reduce the level of risk and may add elements that would improve the outcomes for medium sized entities.

From a research method perspective the researcher believes that further work might be undertaken by qualitative interpretivist researchers to improve the guidance offered to novice researchers using case study and ground theory aligned data analysis. The researcher found that this area of the study required considerable investment in time. Some of the confusion faced by novice researchers might be mitigated by a clearly structured IS context process that supported qualitative interpretivist researchers.

6.8. Research Project Checklist

The following table provides the reader with a succinct assessment of the research study as a whole. This assessment is based on the work of (Hesse-Biber & Levy 2006).

Item	Requirement	Compliance	Comment
Overall Research Question	Is the research question clearly stated? Is it too broad or too narrow?	Yes	For an exploratory study the research question appears to be suitable to the task. It has a single focus within SMEs leading to a possible outcome.
Issues of Credibility	Why should anyone trust your story? What are the criteria for assessing validity?	Yes	Credibility are discussed in depth based on the works of four authors (Klein and Myers 1999; and Lincoln and Guba 1985)
Significance of the Work	How is the research linked to other studies? Is it applicable to practice or other disciplines?	Yes	The outcomes discussed in Chapter Five provide evidence of the linkage to other studies and the applicability of the outcomes to practice and academia
Data Collection	Does the data fit the research question?	Yes	The research question sought to explore a facet of SME activity and the data enabled the researcher to understand the issues, perceptions and needs of the participants
Method	Is the method compatible with the research question? How well are the data collection strategies described?	Yes	Questions of this type have been used in prior studies using the same qualitative case study methods.
Sample	How were the cases selected? Are they a valid choice?	Yes	Specific industry and approximate size were sought. Convenience was a factor but the cases must also be a typical case not least likely or worst case.
Ethics	How are the human subjects issues dealt with?	Yes	All participants agreed to participate and signed an ethics agreement. All data was made anonymous to ensure that both the organisations and the participants were not identifiable.
Analysis	How did you arrive at your findings? Are the analysis strategies clearly described? Are data analysis approaches compatible with the research question?	Yes	Relevant examples of the analysis approach were provided both within the interpretivist field and within case study and information systems
Interpretation	Are the research findings placed in the context of the literature on the topic?	Yes	The findings are provided with supporting literature in Chapter Five
Conclusions /Recommendations	Do the conclusions reflect the findings? Is there a recommendation for further research? Is there a discussion on the limitations of the research?	Yes	Yes see prior sections of this chapter

Table 28- Research Project Checklist (Hesse-Biber & Levy 2006)

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Appendices

7. Appendices

Chapter seven contains the detailed review of research outputs in the business process management domain. This review enabled the researcher to understand where the research was trending and what might be the gaps in the current and prior research activities of the domain. The next section contain the analysis of the methods reviewed by the writer to ensure that the method used in the exploratory study was appropriate. The appendices also include a section on the journals used in this study and the ethics forms used to obtain and inform participants of their rights and risks of participation.

The next section is the analysis of academic and commercial conference presentations and papers within the business process domain. This review enabled the researcher to understand the gaps and issues, based on publications and presentations, that the industry and academics considered important.

The appendices finally, contain a detailed description of the Critical Process Targeting Method (CPTM) taken from a draft publication by the author and the extensive list of references used in this thesis. The following diagram is a model of the sections of the appendices:

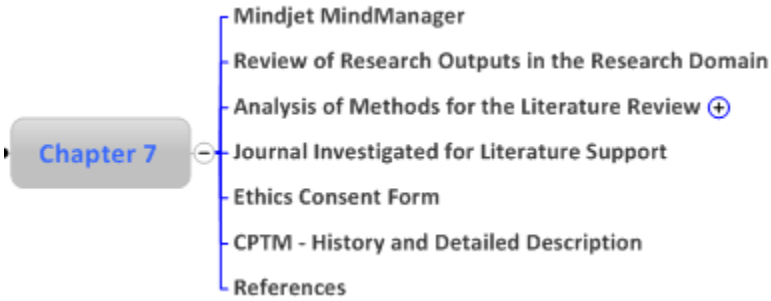
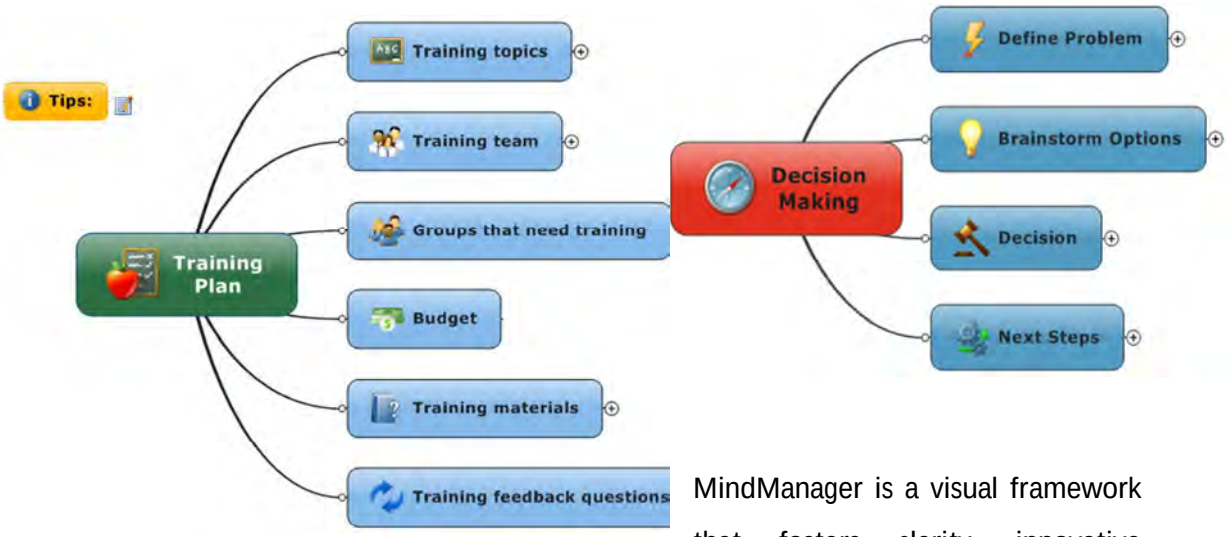


Figure 94- Chapter Seven Structure

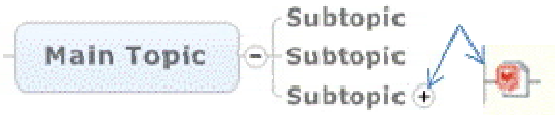
7.1. Mindjet MindManager

This thesis makes extensive use of software called Mindjet MindManager. MindManager is a visual software application that allows the user to rapidly visualise information and ideas.



MindManager is a visual framework that fosters clarity, innovative thinking and communication to improve the way people and organisations undertake planning and communication. MindManager provides an easy approach to displaying, organising and working with ideas and information in a wide variety of interactive visual formats including information maps, outlines, Gantt charts, organisational charts, tree diagrams and a special brainstorming mode. The application is integrated with quite well with Microsoft Office and other Microsoft tools such as Microsoft SharePoint.

Some features of note are that a plus sign with a circle surrounding it and the icon on the far right indicates that further information is attached to that branch within the application only though (Mindjet.com).



7.2. Review of Research Outputs in the Area

When the industrial age provided business with the ability to produce products on a scale previously unheard of, owners and managers soon learnt that large scale production also meant that occasionally they had large scale problems. For example, in August, 2007 U.S. toy giant Mattel announced that its Fisher-Price division needed to recall nearly 1 million toys (Banham & Bacani 2007).

It seems that some organisations have not yet learnt the lessons needed to ensure manufacturing quality. This is despite the fact that methods such as Total Quality Management (TQM) (J.F. Chang 2006; Flynn, Sakakibara & Schroeder 1995; Harmon 2003), Six Sigma (J.F. Chang 2006) and Kaizen (Childe, Maull & Bennett 1994; Mole et al. 2004) have been used in manufacturing for more than twenty years. Business might rightly question how a recall of this size could occur today. Part of the reason may be that not all the processes to blame are in production. Instead there are many business processes that may have led to Mattel's recall.

The emergence and growth of service industries that rival production industries in some countries has led to a more recent interest in service business processes as opposed to production or manufacturing processes. This interest appears to be clustered around a concept termed Business Process Management (BPM). (See 2.2 for the discussion on definition)

> "Without rigorous attention to processes, achieving even such minimally acceptable performance—much less anything better—is impossible. In the absence of a process focus, a company cannot consistently deliver the performance levels that customers always wanted and now demand. Instead, it will be overwhelmed with overhead, beset by delays, and plagued by errors; it will operate unpredictably and inconsistently.....As work gets more demanding and more complex, process becomes absolutely essential" (Hammer 2003, p.52).

This section of the literature review explores the outputs of both non-academic organisations (through conferences) and academic institutions through their research publications and academic dominated conferences.

The review provides some insights into the differences between what appears to be commercially driven (industry participants attend these in greater numbers than academic

conferences) and what is academically undertaken in the BPM space along with possible trends.

To undertake the qualitative analysis the following sources of data were used:

- The academic oriented BPM conference (2003-2011)
- Gartner BPM summits (2006-2008)
- BPMInstitute.org conference (2008)
- Management Information Systems Quarterly (2002-2011)
- Information Systems Research (2002-2010)
- Communications of the ACM (2002-2011)
- Journal of Management Information Systems (2002-2011)
- Harvard Business Review (2002-2010)
- Business Process Management Journal (2002-2010)
- Knowledge and Process Management Journal (2002-2011)
- IRM UK conferences 2008, 2009, 2011

The data taken for this analysis is in the form of conference agendas or programs, topic lists in the 'call for papers' for each academic conference, conference track descriptions and workshops run at each of the conferences. Journals were searched over a five year period (2002-2007) using the search terms *Process*, *Business Process Management* and *BPM*.

Source	Topic List	Program/Agenda	Presentations	Track descriptions	Paper
Gartner Summits		√	√	√	
BPM Institute Conference		√	√	√	
BPM Conferences	√	√	√		
Journals					√
IRM UK Conferences		√		√	

Table 29- Source and Type of Data Collected for Analysis

The journals selected include the top five information Systems journals for Australasia and the world based on a 2001 ranking study (Mylonopoulos & Theoharakis 2001). In addition the Business Process Management Journal, the Knowledge and Process Management Journal were also included as specific publication outlets for material in the area.

World		North America		Europe		Australasia	
1 MISQ	429	1 MISQ	290	1 MISQ	79	1 MISQ	60
2 ISR	342	2 ISR	267	2 CACM	72	2 ISR	39
3 CACM	304	3 CACM	199	3 HBR	38	3 CACM	33
4 HBR	145	4 JMIS	111	4 ISR	36	4 JMIS	24
5 JMIS	144	5 MS	95	5 SMR	24	5 HBR	23

Table 30 - IS Journal Rankings (Mylonopoulos & Theoharakis 2001)

It is not intended that this section be a comprehensive analysis of all business process related research and knowledge transfer. Instead it is meant to provide a general overview of the more important research in the domain and the diversity of research occurring within the domain. The commercial conferences have been used to balance the analysis from a business needs perspective. The analysis also provides useful support in qualifying the research area in which the thesis itself has been conducted.

Outcomes of the analysis are evidence supporting the need for greater understanding of business processes, the trends in the domain based on publication and conference topics and a framework for the industry.

In order to understand the field, the author initially looked at the most recent BPM conference of which the call for papers identified thirty seven individual possible areas of research publication and the actual conference had eight tracks and six workshops. An attempt to cluster the topics in logical areas resulted in four major topic areas;

5. Process Modelling related to operational views of activities
6. Management of business processes related to strategic or tactical views of activities
7. Integration and association with other business activities
8. Experiential which is related to a focus on the experience of practice

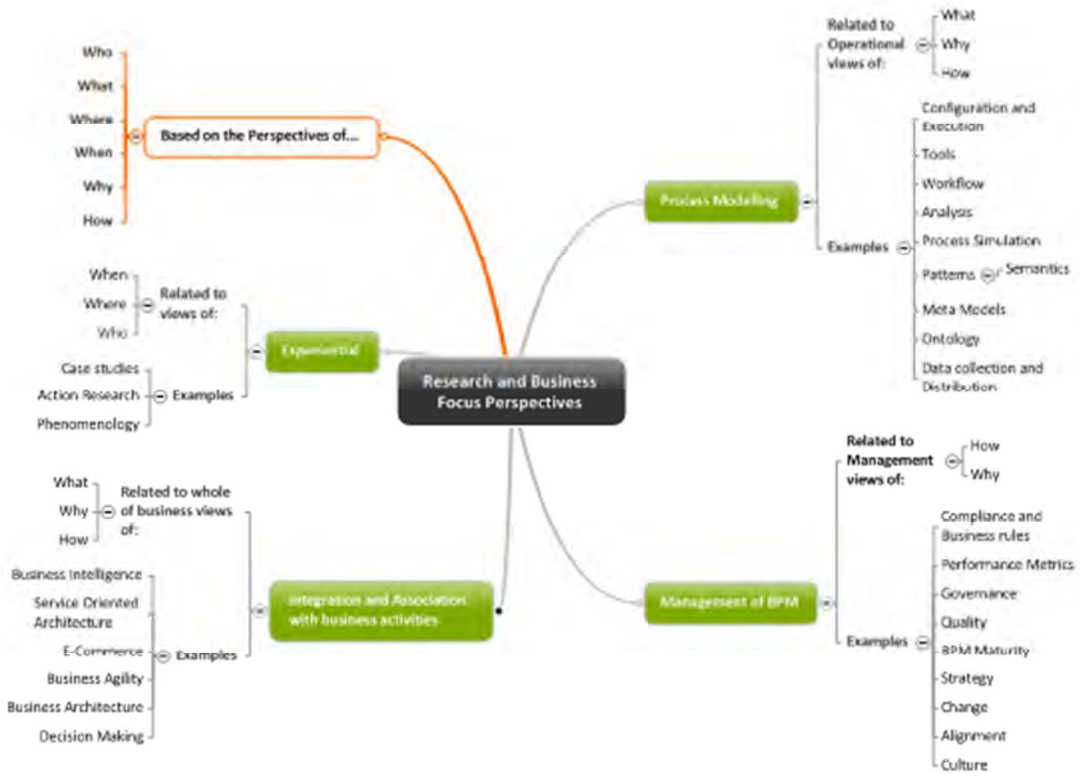


Figure 95- Research perspectives

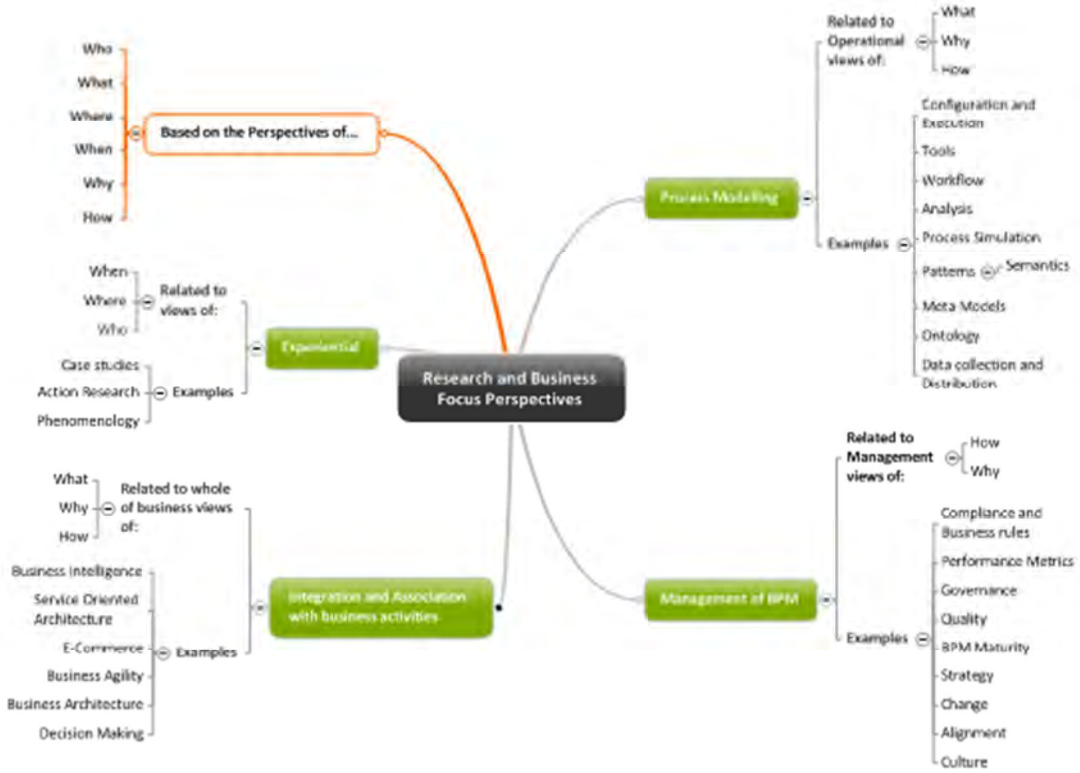


Figure 95 provides an example of the type of research outputs that were associated around the four identified clusters. These four clusters were checked using the perspectives of how, what, where, when, why and who to see if there were any holes in the clusters of

activities from a very basic view of the analysis. The where and when views were considered to be appropriate to almost all the activities within the BPM space.

It is worth noting that the 'who' of BPM appears to be an area lacking in research focus or output. This 'who' relates to the people involved from the organisation that have the capabilities and the tacit or organisational knowledge to work in BPM projects. Although there is a considerable weight of publications in the experiential cluster, it appears that not much consideration has been given to who should be involved and why they should be involved, apart from reiterating that change requires a top down approach and clear and public management support.

After the initial clustering of the early data set the review looked at the whole data set that had been reviewed and coded. The coding was undertaken using the previously discussed categories of who, what, where, when, how and why in order to understand the objectives of each of the research publications. The objective of this analysis is not to provide a rigorous and detailed research outcome instead it is to better understand the environment in which SMEs are operating. This can be linked (tentatively) to the number and type of publications in both academic and commercially focused conferences. This is obviously not all the publications which might be considered and thus not something which a researcher would term a rigorous analysis. But for the purposes of this literature review it provides an insight into the environment in which SMEs are operating.

An additional cluster appeared from the qualitative analysis which was called the *Environmental Factors*. Thus five clusters of domain output were discerned and are shown in Figure 96 below.

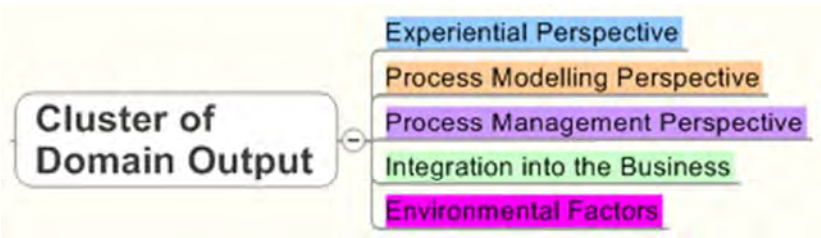


Figure 96- Clusters of Domain Output

The environmental factors outputs were based on informational topics such as "Comparing BPM in Europe to the rest of the world" and "Roadmap to future trends in BPM and converging BPM technologies" (Gartner BPM Summit 2006). In 2007 and 2008 these were

"BPM 2007: Latest Trends & Best Practices" (Gartner, 2007), "The State of the BPM Market" (BPMInstitute, 2008), "The BPMS Market: Key Players and Trends" (Gartner 2008).

This 'environmental factors' perspective was only seen in the commercial conferences and appeared to cater to the businesses which supported the domain. That is, the vendors of software supporting workflow and process modelling and the consulting industry.

An example of the data coding is provided in the following diagram based on the BPM 2007 academic conference.

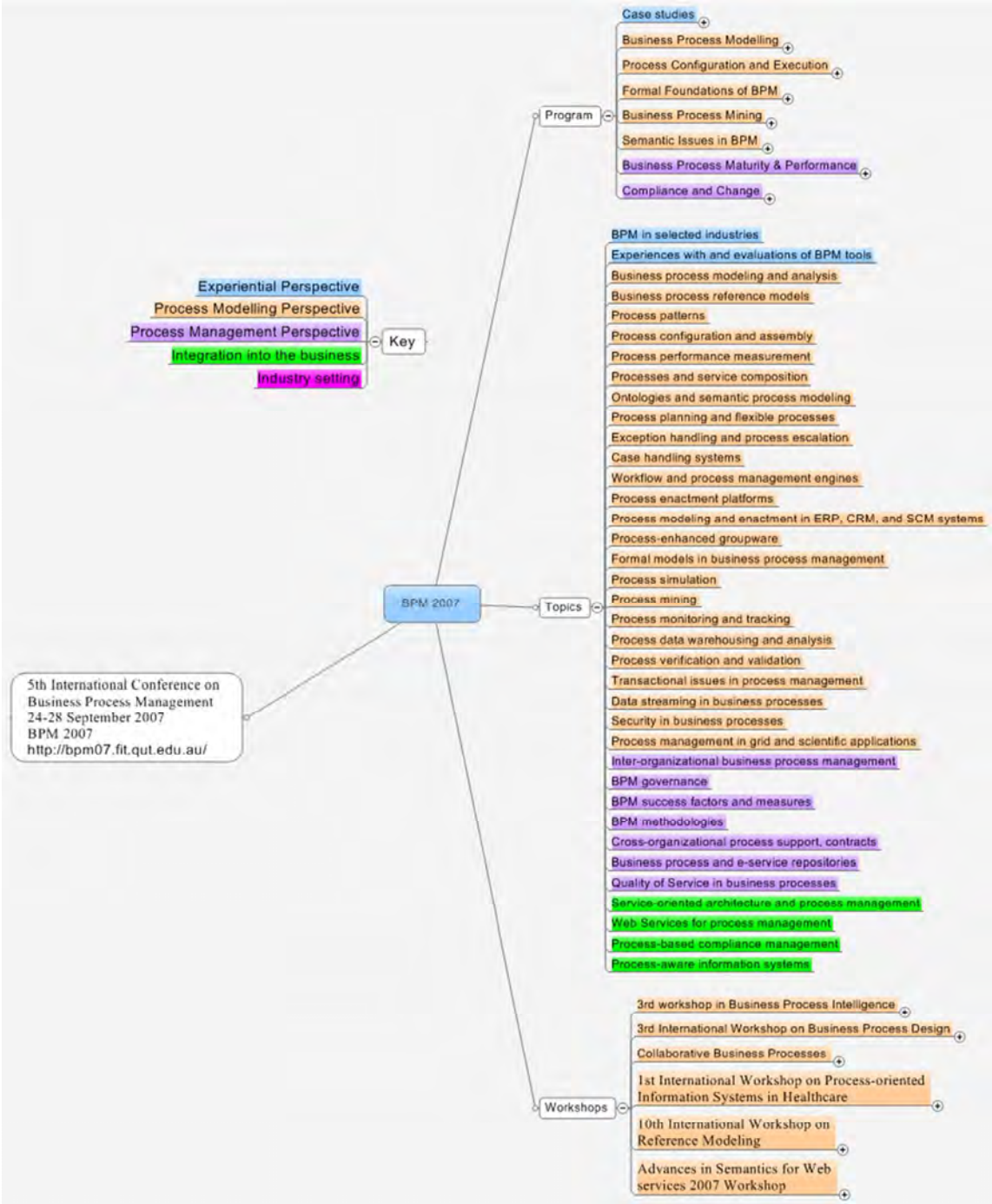


Figure 97- Example coding of the BPM 2007 conference

The following diagram provides the same information but is related to the Gartner BPM conference of 2007 and visibly shows the differences in the focus for the two conference types (Academic Figure 97 compared to Commercial Figure 98). Note this is knowingly too small to read the text as the reader need only take in the colour coding.

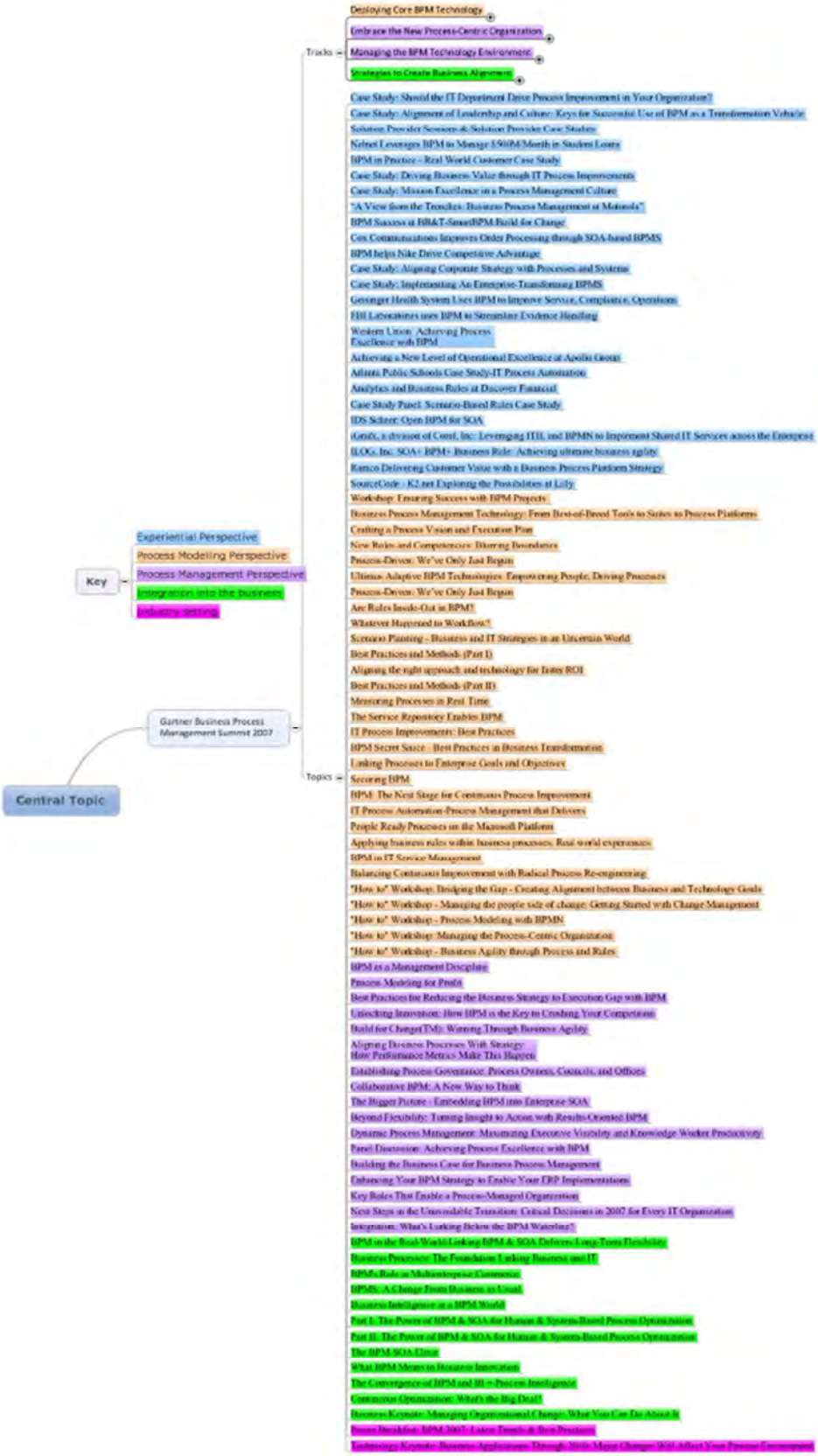


Figure 98- Gartner BPM 2007 conference example

7.3. Analysis of Methods for the Literature Review

7.3.1. Strategy Development Methods

Strategy development methods are designed to support a user as an individual or team to develop an appropriate strategy for an organisation, department or other area of a business.

Figure 99- Strategy Development Methods

The seven strategy development methods will be discussed individually across the following perspectives:

- Purpose
- Decision Support
- Resources required

Many of these methods use what are termed perspectives:

The perspective process is based on the understanding that the whole organisation is a complex organism and using perspectives allows a person or persons (usually executives) to focus their thinking on a single element at a time. The thinking can be part of strategic planning, risk analysis, innovation development, functional improvement or any other management focus. This is done while not forgetting that the single perspective is only a segment of a whole. Thus the selection of the perspectives is critical in that they should when combined add up to the whole.

Enterprise Architecture

Enterprise Architecture is a strategic view of the business which suggests the modelling of various aspects of the business dependant on the method selected (Department of Veterans Affairs 2002b; Fujitsu Consulting 2004; Opengroup.org 2006; Stewart 2006). For example: the C4ISR which is the command, control, computers, communication (c4),

intelligence, surveillance and reconnaissance is the US Department of Defence's version of enterprise architecture (Opengroup.org 2006). There is also Steven Spewak's Architecture Planning method and the Zachman Framework (Opengroup.org 2006; Sowa & Zachman 1992; Zachman 1987). It is understood that the TOGAF method (Opengroup.org 2006; Stewart 2006) is used to assess Enterprise Architecture generally.

Purpose	
What is it meant to do?	Enterprise Architecture is designed to support the management of complex business architectures in the same way that an architect uses different plans to support the construction of a building.
How is it meant to do it?	There are four perspectives to be considered and modelled at various levels and these are the business architecture, the technology architecture, the applications architecture and the information or data architecture. These four views are interrelated in that the business architecture is supported by the application architecture and the applications architecture is manipulated by the information architecture using the technology architecture. Principals are developed for each view and used to assess activities within each area.
Is it industry specific?	No – Broad use in any industry
Is it function specific?	No – has a process focus over business functions
Decision Support	
Strategic planning	Moderate as it breaks down areas into manageable sections
Process modelling	High – many different types of process modelled
Repository management	High – if all processes, data flows and systems are modelled this may be a large body of information
Specific domain knowledge	High
Application specific knowledge	High – must capture information on all systems
Detailed business knowledge	High
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High – complex organisations retain large amounts of information
People	High – extensive if across a large organisation
Budget	High – collection, modelling, storage and ongoing usage result in high costs
Information	High – as per prior elements

Performance Scorecard

Performance Scorecard (tableau de bord) originally developed in France between the 1914-1919 and 1939-1945 wars (Bourguignon, 2004). The Performance Scorecard is a cause and effect method used to support strategy. The approach takes an existing strategy and starts to define measures for (performance) for achieving the strategic objectives (Bourguignon, 2004). These measures are linked to the objectives via cause and effect logic allowing the user to understand what will be affected if a performance target is not reached (Olve & Sjostrand 2002).

Purpose	
What is it meant to do?	It was designed to support the improved performance of the organisation
How is it meant to do it?	It does this by viewing the organisation through a set of agreed perspectives based on the functions of the business.
Is it industry specific?	Broad use in any industry
Is it function specific?	Designed to have a functional view of the business
Decision Support	
Strategic planning	Moderate
Process modelling	Low- no process perspective taken
Repository management	Low- the method uses written documents
Specific domain knowledge	Moderate- Functional understanding of the business, department or area of focus
Application specific knowledge	Low- None as for Repository Management
Detailed business knowledge	High
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	Moderate
People	Moderate - top to lower management levels
Budget	Low
Information	Moderate

Corporate Scorecard

The corporate scorecard is similar to the Performance Scorecard except the focus is only the corporate or strategic level activities of the business (Olve & Sjostrand 2002). The method was focused on very large corporate users unlike the Performance Scorecard (Olve & Sjostrand 2002).

Purpose	
What is it meant to do?	Assess the performance of the organisation at the strategic level
How is it meant to do it?	Use of perspectives and development of measures for strategies
Is it industry specific?	No- Broad use in any industry
Is it function specific?	Does not focus on specific functions instead staying at the strategy layer
Decision Support	
Strategic planning	High
Process modelling	Low
Repository management	Low- the method uses written documents
Specific domain knowledge	High- must be familiar with the strategic level of all functional areas of the business
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	High
Detailed market knowledge	High- Must understand external influences
Resources required	
Time	Moderate to High
People	Moderate- top level management only
Budget	High –internal costs
Information	Moderate - external search data and development of measures

To further to understand the Performance scorecard and the Corporate scorecard it is worthwhile reading Olve and Sjostrand (2002) who provide the steps for implementation of the Corporate Scorecard of which the Performance scorecard is similar.

McKinsey 7 S

The method was developed by Tom Peters and Robert H Waterman Jr. from the consulting company McKinsey & Co. The McKinsey 7S framework variables have a systems view which is described as the 'formal and informal processes used' (Peters & Waterman 1982).

Purpose	
What is it meant to do?	Was originally developed as a way of thinking more broadly about the problems of operationalising the strategy effectively; The method is reported to be excellent for gauging the organisation's ability to implement a desired strategy (Peters 2011). Contains seven perspectives: Strategy, Structure, Systems, Staff, Style, Skills and Share Values
How is it meant to do it?	The 7-S framework provides a tool for judging the 'doability' of strategies. It uses the seven perspectives to assess the organisations capability of delivering on the strategy defined.
Is it industry specific?	No- Broad use in any industry
Is it function specific?	A paper by Peters (2011) confirms that even though they use the word process they (Peters and Waterman 1982) are really talking about functions or activities, Peters 2011 paper, describes cross functional teams and cross functional activities.
Decision Support	
Strategic planning	Moderate
Process modelling	Low – not applicable
Repository management	Low – the method uses written documents
Specific domain knowledge	High – must understand the different organisational aspects such as culture, teams,
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	High - must be very cognizant of the business environment internally
Detailed market knowledge	Low – Low- Little external view of the business
Resources required	
Time	High time requirements to develop operational views
People	Moderate May require high numbers in more complex and siloed organisations
Budget	Moderate - due to the need to have many people resources
Information	High- due to the need to understand the organisation well

Business Excellence Frameworks

The European Foundation for Quality Management (EFQM) believes that at least thirty thousand organisations across 25 countries are using the European Excellence Model (Grigg

& Mann 2008; Australian Quality Council 2001). There are a range of different models/frameworks in use around the world (Grigg & Mann 2008).

Purpose	
What is it meant to do?	The Business Excellence Framework is designed to improve the management practices and performance of organisations who use it.
How is it meant to do it?	The method utilises seven perspectives (Leadership; People; Strategy & Planning; Customer & Market Focus; Innovation, Quality & Improvement; Success & Sustainability; Knowledge & Information) to define the current situation and to then assess it against national benchmarks.
Is it industry specific?	No – Broad use in any industry, though benchmarks are not available for all industries
Is it function specific?	No - Cross functional view of the organisation
Decision Support	
Strategic planning	Low
Process modelling	Low – no process modelling occurs
Repository management	Low – the method uses written documents
Specific domain knowledge	High – relies on in-depth knowledge of all functional areas
Application specific knowledge	Moderate –use of external parties to support and to assess. text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Low
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High- due to the ongoing activities of the method
People	High – ideally all staff from top management down to team leader level at least should be involved
Budget	High – due to requiring external assessment and affiliation fees
Information	High – requires a detailed knowledge of all seven perspectives for all participants in the method

John Thorpe DMR Approach

This is a benefits realisation approach with a focus on IT systems (Thorp 1998; Thorp & Fujitsu Consulting 2003).

Purpose	
What is it meant to do?	The John Thorp DMR method is a process for identifying which IT projects should be selected for initiation and how to make decisions around what those projects should be achieving (Thorp 1998; Huxley et al. 2002).
How is it meant to do it?	The 'Benefits Realisation Approach' uses a quantifiable approach to understanding the business drivers and evaluating the IT requirements to achieve business goals (Thorp and Fujitsu Consulting 2003). The method is focused on the delivery of business benefits through the formal activities of what it terms as 'Portfolio Management' (Thorp & Fujitsu Consulting 2003, p.43).
Is it industry specific?	No- Broad use in any industry but for large complex organisations
Is it function specific?	No – because of the focus on IT systems it is applicable to any and all functional areas

Decision Support	
Strategic planning	Moderate- though as focussed on the IT domain
Process modelling	Low- no modelling considered. The modelling that is discussed in the 'Benefits Realisation Approach' is concerned with what is called a 'results chain' (Thorp & Fujitsu Consulting 2003). The Results Chain technique is used to build simple yet rigorous models of the linkages among the four core elements of the benefits realisation process: outcomes, initiatives, contributions and assumptions (Thorp & Fujitsu Consulting 2003; Thorp 1998). This is not process modelling.
Repository management	Low- the method uses written documents
Specific domain knowledge	High – high level IT knowledge
Application specific knowledge	Low – text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Moderate- Only in as much as the impact of IT systems on the business
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High
People	Moderate
Budget	Low
Information	High

Balance Scorecard

The balanced Scorecard was introduced in a publication by Kaplan and Norton in 1992 (Kaplan & Norton 1992). They suggested that senior executives understood that what you measure defines the outcomes of the activities of the organisation. They developed the balanced scorecard to create a way for executives to clearly understand their strategy and to clearly measure the strategy achievement through both financial and operational measures thus a balanced scorecard (Kaplan & Norton 1992; Kaplan & Norton 1996).

Purpose	
What is it meant to do?	Enable executives to use both financial and operational measures to assess performance
How is it meant to do it?	Create a clear linkage between four perspectives (Financial, Customer, Internal Process and Learning & Knowledge) and then develop measures for the achievement of each of the objectives which support strategies and goals.
Is it industry specific?	No- Broad use in any industry
Is it function specific?	No- works across all functions as defined by the perspectives
Decision Support	
Strategic planning	High – high levels of skill required here
Process modelling	Moderate – Only need to assess and or identify the process not model them. The focus can in practice be on functions at the operational level rather than business processes (Kaplan & Norton 2000)
Repository management	Low- the method uses written documents
Specific domain knowledge	Moderate – though more from a functional perspective
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Moderate

Detailed market knowledge	Moderate- must consider the external view of the customer
Resources required	
Time	High
People	Moderate - created once per strategic review
Budget	Moderate – dependant on the level of research undertaken and the need to develop new measures
Information	High – see prior budget comment

Assessment of the Strategy Development Methods

Each of the methods in the strategy development section is now assessed across the four areas are relevant to usage in the study.

Method	What type of Process Connection does it provide?	Rating for Resource usage?	Rating for decision Support?	Should use this method?
Enterprise Architecture	High level input across all areas (business processes, workflow and information)	High	High	May, provides detailed understanding of business processes
Performance Scorecard	Low, only through seeking to find performance measures	Low to Moderate	Moderate	No, nearly no process understanding occurs
Corporate Scorecard	Low, only through seeking to find performance measures	Moderate	Moderate to High	No, nearly no process understanding occurs
McKinsey 7S	None, the focus is on functions	Moderate to High	Moderate	No, nearly no process understanding occurs
Business Excellence Frameworks	Procedural level only	High	Low to Moderate	No, minor level of process understanding occurs
John Thorpe DMR Approach	IT Systems only focus	Moderate to High	Low to Moderate	No, ignores non system processes
Balanced Scorecard	Mostly top layer (value chain) functional/process focus	Moderate to High	Moderate	May, considers high level business processes

Table 31- Summary of Assessments for Strategy Development Methods

In this assessment consolidation table above (and those following), the rating areas are taken from the following aspects of the individual tables as shown in Table 32 below:

Individual Method Assessment Table	to	Assessment Consolidation Table
Purpose	is considered as..	What type of Process Connection does it provide?
Decision Support	is considered as..	Rating for decision support?
Resources required	is considered as..	Rating for Resource usage?

Table 32- Linkage between summary assessments and individual method assessments

A detailed discussion of the methods and reasons for discarding or retaining the method is provided from 2.8 Critique of Methods Used to Understand Business Processes.

7.3.2. Governance Focused Methods

This section deals with Governance focused methods. Governance is the set of activities which results in decisions that state expectations, authorise activities, and substantiate performance (Piazza & Brunenn, 2007; Hill et al. 2006). In an organisation governance develops and manages consistent, cohesive policies, processes and decision-rights for a given area of responsibility (Hill & Turbitt 2006).

Figure 100- Governance Focussed Methods

Figure 100 describes the four methods which were considered governance focused methods. Of these the Enterprise Architecture (EA) method has been reviewed in the previous section under Strategy Development Methods. EA provides an approach to controlling the activities of organisations in relation to projects by utilising principals which should be adhered to or aligned with by all projects. This fits with the definition provided previously which states that governance is the set of activities which results in decisions that define expectations, authorise activities, and substantiate performance (Piazza & Brunenn, 2007; Hill et al. 2006). An EA method supports the definition of activities and the authorisation of activities.

CoBIT Method

Perhaps the most visible governance tool which readers may have come across is the Control Objectives for Information and related Technology (COBIT), or the COBIT framework (Hill & Turbitt 2006).

Purpose	
What is it meant to do?	The COBIT framework is designed to support the IT elements of the business through a set of processes based on four major areas. These are: plan and organise, acquire and implement, deliver and support and monitor and evaluate.
How is it meant to do it?	CoBIT provides thirty four activity areas which can be used to provide guidance to IT management in the delivery of services
Is it industry specific?	No – Broad use in any industry
Is it function specific?	Yes- applicable to the IT management area
Decision Support	
Strategic planning	Moderate
Process modelling	Moderate- Only if required for assessment of compliance

Repository management	Low- the method uses written documents
Specific domain knowledge	High- in-depth knowledge of the IT management area
Application specific knowledge	Low – text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Moderate- broad business understanding
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	Moderate
People	Moderate
Budget	Low
Information	High

BPM Maturity Methods

There are a number of different BPM maturity models that have been published such as, Curtis and Alden's (Curtis & Alden 2007) model based on the Capability Maturity Model levels (Paulk et al. 1993). There is also the BPM Maturity model developed by the standards group OMG (OMG 2011), the IDS Scheer BPM maturity model (Luyck 2007) and the Business Process Management Maturity model Rosemann, de Bruin, (2004).

Purpose	
What is it meant to do?	Assist organisations in becoming more successful via improvements in how they manage processes.
How is it meant to do it?	The Business Process Management Maturity Model uses a set of perspectives or views to evaluate an organisation. These views in the Rosemann, de Bruin, (2004) model are Strategic Alignment, Governance, Modelling Method, Information Technology, People and Culture (Rosemann & De Bruin 2004).
Is it industry specific?	No- Broad use in any industry but little literature on actual applications
Is it function specific?	Not functionally oriented instead being process oriented.
Decision Support	
Strategic planning	Moderate
Process modelling	Low- as is focused on an assessment of status
Repository management	Low- the method uses written documents
Specific domain knowledge	High- high level Process Management
Application specific knowledge	Moderate - no application needs to be used but some vendors such as IDS Scheer BPM maturity model (Luyck 2007), offer applications that can capture data to support the activities
Detailed business knowledge	Moderate level
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	Moderate
People	Moderate
Budget	Moderate to high dependant on software and licencing
Information	High

Capability Maturity Models Methods

The Capability Maturity Model Integration (CMMI) is one of the better known methods for assisting organisations to understand and improve the way they develop software (Paulk et al. 1993). Prior versions are the Capability Maturity Model (CMM).

Purpose	
What is it meant to do?	CMMI models are collections of best practices that help organisations to dramatically improve effectiveness, efficiency, and quality (Software Engineering Institute 2011). Assist in assessment of the organisation to identify what needs to be improved to successfully develop quality software
How is it meant to do it?	Provides a five level maturity rating with a range of assessment areas within each level.
Is it industry specific?	Yes – to the software development industry and to departments with a software development team
Is it function specific?	Yes- focused on those things that impact on software development
Decision Support	
Strategic planning	Low- Little emphasis
Process modelling	Moderate
Repository management	Low- the method uses written documents
Specific domain knowledge	High – knowledge of and experience in software development
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Moderate – but detailed in the area of software development
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High
People	High
Budget	High- if still working through the levels
Information	High- many areas of assessment and thus documentation

Assessment of Governance Methods

Method	What type of Process Connection does it provide?	Rating for Resource usage?	Rating for decision Support?	Should use this method?
COBIT	IT Process only view	Moderate	Low to Moderate	No, focus does not include the whole business
BPM Maturity Methods	Level of maturity for BPM	Moderate	Low to Moderate	No, must first have a good understanding of BPM to utilise
Capability Maturity Models	Specific to software development	High	Low to Moderate	No, only suitable for organisations which develop software

Table 33- Summary table of Governance Methods

A detailed discussion of the assessment results is provided in 2.8 on page 73.

7.3.3. Workflow Methods

The workflow modelling systems as listed in the following diagram (Figure 101) can provide effective support for modelling situations where rigour, clear communication and convention are critical to a viable system being developed effectively (van der Aalst 2003).

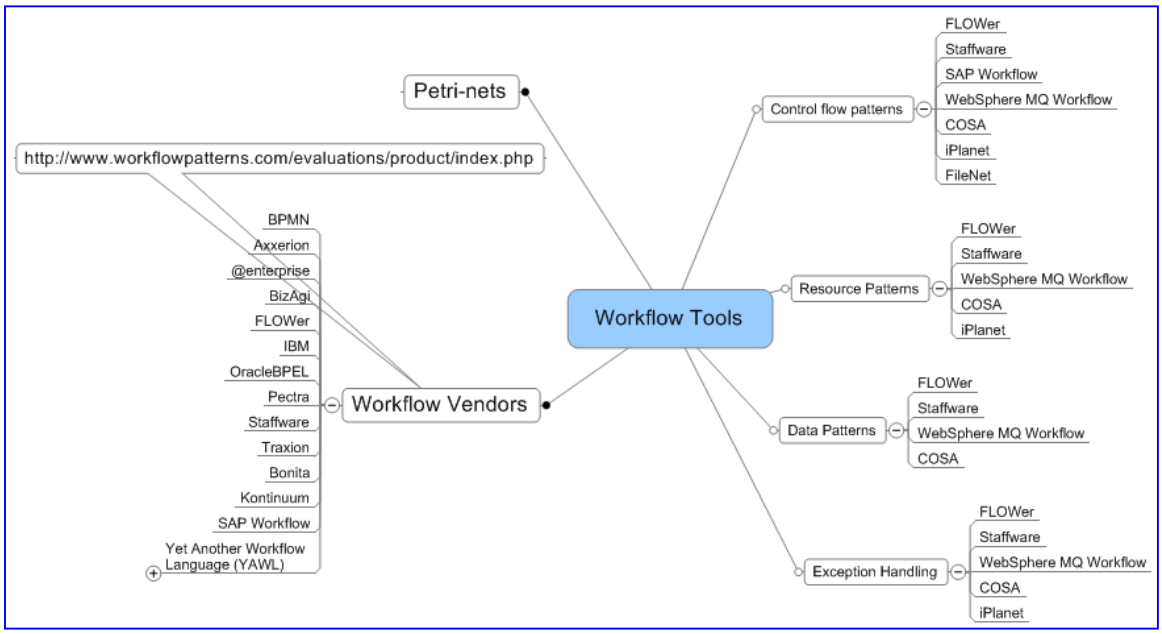


Figure 101- Workflow Methods

Figure 101, above depicts an example set of different mainstream workflow methods available. These methods are used by systems integrators, workflow automators and to a small extent business people looking to capture the movement of information and decisions into, within and out of an organisation (van der Aalst & ter Hofstede 2005). The studies conducted and reported on by widely recognised researchers such as Arthur ter Hofstede and Wil van der Aalst (van der Aalst 2003; van der Aalst & ter Hofstede 2005) have identified and analysed the workflow methods in Figure 101 for their suitability to be used to capture information concerning: Exception Handling, Data Patterns, Resource Patterns and Control Flow Patterns.

Today's workflow management systems can be used to integrate existing applications and to support changes to workflows by reconfiguring the elements of a workflow and in some cases by changing the diagram used to visualise the workflow (van der Aalst 2003). Workflow focusses on the 'getting the system to work ' elements of BPM (van der Aalst 2003; van der Aalst & ter Hofstede 2005). A Workflow Management System (WFMS) is defined as: "a system that defines, creates and manages the execution of workflows

through the use of software, ...which is able to interpret the process definition, interact with workflow participants and, where required, invoke the use of IT tools and applications". (P.e. Lawrence 1997, p.17).

Workflow methods are related to business process management in the following ways:

- Implemented processes may require workflow management especially in cases where there are many instances of the process being used (for example: transactions in a supermarket)
- Workflow management can be effectively achieved through automation of the processes where practical
- Workflow can be supported by Petri nets as one example, developed in 1962 by Carl Petri (Petri 2008).

Purpose	
What is it meant to do?	A system that defines, creates and manages the execution of workflows through the use of software
How is it meant to do it?	Running on one or more workflow engines, which are able to interpret the process definition (model), interact with workflow participants (people and systems) and, where required, invoke the use of other systems.
Is it industry specific?	No – Broad use in any industry where automation is viable
Is it function specific?	Yes- the focus is on the system layer
Decision Support	
Strategic planning	Low
Process modelling	High- high level skills as it is required for systems configuration so must be correct semantically and for syntax
Repository management	High- creates a range of different process which should be distributed, stored and allow for assessment
Specific domain knowledge	High- systems view of systems and software development
Application specific knowledge	High – typically managed via a workflow system
Detailed business knowledge	Moderate – operates at the systems level
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High
People	High
Budget	High
Information	High

Assessment of Workflow Methods

Method	What type of Process Understanding does it provide?	Rating for Resource usage?	Rating for decision Support?	Should use this method?
Workflow Methods	Minor operational but detailed systems level	High	High	No- systems focus only with high resource consumption

Table 34- Summary table of Workflow Methods

7.3.4. Process Focused Methods

Process based methods are those methods which focus on a series of activities at various levels within the organisation. There are many types of process modelling applications which support business process management such as MagicDraw UML, Bonita Open Solution and Oracle BPEL Process Manager. Each of these modelling applications on its own is a method designed to support elements of business process use, modelling, communication and improvement. This review will consider the different well known methods which approach process improvement in a variety of ways. Figure 102 following lists the different methods which will be reviewed.

Figure 102- Process Based Methods

Failure Mode Effects Analysis (FMEA)

Failure Mode Effects Analysis (FMEA) is a quality improvement method initiated by the US army in the late 1940's (Kinetic 1999). The automotive industry has used this as the basis of their quality improvement process until the development of ISO 9000 (Kinetic 1999).

Purpose	
What is it meant to do?	FMEA is commonly defined as 'a systematic process for identifying potential design and process failures before they occur, with the intent to eliminate them or minimize the risk associated with them' (Kinetic 1999; Stamatis 1995).
How is it meant to do it?	The focus within the FMEA methodology is on failure and the detection of failure.
Is it industry specific?	Yes – focus is on manufacturing and design functions
Is it function specific?	Yes - The processes which are referred to in the FMEA methodology are manufacturing and design processes and not business processes.
Decision Support	
Strategic planning	Low
Process modelling	Low
Repository management	Low- the method uses written documents
Specific domain knowledge	High – Manufacturing and Design
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	High- only for manufacturing and product areas
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High
People	High
Budget	High
Information	High

Kaizen Method

Japanese for 'improvement', or 'change for the better' refers to philosophy or practices that focus upon continuous improvement of processes in manufacturing, engineering, game development, and business management (Weed 2010; Berger 1997).

Purpose	
What is it meant to do?	Provide a method for continuous waste reduction
How is it meant to do it?	Continual confined site focused small improvements seeking waste reduction
Is it industry specific?	No –typically manufacturing industries
Is it function specific?	No- waste reduction can be related to services, management processes or systems
Decision Support	
Strategic planning	Low
Process modelling	Low- Not required
Repository management	Low- the method uses written documents
Specific domain knowledge	High – must be knowledgeable of the area under review. Usually led by the team leader

Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Moderate- Focused business knowledge
Detailed market knowledge	Moderate - Focused market knowledge if the area under focus is related
Resources required	
Time	Moderate
People	High
Budget	Low
Information	Low

Lean manufacturing and Kaizen both have their origins in the Toyota Production System which was developed by the Japanese automobile manufacturing firm Toyota (Bhasin & Burcher 2006).

Total Quality Management (TQM)

W. Edwards Deming introduced what is now called TQM to Japanese industry at the end of the Second World War (Dean & Bowen 1994).

Purpose	
What is it meant to do?	TQM "evolved from a narrow focus on statistical process control to encompass a variety of technical and behavioural methods for improving organizational performance" (Dean & Bowen 1994, p.396)
How is it meant to do it?	It mobilises the entire staff to participate in the creation of quality goods or services with quality determined by the customer.
Is it industry specific?	No – Broad use in any industry
Is it function specific?	No applies to any area of the business
Decision Support	
Strategic planning	Low
Process modelling	Moderate –typically a functional perspective
Repository management	Low- the method uses written documents
Specific domain knowledge	Moderate - as it is everyone's responsibility the individual has responsibility for their quality tasks
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Moderate- need to understand the procedures of the business
Detailed market knowledge	Moderate- Must understand the customer view/need
Resources required	
Time	High
People	High
Budget	High
Information	High

Six Sigma

"Six Sigma is a rigorous and a systematic methodology that utilizes information (management by facts) and statistical analysis to measure and improve a company's operational performance, practices and systems by identifying and preventing 'defects' in manufacturing and service-related processes" (Pestorius 2006, p.122).

Purpose	
What is it meant to do?	Improve specific processes within the business
How is it meant to do it?	Taking the customers' needs as the priority processes are analysed from an error reduction perspective.
Is it industry specific?	No – Broad use in any industry originally developed for manufacturing or process industries
Is it function specific?	No – can be applied to any process
Decision Support	
Strategic planning	Low
Process modelling	Moderate- text based models are traditional
Repository management	Low- the method uses written documents
Specific domain knowledge	High
Application specific knowledge	High- different levels of skill are obtained to use the method, text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	Moderate- knowledge is highly focused on a single process
Detailed market knowledge	Low- although the customer may be investigated
Resources required	
Time	High
People	High
Budget	High
Information	High

Lean Manufacturing

Lean manufacturing was initially introduced by researchers at the Massachusetts Institute of Technology in a seminal study of international practices in the automotive industry (Stecher & Nataraj Kirby 2004).

Purpose	
What is it meant to do?	Lean manufacturing involves all employees continuously looking for ways to improve processes and is a management philosophy and system of organising operations (Spann et al. 1999).
How is it meant to do it?	Eliminating all non-value added activities, or waste, throughout an organisation's entire operations (Spann et al. 1999).
Is it industry specific?	Aimed at the Manufacturing and Process Industries but used in others
Is it function specific?	No
Decision Support	
Strategic planning	Low
Process modelling	Moderate- but not intensive
Repository management	Low- the method uses written documents

Specific domain knowledge	Moderate- for the area under review by the team leader
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	High- sufficient to identify areas for improvement and to develop improvements
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High
People	High
Budget	Moderate
Information	High

International Standards organisation (ISO)

The ISO 9000 Series Standards for Quality Management and Assurance were issued by the International Organization for Standardization (ISO) in 1987 (Stenzel 2011). ISO 8402 states that: "Quality is the totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs" (Stenzel 2011, p.4).

Purpose	
What is it meant to do?	looks to a continuous improvement culture for an organisation
How is it meant to do it?	Management must decide which ISO standards apply. All personnel directly involved must be trained. Staff must develop policies and objectives necessary. Procedures and documentation must be developed to carry out the policies and objectives. A description of procedures is created for each job. The description must include safety procedures. Industry-wide standards and specifications. The company must establish an internal audit system. (Reference for Business 2011)
Is it industry specific?	No- Broad use in any industry
Is it function specific?	No
Decision Support	
Strategic planning	Low
Process modelling	Low
Repository management	Low- the method uses written documents
Specific domain knowledge	High- ISO requires training in its use and assessment
Application specific knowledge	Low- text based system with some use of spreadsheets to capture measurements
Detailed business knowledge	High- to enable staff to document and undertake continuous improvement
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High
People	High
Budget	High
Information	High

Information Technology Infrastructure Library (ITIL)

One of the more visible advances in the area of 'best practice' frameworks is the Information Technology Infrastructure Library (ITIL) (Bartett et al. 2001; Berkhout et al. 2001; Taylor 2003; Hill et al. 2006)

Purpose	
What is it meant to do?	A set of five books that provide advice and structure for IT Services Management (ITIL.org 2007).
How is it meant to do it?	This framework defines how IT Services Management should be applied within an organisation. It also aligned with the international standard, ISO 20000 (ITIL.org 2007).
Is it industry specific?	No- Broad use in any industry
Is it function specific?	Yes – for IT service management
Decision Support	
Strategic planning	Low
Process modelling	Low – small amounts of modelling can be done to capture specific aspects of the way the process is completed in-house
Repository management	Low- the method uses written documents
Specific domain knowledge	High – IT service management training
Application specific knowledge	Low- text based system
Detailed business knowledge	Low- only in the specific area of IT service management
Detailed market knowledge	Low- No external view of the business
Resources required	
Time	High
People	Moderate
Budget	Moderate
Information	Moderate

Enhanced Telecom Operations Map (eTOM)

eTOM is a business process model or framework for use by telecommunications service providers and others within the telecommunications and related sectors of industry (tmforum.org 2011).

Purpose	
What is it meant to do?	Provide guidance on what processes should be in place
How is it meant to do it?	eTOM model lists all the enterprise processes required by a service provider and analyses them to different levels of detail according to their significance and priority for the business (tmforum.org 2011).
Is it industry specific?	Yes – Telecommunications and associated industries
Is it function specific?	No
Decision Support	
Strategic planning	High - Strategy, Infrastructure & Product covering planning and lifecycle management
Process modelling	Low - small amounts of modelling can be done to capture specific aspects
Repository management	Low- the method uses written documents
Specific domain knowledge	Moderate- cross organisation method
Application specific knowledge	Low- text based system
Detailed business	High

knowledge	
Detailed market knowledge	Low- Little external view of the business
Resources required	
Time	High
People	High
Budget	High
Information	High

Critical Process Targeting Method (CPTM)

This method has been developed to identify the processes most critical to an organisation from the perspective of what they are trying to achieve strategically.

Purpose	
What is it meant to do?	Identify critical processes or projects (when related to processes) across an organisation and assist in making the decision on which to undertake first, second, third and so on. The targeting method has two main parts, 'identifying critical processes' and the 'selection of which identified critical processes to improve'.
How is it meant to do it?	Links processes to the lowest layer of a cause and effect structured strategic plan and assesses the processes or projects across five elements: 1.The Effect of Failure; the consequence of a the failure of the process on the organisation 2. Probability of failure; the chance that the process will fail 3. Impact; the relative contribution of the process to achieving organisational goals. 4. Cost/benefit; the analysis of the costs and benefits of improving the process 5. Probability of success; the chance that the process improvement project will be successfully completed
Is it industry specific?	No- Broad use in any industry
Is it function specific?	No – focus is on business processes
Decision Support	
Strategic planning	Moderate
Process modelling	Moderate- small amounts of modelling can be done to capture specific aspects
Repository management	Low- the method uses written documents
Specific domain knowledge	Moderate – some in order to create the high level list of processes
Application specific knowledge	Low- uses excel spreadsheets and Mindmanager to capture data
Detailed business knowledge	Moderate- High level, but learning is part of the process
Detailed market knowledge	Moderate- considers the influence of markets
Resources required	
Time	Moderate
People	Moderate
Budget	Low
Information	Moderate

Assessment for Process Focused Methods

Method	What type of Process Connection does it provide?	Rating for Resource usage?	Rating for decision Support?	Should use this method?
FMEA	Manufacturing processes only with a focus on risk	High	Low to Moderate	No, low level of process understanding occurs
Kaizen	Isolated and unintegrated procedural level with a manufacturing focus	Moderate	Low to Moderate	No, low level of procedure understanding occurs
TQM	Unlinked Operational and procedural level process managed	High	Low to Moderate	No, moderate level of procedure understanding occurs
Six Sigma	Isolated and unintegrated Operational and procedural level	High	Moderate	No, low level of procedure and systems understanding occurs
Lean Manufacturing	Isolated and unintegrated procedural level	High	Low to Moderate	No, moderate level of procedure understanding occurs
ISO	None Policy and procedure focus	High	Moderate	No, low level of procedure and policy understanding
ITIL	Operational IT service Management focus only	Moderate	Low	No, very narrow focus of activities
eTOM	Operational Telecommunications process focus	High	Moderate	No, specific to communications companies only
Critical Process Targeting Method	High level to Operational and systems if required	Moderate	Moderate	May, as appears to consider all business processes and their relationship to strategy

Table 35- summary table of Process Focussed Methods

"Systems thinking put the emphasis on understanding the organization as a whole. Process thinking stresses thinking about the portion of the system that produces a specific set of results" (Harmon 2003, p.32). As early as 1990 and 1993, authors such as Deming and Senge wrote about the importance of systems thinking to understand workflow and business processes (O'Neill and Sohal 1999). The method of choice then should ideally provide the SME user with the ability to consider the entire organisation from a system and thus process perspective.

7.4. Journals Investigated for Literature Support

The following table lists a large number of the journals used following the broad search approach:

Academy of Management Review	Accounting Review
British Journal of Management	Business Process Management Journal
California Management Review	Chartered Accountants Journal of New Zealand
Communications of the ACM	Decision Sciences
Electronic Journal of Information system Evaluation	Engineering Management Journal
Entrepreneurship: Theory and Practice	European Journal of Information Systems
European Management Journal	Group Decision and Negotiation
Harvard Business Review	IBM Systems Journal
IEEE Transactions On Engineering Management	Industrial and Commercial Training
Information and Management	Information Strategy: The Executive's Journal
Information Systems	Information Systems Research
InfoWorld	International Journal of Entrepreneurship and Innovation Management
International Journal of Hospitality Management	International Journal of Operations & Production Management
International Journal of Quality & Reliability Management	Journal of Accounting and Public Policy
Journal of Advanced Nursing	Journal of Applied Systems Analysis
Journal of Business Research	Journal of Business Strategies
Journal of Global Information Management	Journal of Information Systems Management
Journal of Interprofessional Care	Journal of Management Accounting Research
Journal of Management in Medicine	Journal of Manufacturing Technology Management
Journal of Operations Management	Journal of Organizational Computing and electronic commerce
Journal of Small Business Management	Journal of Systems and Software
Journal of Systems Management	Journal of Systems Software
Knowledge and Process Management	Language Learning & Technology
Leadership & Organization Development Journal	Long Range Planning
Management Research News	Marketing Science
MIS Quarterly	MIT Sloan Management Review
Nursing and Health Care Perspectives	Organizational Behaviour and Human Decision Processes
Pathology Patterns Reviews	Quality Management Journal
Scandinavian Journal of Information Systems	Sloan Management Review
Small Business Economics	Strategic Management Journal
Supply Chain Management-an International Journal	Technovation
The Academy of Management Journal	The International Journal of Management Science
The Journal of the Operational Research Society	Training & Development Journal
Urban Studies	

Table 36- Journals used following broad search process

Specific journals were also targeted and these are identified in Figure 103 following. These journals were selected based on the perceived quality of the research published by them and relevance to the topics under review.

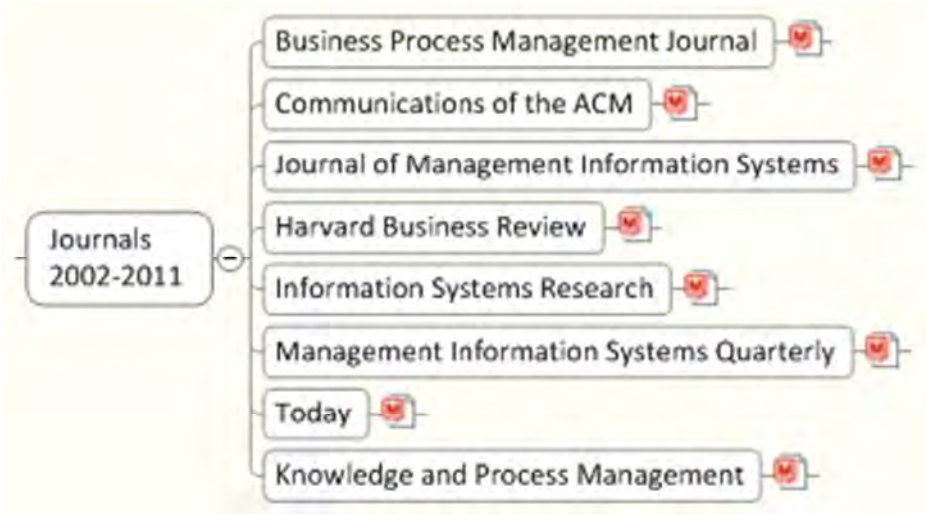


Figure 103- Journals Reviewed for the Literature Review

The major journals listed above were extensively searched for BPM research significance, information relating to business process understanding, SME characteristics and decision making. (Figure 103)

Figure 104 following provides a summary of the conferences which were investigated for understanding of the status of BPM research generally and for information relating to the areas of interest.

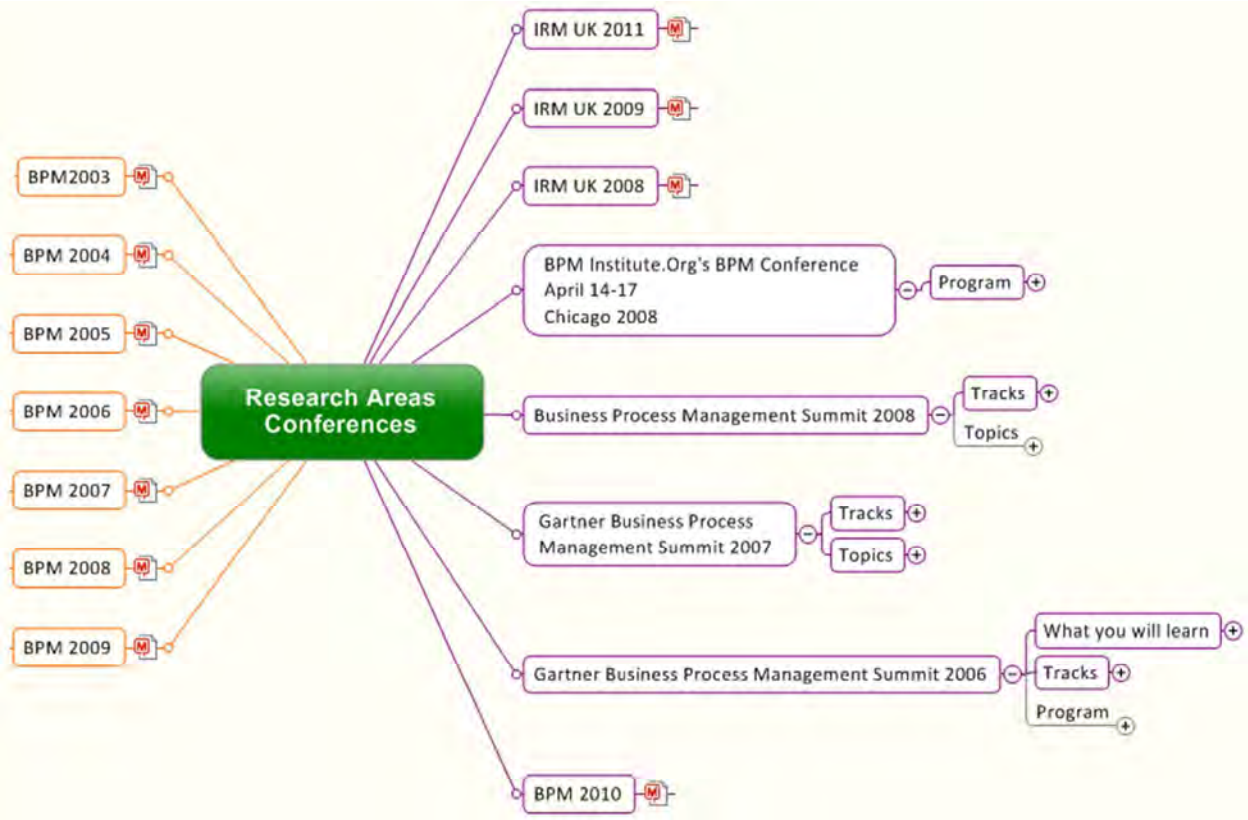


Figure 104- Conference materials research areas

7.5. Informed Consent Form

Informed Consent Package: Case Studies - Page 1 of 4

Address and Contact Panel

"Identification of Critical Processes"

Signing this consent form indicates that the participant involved in the research and the authorised person (if different) from your organisation have read and understood the information package included with this form.

It also indicates that this person or persons;

- Has had any questions answered to their satisfaction;
- Understands that if they have any additional questions they can contact the research team;(see contact details above and included in the information package)
- Understands that they are free to withdraw at any time, without comment or penalty; (Withdrawal does not negate your right to see and approve items for publication which may be of a sensitive nature.) See information sheet for complete details
- Has read, understood and initialled accompanying information pages
- Understands that they can contact the Secretary of the University Human Research Ethics Committee on 3864 2902 if they have concerns about the ethical conduct of the project;

Agrees to participate in the Case Study YES NO

(Please circle)

Date ___/___/ 2004

Participant Name

_____ (Signature) _____ (Printed Name)

Authorised Officer

(If different to participant) _____ (Signature) _____ (Printed Name)

Participant Organisation

_____

Craig Huxley

IT Researcher

Case Study – Information Pages

Case Study Specific Information

- Case Study is the general term given to research in which the researchers are interested in not just the output of a situation. In this case study the data is the inputs and outputs to implementing the critical process targeting method (CPTM) in order to identify critical processes or projects. Additional to documents brought to the case study will be issues and comments by those involved concerning the approach to identifying critical processes, their understanding of the business processes of the organisation and the effect of using the CPTM on their understanding and organisation.
- The CPTM will be implemented to the extent that knowledgeable management team members will be able to assess the activities of their department and identify which processes will provide the greatest support in achieving organisational goals.
- Data collected will be:
    - The identified critical processes
    - Implementation issues concerning the CPTM
    - Diary notes on experiences during the implementation
    - Strategies, objectives, key steps and cause & effect linkages (kept confidential)
- Time commitment
    - One initial meeting of around 2-3 hours to ensure that terminology and understanding of the concept is clear.
    - Dependant on the acceptance of the current strategic plan and the detail required of the cause and effect mapping and assessments to identify critical processes (series of meetings of no more than two hours in length)
    - Final presentation of outputs to Management Team 1 hour
    - Interviews (ideally at the start and completion of up to one hour in duration)
    - Time to deal with email correspondence. (limited)
- Feedback will be provided via access to relevant publications by the researchers, through informal means such as email and telephone as reasonably requested, and through a formal group presentation meeting
- Data collected from case study will be subject to the confidentiality contract as signed by the participant and the researcher

Project Description

This research project is aimed at developing knowledge about the understanding of business processes by organisations using a method which supports business process understanding.

The project is seeking to uncover knowledge of the impact of the critical process targeting method on your organisations understanding of business processes.

The approach being taken is to facilitate the implementation of the method to resolve the existing discussed business problem(s) of the organisation and to observe as a participant observer during the process. The researcher will also like to interview participants early in the process and at the end of the process. At least two interviews will be required.

Benefits for Participants

Cost Free

This research project is provides the participant organisation with a facilitated implementation of the Critical Process Targeting Method (CPTM) with no cost to the organisation apart from time.

Business Process Knowledge

A benefit from this research will be the potential improvements in the understanding of your management team of the major processes across your organisation. The ability to identify critical processes will provide an effective method of aligning process improvement projects to process and organisational objectives.

The knowledge gained from this project may provide valuable solutions to the defined business problem(s).

Academic Involvement

This research team brings considerable expertise and provides detailed researched knowledge and consultancy to participants. Participation in research projects also provides an excellent opportunity for organisations to seek further academic involvement in developing leading edge methods and techniques.

Real World Intelligence

Involvement in this research project will provide opportunities for participants to gain tangible, valuable knowledge concerning a new way of identifying critical processes or projects. The researcher has considerable experience in the development of strategy within organisations and the use of frameworks to assist in decision making. These skills and knowledge will be provided at no cost.

Risks

Dissemination of Sensitive Information

This research will be dealing with potentially sensitive information and data. There is a risk that this information could be used by others to the detriment of the provider, if not controlled within binding confidentiality agreements. The procedures for dealing with

information gathered from industry participants in this research are outlined in the Confidentiality Agreement.

Failure to Resolve the Business Problem

This project is a research project and cannot guarantee that that the CPTM will resolve the business problem(s) in full or even partially. There will be no avenue for organisations to recoup time costs if the project does not resolve the identified business problem(s).

Confidentiality

See: Individual "Confidentiality Agreement"

Voluntary Participation

Participation is completely voluntary and each participant has the right to withdraw at any time, by simply emailing or telephoning the researcher or the School. Data collected from withdrawn organisations or individual participants will, where practical, be removed and destroyed on request.

Feedback

Feedback will be provided via access to relevant publications by the researchers, through informal means such as email and telephone as reasonably requested, and through a the final presentation wrap up meeting

Further Questions

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7.6. The Critical Process Targeting Method

The following description of the CPTM is taken from a draft text written by the researcher for commercial publication in 2005. It provides a detailed description of the method with examples from prior use.

This section is designed to provide the practitioner with a step-by-step approach to using the targeting method to identify and select critical processes for improvement. It describes the necessary tasks for implementation of the targeting methodology including providing a description of the types of documents that might be used. While there are various possible approaches to the assessment of some the factors within the CPTM, the description has focussed on the one approach which the author believes from his experience is most commonly used in business.

The Ten Steps for Business Process Improvement Targeting

The targeting method has two main parts, 'identifying critical processes' and the 'selection of which identified critical processes to improve'. This can be seen in Figure 105 as broken into the two triangles of three factors each.

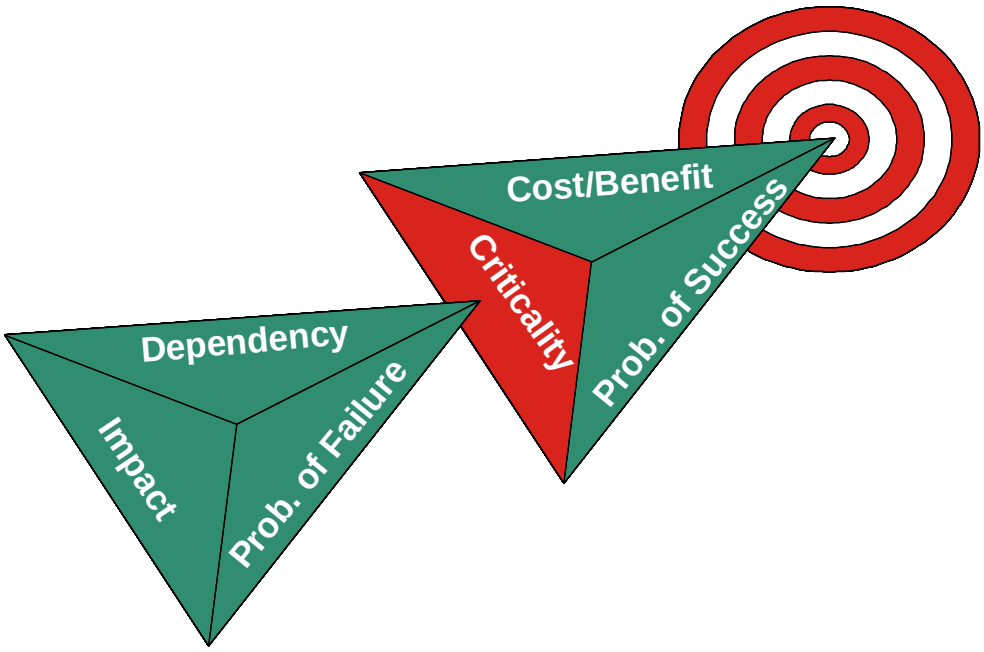

Figure 105- Diagram showing the two main areas of the Methodology; Criticality and Selection

The first triangle (bottom left hand side) in Figure 105 is made up of three factors;

1. Dependency; the effect of failure of a process on the organisation

2. Probability of failure; the chance that a process will fail

3. Impact; the relative contribution of a process on organisational goals.

These three factors combine to provide a rank order of processes, with the processes having larger combined assessments for the three factors being considered as critical. We

have termed this combination criticality. It is shown within the red area of the second triangle.

The second triangle on the right hand side contains criticality and the two factors concerned with selecting which of the identified 'critical' processes should be improved upon first;

4. Cost/benefit; the analysis of the costs and benefits of improving the process

5. Probability of success; the chance that the process improvement project will be successfully completed

Once criticality is defined we are left with a rank order of processes, that is, a list showing most critical to least critical. There is a business decision at this point which requires the organisation to decide how many processes it will apply the next assessments to.

Criteria or variables that influence this decision are:

Decision criteria for deciding how many processes to assess for cost/benefit and probability of successful improvement

The size and complexity of the processes in the list; if the processes are large and complex each process improvement project may entail substantial resources thus meaning the organisation can only afford to focus on a single or a few processes

The perceived advantages to be gained from improving many processes or a single process at one time; if the organisation perceives that there is sufficient advantage to be gained by undertaking processes improvement in multiple processes or alternatively by undertaking process improvement on a single process.

The differences in criticality rating of those in the list; that is those at the top of list may have a rating far greater than those in the lower half , thus meaning that only those with the substantially higher rating are further assessed.

The selected processes are then assessed for cost/benefit in order to ascertain if improvement will result in a positive cost/benefit. Those processes with a positive cost/benefit are then assessed for the probability that the organisation or project team can successfully improve the process and achieve the expected benefits. The assessments for criticality, cost/benefit and probability of successful improvement are then combined to allow the organisation to decide which process or processes from those selected for further assessment are viable process improvement projects.

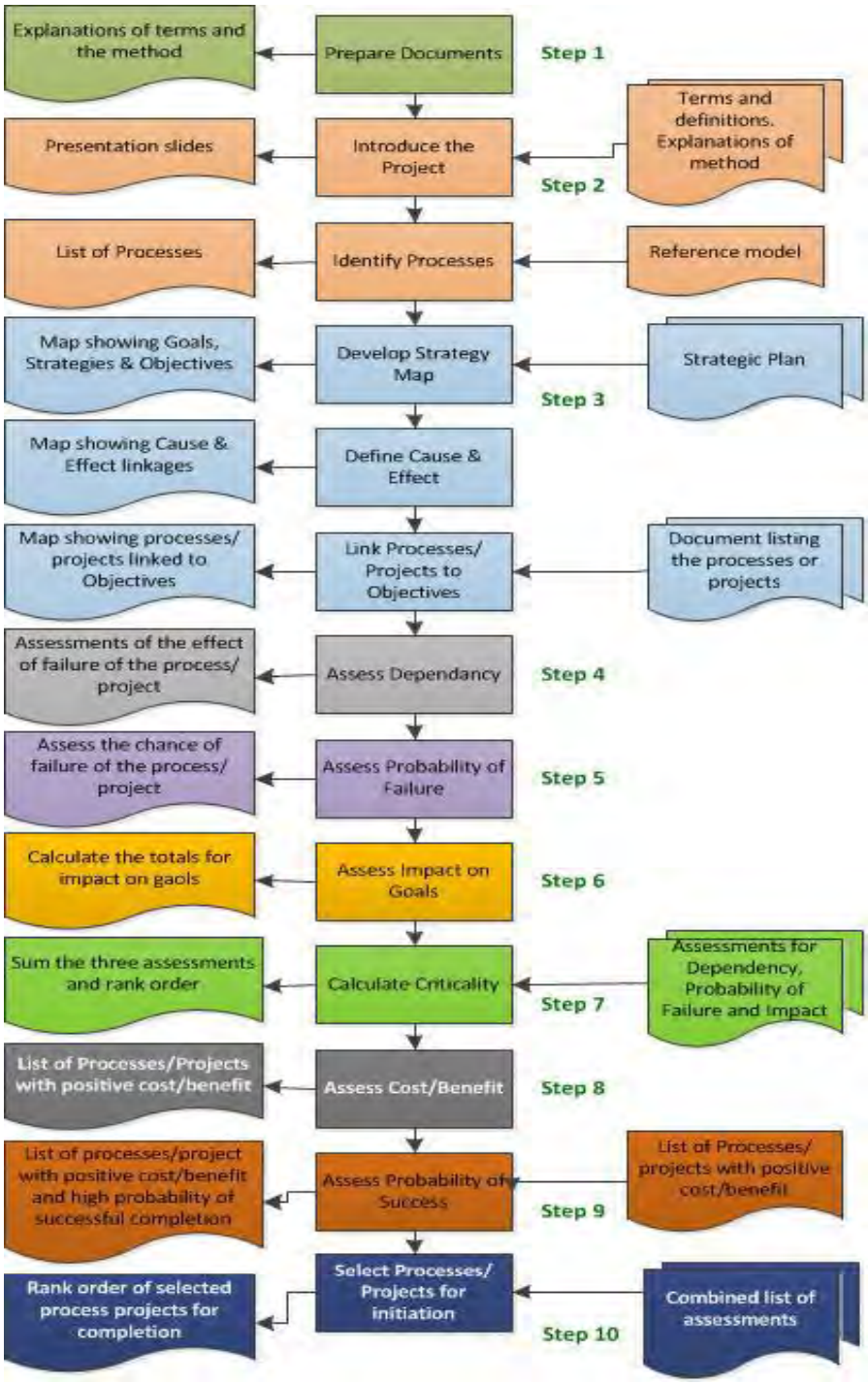

Figure 106- Process Model of Ten Step Targeting Method

The diagram above (Figure 106) is a representation of the ten step targeting method in process model form. Each step is indicated by a dotted horizontal line and a circled number on the left. Some steps have more than one part and these are shown by the rectangular boxes in the centre. The inputs for the model are on the right and the outputs of the model are on the left.

Defining the Project

The following sections explain each of the ten steps in detail.

1. Project Initiation and Definition

Step One: Preplanning

As with any project of a reasonable size, there should be a project manager and project team assigned to the task of implementing the targeting method. This is especially applicable to medium and large organisations where the constraints of projects (time, communication and resources) are constant and need to be taken into account as early as possible. The project manager should prepare the introductory documents for the project team and those involved in the assessments made within the method or impacted by the results. For the targeting method, these documents explain the targeting method, the strategic mapping approach and the terms that might be used in the project. In addition to these documents there should also be the usual agenda document for meetings and sufficient knowledge of the organisational environment in which the method is to be used to allow for appropriate planning for the many change management issues.

Step Two: Defining Scope and Introduction

There are two parts within step two. They are the introduction of the project to those involved in the assessment phases and the scoping of the project.

Introduction of the Project

The level of detail of any documentation is dictated by the needs of those involved and their experience with the elements of the method. Explanations should include:

The business reasons for undertaking the project to identify critical processes and the possible benefits to be gained from it.

- A description of how the strategic mapping is used within the targeting method.
- The people involved in the project.
- The estimated time required of those involved.
- The methods to be used to communicate the outputs of the project
- The methods to be used to collect the input of those involved in the assessments and those impacted by the results

The next part is to define the scope of the project. Scoping includes decisions concerning the area of the organisation in which the method will be implemented and identifying the processes to be assessed. Some organisations will not have the resources to undertake process improvement in a companywide approach or are such large organisations that, to consider all the processes within the entire organisation is a huge undertaking. Thus some organisations may focus on a particular department or service initially.

The following portion of a case study describes the scoping that occurred within CSC and Citec when they used the Targeting Method.

CSC (Computer Science Corporation) is a private global company and the third largest outsourcing provider in Australia. The company is in the top three of Australian Outsourcers

with annual revenue in excess of AUD 1.16 billion. Within the Australian market the top three outsourcers share 76% of the total market revenue. CSC has more than 4500 employees in Australia almost all of which work in the outsourcing services industry.

> Within CSC, different management teams supervise the operations of a single customer account if that account is sufficiently large. CSC chose to focus the use of the Targeting Method on the operations of one client, BHP-Billiton. BHP-Billiton is Australia's largest mining and metals refining company with operations throughout the world. They run a complex mixture of management information systems, decision support systems, document management systems, data bases and networks. CSC was interested in identifying which of the service support processes, provided by CSC, for this customer were most critical.
>
> They thus had reduced the focus of analysis from that of an entire global organisation to a segment of the operations used to provide services to one client.
>
> By contrast Citec is a commercialised wholly Government owned company and the ninth largest outsourcer in Australia. Citec have both government (57%) and private company (43%) clients and in 2001 had revenue of AUD120 million and staff in excess of 700. Citec chose to start with their strategic plan and identify their critical processes from this high level.

Within the defined scope it is possible to identify the processes that will be assessed.

Identifying Processes

We used a high level model focused on service delivery, for this task, which initially provides those processes which would be expected in a typical ASP (Application Service Provision).

A reference model is a generalisable model detailing most of the common features of its subject.

The Reference Model of ASP service delivery shown in Figure 107 depicts a view of the major processes within an ASP business. Using this reference model organisations' can add or remove processes to provide them with a representation of their own environment. The model is based on the 'house model' developed by Ulrich in 1977 and used by Scheer and Nuttgens 2000 and Aoyama Gakuin University 2003.

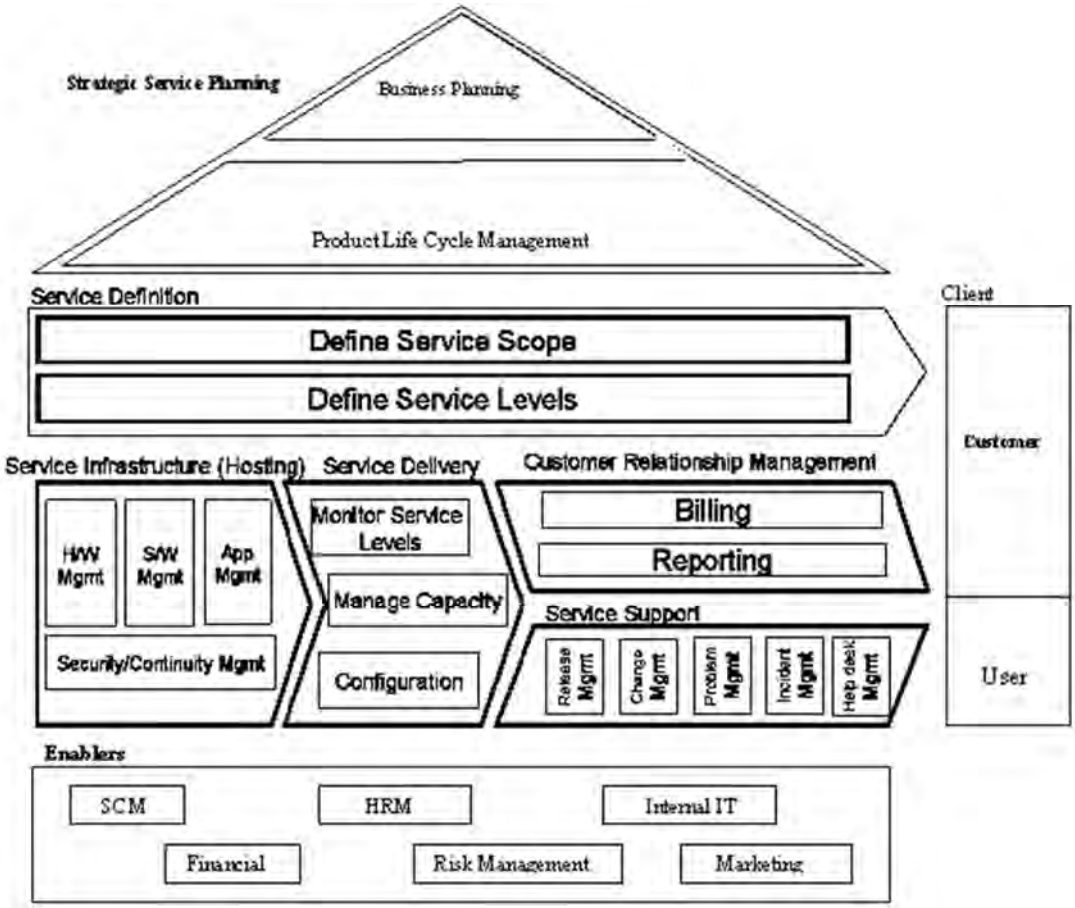

Figure 107-Version 1 Reference Model of ASP service delivery (Taylor 2002)

Each rectangle within the model (Figure 107) represents a high level process for many Application Service Providers. Using the model the organisation can identify the processes being used in their business. The model helps to initiate discussion and provide a starting point for the entity to consider their processes. Processes can be added or removed and names of processes can also be altered to suit communication within the organisation.

An alternative approach is for the entity to undertake this task using their knowledge of the business. They may wish to compile a list of the processes without using a model.

> Citec undertook to identify processes from a high level so that their corporate strategic plan was able to be linked directly to processes. They conducted a brainstorming session to provide a list of processes at a level which they believed was suitable. Of the forty two identified processes in six major categories, one single category was:
>
> - Financial and Corporate Affairs
> - Financial Administration
> - Financial Reporting
> - Financial Accounting
> - Purchasing
> - Budgeting
> - Contract Administration
> - Administration

Each organisation will have differences in naming and in the grouping of processes and the method allows for these issues.

It is possible that both approaches to identifying processes may result in some processes being forgotten. Any processes missed during this step will either be identified at a later stage or are considered of little criticality to the organisation, department, business unit or group.

With the companies that we undertook this activity we had printed the reference model on A3 size paper (297mm x 420mm) so that the project team were able to make any adjustments to the model.

The next case study excerpt discusses the outputs of the work with two companies in identifying the processes within their company that dealt with Service Support.

The outputs of the activity with CSC were changes to the names of some processes and the addition of some new processes. This is identified in Figure 108.

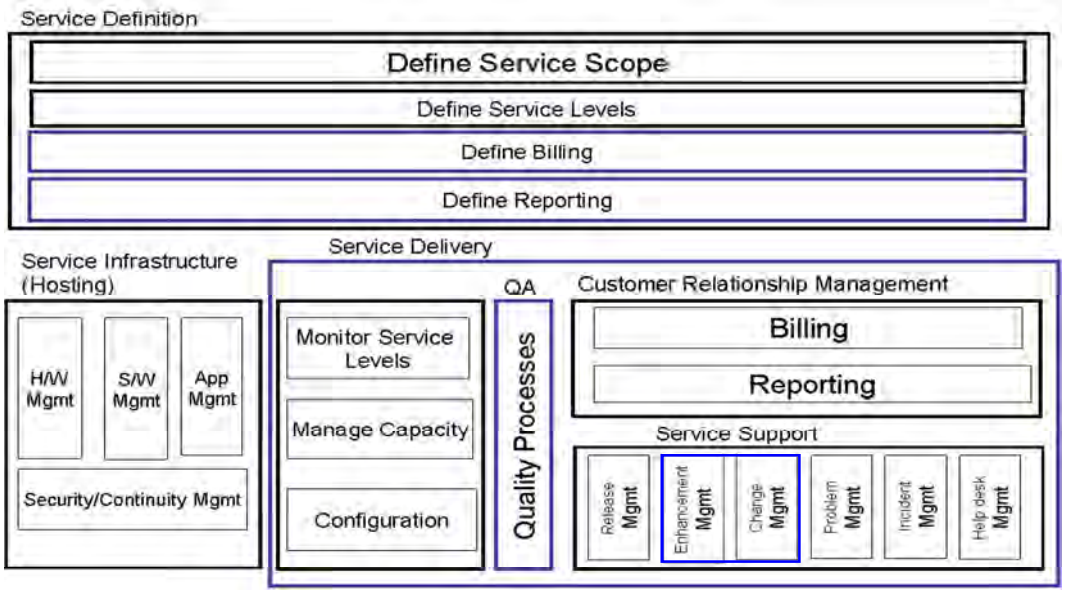

Figure 108- CSC version of AHC (changes highlighted in blue)

The addition of 'Define Billing' and 'Define Reporting' to the Service Definition functional area at the top of the model was the first change. The second change was the addition of 'Quality processes' to the 'Service Delivery/Management area and the addition of 'Enhancement' to Change Management in the Service support functional area to become 'Change/Enhancement Management'. Service delivery, customer relationship management and service support areas were placed within the one functional area named 'Service Delivery'. This meant that a new title for the old Service Delivery area needed to be provided. (This was not agreed to during this project, though was answered during the next project) The final alteration was to the shape for the reference model objects from those appearing as block arrows and directed towards the right hand side of the model to rectangular objects with no apparent flow.

These changes provided a list of eleven 'Service delivery' processes which had been identified for consideration in the targeting methodology within CSC. They were:

1. Monitor Service levels
2. Manage capacity
3. Configuration
4. Quality processes
5. Billing
6. Reporting
7. Help desk
8. Incident reporting
9. Problem management
10. Change/Enhancement Management
11. Release Management

We used the reference model of ASP service delivery as a starting point in our project with REALTECH and included the CSC version of the model.

REALTECH made several changes to the model, which is highlighted by the blue boxes in the diagram named Figure 109.

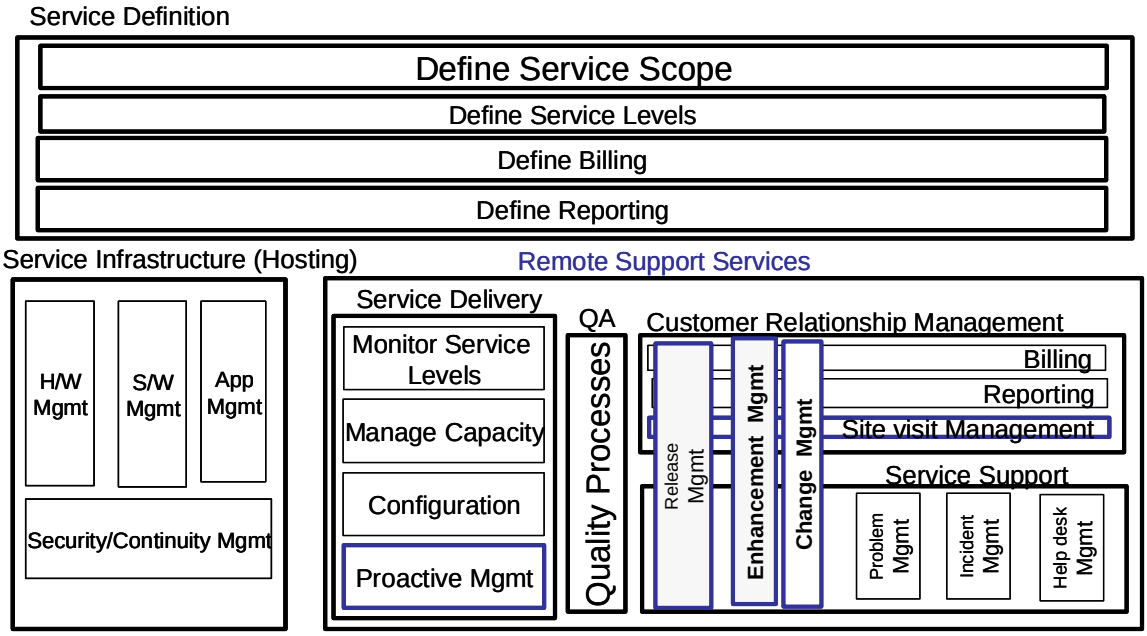

Figure 109- REALTECH version of reference model of ASP Service Delivery (alterations in blue)

The changes made by REALTECH to the reference model took into account the changes suggested by CSC but also added to and extended the model, through the inclusion of Proactive Management and Site Visit Management.

Within the Customer Relationship Management (CRM) functional area, a new process named Site Visit Management was also added. The REALTECH participants also separated change/enhancement management into two separate processes, Change Management and Enhancement Management.

The final changes were to show the crossover of the processes Release Management, Enhancement Management and Change Management from Service Support functional area into the functional area of CRM. This was meant to illustrate the connection between these three processes and the processes within the CRM functional area.

The outstanding issue from the CSC model was that the processes Monitor Service Levels, Manage Capacity and Configuration had no functional process name. The REALTECH project team named this functional area Service Delivery. They also added a further process called Proactive Management to the Service Delivery functional area. REALTECH re-named the functional area CSC had called Service Delivery calling it Remote Support Services. This functional area encompasses Service Support, Customer Relationship Management, Quality Assurance (QA) and Service Delivery.

In total there were fourteen processes identified from this activity to be used in the targeting methodology. These were:

1. Billing
2. Reporting
3. Site Visit Management
4. Release Management
5. Change Management
6. Enhancement Management
7. Problem Management
8. Incident Management
9. Help Desk Management
10. Quality Processes
11. Monitor Service Levels
12. Manage Capacity
13. Configuration
14. Proactive Management

With the processes identified, the scope of the project recorded and the explanation of the targeting method and terms defined, we can then move to the next step.

The assessment of the factors which make up criticality can be undertaken in any order without altering the outcome of the assessment. That is, the assessment for impact can be conducted before, after, or in parallel with the assessments for dependency and probability of failure. The project team should choose the order of conducting the assessment to suit the organisation's needs.

> In our experience most users of the Targeting Method preferred to undertake the assessment for impact first as it was visually more stimulating and provided the opportunity for early feedback from those outside the project team. The assessment for impact requires that the strategic plan be mapped down to the objective level to allow processes to be linked to objectives.

The next step then, in the targeting methodology is the development of a strategic map in which we can identify the linkages of cause and effect between the processes identified in step two and the objectives, strategies and goals taken from the strategic plan. These links are then assessed for their relative contribution to the organisational goals (impact)

2. Linking Strategy to Processes

Step Three: Developing a Strategic Cause and Effect Map

To assess this factor (impact) is calculated by first taking the existing corporate strategic plan or business unit strategic plan and developing this into a cause and effect map.

> We found that it was useful in some cases to use a Balanced Scorecard (BSC) approach for this part of the method. The BSC is considered to be a viable approach to developing a cause and effect and as it uses both tangible and intangible perspectives in defining objectives which provides a valuable tool for assisting with the development and deployment of strategy.

To develop a BSC the organisation should first define their goals. There may be existing formal goals available within the entity and these may be used. In many cases the development of a BSC is the initiator for the review or formal description of the goals of the entity. Once goals are described, it is then necessary to devise strategies which will provide goal achievement. With strategies in place, the next step is to develop objectives or minor goals. These objectives are the activities which need to occur for strategies to be successful.

Using a Balanced Scorecard for linking strategy to processes

Kaplan and Norton [1-3] say that organisations should use perspectives in order to ensure that all relevant views of an organisation are taken into account. This is what the balance is concerned with in the balanced scorecard (Kaplan & Norton 2001; Kaplan & Norton 1996; Kaplan & Norton 1992). Perspectives can be the original four perspectives used by Kaplan and Norton [3]; financial perspective, customer perspective, internal process perspective and learning and growth perspective.

New BSC Views
1. Financial Perspective
2. Customer/Supplier Perspective
3. Partner Perspective
4. Process Perspective
5. Knowledge Management Perspective

We have used different names for some perspectives and also added a fifth perspective within some organisations. The rule here is to use appropriate names and further perspectives as an aid to communication within the entity and to provide a balanced view for developing objectives (Huxley, Taylor & Stewart 2002). Almost all managers today understand and agree to the need for a view of the organisation which is broader than the purely financial.

The Citec project showed that the approach taken with the development of the BSC is not always suitable to all types of strategic plans. One concern was that to bring into the organisation new terminology in regards to the strategic plan would only lead to confusion and disenchantment amongst managers and staff that already had spent time understanding the current terminology. The current terminology used planks and platforms with goals, and different layers of sub-goals. In addition to the issue of language, we found that a BSC style map did not take into consideration the cause and effect linkages that their present strategic plan contained. In order to capture these links in a visual map we needed to ignore the perspective views as these added complexity and confusion in the communication. We also changed the visual map to show the 'layered' approach taken by

the Citec strategic plan. The diagram below, Figure 110 is an example of the layered approach used in the Citec strategic plan visual map.

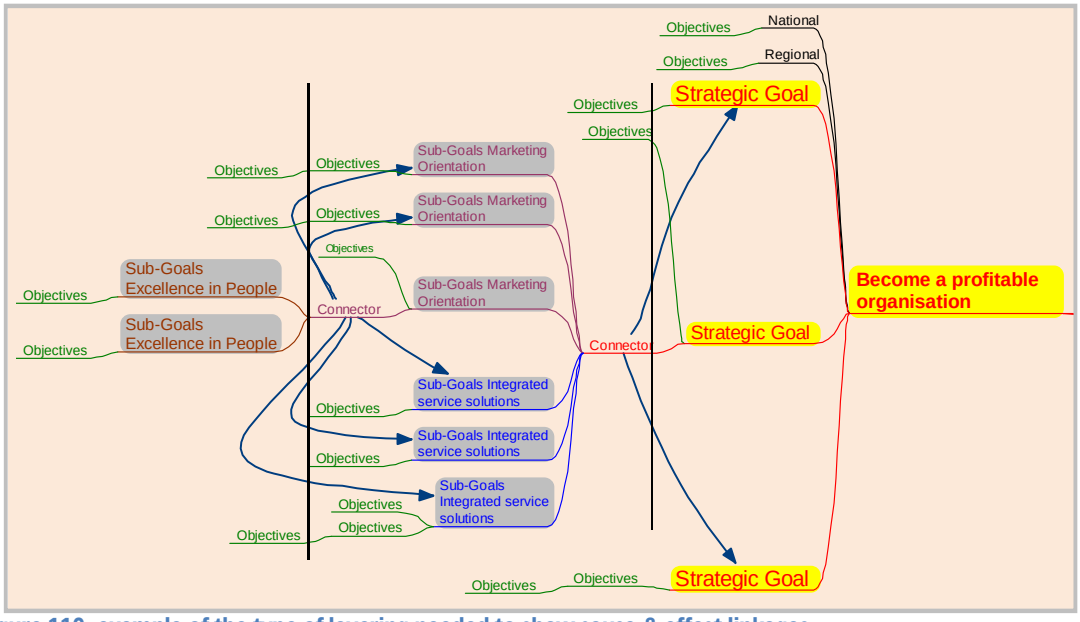

Figure 110- example of the type of layering needed to show cause & effect linkages

In Figure 110, the map is read from right to left with the strategic goals and sub-goals highlighted. The layering we are referring to is shown by the positioning of the sub-goals and strategic goals. The two vertical lines have been added to enhance this layering effect. The first layer is the two sub-goals called Excellence in People. These two sub-goals impact upon all six of the sub-goals in the next layer. The middle layer contains three sub-goals 'Integrated Service Solutions' and three sub-goals 'Marketing Orientation'. The link between these six sub-goals and the previous two to the left (in the first layer) is indicated by the arrows and the branch. The same type of linkage is shown between the six sub-goals (in the middle layer) and the three strategic goals (in the right hand layer). All six sub-goals impact upon all three strategic goals.

A partial BSC is applicable as in most BSC's there is considerable time spent on defining the measures that are used. These are not necessary for the successful identification of critical processes.

The next step in developing this partial BSC is to define the cause & effect relationships between the objectives, strategies and goals. We suggest a 'rule of thumb' or heuristic approach in which the project team ask themselves' if there is an effect by a single objective on the other objectives, strategies or goals. Each objective and strategy is looked at singularly. This can be shown by using arrows to show the links and in some software packages these arrows have different thicknesses to define the strength of effect (Scheer 2000).

> Many organisations suffer from 'paralysis by analysis' when they attempt to provide conclusive proof of the state of a situation or element (Dettmer 1998; Dollinger 1999; Frenzel 1999; Hacker & Brotherton 1998; Kaplan & Norton 2001; Meredith & Mantel Jr 2000). This can be as unhelpful and disastrous as guessing at a state of being from limited knowledge and experience (Meredith & Mantel Jr 2000).

As with research methods there are two categories in which assessment methods might be considered:

1. Quantitative assessments- these are based on possibly complex statistical data which is analysed to provide a more reliable result.

2. Qualitative assessments- these are based on historical data, thoughts and impressions gained from experience and conversation. The analysis might occur as conversation or debate and as a single person's thought.

The sophisticated analytical methods are not discussed or applied in this book. From a more pragmatic view the qualitative approach is favoured in order to avoid the issues of 'paralysis by analysis' and to provide business with an approach to analysis which is able to be conducted in a reasonable time frame and at a relatively low cost.

One practical method is the heuristic approach called 'anchoring and adjustment style heuristics' (Davidson & Griffin 2000). The approach bases the assessment on historical data. This is the anchoring portion of the heuristic style. The historical data is adjusted to suit the present context (time and place) adding knowledge sourced since the original data was provided. This is the adjustment portion of the anchoring and adjustment style heuristic approach. The result is an assessment based on fact and adjusted qualitatively. The approach consumes far less time and resources but is ultimately an approximation of what the assessment might be if a quantitative approach was used (Davidson & Griffin 2000).

Once the cause & effect links between objectives strategies and goals are identified and mapped then objectives are linked to the original list of identified business processes, developed in step two, by using the same approach to cause and effect. The project team asks – which processes have an impact on which objectives? A single process may have cause & effect relationships with many objectives.

We used a table (Table 37), which listed the processes down one side of the page, the process perspective objectives down the centre of the page and a column for the results down the right hand side.

Processes within Service Delivery	Process Perspective Objectives	Example results
Manage capacity	A) Reduce activity complexity	5,6,7,9,10,11
Quality processes	B) Increase utilisation of low cost solution processes	
Billing	C) Proceduralise existing informal processes	
Reporting		

Help desk	D) Develop support team model	
Problem management		
Change / Enhancement management	E) Reduce non-productive time	
Release management	F)Reconfigure products and services to meets needs	

Table 37-Relationship Drawing Table

The project team would identify which processes impacted on the process perspective objective and record the processes' representative number in the relevant cell of the far right column. For example, reduce activity complexity is shown as having six processes impacting on it. They are represented by the numbers 5, 6, 7, 9, 10 and 11. The number 5 represents Billing in the left hand column.

An example set of cause & effect relationships for processes to objectives can be seen in Figure 111. Processes are shown in red text and these processes have cause & effect relationships with the process objectives which are identified in green text. The blue text identifies a typical financial perspective objective.

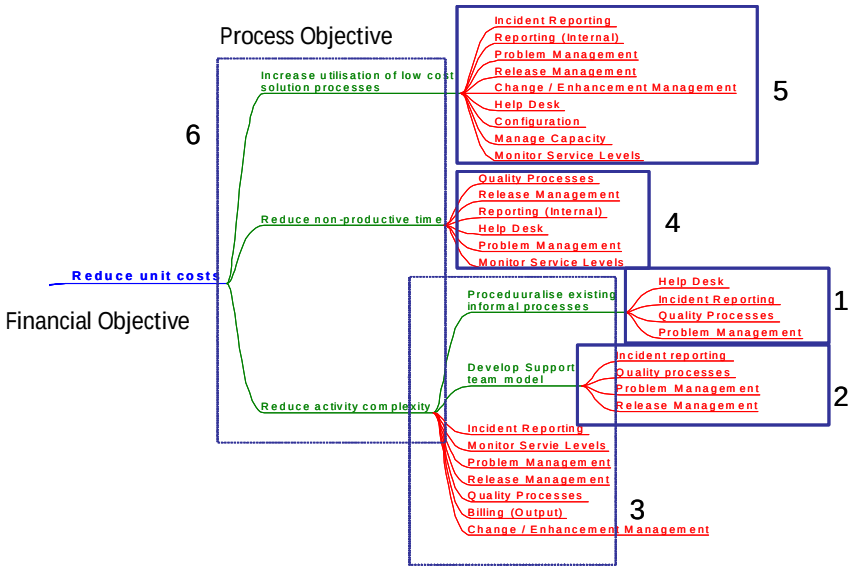

Figure 111- Example of processes and or objectives, which needed to be considered together

This example of a BSC style 'map' shows the linked processes to objectives, which were completed using heuristics. The blue boxes in the map are inserted to show the processes and objectives which are taken into consideration when assessing the relationships between processes and the objective to the left. The relationships are the contribution of the processes in assisting the achievement of the objectives. For example; in box one (1) there are four red text processes relating to one process perspective objective. In box three (3) there are seven red processes and two objectives affecting a single objective shown to the left.

The example of processes and or objectives which needed to be considered together is developed using Mind Jet software called 'Mind Mapper'. While not a 100% solution, was far more useful than other approaches we had tested or appraised. The software essentially uses a branch network used to visualise linkages, and within the diagram further linkages can be added using U shaped arrows. Colour is easily added as well as icons and 'floating' text (text not attached to a branch). These elements provide a map that offers a number of levels of communication, reducing the complexity of a strategic map.

Cause & effect is a visual message reflecting how different objectives and strategies affect other objectives and strategies within a strategic plan. It is important that participants are able to provide plausible links within the strategic map and as such the communication of these links needs to be clear. As the strategic map becomes a more complete picture of the needs of the organisations approach to its goals the complexity of these cause and effect linkages usually increases. We knew it was important to provide an easy to understand and visually uncomplicated picture of these strategic cause and effect maps.

Other possible solutions were to use different modelling software products such as Microsoft Visio, ARIS toolset and DIA. These tools support modelling applications but each of them failed to provide the functionality required in displaying the information developed within this Targeting Methodology. Modelling packages generally use 'objects' which are different shapes and colours. These objects allow for a small amount of text to be added as most communication of information is provided by the standard shapes and joins used. We needed an easy means to show the logical connection of objectives to strategies: concept mapping provided this functionality. The mind-mapping software was also inexpensive and easy to learn.

We sought to improve the concept maps more effectively and utilised the work of Edward Tufte (2002) who writes on the visual display of information. His books on displaying complex information visually describe how a visual explanation has a number of levels. The first is the colour of the explanation and how colour draws the eye to groups of information. The second is the layout of the explanation and the placement of objects or information as another way of relating information and the third, the structure of text based information (Tufte 2002). The strategic maps developed within the Targeting Method should make extensive use of colour, layout and text structure.

During the REALTECH project we developed a corporate BSC and then developed a business unit BSC, which was linked to the corporate scorecard. We used a laptop connected to a data projector when discussing the maps so that the entire project team were able to view the large-scale image of the developing BSC. The project team could easily change the structure and contents of the map as the discussion took place.

In Step Three we develop a strategic map to identify the goals, strategies and objectives of an organisation. We then identify the cause and effect linkages within this map and show them visually. The last task of this step is to identify the processes that relate to the internal process perspective objectives and add these to the visual map being developed.

3. Assessing the Effect of Failure and the Probability of Failure

Step Four: Assessing Dependency

Dependency is defined as the effect of failure of a process on the organisation. The factor dependency is measured by assessing the probable effect of the types of failure of a process on the organisation.

To calculate ratings for dependency an organisation can use a number of techniques; for example, anchoring and adjustment style heuristics and the FMEA methodology severity assessment.

> Failure Mode Effects Criticality Analysis (FMEA) is a quality improvement method initiated by the US army in the late 1940's (Kinetic 1999). The automotive industry has used this as the basis of their quality improvement process until the development of ISO 9000 (Kinetic 1999). FMEA is commonly defined as 'a systematic process for identifying potential design and process failures before they occur, with the intent to eliminate them or minimize the risk associated with them' (Kinetic 1999; Stamatis 1995). The focus within the FMEA methodology is on failure and the detection of failure.

Further evidence of this focus is seen in the FMEA Risk Priority Number (RPN). The RPN is an assessment of the risk of probable undesired outcomes of a production process which provides a rank order list of those outcomes for which action is required. The undesired outcomes are the types of failure that might occur in a design or production process.

The first task in this step is to agree on the type of assessment that will be undertaken. We found that most companies prefer the anchoring and adjustment style heuristics as more appropriate to the needs of their organisation. A major influence on this decision was the amount of time available to the project team members and also the complexity of possible alternatives.

When using anchoring and adjustment style heuristic decisions, input by a group of people is an improvement over that of a few people. A consensus result can be used or if this is not possible then an average or mean is applied.

To use this method effectively the project team required a knowledge of, or evidence of the effects of failure for the processes under assessment and if these effects will be similar in the future.

A ranking system with 1 = least effect and 10 = most effect is used by the project team in assessing each process. Organisations can apply their own criteria to the rankings or use the rankings found in the FMEA methodology.

The rankings and their explanation are shown in Table 2 (Stamatis 1995, p.451).

Effect	Rank	Criteria
No effect	1	No effect on processes
Very slight effect	2	Non-vital fault noticed sometimes
Slight effect	3	Non-vital fault noticed most of the time
Minor effect	4	Non-vital fault always noticed

Moderate effect	5	Non-vital fault requires repair
Significant effect	6	Non-vital fault process not finishing
Major effect	7	Process not finishing with performance severely affected but functional and safe
Extreme effect	8	Process not finishing with performance extremely affected not functional and safe
Serious effect	9	Safety related time-dependant failure with potential hazardous effects. Disruption to subsequent processes
Hazardous effect	10	Safety related with imminent failure and legal ramifications

Table 38- Effect of failure of a process - ranking guidelines (Stamatis 1995)

These rankings from the FMEA methodology use a ten point scale with an explanation of the type of effect that would be expected for each ranking. The project team can adjust these rankings by changing the criteria for each effect to suit their industry or environment.

The project team then take the list of processes identified in step two and assess the probable effect of failure of the process on the organisation for each process. Each process from the list will then have a ranking of between 1 and 10. A table listing the processes down one side and the rankings in a column can be used to record the results as shown in Table 39.

Process	Dependency	Probability of Failure	Impact	Criticality
Process name	Ranking result			

Table 39- Example of table used to record assessment results

The results of these assessments are then recorded in a table listing all the processes and their result, using a scale of one to ten, with ten being most effect and one being least effect. With this task complete we turn to step four, the assessment of probability of failure.

Step Five: Assessing Probability of Failure

In this step we assess the probability or chance that a process will fail. Step four uses a similar approach to that seen in step four, that is, the first task is to agree the method by which the assessment will be conducted.

The anchoring and adjustment style heuristic is our suggested approach for the same reasons identified earlier.

The participants should also agree to a definition of failure and the target type model following Figure 112, is a popular starting point.

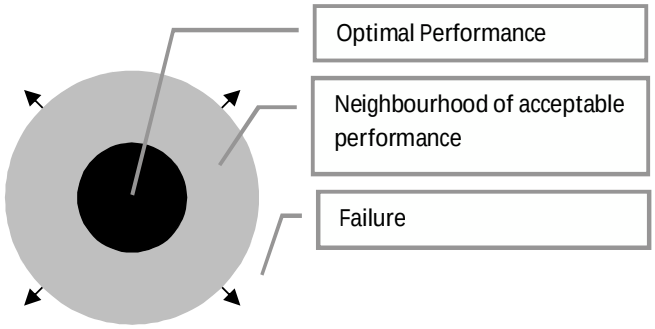

Figure 112- Categories of performance model

Figure 112 suggests one type of failure (outer -white), an area of optimal performance (centre -black) and area between optimal and failure (grey) in which performance is not optimal but is still considered within acceptable levels. Sub-optimal performance and over-performance is a category of failure and might be considered to be within the neighbourhood of acceptable performance as the effect of the failure is minimal and thus not a critical reason for process improvement. When the project team are agreed on how they will identify failure they can assess the factor. If using the heuristic approach they then locate historical data on the processes being assessed which have failed. This information will anchor the heuristic in fact and the next step is to use current experience and future trends to adjust the original data taking into account possible changes in the environment. Variable elements of the environment such as the skill levels of employees and usage of the process will influence the outcome of the rankings.

A ranking system similar to that used for dependency is applied for this factor. 1 = least probability of failure and 10 = most probability of failure. Participants can apply criteria to each ranking; for example, 1 = never fails and 10 = fails more than five times a day.

The participants then assess the same processes as were assessed in step three by recording a ranking in the table used in step three. We will then have completed assessments for dependency and probability of failure in the table.

Process	Dependency	Probability of Failure	Impact	Criticality
Process name	Ranking result	Ranking result		

Table 40- Example of table used to record assessment results

Step five sees an agreement by project team for the method of assessment and the categories of failure which will be used to define the number of probable failures that might occur.

When the assessments for dependency and probability of failure are completed it is now possible to take the next step of providing an impact rating to the relationships within the strategic map.

4. Assessing Impact and Calculating Criticality

Step Six: Assessing Impact

In step six we assess the impact factor, which is defined as the relative contribution of a process on organisational objectives and goals. In order to measure this factor we assess each of the cause & effect linkages developed in the strategic map from step three. These linkages start with the processes and end at the goal or goals by following the branch structure. The linkages are calculated for each branch along which they impact and then added where a process impacts more than one objective. The calculation is explained later in this section.

The reason for undertaking the assessments in Step 6 and not step 4, which is immediately after the mapping, is to enable the project team to assess their previous thinking. This is similar to an editing process in which the writer will wait a number of days before reviewing a paper.

This approach is similar to those used in many BSC software systems, where relationships are classified as high, medium and low impact (Scheer 2000; CorVu 1999). In our methodology the user is asked to provide a percentage score of the impact of the focal process in relation to all the other processes or objectives which are shown to impact on an individual objective.

Figure 113 uses blue rectangular boxes to indicate how this works.

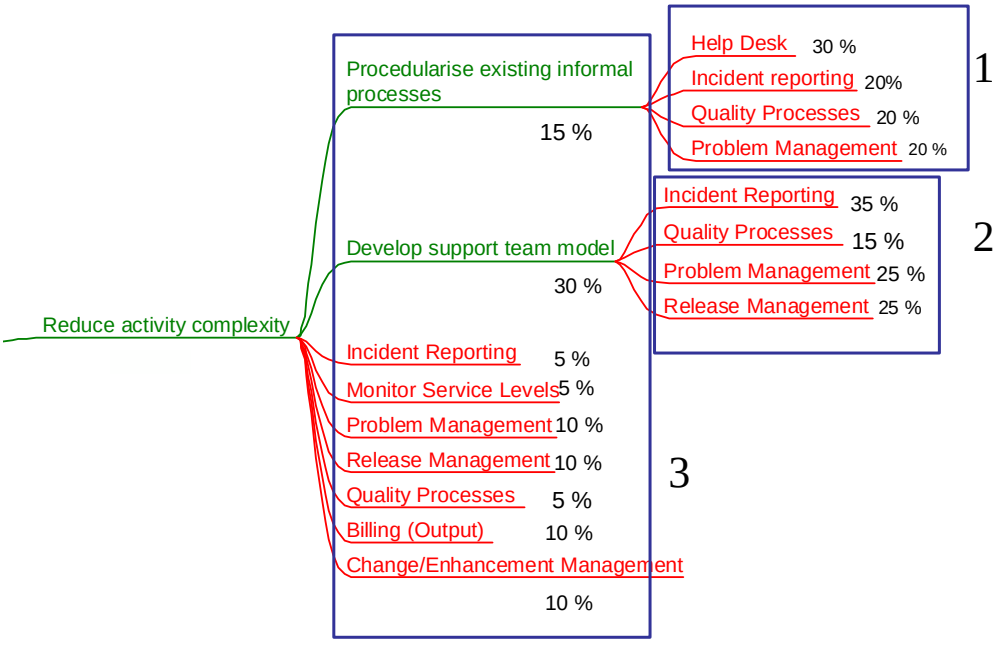

Figure 113- Portion of the previous example, of a BSC Map, showing impact assessments

The map (Figure 113) is read from right to left with the processes identified by the organisation shown in red text and to the right of the map and the objectives they link to in green text to the left of the map.

Box 1 at the top of the diagram has four processes, help desk, incident reporting, quality process and problem management, which all have been assessed as impacting on the objective to its left, proceduralise existing informal processes. Proceduralise existing

informal processes, develop support team model and the seven processes within box 3 are all assessed as impacting upon the objective 'reduce activity complexity'. The rating for impact is shown to the right of each process and objective.

The ratings given to each of the processes or processes and objectives within a blue box (1,2 & 3), should not in total add to more than 100% but can be less (box 1 shows an impact total of 90% for the four processes). It is possible that there are other objectives or processes which might impact on the individual objective which are not mentioned and may contribute in a minor way.

It is not necessary for ratings of Impact to add to 100 only that they should not exceed 100

It should be remembered that some processes are assessed as impacting on more than one objective. In Figure 113 the process 'problem management' is shown as impacting on three objectives, proceduralise existing informal processes, develop support team model, and reduce activity complexity. Each branch along which the process problem management impacts are assessed individually and the totals for each branch are added together.

Add process which may have been forgotten at this point

At this point if there are processes which have been forgotten they can be added to the map.

In our experience, the use of a rating system of between 1% and 100% is more effective than 1 = least and 10 = most as it allows for increased differentiation of the cause & effect relationships. It is also possible to ignore the use of percentages and opt for the equivalent in decimal places, for example, 20% is equal to point 2.

Once these percentages are applied to the map they can then be calculated to provide a ranking for each process.

For example, in

Figure 114 the organisation would multiply the 20% assessment for problem management by the 15% assessment for proceduralise existing informal processes. The result is the impact of the process problem management on the objective 'reduce activity complexity'.

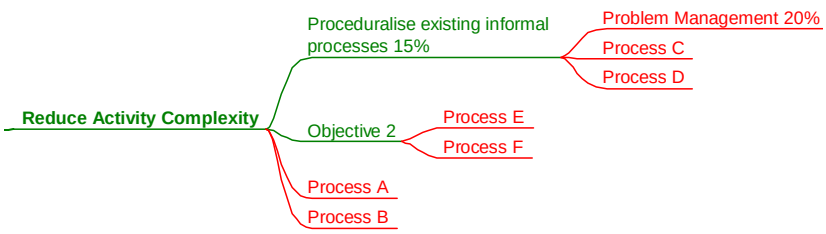

Figure 114- Calculating along the branch

The same procedure is extended along each branch from process to goal, resulting in n number of assessments multiplied by each other. For example, in

Figure 114 the calculation would start with 20% x 15% x ...

An excel table is a suitable approach to recording and calculating the totals for the assessments. Rows list the processes and columns are used to record each % assessment along an individual branch.

Table 41 shows the layout and part of the formulae that might be used to calculate the impact of each of the processes shown in column B.

A	B	C	D	E	F
1		Branch 1	Branch 2	Branch 3	Total = addition of each column
2	Help Desk	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C2+D2+E2+..)
3	Incident reporting	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C3+D3+E3+..)
4	Quality Processes	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C4+D4+E4+..)
5	Problem Management	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C5+D5+E5+..)
6	Release Management	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C6+D6+E6+..)
7	Monitor Service Levels	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C7+D7+E7+..)
8	Billing (Output)	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C8+D8+E8+..)
9	Change/Enhancement Management	= (%*%* ....)	= (%*%* ....)	= (%*%* ....)	= (C9+D9+E9+..)

Table 41- Excel table showing possible formula for calculating impact

We have now calculated the ratings for the impact assessments of each process on the organisational goal (or goals). The result of these calculations will be a list of processes, with a value indicating the probable impact of the process on the organisation's goal or goals. Those processes with the largest value result are considered to have the greatest impact.

In step six, we have taken the output of step three, which was, the identified linkages between processes and goals using cause & effect. These linkages were then assessed for their relative contribution to the objective, strategy and goal along each branch (impact). The results of these assessments were then multiplied in order to arrive at a total value for each branch within the strategic map. Where a process impacted more than one objective, the total value for each branch along which the process impacted was added. The grand totals indicated which processes had the greatest impact on organisational goals.

The grand totals for impact are then added to the table used to record the results of the assessments for the criticality factors (dependency, probability of failure and impact).

Table 42 is an example of the table.

Process	Dependency	Probability of Failure	Impact	Criticality
Process name	Ranking result	Ranking result	Ranking result	

Table 42- Example of table used to record assessment results

Thus far we have assessed the factors dependency, probability of failure and impact of each of the processes identified from step 2. The next step requires that we calculate the criticality, which is the product of the factors assessed so far.

Step Seven: Calculating Criticality

In step seven we calculate criticality which is the mathematical product of impact, probability of failure and dependency. The definition of criticality as taken from the literature review is 'a critical process is one which has the greatest positive contribution or negative effect on the organisation over time.' Thus we suggest, as shown in the literature review that criticality is the product of impact, probability of failure and dependency.

Criticality *is the product of impact, probability of failure and dependency.*

The relationship between each of the three factors which make up criticality is important to the treatment of the factors during the calculation of criticality. We have not sought to determine whether the relationships, between the three factors that combine to form criticality in the targeting methodology, are dependent or independent of each other. When calculating the values for each process the method thus requires that each factor is multiplied rather than added in the same way as the FMEA methodology operates (Kinetic 1999; Stamatis 1995). Adding the factors suggests that they are independent of each other (Kinetic 1999).

Step seven then requires that we return to the table, in which the results for each of the assessments for the processes have been recorded.

1	A	B	C	D	**E**
2	Process	Dependency	Probability of Failure	Impact	Criticality
3	Process name	Ranking result	Ranking result	Ranking result	**=(B3*C3*D3)**

Table 43- Example of table used to calculate criticality

The ranking result for each process is placed into the formula shown in cell E3 of Table 43 above. The output of this calculation is a list of processes ranked by their criticality. The process with the greatest value in comparison to the other processes is

<u>Calculation Issues</u>
1. Using different values for assessments
2. Weighting of factors
3. High result in only one factor

considered to have the greater criticality.

There are a number of issues that should to be discussed at this point in regards to the final ranking of the processes in terms of criticality.

Weighting of the three factors:

Thus far we have two factors (dependency and probability of failure) that are rated out of ten and the third factor (impact), which is a percentage (out of 100). Though it may appear that impact is ten times more important that dependency and probability of failure, our sub objective here is to derive a rank order; a list of processes from most critical (highest rank) to least critical (lowest rank). This difference of scale between impact (1-100), dependency (1-10) and probability of failure (1-10), will not alter the rank order of processes in the list. The impact scale (1-100) was selected to make the decision of assessing impact as simple and logical as possible.

Each organisation might adjust the weighting of each of the three factors to suit their perception of the importance of one factor in comparison to the others. We do not suggest this as we are unable to provide suitable evidence for changes of this nature.

If the results this far, in the targeting method, provided a result such as the example shown in Table 44, then there is an argument that both process A & B should be considered critical.

Process	Dependency	Probability of Failure	Impact	Criticality
Process A	10	1	1	10
Process B	2	3	7	42

Table 44- Example of threshold issue

The argument suggests that Process A should be considered critical because of the very large effect that the 'failure of the process' or the 'level of dependency' that organisation has for the process. In this example, the probability of failure assessment is almost negligible, and the assessment for impact on goals is also very low.

In our experience within organisations, this type of result, (pathological behaviours) does not exist except when there is a lack of understanding or poor classification of ratings. In any case it is necessary to consider each process being assessed for criticality in the light of the combined results. As previously stated, criticality is the product of impact, dependency and probability of failure, not the result of only one assessment.

It may be useful to some organisations to provide a threshold figure for each assessment result, which will, if exceeded, be considered for

Assessment results are unique to each organisation.

assessment by the final two factors (probability of successful improvement and cost/benefit).

The previous six steps have provided us with a list of processes in which those with the highest rating are considered to be the most critical. This list is unique to each organisation, department or business unit in which it is calculated.

The next step is designed to assist the organisation in selecting which of the most critical processes it should examine for possible process improvement.

5. Choosing the Best Process Improvement Project for your Company

Step Eight: Assessing Cost/benefit

This step is concerned with the assessment of cost/benefit of a process in order to uncover the value to the organisation in conducting a process improvement project on a process. If a process improvement project is considered to be an investment of an organisation's resources then economic theory states that only those investments which add positive value should be undertaken (Dollinger 1999; Carnegie et al. 1998; Mankiw et al. 1999).

The definition of cost/benefit is the comparison of costs associated with and caused by the project and the benefits derived from and affected by the project. A cost/benefit analysis which provides greater value of benefit than costs is considered to have positive cost/benefit and should be further considered for improvement.

Choosing to utilise the step 8, 9 & 10 or not

The methodology so far has provided the project team with the process to rate the 'criticality' of each process. It is entirely possible that at this point an entity might decide to improve half or a few of those processes with the highest criticality rating. The organisation should decide at this point how many processes it can afford to conduct the assessment of cost/benefit upon.

Initiating a cost/benefit on a large number of processes can be an expensive and time consuming exercise in itself. Thus it is suggested that some form of 'culling' is performed before starting this step. The project team may at this point also choose to ignore the steps eight, nine and ten and improve processes purely on their 'criticality' rating. Where the processes are complex and there are many to choose from, it is suggested that the project team take into consideration a more in-depth approach as suggested by steps eight, nine and ten.

Within some projects the project teams may not use the final three steps of the targeting method. We have a number of explanations for why these steps may not be undertaken.

1. It is possible that the project team see the last three steps as time consuming for little further gain. That is, they may consider that their present knowledge of the processes is sufficient to select the processes they would improve.

2. Their process improvement process may be informal and thus if they are not using a project management approach will not necessarily require the information on cost/benefit and probability of success.
3. The last alternative is that the project team may be happy with the criticality rating as a method for selection of which processes to improve.

Process	Impact	Dependency	Probability of Failure	Criticality
Problem Mgmt.	0.018	8	9	1.310
Quality Processes	0.010	8	8	0.639
Help Desk	0.011	8	7	0.597
Monitor Service Levels	0.009	7	6	0.368
Billing	0.008	6	7	0.338
Incident Mgmt.	0.008	6	6	0.287
Manage Capacity	0.008	4	4	0.135
Configuration	0.010	3	2	0.058

Table 45- Example of results table showing a single obvious choice

Process	Impact	Dependency	Probability of Failure	Criticality
Problem Mgmt.	0.020	7.5	5.4	0.810
Quality Processes	0.015	9	5.9	0.797
Help Desk	0.013	9	6.5	0.761
Monitor Service Levels	0.017	8.5	5	0.723
Billing	0.006	8	5.5	0.264
Incident Mgmt.	0.008	6	4	0.192
Manage Capacity	0.008	5.5	4.5	0.198
Configuration	0.008	5	4	0.160

Table 46-Example of results table showing **no** obvious choice

Table 45 and Table 46 compare the situation when there is an obvious choice as in Table 45 with problem management having a rating more than twice that of the next highest process and in Table 46 where the results for the top four processes are reasonable close. In the second situation it is more difficult to make a good decision on which process to improve first without having conducted some further evaluation of the returns to be provided by each of the processes and the probability of achieving those returns.

The suggested approach to assessing this factor is to use one of the common cost/benefit methods presently available and described in many financial texts. An organisation that presently employs a cost/benefit analysis should follow their accepted method. There are a considerable number of cost/benefit analysis or investment analysis methods for the practitioner to choose from, such as:

1. Accounting rate of return;
2. Net present value (NPV);
3. Return on Investment (ROI);
4. Economic Value Added (EVA);
5. Internal Rate of Return (IRR); and
6. Return On Capital Employed (ROCE) (Weiss & Wysocki 1992; Nel 1997; Meredith & Mantel Jr 2000; Mah 1999; Carnegie et al. 1998; Botten & McManus 1999; Mankiw et al. 1999).

In most assessments of cost/benefit it is first necessary to define the project scope. The scope of a process improvement project relates to the project plan. The project plan identifies the scale of the project and the time frame in which the project should occur. When scope is defined it is then necessary to identify the resource (human & equipment) components, which both contribute to the cost of the project (Weiss & Wysocki 1992; Jewels 2001; Meredith & Mantel Jr 2000). We then have a basis for calculating cost.

Most approaches should take into account both tangible and intangible benefits over an agreed time frame as well as the costs accrued in the improvement project and any costs incurred by other areas due to the changes made to the process (Carnegie et al. 1998, p.821).

Only those projects with a positive cost/benefit should be further assessed for probability of successful

A positive value would be a result showing that the benefits were financially greater than costs. A negative value would be associated with costs being greater than benefits. Those processes with positive value are then taken to step nine to be assessed for the probability that the organisation or project team can successfully improve the process. The step nine assessments are concerned with the risk of not receiving the desired return.

Step Nine: Assessing the Probability of Successful Improvement of a Process

Step nine, 'Probability of Success', is defined as the assessment of the likelihood that the organisation can successfully re-engineer a process and provide the expected benefits within the expected time and cost.

This step can be completed by using risk analysis techniques, such as scenario planning and multi-criteria decision analysis tools as an aid to the decision making process. The more common approach in this methodology is to use the anchoring and adjustment style heuristics.

Wasana Sedera's (now Bandara) (2001) Process Modelling Success research provides us with a list of factors that impact on the likely success of a process modelling project (Sedera, Rosemann & Gable 2001a). The factors applicable to our task are;

1. Team Orientation
2. Project Management
3. Management Support
4. User Participation
5. Project Championship
6. Communication (Sedera, Rosemann & Gable 2001a)

Suitable historical data the user might seek information on would be the success or failure of previous process improvement projects and the impact of each of the Sedera factors on their success or failure. The adjustment phase of the assessment can also use the Sedera (2001) factors to provide the project team with points of focus by which to judge the possible success or failure of the processes being assessed. The project team is able to adjust the original data they have collected by using their knowledge and experience with the organisation to provide an assessment of the capabilities and support which might be found to influence the success of the project.

It should be remembered that there are three views of success in projects;

1. Project Management Success- which is the internal perspective that the project was effective and efficient

2. Project Success- which is the external perspective and asks how closely the project meets the goals as specified in the project documents and

3. Organisational Success- which is whether the project provided appropriate benefits regardless of the project outcome (Jewels 2001).

This third view is the most important.

A scale of 1 = least probability of success and 10 = most probability of success is appropriate for the ranking. As with previous assessments you can apply criteria to each level of ranking if this assists in the decision making.

The result of this assessment is that each of the (now reduced list) processes is provided with a rating which signifies their probable chance of being successfully re-engineered. We now have a list of processes ranked according to most likely to be successfully improved.

The next step is the final step of the targeting method, requiring the organisation to make a business decision based on the output of the previous three steps (steps seven, eight and nine).

Step Ten: Selecting Which of the Critical Processes to Improve First

In step ten we use the outputs of the assessments for cost/benefit and probability of success combined with the rating for criticality, to decide which processes to improve first.

Process	Criticality rating	Those with a Positive Cost/Benefit result and ranking	Probability of Successful Improvement ranking	Processes chosen for improvement
Process name	Ranking result	Ranking result	Ranking result	List of Processes for improvement

Table 47- Table headings for summarising the outputs of steps 7, 8 and 9

Much of the decision making in this step is dependent on the groupings of the results. If results of each of the assessments are closely grouped then the decision making may be difficult if a further reduction in the processes is needed.

Process	**Criticality rating**	**Those with a Positive Cost/Benefit result**	**Probability of Successful Improvement ranking**	**Processes chosen for improvement**
Problem Mgmt.	0.810	$15,000/yr	4.4	2nd
Quality Processes	0.797	$2,000/yr	7.5	3rd
Help Desk	0.761	$21,000/yr	6.5	1st
Monitor Service Levels	0.723	$2,000/yr	9	4th
Billing	0.264	$5,000/yr	8.3	
Incident Mgmt.	0.192	$8,000/yr	7.2	
Manage Capacity	0.198	$3,000/yr	4.5	
Configuration	0.160	$17,500/yr	4	

Table 48- Example of the results of steps 7, 8 and 9

Choose the 'low hanging fruit' for first time process improvement projects.

Table 48 is an example of the possible results of steps 7, 8 and 9 which are used in step 10 for deciding which process or processes to improve first. It may not always be the process with the greatest criticality if the criticality results are similar. Also it may be that if this your organisations first attempt at improving processes it is wise to select a process for improvement in which the possibility of successful improvement is very high. This is the low hanging fruit answer to the decision being asked in this step.

Ultimately, the decision is a business decision as the results of the targeting methodology are used to reduce the complexity of the decision making. If you use heuristics as the form of decision making, the quality of assessments is necessarily subject to the skills and knowledge of those people conducting the assessment.

> It is possible that the selected process may be far too large to consider improvement of the process in its entirety. If this is the case then the organisation might identify the lower level processes within the larger process and perform the identification and selection process again at this level. Once the critical processes have been identified at a granularity that is suitable for improvement then the entity can undertake a properly targeted process improvement project.

In this step we have suggested that the final decision making for the selection process is not based on scientific fact but the quality of the assessments used during the targeting method. We have made the decision of which to improve first based on the outcomes of the assessments of cost/benefit and probability of successful improvement of the process and the criticality rating for the processes assessed in steps eight and nine. We have also suggested that if the chosen process is very large and complex then the organisation should undertake the process again using the lower level processes within the larger more complex process.

The next page is a ten step, text based, model of the targeting method.

The CPTM in Summary

1. Preplanning
   1.1. Assessing participants
   1.2. Preparation of any documents
2. Defining Scope
   2.1. Identify the processes
   2.2. Introduction of the project as a whole to the project team
3. Developing a Strategic Map
   3.1. Identify the goals and strategies and objectives of the entity
   3.2. Identify the cause & effect linkages within the strategic map
   3.3. Link processes identified earlier (2.2) to internal process objectives
4. Assessing the Impact of Processes on Goals
   4.1. Assess the impact of each process on goals using heuristics and total
5. Assessing Dependency of the Organisation on the Process
   5.1. Agree on the method to be used for assessing dependency
   5.2. Identify the criteria to be used and rate each process
6. Assessing Probability of Failure of the Process
   6.1. Agree on the method to be used for assessing probability of failure
   6.2. Identify the criteria to be used and rate each process
7. Calculate the Criticality of each Process
8. Assess the Cost/Benefit of Improving the Process
   8.1. Agree on the method to be used for assessing cost/benefit
   8.2. Identify the criteria to be used and rate each process
9. Assess the Probability of Successful Improvement of the Processes with positive cost/benefit
   9.1. Agree on the method to be used for assessing probability of success
   9.2. Identify the criteria to be used and rate each process
10. Selection of which Critical Process to Improve First
    10.1. List the results of steps 7,8 and 9 and then dependant on organisational needs choose those processes for improvement which provide the greatest value for the least risk

References specific to the CPTM explanation:

1. Dettmer, H.W., Breaking the Constraints to World-Class Performance. 1 ed. Vol. 1. 1998, Milwaukee: ASQ Quality Press. 288.

2. Dollinger, M., Entrepreneurship: Strategies and Resources. 2nd ed. 1999, Upper Saddle River, NJ: Prentice-Hall.

3. Frenzel, C.W., Management of Information Technology. 3rd ed, ed. K. Duerr. 1999, Scarborough: Course Technology ITP. 546.

4. Hacker, M.E. and P.A. Brotherton, Designing and Installing Effective Performance Measurement Systems. IIE Solutions Magazine, 1998(August 1998): p. 18.

5. Kaplan, R.S. and D.P. Norton, The Strategy Focused Organisation: How Balanced Scorecard companies thrive in the new business environment. 2001, Boston: Harvard Business School Publishing Corporation. 400.

6. Meredith, J.R. and S.J. Mantel Jr, Project Management: A Managerial Approach. 4th ed. 2000, Brisbane: John Wiley and Sons. 616.

7. Davidson, P. and R.W. Griffin, Management: Australia in a Global Context. Adaptation of the 5th edition by Ricky W Griffin ed. 2000, Brisbane: John Wiley & Sons Australia Ltd. 852.

8. Kaplan, R.S. and D.P. Norton, The Balanced Scorecard. 1996, Boston Massachusetts: Harvard Business School Publishing. 322.

9. Kaplan, R.S. and D.P. Norton, The Balanced Scorecard: Measures that Drive Performance. Harvard Business Review, 1992. 70(1): p. p9.

10. Huxley, C., C. Taylor, and G. Stewart. Changing the Four Perspectives of the Balanced Scorecard to Suit IT. in Enhancing Business & Government Capability. 2002a. Beechworth, Victoria: Australian New Zealand Academy of Management.

11. Scheer, I., ARIS Toolset. 2000, Scheer.

12. Tufte, E.R., Visual Explanations: images and Quantities, Evidence and Narrative. 2nd ed. 2002, Cheshire, Connecticut: Graphics Press. 156.

13. Kinetic, L. 1999, FMECA Process, Kinetic, LLC http://www.fmeca.com/ffmethod/definiti.htm, (Accessed 06/06/2002)

14. Stamatis, D.H., Failure Mode and Effect Analysis: FMEA from Theory to Execution. 1995, Milwaukee, Wisconsin: Quality Press. 494.

15. CorVu 1999, The New Balanced Scorecard, CorVu Corporation http://www.corvu.com., (August 2001)

16. Carnegie, G., et al., Accounting: Financial and Organisational Decision Making. 1998, Melbourne: McGraw-Hill Book Company of Australia Pty Ltd. 998.

17. Mankiw, N.G., et al., Principles of Macroeconomics. 1999, Sydney: Harcourt Australia. 450.

18. Weiss, J.W. and R.K. Wysocki, 5-Phase Project Management: A practical planning and implementation guide. 1 ed. 1992, US: Perseus Books Publishing. 121.

19. Nel, J. IT investment management : a case study and survey of effects of IT useage on organisational strategic performance. in 3rd Pacific Asia Conference on Information Systems. 1997. Brisbane, Qld: Queensland University of Technology.

20. Mah, M., High-definition software measurement. Software Development, 1999. 7(5).

21. Botten, N. and J. McManus, Competitive Strategies for Service Organisations. 1999, Basingstoke Hampshire UK: Macmillan Press Ltd. 327.

22. Jewels, T. 2001, Benefits Realisation from IT Projects, QUT https://olt.qut.edu.au/it/ITN251/admin/index.cfm?fa=displayPage&rNum=85277&pType=curr, (December 2001)

23. Sedera, W., Critical success factors of process modeling for enterprise systems. 2001: Doctoral Consortium, 5th Pacific Asia Conference on Information Systems, Seoul.

24. Davenport, T.H., Process Innovation Reengineering Work through Information Technology. 1993, Boston, MA.: Harvard Business School Press,. 337.

25. Hammer, M. and J. Champy, Reengineering the Corporation: A Manifesto for Business Revolution. 1993, New York: Harper Business.

26. Makins, M., ed. Collins English Dictionary. 3rd ed. Vol. 1. 1992, Harper Collins Publishers: Sydney. pgs 1791.

27. Melnyk, S.A., Value-Driven Process Management: Using Value to Improve Processes. Hospital Materiel Management Quarterly; Rockville, 2000. 22(1).

28. Carpinetti, L.C.R., M.C. Gerlamo, and M. Dorta, A conceptual framework for deployment of strategy-related continuous improvements., in The TQM Magazine, Bedford. 2000. p. 14.

29. Dervitsiotis, K.N., How to attain and sustain excellance with performance-based process management. Total Quality Management, 1999. 10(3): p. 309-326.

30. Hax, A.C. and N.S. Majluf, Strategic Management: an integrative perspective. 1984, Englewood Cliffs,New Jersey: Prentice-Hall. 468.

31. Rummler, G.A. and A.P. Brache, Managing the White Space on the Organisation Chart. Supervision, 1991. 52(5): p. 6.

32. Poullot, G., D. Doutriaux, and J. Anno, ICSBEP Guide to the Expression of Uncertainties. 2001, Nuclear Energy Agency Nuclear Science Committee. p. 44.

33. Seely, R.J., et al., Defining critical variables in well-characterised biotechnology processes. Biofarm, 1999. 12(4): p. 33-36.

34. McFarlan, F.W. and J.L. McKenney, Corporate Information Systems Management; The Issues Facing Executives. 1983, Homewood, Illinois: Richard D. Irwin INC.

35. Sisco, M. 2002, Prioritze your recommendations to focus clients' efforts, Techrepublic.com http://www.techrepublic.com/article_guest.jhtml?id=r00720020313MS01.htm&rcode=&rcode=&page=3, (18/03/02)

36. De Loof, L., Information Systems Outsourcing Decision Making: A Managerial Approach. 1997, London: Idea Group Publishing. 287.

37. Thorp, J., The Information Paradox. Realizing the Business Benefits of Information Technology. 1998, New York: McGraw-Hill. 273.

38. Viljoen, J. and S. Dann, Strategic Management: Planning and Implementing Successful Corporate strategies. 3rd ed. 2000, Sydney: Pearson education Australia Pty Ltd.

39. Mendoza, C. and R. Zrihen, Measuring Up. Financial Management, 2001: p. pgs 26-30.

40. Peters, T.J. and R.H.J. Waterman, In Search of Excellence: Lessons from America's best-run companies. 1st ed. 1982, New York: Warner Books. 360.

41. Mabin, V.J., S. Forgeson, and L. Green, Harnessing Resistance: Using the theory of constraints to assist change management. Journal of European Industrial Training, 2001. 25(2): p. 168-191.

42. Australian Quality Council, Australian Business Excellence Framework. 2001 ed. 2001, Sydney: Australian Quality Council. 37.

43. Ittner, M.G. and D.F. Larker, Innovations in Performance Measurement: Trends and Research Implications. Journal of Management Accounting, 1998. 10: p. pgs 34.

44. Lipe, M.G. and S.E. Salterio, The Balanced Scorecard: Judgmental Effects of Common and Unique Performance Measures. Accounting Review, 2000. 75(3): p. 16.

45. Kaplan, R.S. and D.P. Norton, Renaissance Solutions, Using the Balanced Scorecard as a Strategic management System. Harvard Business Review, 1996a(1): p. p75.

46. Van der Zee, D.I. Alignment is not enough: Integrating Business and IT Management with the Balanced Scorecard. in Symposium on IT Balanced Scorecard. 1999. Antwerp, Belgium: Technologish Instituut VZW.

47. Mitchell, D., C. Coles, and R. Metz, The 2,000 Percent Solution. Free Your Organisation from "Stalled" Thinking to Achieve Exponential Success. 1999, New York: AMACOM. 258.

48. Mabin, V.J., et al., Public Sector Priority Setting Using Decision Support Tools. Australian Journal Public Administration, 2001a. 60(2): p. 44-59.

49. Jennex, M., et al. An Organizational Memory Information Systems Success Model: An Extension of De Lone and Mclean's IS Success Model. in 31st Annual Hawaii International Conference on Systems Sciences. 1998. Hawaii.

50. Ishman, M., Measuring Information Systems Success at the Individual Level in Cross-Cultural Environments, in Information Systems Success Measurement, series in Information Technology Management. 1998, Idea Group Publishing. p. pp. 60-78.

51. Garrity, E.J. and G.L. Sanders, Dimensions of IS Success, in Information Systems Success Measurement, series in Information Technology Management. 1998, Idea Group Publishing. p. 13-45.

52. Ballantine, J., et al., Developing a 3-D model for Information Systems Success, in Information Systems Success Measurement, series in Information Technology Management. 1998, Idea Group Publishing. p. pp. 46-59.

53. De Lone, W. and E.R. McLean, Information Systems Success: The Quest for the Dependent Variable . Journal of Information Systems Research, 1992. 3(1): p. pp. 60-95.

54. Myers, B.L., L.A. Kappelman, and V.R. Prybutok, A comprehensive model for assessing the quality and productivity of the information systems function: toward a theory for information systems assessment, in Information Systems Success Measurement, series in Information Technology Management. 1998, Idea Group Publishing. p. pp. 94-121.

55. Seddon, P.B., et al., Dimensions of Information Systems Success. Communications of the Association for Information Systems (CAIS), 1999. 2(20).

7.7. References

References for the thesis

ABS 1999a, *Characteristics of Small Business*, 8127.0, Australian Bureau of Statistics, Canberra.

ABS 1999b, *Information Technology, Australia*, 8126.0, Australian Bureau of Statistics, Canberra.

ABS 1999c, *Small and Medium Enterprises: Business Growth and Performance Survey*, Australian Bureau of Statistics, Canberra.

ABS 1999d, *Small Business in Australia*, Australian Bureau of Statistics, Canberra.

ABS 2000, *Business Use of Information Technology, Australia*, 8129.0, Australian Bureau of Statistics, Canberra.

ABS 2004a, *8127.0 Characterisitcs of Small Business, Australia - (Reissue - Main Features only)*, Australian Bureau of Statistics.

ABS 2004b, *8153.0 Internet Activity, Australia*, Australian Bureau of Statistics.

ABS 2004c, *Mesures of a knowledge-based economy and society, Australia*, Australian Bureau of Statistics.

Agarwal, R 1998, 'Small firm survival and technological activity', *Small Business Economics*, vol. 11, pp. 215-224.

Agassi, S, *mySAP Technology –Platform for the Future*, SAP AG. Available from: <http://www.sap.com/about/investor/pdf/MorganStanley_Shai-Agassi_2003-01-08.pdf

file://D:%5CMy%20Data%5CMy%20Documents%5C2008%5CCraig%5CAgassi2003SAP.pdf>. [2 April].

Al-Bakri, AA, Cater-Steel, A & Soar, J 2010, 'The influence of B2B e-commerce on SMEs' performance and efficiency: a review of the literature', *International Journal of Liability and Scientific Enquiry*, vol. 3, no. 3, pp. 213-224.

Amit, R & Zott, C 2001, 'Value Creation in E-Business ', *Strategic Management Journal*, vol. 22, no. 6/7, pp. 493-520.

Anderson, N, De Dreu, CKW & Nijstad, BA 2004, 'The routinization of innovation research: a constructively critical review of the state-of-the-science', *Journal of Organizational Behaviour*, vol. 25, pp. 147-173.

Angrosino, MV 2005, 'Recontextualizing Observation', in *The Sage Handbook of Qualitative Research*, Third edn, eds NK Denzin & YS Lincoln, Sage Publications, Thousand Oaks CA, pp. p 729-745.

Anon 2008, *UK annuity providers face hefty IT bill* in Life Insurance International, Financial News Publishing.

Anon, *Writing a Procedure*, Mindtools.com. Available from: <http://www.mindtools.com/pages/article/newTMC_78.htm>. [August 2011].

Anonymous 2001, 'ERP Can Give Its Customers A Bumpy Ride', *Australian Financial Review*, September 5 2001.

Antony, J & Banuelas, R 2002, 'Key ingredients for the effective implementation of Six Sigma program', *Measuring Business Excellence*, vol. 6, no. 4, pp. 20-27.

Antony, J, Kumar, M & Madu, CN 2005, 'Six Sigma in small- and medium-sized UK manufacturing enterprises', *International Journal of Quality & Reliability Management*, vol. 22, no. 8, pp. 860-874.

Aoyama Gakuin University 2003, *ARIS: Architecture of Integrated Information Systems*, Aoyama Gakuin University, http://www.bpm-agu.com/.

Arcury, TA & Quandt, SA 1999, 'Participant recruitment for qualitative research: A site-based approach to community research in complex societies', *Human Organization*, vol. 58, no. 2, pp. 128-133.

Arif, M, Kulonda, D, Jones, J & Proctor, M 2005, 'Enterprise information systems: technology first or process first?', *Business Process Management Journal*, vol. 11, no. 1, pp. 5-21.

Armistead, C, Pritchard, J-P & Machin, S 1999, 'Strategic Business Process Management for Organisational Effectiveness', *Long Range Planning*, vol. 32, pp. 96 - 106.

Aron, R & Singh, JV 2005, 'Getting Offshoring Right', *Harvard Business Review*, vol. 83, no. 12, pp. 135-143.

Asheim, BrT 2003, *Regional innovation policy for small-medium enterprises*, Edward Elgar, Cheltenham, UK Northampton, MA.

Atkinson, AA & Shaffir, W 1998, 'Standards for Field Research in Management Accounting.', *Journal of Management Accounting Research*

Journal of Management Accounting Research J1 - Journal of Management Accounting Research, vol. 10, p. 41.

Australian Bureau of Statistics, 17 January 2007, *Measures of industry structure and performance*, Commonwealth of Australia. Available from: <http://www.abs.gov.au/AUSSTATS/abs@.nsf/bb8db737e2af84b8ca2571780015701e/24D244B219D8032CCA2572360000FF4C?opendocument>. [4 July].

Australian Bureau of Statistics 2011, *81660DO003_200910 Summary of IT Use and Innovation in Australian Business, 2009-10*, Bo Statistics, Australian Government, Canberra.

Australian Quality Council 2001, *Australian Business Excellence Framework*, 2001 edn, Australian Quality Council, Sydney.

Bailey, JE & Royston, SM 1980, *Small Business Ediucation and Training in Australia*, Caulfield Institute of Technology.

Ballantine, J, Levy, M & Powell, P 1998, 'Evaluating informaiton systems in small and medium-sized enterprises: issues and evidence', *European Journal of Informaiton Systems*, vol. 7, pp. 241-251.

Bandara, W 2007, Process Modeling Critical Success Factors and Measures, thesis, Queensland University of Technology.

Banham, HC 2005, Organisational Change in Small and Medium Sized Enterprises - A Regional Study, Doctor of Business Administration thesis, University of Southern Queensland.

Banham, R & Bacani, C 2007, *Trouble in the Workshop* in CFO Asia .com.

Banzi, M, Bruno, G & Caire, G 2008, 'Open Source Development, Communities and Quality', *International Federation for Information Processing*, vol. 275/2008, pp. 307-315.

Barber, KD, Dewhurst, FW, Burns, RLDH & Rogers, JBB 2003, 'Business-process modelling and simulation for manufacturing management: A practical way forward', *Business Process Management Journal*, vol. 9, no. 4, pp. 527-542.

Barnett, TR & Mackness, JR 1983, 'An Action Research Study of Small Firm Management', *Journal of Applied Systems Analysis*, vol. 10, pp. 63-82.

Barrett, M & Walsham, G 1995, 'Using IT to support business innovation: a case study of the London Insurance Market', *Scandinavian Journal of Information Systems*, vol. 17, no. 2.

Bartett, J, Hinley, D, Johnson, B, Keeling, C, Lloyd, V, MacDonald, I, Mather, J, McLaughlin, G, Rudd, C, Wheeldon, D & Young, R 2001, *Best Practice for Service Delivery ITIL*, 2 edn, The Stationery Office, London.

Baskerville, R & Preis-Heje, J 1999, 'Grounded Action Research: a method for understanding IT in practice', *Accounting, Management and Information Technology*, vol. 9, pp. 1-23.

Baskerville, RL 1997b, 'Distinguishing action research from participative case studies', *Journal of Systems and Information Technology*, vol. 1, no. 1, pp. pp.24 - 43.

Bazeley, P 2004, ' "Issues in mixing qualitative and quantitative approaches to research"', in *Applying Qualitative Methods to Marketing Management Research*, eds R Buber & J Gadner, Palgrave Macmillan, Basingstoke, pp. pp. 141-56.

Benbasat, I, Goldstein, DK & Mead, M 1987, 'The Case Research Strategy in Studies of Information Systems', *MIS Quarterly*, vol. 11, no. 3, p. 18.

Bennett, C & Timbrell, G 2000, 'Application Service Providers: will they succeed', *Information Systems Frontiers*, vol. 2, no. 2, pp. 195-211.

Berard, EV 2006, *What Is a Methodology?* , itmWEB Media Corporation.

Bergelson, M 2007, 'Using SOA to integrate the contact center', *Network World*, vol. 24, no. 36, pp. 45-45.

Berger, A 1997, 'Continuous improvement and kaizen: standardization and organizational designs', *Integrated Manufacturing Systems*, vol. 8, no. 2, pp. 110-117.

Bergeron, F, Raymond, L, Gladu, M & Leclerc, C 1998, 'The contribution of information technology to the performance of SMEs: alignment of critical dimensions', in *6th European Conference on Information Systems*, ed. WJ Baets, Euro-Arab Management School, France.

Bergeron, FaR, L. 1992, 'Planning of Informaiton Systems to Gain a competitve advantage', *Journal of Small Business Management*, vol. 30, pp. 21-26.

Berisha-Namani, M 2009, 'The Role of Information Technology in Small and Medium

Sized Enterprises in Kosova', *Fulbright Academy 2009 Conference*.

Berkhout, M, Harrow, R, Johnson, B, Lacy, S, Lloyd, V, Page, D, Goethem, M, Bent, H & Welter, G 2001, *Best Practice for Service Support ITIL*, 3 edn, The Stationary Office, London.

Bernroider, E & Koch, S 2001, 'ERP selection process in midsize and large organizations', *Business Process Management Journal*, vol. 7, no. 3, pp. 251-257.

Bhagwat, R & Sharma, MK 2007, 'Information system architecture: a framework for a cluster of small- and medium-sized enterprises (SMEs)', *Production Planning and Control*, vol. 18, no. 4, pp. 283-296.

Bhagwata, R & Sharmaa, MK 2007, 'Information system architecture: a framework for a cluster of small- and medium-sized enterprises (SMEs)', *Production Planning &Control: The Management of Operations*, vol. 18, no. 4, pp. pages 283-296.

Bharati, P & Chaudhury, A 2006, 'Studying the current status of technology adoption', *Communications of the ACM*, vol. 49, no. 10.

Bhasin, S & Burcher, P 2006, 'Lean viewed as a philosophy', *Journal of Manufacturing Technology Management*, vol. 17, no. 1, pp. 56-72. Available from: Emerald.

Biazzo, S & Bernardi, G 2003, 'Process management practices and quality systems standards: Risks and opportunities of the new ISO 9001 certification', *Business Process Management Journal*, vol. 9, no. 2, pp. 149-169.

Bibiano, LH, Mayol, E & Pastor, JA 2007, 'Role and importance of business processes in the implementation of CRM systems', in *Taller sobre Procesos de Negocio e Ingeniería del Software (PNIS07)*, Zaragoza, España.

Bititci, U, Ackermann, F, Ates, A, Davies, J, Gibb, S, MacBryde, J, Mackay, D, Maguire, C, van der Meer, R, Shafti, F & Bourne, M 2010, 'Managerial processes:an operations management perspective towards dynamic capabilities', *Production Planning &Control* vol. 22, no. 2.

Bititci, US, Ackermann, F, Ates, A, Davies, J, Garengo, P, Gibb, S, MacBryde, J, Mackay, D, Maguire, C, van der Meer, R, Shafti, F, Bourne, M & Seniye, UF 2011, 'Managerial processes: business process that sustain performance', *International Journal of Operations & Production Management*, vol. 31, no. 8, pp. 851-891.

Blili, S & Raymond, L 1993, 'Information Technology: Threats and Opportunities for Small and Medium-sized Enterprises', *International Journal of Information Management*, vol. 13, pp. 439-448.

Bogdan, R & Biklen, S 1998, *Qualitative research in education: An introduction to theory and methods* 3 rd ed edn, Needham Heights.

Bolger, N, Davis, A, Rafaeli, E & Abell, DF, 'Diary Methods: Capturing Life as it is Lived', *Annual review of psychology*, vol. 54, pp. 579-616.

Bollen, R 2007, 'A Case Study of Bounded Rationality in the Market for Superanuation Products.', *Macquarie Journal of Business Law* vol. 4.

Bonk, ET 1997, 'The Information Revolution and its Impact on SME Strategy: the Asia Pacific Economic Cooperative forum as a model', *Journal of Small Business Management*, vol. 34, no. 1, pp. 71-77.

Botten, N & McManus, J 1999, *Competitive Strategies for Service Organisations*, Macmillan Press Ltd, Basingstoke Hampshire UK.

Box, S & Platts, K 2005, 'Business process management: establishing and maintaining project alignment', *Business Process Management Journal*, vol. 11, no. 4, pp. 370-387.

Boynton, AC & Zmud, RW 1987, 'Information Technology Planning in the 1990's: Directions for Practice and Research', *MIS Quarterly*, pp. pp 58-71.

Bozarth, C 2006, 'ERP implementation efforts at three firms: Integrating lessons from the SISP and IT-enabled change literature', *International Journal of Operations & Production Management*, vol. 26, no. 11, pp. 1223-1239.

Brancheau, JC, Janz, BD & Wetherbe, JC 1996, 'Key Issues in Information Systems Management:1994-95 SIM Delphi Results', *MIS Quarterly*, vol. 20, no. 2, pp. 225-242.

Brancheau, JC & Wetherbe, JC 1987, 'Key Issues in Information Systems Management.', *MIS Quarterly*, vol. 11, no. 1, p. 22.

Broadbent, M 1991, 'Case Study Based Information Systems Research: An example in the Banking Industry', in *2nd Annual Conference on IS and DB Special Interest*, pp. 195-209.

Brouthers, K, Andriessen, F & Nicolaes, I 1998, 'Driving Blind: Strategic Decisionmaking in Small Companies', *Long Range Planning*, vol. 31, no. 1, pp. 130-138.

Brown, JS, Collins, A & Duguid, P 1989, 'Situated Cognition and the Culture of Learning', *Educational Researcher*, vol. 18, no. 1, pp. 32-42.

Bryant-Lukosius, D & DiCenso, A 2004, 'A framework for the introduction and evaluation of advanced practice nursing roles.', *Journal of Advanced Nursing*

Journal of Advanced Nursing J1 - Journal of Advanced Nursing, vol. 48, no. 5, pp. 530-540.

Bryman, A 2008, 'Of methods and methodology', *Qualitative Research in Organizations and Management: An International Journal,*, vol. 3, no. 2, pp. 159 - 168.

Burrell, G & Morgan, G 1991, *Sociological Paradigms and Organisational Analysis*, Heinemann, Brookfield.

Buxbaum, P 2001, 'Measuring Alignment', *Computerworld*, 5/7/2001, vol. 35, no. 19.

Caldeira, MM & Ward, JM 2002, 'Understanding the successful adoption and use of IS/IT in SMEs: an explanation from Portugese manufacturing industries', *Information Systems Journal*, vol. 12, pp. 121-152.

Campbell, B, Kay, R & Avison, D 2005, 'Strategic alignment: a practitioner's perspective', *Journal of Enterprise Information Management*, vol. 18, no. 6, pp. 653 - 664.

Cantara, M 2009, *Key Issues for Business Process Management, 2009*, G00165352, Gartner.
Carnegie, G, Jones, S, Norris, G, Wigg, R & Williams, B 1998, *Accounting: Financial and Organisational Decision Making*, McGraw-Hill Book Company of Australia Pty Ltd, Melbourne.
Carroll, J, Dawson, LL & Swatman, PA 1998, *Using Case Studies to Build Theory: Structure and Rigour*, Deakin Univeristy, Working Paper Series.
Carroll, J, Howard, S, Vetere, F, Peck, J & Murphy, J 2001, 'Identity, Power And Fragmentation in Cyberspace: Technology Appropriation by Young People', in *ACIS 2001*, p. Paper 6.
Carson, D, Gilmore, A & Gronhaug, K 2001, *Qualitative Marketing Research*, Sage Publications, London.
Cassell, C & Symon, G 1995, 'Qualitative Research in Works Contexts', in *Qualitative Methods in Organizational Research: A practical guide*, eds C Cassell & G Symon, SAGE publications, London, pp. 1-13.
Chan, R & Rosemann, M 2001, 'Integrating Knowledge into Process Models - A Case Study', in *12th Australasian Conference on Information Systems*, Coffs Harbour.
Chan, YE & Huff, SL 1993, 'Strategic Information Systems Alignment', *Business Quarterly*, vol. 58, no. 1, pp. pp 51-56.
Chang, HH 2006, 'Technical and management perceptions of enterprise information system importance, implementation and benefits', *Information Systems Journal*, vol. 16, no. 3, pp. 263-292.
Chang, JF 2006, *Business Process Management Systems: Strategy and Implementation*, Auerbach Publications.
Chapman, P, James-Moore, M, Szczygiel, M & Thompson, D 2000, 'Building Internet capabilities in SMEs', *Logistics Information Management*, vol. 13, no. 6, pp. pp.353 - 361.
Charmaz, K 2005, 'Grounded theory in the 21st century: Applications for advancing social justice studies.', in *The Sage handbook of qualitative research* 3rd ed. edn, eds NK Denzin & YS Lincoln, Sage, Thousand Oaks, CA.
Chatterjee, A 2007, 'Service-Component Architectures', *Dr. Dobb's Journal: The World of Software Development*, vol. 32, no. 9, pp. 40-45.
Chen, IJ & Popovich, K 2003, 'Understanding customer relationship management (CRM): People, process and technology', *Business Process Management Journal*, vol. 9, no. 5, pp. pp.672 - 688.
Chetty, S 1996, 'The Case Study Method for Research in Small and Medium Firms', *International Small Business Journal*, vol. 15, no. 1, pp. 73-86.
Childe, SJ, Maull, RS & Bennett, J 1994, 'Frameworks for understanding business process re-engineering', *International Journal of Operations & Production Management*, vol. 14, no. 12, pp. 22-34.
Choi, DY & Perez, A 2007, 'Online piracy, innovation, and legitimate business models', *Technovation*, vol. 27, no. 4, pp. 168-178.
Choi, TY & Liker, JK 1995, 'Bringing Japanese continuous improvement approaches to U.S. manufacturing: The roles of process orientation and communications.', *Decision Sciences*, vol. 26, no. 5, p. 589.
Chong, S 2007, 'Business process management for SMEs: an exploratory study of implementation factors for the Australian wine industry ', *Journal of Information Systems and Small Business*, vol. 1, no. 1-2, pp. 41-58.
Christensen, CM, Baumann, H, Ruggles, R & Sadtler, TM 2006, 'Disruptive Innovation for Social Change', *Harvard Business Review*, vol. 84, no. 12, pp. p94-101.
Christensen, CM & Overdorf, M 2000, 'Meeting the Challenge of Disruptive Change. ', *Harvard Business Review*, vol. 78, no. 2, pp. p66-76.

Christian, P 2002, 'Agreeing to disagree: Collaboration can be an option to settling business disputes', *Business Couriere*, Monday November 11, 2002.
Chua, W-F 1986, 'Radical developments in accounting thought', *The Accounting Review*, pp. 601-32.
Clark, K 2006, *Comparison of Improvement Methodologies*, Australian Resource Centre for Healthcare Innovations, Sydney.
Clemons, EK & Weber, BW 1990, 'London's Big Bang: a case study of information technology, competitive impact, and organizational change', *Journal of Management Information Systems*, vol. 6, no. 4, pp. 45-57.
Collins 1999, *Concise Dictionary*, Forth Edition edn, Harper Collins Publishers.
Computer Sciences Corporation 2001, *14th Annual Survey of IS Management Issues*, Computer Sciences Corporation, El Segundo, California.
Conn, HP & Yip, GS 1997, 'Global transfers of critical capabilities.', *Business Horizons*, vol. 40, no. 1, p. 10.
Cooper, C & Otley, D 1998, 'The 1996 Research Assessment Exercise for Business and Management.', *British Journal of Management,*, vol. 9, no. 2, pp. p73-89.
Corbin, J & Strauss, A 1990, 'Grounded Theory Research: Procedures, Canons, and Evaluative Criteria', *Qualitative Sociology*, vol. 13, no. 1, pp. 3-21.
CorVu, *The New Balanced Scorecard*, CorVu Corporation. [August 2001].
Costa, J, Herbert, C & Macaulay, AC 2004, 'Participatory research in primary care.', *Journal of Interprofessional Care*

Journal of Interprofessional Care J1 - Journal of Interprofessional Care, vol. 18, no. 4, pp. 451-453.
Cragg, P & Mills, A 2011, 'IT support for business processes in SMEs', *Business Process Management Journal Volume*, vol. 17, no. 5.
Crotty, M 1998, *The foundations of social research : meaning and perspective in the research process*

Allen & Unwin, St Leonards, NSW.
Cullen, A 2005, *SOA Will Change How IT Works*, Forrester Research.
Currie, WL & Selsikas, P 2001, 'Exploring the supply-side of IT outsourcing: evaluating the emerging role of application service providers', *European Journal of Information Systems*, no. 10, pp. 123-134.
Curtis, B & Alden, J 2007, *The Business Process Maturity Model (BPMM): What, Why and How* in BPM & Organisational Maturity, BPTrends.com.
D'Souza, DM, Debasish 2004, 'Overcoming the Challenges of Aligning IT with Business.', *Information Strategy: The Executive's Journal*, vol. 20, no. 2, p. 23.
Da Rold, C, Margevicius, MA, Cohen, LR & Bittman, TJ 2007, *Alternative Delivery Models: A Sea of New Opportunities and Threats* in Gartner.
Dalglish, CL 2004, 'Business Success & Sustainability', in *International Council for Small Business Conference (ICSB) In Proceedings*, Johannesburg SA.
Dane, E & Pratt, MG 2007, 'EXPLORING INTUITION AND ITS ROLE IN MANAGERIAL DECISION MAKING.', *Academy of Management Review*, vol. 32, no. 1, pp. 33-54.
Darke, P, Shanks, G & Broadbent, M 1988, 'Successfully completing case study research: combining rigour, relevance and pragmatism', *Information Systems Journal*, no. 8, pp. 273-289.
Das, SR, Zahra, SA & Warkentin, ME 1991, 'Integrating the Content and Process of Strategic MIS Planning with Competitive Strategy', *Decision Sciences*, vol. 22, no. 5, p. 953.
Davenport, TH 1993, *Process Innovation Reengineering Work through Information Technology*, Harvard Business School Press,, Boston, MA.

Davenport, TH 2005, 'The coming commoditization of processes', *Harvard Business Review*, no. June, pp. 1-9.

Davenport, TH, Jarvenpaa, SL & Beers, MC 1996, 'Improving Knowledge Work Processes.', *Sloan Management Review*, vol. Vol. 37,, no. No. 4, p. 11.

Davidson, P & Griffin, RW 2000, *Management: Australia in a Global Context*, Adaptation of the 5th edition by Ricky W Griffin edn, John Wiley & Sons Australia Ltd, Brisbane.

Davies, B 2003, 'The Role of Quantitative and Qualitative Research in Industrial Studies of Tourism', *International Journal of Tourism Research*, vol. 5, no. 2, pp. 97-111.

De Lone, W & McLean, ER 1992, 'Information Systems Success: The Quest for the Dependent Variable .', *Journal of Information Systems Research*, vol. 3, no. 1, pp. pp. 60-95.

De Loof, L 1997, *Information Systems Outsourcing Decision Making: A Managerial Approach*, Idea Group Publishing, London.

de Salas, K 2002, Factors Inhibiting The Collaborative Adoption Of Electronic Commerce Technologies In A Tasmanian Industry Sector, thesis, University of Tasmania.

de Salas, K, Marshall, P & Young, J 2007, 'IS Strategy Formulation in a Financial Services Company: The Dual Lens Approach', in *Pacific Asia Conference on Information Systems*, Association of Information Systems (AISeL).

de_Berranger, P & Meldrum, MCR 2000, 'The development of intelligent local clusters to increase global competitivness and local cohesion: the case of small businesses in the creative industries.', *Urban Studies*, vol. 37, no. 10, pp. 1827-1835.

Dean, JW & Bowen, DE 1994, 'Management Theory and Total Quality: Improving Research and Practice through Theory Development', *The Academy of Management Review*, vol. 19, no. 3, pp. 392-418.

Dekkers, R 2000, 'Decision Models for Outsourcing and Core Competencies in Manufacturing', *International Journal of Production Research*, vol. 38, no. 17, pp. pp 4085-4097.

Delen, D, Dalal, NP & Benjamin, PC 2005, 'Integrated modeling: the key to holistic understanding of the enterprise', *Communications of the ACM*, vol. 48, no. 4, pp. 107-112. Available from: ACM.

Deming, WE 1986, *Out of the crisis.*, MIT Centre for Advanced Engineering Study, Cambridge MA.

Denscombe, M 2007, *The Good Research Guide: for small-scale social research*, Third edition (First edition 1998, Second edition 2003) edn, Open University Press, Maidenhead.

Denzin, NK & Lincoln, YS 1994, 'Strategies of Inquiry', in *Handbook of Qualitative Research*, eds NK Denzin & YS Lincoln, SAGE publications, California, pp. 199-208.

Denzin, NK & Lincoln, YS 1998, 'Entering the field of Qualitative Research', in *Strategies of Qualitative Inquiry*, eds NK Denzin & YS Lincoln, Sage Publications, pp. 1-34.

Denzin, NK & Lincoln, YS 2005, *The Sage Handbook of Qualitative Research*, Third edn, Sage Publications, Thousand Oaks CA.

Department of Veterans Affairs 2002a, *Department of Veterans Affairs Enterprise Architecture Strategy, Governance and Implementation*, Department of Veterans Affairs, Washington DC.

Department of Veterans Affairs 2002b, *One-VA Enterprise Architecture*, Version 1.0.

Dettmer, HW 1998, *Breaking the Constraints to World-Class Performance*, 1 edn, ASQ Quality Press, Milwaukee.

Deval, P, L. & Murray, TP, *FY2010 House 1 Budget Recommendation: Policy Brief*, Massachusetts Government USA. [16/11/2010].

Devers, K 1999, 'How Will We Know "Good" Qualitative Research When We See It? Beginning the Dialogue in Health Services Research', *Health Services Research*, vol. 34, no. 5.

Dey, I 1999, *Grounding Grounded Theory: Guidelines for qualitative inquiry*, Academic Press, San Diego.

Dey, I 2004, 'Grounded Theory', in *Qualitative Research in Practice*, eds C Seale, G Gobo, JF Gubrium & D Silverman, Sage.

Dholakia, RR & Kshetri, N 2004, 'Factors Impacting the Adoption of the Internet among SMEs', *Small Business Economics*, vol. 23, pp. 311-322.

Di Renzo, B, Hillairet, M, Picard, M, Rifaut, A, Bernard, C, Hagen, D, Maar, P & Reinard, D 2007, 'Operational Risk Management in Financial Institutions: Process Assessment in Concordance with Basel II', *Software Process Improvement and Practice*, vol. 12, pp. 321–330.

Díaz Andrad, A 2009, 'Interpretive Research Aiming at Theory Building: Adopting and Adapting the Case Study Desig', *The Qualitative Report* vol. 14, no. 1, pp. 42-60

Dollinger, M 1999, *Entrepreneurship: Strategies and Resources*, 2nd edn, Prentice-Hall, Upper Saddle River, NJ.

Domingo, RT 2003, *Consistency in Service Quality* in rtdonline.com, rtdonline.com.

Doukidis, GJ, Lybereas, P & Galliers, RD 1996, 'Information Systems Planning in Small Business: a stages of growth analysis', *Journal of Systems Software*, vol. 33, pp. 189-201.

Dowlatshahia, S & Tahamb, F 2009, 'The development of a conceptual framework for Just-In-Time implementation in SMEs', *Production Planning & Control: The Management of Operations*, vol. 20, no. 7, pp. pages 611-621.

Drucker, P 2001, 'The Effective Decision', in *Harvard business review on decision making.*, [Books24x7 version] edn, Business School Publishing, Harvard.

Drucker, P 2008, *The Essential Drucker: The Best of Sixty Years of Peter Drucker's Essential Writings on Management*, Harper Collins Publishers, New York USA.

Duhan, S, Levy, M & Powell, P, 'IS Strategy in SMEs Using Organizational Capabilities: The CPX Framework'.

Duhan, S, Levy, M & Powell, P 2010, 'Exploring the Role of IS in Dynamic Capabilities', *International Journal of Strategic information Technology and Applications*, vol. 1, no. 2, pp. pp19-37.

Duncan, I 1992, 'Putting new ideas to the test', *CMA Magazine* vol. 66, no. 6, p. 31.

Dyer, W, Gibb & Wilkins, AL 1991, 'Better Stories, Not Better Constructs, to Generate Better Theory: A Rejoinder to Eisenhardt', *The Academy of Management Review*, vol. 16, no. 3, pp. pp. 613-619.

Earl, M, Sampler, J & Short, JE 1995, 'Strategies for business process reengineering: Evidence from', *Journal of Management Information Systems*, vol. 12, no. 1, p. 31.

Earl, MJ 1996, 'The Risks of Outsourcing IT', *Sloan Management Review*, vol. 37, no. 3, pp. 26-33.

Earl, MJ, Sampler, JL & Short, JE 1995, 'Strategies for Business Process Reengineering: Evidence from Field Studies', *Journal of Management Information Systems*, vol. 12, no. 1, pp. pp 31-56.

Easterby-Smith, M, Golden-Biddle, K & Locke, K 2008, 'Working With Pluralism: Determining Quality in Qualitative Research', *Organizational Research Methods*.

Eaves, YD 2001, 'A Synthesis Technique for Grounded Theory Data Analysis', *Journal of Advanced Nursing*, vol. 35, no. 5, pp. 654-663.

Eisenhardt, KM 1989, 'Building Theories from Case Study Research', *Academy of Management Review*, vol. 14, no. 4, pp. 532-550.

Eisenhardt, KM 1991, 'Better stories and better constructs: the case for rogor and comparative logic', *Academy of Management Review*, vol. 16, no. 3, pp. 620-627.

Eisenhardt, KM 1999, 'Strategy as Strategic decision making', *Sloan management Review*, no. Spring, pp. 65-72.

Ely, M, Vinz, R, Downing, M & Anzul, M 1997, *On writing qualitative research: Living by words*, RoutledgeFalmer, London.

Elzinga, DJ, Horak, T, Lee, C-Y & Bruner, C 1995, 'Business process management: survey and methodology', *IEEE Transactions On Engineering Management*, vol. 42, no. 2, pp. 119-128.

Emale, JM 2010, An Examination Of How Conglomerates Impact Small-Medium Enterprises In Their Relationship, thesis, University of Phoenix.

Fan, Q 2003, *Importance of SMEs and the Role of Public Support in Promoting SME Development*, ed.^eds Presentation, SP A Policy Dialogue Workshop, Russia, World Bank Institute, St. Petersburg, Russia.

Fann, GL & Smeltzer, LR 1989, 'The use of information from and about competitors in small business management', *Entrepreneurship: Theory and Practice*, no. Summer, pp. 35-46.

Fargnoli, M 2006, *Getting BPM Started*, APD Presented at the Sydney

Fariselli, P, Oughton, C, Picory, C & Sugden, R 1999, 'Electronic commerce and the future for SMEs in the global market-place: networking and public policies', *Small Business Economics*, vol. 12, pp. 261-275.

Farrell, IJ 2003, Aligning IT to Corporate Objectives: Organisational Factors in Use, thesis, Macquarie University, Sydney.

Feurer, R, Chaharbaghi, K, Weber, M & Wargin, J 2000, 'Aligning strategies, processes, and IT: A case study', *IEEE Engineering Management Review*, vol. 28, no. 3, pp. 81-91.

Fink, D & Disterer, G 2006, 'International case studies: To what extent is ICT infused into the operations of SMEs?', *Journal of Enterprise Information Management*, vol. 19, no. 6, pp. 608-624.

Fitz-Gerald, L & Carroll, J 2003, 'The Role of Governance in ERP System Implementation', in *14th Australasian Conference on Information Systems*, ACIS, 26-29 November 2003, p. 10.

Flower, L & R., HJ 1980, 'The Cognition of Discovery: Defining a Rhetorical Problem.', *College Composition and Communication*, vol. 31, no. 1, pp. 21-32.

Flynn, BB, Sakakibara, S & Schroeder, RG 1995, 'Relationship between JIT and TQM: Practices and Performance', *The Academy of Management Journal*, vol. 38, no. 5, pp. 1325-1360.

Flyvbjerg, B 2006, 'Five Misunderstandings About Case Study Research', *Qualitative Inquiry*, vol. 12, no. 2, pp. pp 219-245.

Fontana, A & Frey, JH 2005, 'The Interview', in *The Sage Handbook of Qualitative Research*, Third edn, eds NK Denzin & YS Lincoln, Sage Publications, Thousand Oaks CA, pp. p 695-727.

Freel, MS 2000, 'Barriers to Product Innovation in SMall Manufacturing Firms', *International Small Business Journal*, vol. 18, no. 2, p. 60ff.

Frenzel, CW 1999, *Management of Information Technology*, 3rd edn, Course Technology ITP, Scarborough.

Frost, GR & English, L 2002, *Mandatory corporate environmental reporting in Australia: Contested introduction belies effectiveness of its application* in An Australian Review of Public Affairs, University of Sydney.

Fujitsu Consulting, CfSL 2004, *Enterprise Architecture*, QUT, Brisbane.

Fulcher, E 2003, *Cognitive Psychology*, Crucial, a division of Learning Matters Ltd.

Galliers, RD & Land, FF 1987, 'Choosing appropriate information systems research methodologies', *Journal of the Communications of the ACM*, vol. 30, no. 11, pp. 901-902.

Gallivan, MJ 1997, 'Value in triangulation: a comparison of two approaches for combining qualitative and quantitative methods', in *International conference on Informaiton*

Systems and Qualitative Research, eds AS Lee, J Liebenau & JI DeGross, Chapman & Hall, Philadelphia, USA.

Gandz, J & Murray, VV 1980, 'The Experience of Workplace Politics', *The Academy of Management Journal*, vol. 23, no. 2.

Garcia, L & Quek, F 1997, 'Qualitaitve research in Information Systems: Time to be objective?', in *International conference on Informaiton Systems and Qualitative Research*, eds AS Lee, J Liebenau & JI DeGross, Chapman & Hall, Philadelphia, USA, pp. 444-465.

Gardner, S 2004, 'Participatory Action Research Helps Now.', *Education Digest*

Education Digest J1 - Education Digest, vol. 70, no. 3, pp. 51-55.

Gartner 2006a, 'Build for Change - A Vodafone Example ', in *Gartner Business Process Management Summit 2006*

London Hilton Metropole.

Gartner 2006b, 'Lean Operations and BPM at Toyota Motor Europe ', in *Gartner Business Process Management Summit 2006*

London Hilton Metropole.

Gartner 2006c, 'Reengineering the Middle Office at Citigroup – Drivers, Choices, Implementation, Achievements ', in *Gartner Business Process Management Summit 2006*

London Hilton Metropole.

Gartner 2007a, 'BPM helps Nike Drive Competitive Advantage', in *Gartner Business Process Management Summit 2006* San Diego, CA

Sheraton San Diego Hotel & Marina.

Gartner 2007b, 'Enhancing Your BPM Strategy to Enable Your ERP Implementations', in *Gartner Business Process Management Summit 2006* San Diego, CA

Sheraton San Diego Hotel & Marina.

Gartner 2007c, 'Establishing Process Governance: Process Owners, Councils, and Offices', in *Gartner Business Process Management Summit 2006* San Diego, CA

Sheraton San Diego Hotel & Marina.

Gartner 2007d, '"A View from the Trenches: Business Process Management at Motorola"', in *Gartner Business Process Management Summit 2006* San Diego, CA

Sheraton San Diego Hotel & Marina.

Garvey, MJ 2003, 'TESTING TOOLS STEP UP TO MANAGE OPERATIONS.', *InformationWeek*, 22nd September 2003, no. 956, p. 24.

Gaskill, L, Van Auken, H & Manning, R 1993, 'A Factor Analytic Study of the Perceived Causes of Small Business Failure', *Journal of Small Business Management*, vol. 31, no. 4, pp. 18-31.

Gasse, Y 1990, 'An experience in training in the area of entrepreneurship and starting a business in Quebec: the project "Become an Entrepreneur"', in *New Findings and Perspective in Entrepreneurship*, eds D R & MA (eds), Gower Publishing Company Ltd, Avebury.

Gibson, K & O'Donovan, G 2007, 'Corporate Governance and Environmental Reporting: an Australian study', *Corporate Governance: An International Review*, vol. 15, no. 5, pp. 944-956.

Godwin-Jones, R 2005, 'EMERGING TECHNOLOGIES: Skype and Podcasting: Disruptive Technologies for Language Learning ', *Language Learning & Technology*, vol. 9, no. 3, pp. 9-12.

Goldsworthy, D 1988, 'Thinking Politically about Development', *Development and Change*, vol. 19, no. 1, pp. 505-530.

Gomez-Perez, A & Manzano-Macho, D 2004, 'An overview of methods and tools for ontology learning from texts', *The Knowledge Engineering Review* vol. 19, no. 3, pp. 187-212.

Goulding, C 1999, *Grounded Theory: Some Refelections on Paradigm, Procedures and Misconceptions* in Working Paper, University of Wolverhampton, Wolverhampton UK.

Goulding, C 2002 *Grounded Theory A Practical Guide for Management, Business and Market Researchers* SAGE Publications Ltd Coventry University, UK.

Green, AN & Jack, A 2004, 'Creating stakeholder value by consistently aligning the support environment with stakeholder needs', *Facilities*, vol. 22, no. 13/14, pp. 359-363.

Grigg, M, Endacott, R, Herrman, H & Harvey, C 2004, 'An ethnographic study of three mental health triage programs.', *International Journal of Mental Health Nursing*

International Journal of Mental Health Nursing J1 - International Journal of Mental Health Nursing, vol. 13, no. 3, pp. 145-151.

Grigg, N & Mann, R 2008, 'Review of the Australian Business Excellence Framework: A comparison of national strategies for designing, administering and promoting Business Excellence Frameworks', *Total Quality Management*, vol. 19, no. 11, pp. 1173-1188.

Guba, EG & Lincoln, YS 1994, 'Competing Paradigms in Qualitative Research', in *Handbook of Qualitative Research*, eds NK Denzin & YS Lincoln, SAGE Publications, California, pp. 105-117.

Guba, EG & Lincoln, YS 2005, 'Paradigmatic Controversies, Contradictions, and Emerging Confluences', in *The Sage handbook of qualitative research (3rd ed.).* ed. NKEL Denzin, Yvonna S. (Ed), Sage Publications Ltd, Thousand Oaks, CA, pp. pp. 191-215.

Hacker, ME & Brotherton, PA 1998, 'Designing and Installing Effective Performance Measurement Systems', *IIE Solutions Magazine*, no. August 1998, p. 18.

Hagmann, C & McCahon, C 1993, 'Strategic information systems and competitiveness.', *Information and Management* vol. 25, pp. 183-192.

Hall, C 1992, 'The globalisation of small and medium enterprises.', in *SEAANZ and the Institute of Industrial Economics National Business Conference*, pp. 31-51.

Hammer, M 2002, 'Process management and the future of Six Sigma', *MIT Sloan Management Review*, vol. 43, no. 2, pp. 26-32.

Hammer, M 2003, *The Agenda: What Every Business Must Do to Dominate the Decade*, 1st edn, Crown Business, New York , New York.

Hammer, M & Champy, C 1993, *Reengineering the Corporation: A Manifesto for Business Revolution*, Harper Business, New York.

Harari, O 1993, 'Ten Reasons Why TQM Doesn't Work', *Management Review*, vol. 82, no. 1, pp. 33-38.

Harding, C 2007, 'An Open Marketplace for Services', *DM Review*.

Harindranath, G, Dyerson, R & Barnes, D 2008, 'ICT Adoption and Use in UK SMEs: a Failure of Initiatives?', *Electronic Journal of Information system Evaluation*, vol. 11, no. 2.

Harmon, P 2003, *Business process change : a manager's guide to improving, redesigning, and automating processes*, Morgan Kaufmann, Amsterdam.

Hart, S & Tzokas, N 1999, 'The Impact of Marketing Research Activity on SME Export Performance: Evidence from the UK', *Journal of Small Business Management*, vol. 37, no. 2, pp. p63-75.

Haubl, G & Trifts, V 2000, 'Consumer Decision Making in Online Shopping Environments: The Effects of Interactive Decision Aids', *Marketing Science*, vol. 19, no. 1, pp. 4-21.

Healy, M & Perry, C 2000, 'Comprehensive criteria to judge validity and reliability of qualitative research within the realism paradigm', *Qualitative Market Research: An International Journal*, vol. 3, no. 3, pp. 118 - 126.

Herzoga, NV, Tonchiab, S & Polajnara, A 2009, 'Linkages between manufacturing strategy, benchmarking, performance measurement and business process reengineering', *Computers & Industrial Engineering*, vol. 57, no. 3, pp. 963-975.

Hess, GF 1999, ' Seven Principles for Good Practice in Legal Education-History and Overview ', *Journal of Legal Education*, vol. 49, no. 3.

Hesse-Biber, SN & Levy, P 2006, *The practice of qualitative research*, Sage, Thousands Oaks.

Hiddink, G 2001, 'Solving reusability problems of online learning materials', *Campus-wide Information Systems*, vol. 18, no. 4, pp. 146-153.

Hill, JB, Cantara, M, Kerremans, M & Plummer, DC 2009, *Magic Quadrant for Business Process Management Suites*, Gartner.

Hill, JB, Gilbert, MR, Schulte, RW, Natis, YV, McCoy, DW, Shegda, KM, Genovese, Y, Blechar, MJ, Cantara, M, Dunne, M, Gassman, B & Thompson, J 2007, *Hype Cycle for Business Process Management, 2007* in Gartner.

Hill, JB, Sinur, J, Flint, D & Melenovsky, MJ 2006, *Gartner's Position on Business Process Management*, G00136533, Gartner.

Hill, P & Turbitt, K 2006, *Combine ITIL and COBIT to Meet Business Challenges*, BMC Software.

Hines, T 2000, 'An evaluation of two qualitative methods (focus group interviews and cognitive maps) for conducting research into entrepreneurial decision making', *Qualitative Market Research; Bradford*, vol. 3, no. 1, p. 9.

Hirschheim, RA 1985, 'Information Systems Epistemology: An historical perspective', in *Research Methods in Information Systems*, ed. E Mumford.

Hodgkinson, GP, Maule, AJ, Bown, NJ, Pearman, AD & Glaister, KW, 'Research notes and commentaries: Further reflections on the elimination of framing bias in strategic decision making', *Strategic Management Journal*, vol. 23, no. 11, p. 1069.

Holkup, PA, Tripp-Reimer, T, Salois, EM & Weinert, C 2004, 'Community-based Participatory Research.', *Advances in Nursing Science*

Advances in Nursing Science J1 - Advances in Nursing Science, vol. 27, no. 3, pp. 162-175.

Holmes, S & Goibson, B 2001, *Definition of Small Business*, University of Newcastle, Newcastle.

Holmström, J 1998, 'Handling product range complexity A case study on re-engineering demand forecasting', *Business Process Management Journal*, vol. 4, no. 3, pp. pp.241 - 258.

Howe, KR 2004, 'A Critique of Experimentalism', *Qualitative Inquiry*, vol. 10, no. 1, pp. 42-61.

Hoy, G 2008, *'Fast Eddy' leaves ABC Learning investors reeling* in ABC News, Australian Broadcasting Corporation.

Hsiao, RL & Ormerod, RJ 1998, 'A new perspective on the dynamics of information technology-enabled strategic change', *Information Systems Journal*, vol. 8, no. 1, pp. 21-52.

Hudson Smith, M & Smith, D 2007, 'Implementing strategically aligned performance measurement in small firms', *International Journal of Production Economics*

Special section on organizational structure, culture and operations management: an empirical missing link, vol. 106, no. 2, pp. 393-408.

Huitt, W 1992, 'Problem solving and decision making: Consideration of individual differences using the Myers-Briggs Type Indicator.', *Journal of Psychological Type*, vol. 24, pp. 33-44.

Huxley, C 2003, An Improved Method of Identifying Critical Processes, Masters of IT by Research thesis, Queensland University of Technology.

Huxley, C 2010, *Process Changes can be Stealth Bombs* in TurboCharge, Process Performance, Brisbane.

Huxley, C & Stewart, G 'Identifying Core Processes and Critical Processes for the IT Decision Process', in *ACIS??*

Huxley, C & Stewart, G 2004, 'Identifying Core Processes and Critical Processes for the Sourcing Decision', in *Proceedings of the 15th Australasian Conference on Information Systems*, ACIS, Hobart,.

Huxley, C, Stewart, G & Jewels, T 2004b, 'Staying Focussed in a Crisis', in *Proceedings of the PacificAsia Conference on Information Systems*, AIS, Shanghai.

Huxley, C, Stewart, G, Taylor, C & Rosemann, M 2002, 'Identifying the Processes Most Necessary for Achieving Strategic Goals', in *Americas Conference on Information Systems 2002*, Association of information Systems, Dallas, Texas, p. CD.

Huxley, C, Taylor, C & Stewart, G 2002, 'Changing the Four Perspectives of the Balanced Scorecard to Suit IT', in *Enhancing Business & Government Capability*, ed. L Bennington, Australian New Zealand Academy of Management, Beechworth, Victoria, p. CD.

Ihlstrom, C & Nilsson, M 2011, 'E-Business Adoption by SMEs--Prerequisites and Attitudes of SMEs in a Swedish Networ', *Journal of Organizational Computing and Electronic Commerce*, vol. 13, no. 3-4, pp. pages 211-223.

Interfacing Technologies Corporation 2009, *ISO is the Path to Quality Assurance*, Interfacing Technologies Corporation,.

ITIL.org, *Information Technology Infrastructure Library*, ITIL.org. Available from: <http://www.itil.org/en/vomkennen/itil/ueberblick/index.php>.

James-Moore, SM & Gibbons, A 1997, 'Is lean manufacture universally relevant? An investigative methodology', *International Journal of Operations & Production Management*, vol. 17, no. 9, pp. 899-911.

Jarratt, DG 1996, 'A comparison of two alternative interviewing techniques used within an integrated research design: a case study in outshopping using semi-structured and non-directed interviewing techniques', *Marketing Intelligence & Planning*, vol. 14, no. 6, pp. 6-15.

Jeffcoate, J, Chappell, C & Feindt, S 2000, 'Attitudes towards Process Improvement among SMEs Involved in E-commerce.', *Knowledge and Process Management*, vol. 7, no. 3, pp. 187-195.

Jewels, T, *Benefits Realisation from IT Projects*, QUT. Available from: <https://olt.qut.edu.au/it/ITN251/admin/index.cfm?fa=displayPage&rNum=85277&pType=curr>. [December 2001].

Jick, TD 1979, 'Mixing Qualitative and Quantitative Methods: Triangulation in Action', *Administraive Science Quarterly*, vol. 24, no. 4.

Johnson, RB 2011, *Educational Research: Quantitative, Qualitative, and Mixed Approaches*, University of South Alabama, Fairhope Alabama USA.

Jones, WD 1982, 'The characteristics of planning in small firms', *Journal of Small Business Management*, vol. 20, no. 3, pp. 15-19.

Jorosi, BN 2006, 'The information needs and information seeking behaviours of SME managers in Botswana. ', *Libri*, vol. 56, pp. 97-107.

Kanellis, P, Lycett, M & Paul, RJ 1999, 'Evaluating business Information Systems Fit: From Concept to Practical Application', *European Journal of Information Systems*, vol. 8, no. 1, pp. 65-77.

Kanter, RM 2006, 'Innovation: The Classic Traps. ', *Harvard Business Review*, vol. 84, no. 11, pp. p72-83.
Kaplan, RS 2004, *Five Questions About Strategy Maps*, Harvard Business School.
Kaplan, RS & Bower, M 2000, *Balanced Scorecard Report*, Harvard Business School, Boston.
Kaplan, RS & Norton, DP 1992, 'The Balanced Scorecard: Measures that Drive Performance', *Harvard Business Review*, vol. 70, no. 1, p. p9.
Kaplan, RS & Norton, DP 1996, *The Balanced Scorecard*, Harvard Business School Publishing, Boston Massachusetts.
Kaplan, RS & Norton, DP 2000, 'Having Trouble with your Strategy? The Map it.', *Harvard Business Review*, no. September-October.
Kaplan, RS & Norton, DP 2001, *The Strategy Focused Organisation: How Balanced Scorecard companies thrive in the new business environment*, Harvard Business School Publishing Corporation, Boston.
Kelmar, JH & Noy, S 1990, *Perceptual Differences in Small Business Strategic Planning*, BLDSC - British Library Document Supply Centre, http://hdl.handle.net/10068/507614, p. 21 p.
Kent, T 2003, 'Management and design perspectives on retail branding', *International Journal of Retail & Distribution Management*, vol. 31, no. 3, pp. 131-142.
Kettinger, WJ & Grover, V 1995, 'Special section: toward a theory of business process change management', *Journal of Management Information Systems*, vol. 12, no. 1, pp. 9 - 30.
Kettinger, WJ, Teng, JTC & Guha, S 1997, 'Business Process Change: A Study of Methodologies, Techniques, and Tools', *MIS Quarterly*, vol. 21, no. 1, pp. 55-98.
Kidd, SA & Kral, MJ 2005, 'Practicing Participatory Action Research.', *Journal of Counseling Psychology*

Journal of Counseling Psychology J1 - Journal of Counseling Psychology, vol. 52, no. 2, pp. 187-195.
Kim, RM & Kaplan, SM 2006, 'Interpreting socio-technical co-evolution: Applying complex adaptive systems to IS engagement', *Information Technology & People*, vol. 19, no. 1, p. 35.
Kimchi, J, Polivka, B & Stevenson, JS 1991, 'Triangulation: Operational Definitions', *Nursing Research*, vol. 40, no. 6, pp. 364-366.
Kinetic, L, October 27, 1999, *FMECA Process*, Kinetic, LLC. Available from: <http://www.fmeca.com/ffmethod/definiti.htm>. [Accessed 06/06/2002].
Kitchenham BA, Pfleeger SL & Fenton NE 1999, 'Towards a framework for software measurement validation', *IEEE Tans Software Engineering*, vol. 21, no. 12, pp. pp. 929-944.
Klein, H & Myers, M 1999, 'A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems', *MIS Quarterly*, vol. 23, no. 1, pp. 67-93.
Kmicinski, NR 2001, Process Mapping Framework for Small Business Consultants: A Case Study Approach, thesis, Rochester Institute of Technology.
Kocas, C 2002, 'Evolution of Prices in Electronic Markets Under Diffusion of Price-Comparison Shopping', *Journal of Management Information Systems*, vol. 19, no. 3, pp. 99-119.
Koch, C 2005, 'A New Blueprint For The Enterprise ; Enterprise architecture is not just about mapping and standardizing hardware and software anymore. Now it's about services, events and- get this-good old ROI.', *CIO*, vol. 18, no. 10, p. 1.
Kolb, D 1984, *Experiental Learning: Experience as the source of learning and development*, Prentice Hall, Englewood Cliffs NJ.

Kraatz, MS 1998, 'Learning by Association? Interorganizational networks and adaptation to environmental change', *Academy of Management Journal*, vol. 41, no. 6, pp. 621-643.

Krammer, M, 13/03/02, *Appealing to what's important: SMB IT selection criteria*, Gartner. Available from: <http://www.techrepublic.com/article_guest.jhtml?id=r00720020313ern01.htm&fromtm=e108-1>. [18/03/02].

Kueng, P, Meier, A & Wettstein, T 2000, *Computer-based performance Measurement in SMEs: Is there any option?*, Working paper 00-11, Institute of Informatics, Univeristy of Fribourg.

Kuhberger, A 1998, 'The influence of framing on risky decisions: a meta analysis', *Organizational Behavior and Human Decision Processes*, vol. 75, no. 1, pp. 22-55.

Kumar, K & vanDiesel, HG 1996, 'Sustainable collaboration: managing conflict and cooperation in inter-organizational systems', *MIS Quarterly*, no. September, pp. 279-297.

Spencer L., S, Ritchie J, Lewis J & L, Dillon 2003, *Quality in qualitative evaluation: a framework for assessing research evidence.*, London.

La France, M 1989, 'The quality of expertise: Implications of expert novice differences for knowledge acquisition. ', *SIGART Newsletter*, April (1989), no. 108, pp. 6-14.

Lapadat, JC 2009, 'Writing Our Way Into Shared Understanding: Collaborative Autobiographical Writing in the Qualitative Methods Class', *Qualitative Inquiry*, vol. 15, no. 6, pp. 955-979.

Latamore, B 2007, *Nine things you need to know about SAAS* in Computerworld (The Voice of IT Management).

Lawrence, KL 1997, 'Factors inhibiting the utilisation of Electronic Commerce facilities in Tasmanian small to medium sized enterprises', in *Australasian Conference on Information Systems*, University of South Australia, Adelaide, Australia.

Lawrence, Pe 1997, *Workflow Handbook 1997, Workflow Management Coalition*, John Wiley and Sons, New York.

Lawson, C & Lorenz, E 1999, 'Collective learning, tacit knowlegde anmd regional innovative capacity', *Regional Studies*, vol. 33, no. 4, p. 305ff.

Lawson, M 2002, 'Don't Blame The Technology For Poor Results', *Australian Financial Review*, July 18, 2002.

Lee, AS 1991, 'Integrating positivist and interpretive approaches to organisational research', *Organisational Science*, vol. 2, no. 4, pp. 342-365.

Lee, RG & Dale, BG 1998, 'Business process management: a review and evaluation', *Business Process Management Journal*, vol. 4, no. 3, pp. 214-225.

Leech, BL 2002, 'Interview Methods in Political Science', *Political Science and Politics*, vol. 35, no. 4, pp. pp. 663-664.

Leech, BL 2002a, 'Techniques for Semistructured Interviews', *Political Science and Politics*, vol. 35, no. 4, pp. pp. 665-66.

Leech, T 2003, 'Look before you leap', *Global Risk Regulator*.

Leedy, PD 1997, *Practical research: planning and design*, 6th edn, Prentice-Hall, New Jersey.

Leedy, PD & Ormrod, JE 2005, *Practical research : planning and design*, Prentice Hall,, Upper Saddle River, N.J. .

Lees, JD 1987, 'Successful development of Small Business Informaiotn Systems', *Journal of Systems Management*, no. September, pp. 32-39.

Lees, JD & Lees, DD 1987, 'Realities of Small Business Information Systems Implementation', *Journal of Systems Management*, no. January, pp. 6-13.

Levin, IP, Schneider, SL & Gaeth, GJ 1998, 'All frames are not created equal: a typology and critical analysis of framing effects', *Organizational Behavior and Human Decision Processes*, vol. 76, no. 2, pp. 149-188.

Levy, M, Loebbecke, C & Powell, P 2001, 'SMEs, Co-opetition and knowledge sharing: the IS role', in *9th European Conference on Informaiton Systems*, eds S Smithson, J Gricar, M Podlogar & S Avgerinou, Bled, Slovenia, pp. 640-652.

Levy, M & Powell, P 1998a, 'SME flexibility and the role of Information Systems', *Small Business Economics*, vol. 11, pp. 183-196.

Levy, M & Powell, P 2000, 'Information systems strategy for small and medium sized enterprises: an organisational perspective', *Journal of Strategic Information Systems*, vol. 9, pp. 63-84.

Levy, M, Powell, P & Yetton, P 1998, 'SMEs and the gains from IS: from cost reduction to value added', in *IFIP 8.2*.

Levy, M, Powell, P & Yetton, P 2001, 'SMEs: aligning IS and the strategic context', *Journal of Information Technology*, vol. 16, pp. 133-144.

Lewin, AY & Peeters, C 2006, 'Offshoring Work: Business Hype or the Onset of Fundamental Transformation?', *Long Range Planning*, vol. 39, no. 3, pp. 221-239.

Liebowitz, S 2008, 'Internet', in *The Concise Encyclopedia of Economics*, 2nd edn, ed. DR Henderson, Library of Economics and Liberty.

Lincoln, YS & Guba, EG 1985, *Naturalistic Inquiry*, Sage Publications.

Lindgren, R, Henfridsson, O & Schultze, U 2004, 'DESIGN PRINCIPLES FOR COMPETENCE MANAGEMENT SYSTEMS: A SYNTHESIS OF AN ACTION RESEARCH STUDY[1].', *MIS Quarterly*

MIS Quarterly J1 - MIS Quarterly, vol. 28, no. 3, pp. 435-472.

Linton, JD 2003, 'Facing the Challenges of Service Automation: An Enabler for E-Commerce and Productivity Gain in Traditional Services', *IEEE Transactions On Engineering Management*, vol. 50, no. 4, pp. 478-484.

Lipowski, EE 2008, 'Developing great research questions', *American Journal of Health-System Pharmacists*, vol. 65, pp. 1667-1670.

LORIA, *BPM 2005*, Informatik University.

Luftman, J 2003, 'Assessing IT/Business Alignment.', *Information Strategy: The Executive's Journal*, vol. 20, no. 1, p. 7.

Luftman, JN, Papp, R & Brier, T 1999, 'Enablers and Inhibitors of Business-IT Alignment', *Communications of the AIS*, vol. 1, no. 11.

Luyck, F 2007, *IDS BPM Roadmap Assessment* (Presentation), IDS Scheer Nederlands BV.

Lybaert, N 1998, 'The Information Use in a SME: Its Importance and Some Elements of Influence', *SMALL BUSINESS ECONOMICS*, vol. 10, no. 2, pp. 171-191.

MacGregor, RC & Vrazalic, L 2005, 'A basic model of electronic commerce adoption barriers: A study of regional small businesses in Sweden and Australia', *Journal of Small Business and Enterprise Development*, vol. 14, no. 4, pp. 510-527.

Mah, M 1999, 'High-definition software measurement', *Software Development*, vol. 7, no. 5.

Makins, M (ed.) 1992, *Collins English Dictionary*, 3rd edn, 1 vols, Harper Collins Publishers, Sydney.

Mankiw, NG, King, SP, Gans, JS & Stonecash, RE 1999, *Principles of Macroeconomics*, Harcourt Australia, Sydney.

Margulius, DL, *BPM in the Trenches*, Computerworld .com. [July 1st 2005].

Margulius, DL 2006, 'SOA planning: Sizing up business processes', *InfoWorld*, vol. 28, no. 11, pp. 18-24.

Markus, ML 1989, 'Case selection in a disconfirmatory case study', in *The ifnormaiton systems challenge: qualitative research methods*, eds JI Cash & PR Lawrence, Harvard Business School, pp. 21-26.

Markus, ML 1997, 'The qualitative difference in Information Systems Research and Practice', in *International conference on Informaiton Systems and Qualitative*

Research, eds AS Lee, J Liebenau & JI DeGross, Chapman & Hall, Philadelphia, USA, pp. 11-27.

Markus, ML & Benjamin, RI 1997, 'The Magic Bullet Theory in IT-Enabled Transformation', *Sloan Management Review*, vol. 38, no. 2, p. p55.

Massey, AP, Montoya-Weiss, MM & O'Driscoll, TM 2002, 'Knowledge Mangement in Pursuit of Performance: Insights from Nortel Networks', *MIS Quarterly*, vol. 26, no. 3, pp. 269-289.

Maull, RS 2005, *Business Process Management*, Queensland University of Technology, Brisbane, p. 18.

Maull, RS, Weaver, AM, Childe, SJ, Smart, PA & Bennett, J 1995, 'Current issues in business process re-engineering', *International Journal of Operations & Production Management*, vol. 15, no. 11, p. 37.

Maxwell, JA 1996, *Qualitative Research Design: An interactive approach*, SAGE Publications, Thousand Oaks, Calif.

Mazzarol, T 2004, 'Strategic management of small firms: a proposed framework for entrepreneurial ventures', *17th Annual SEAANZ Conference*.

McAdam, R 2000, 'Quality models in an SME context: A critical perspective using a grounded approach', *The International Journal of Quality & Reliability Management*, vol. 17, no. 3, pp. 305-323.

McAdam, R & McCormack, D 2001, 'Integrating business processes for global alignment and supply chain management', *Business Process Management Journal*, vol. 7, no. 2, pp. pp.113 - 130.

McBride, M 2011, 'Triple Bottom Line by Design: Leading as if Life Matters', *Design Management Review*, vol. 22, no. 1, pp. 6-

McDonough, J & Long, T 1980, *Managing risk in a smaller business* in Price Waterhouse Review, vol. 25, pp. 2-6.

McKeirnan, P & Morris, C 1994, 'Strategic Planning and Financial performance in UK SMEs: does formality matter?', *British Journal of Management*, vol. 5, pp. 31-41.

Melnyk, SA 2000, 'Value-Driven Process Management: Using Value to Improve Processes', *Hospital Materiel Management Quarterly; Rockville*, vol. 22, no. 1.

Meredith, JR & Mantel Jr, SJ 2000, *Project Management: A Managerial Approach*, 4th edn, John Wiley and Sons, Brisbane.

Miles, MB & Huberman, AM 1994, *Qualitative Data Analysis: An Expanded Sourcebook*, 2nd Edition edn, Sage Publications, thousand Oaks, California.

Miles, RE & Snow, CC 1986, 'Organizations: New Concepts for New Forms.', *California Management Review*, vol. 28, no. 3, p. 62.

Mind Tools, *Problem Solving Techniques*, Mind Tools. [October 2008].

Mindmanager 2011, ed.^eds 9 Professional, www.mindjet.com

Mingay, S 2007, *Are Alternative Environmental Delivery Models More Environmentally Sustainable?* in Gartner.

Mintzberg, H 1979, 'An Emerging Strategy of "Direct" Research ', *Administrative Science Quarterly*, vol. 24, no. 4, pp. pp. 582-589.

Mintzberg, H & Westley, F 2001, 'Decision Making: It's Not What You Think.', *Sloan Management Review*, vol. 42, no. 3, p. 89.

Mohan-Neill, SI 1995, 'The influence of firm's age and size on its environmental scanning activities', *Journal of Small Business Management*, vol. 33, no. 4, pp. 10-21.

Mole, KF, Ghobadian, A, O'Regan, N & Liu, J 2004, 'The Use and Deployment of Soft Process Technologies within UK Manufacturing SMEs: An Empirical Assessment Using Logit Models', *Journal of Small Business Management*, vol. 42, no. 3, pp. 303–324.

Moody, DL 2003, 'Real World Testing of a Method for "Modularising" Large Data Models: An Action Research Programme', in *14th Australasian Conference on Information Systems*, ACIS, Perth, p. 12.

Moreton, PH 1997, Business Process reengineering: seperating Fact from Myth, Masters of Business thesis, Queensland University of Technology.

Muscatello, JR & Parente, DH 2006, 'Enterprise Resource Planning (ERP): A Postimplementation Cross-Case Analysis', *Information Resources Management Journal*, vol. 19, no. 3, p. 61.

Myers, A 1997b, 'Interpretive Research in Information Systems', in *Information Systems: An Emerging Discipline?*, ed. JaS Mingers, F, McGraw-Hill, London, pp. 239-266.

Myers, A & Avison, D (eds) 2002, *Qualitative Research in Information Systems*, Sage Publications, London.

Myers, M 1999, 'Investigating Information Systems with Ethnographic Research', *Communication of the AIS*, vol. 2, no. 1.

Myers, MD, *References on case study research*. Available from: <http://www.auckland.ac.nz/msis/isworld/case.html>. [22/1/99].

Myers, MD, *References on Interpretive research*. Available from: <http://www.qual.auckland.ac.nz/interp.aspx>. [22/1/99].

Myers, MD, *Qualitative research in information systems*. Available from: <http://www.auckland.ac.nz/msis/isworld/>.

Myers, MD & Newman, M 2007, 'The qualitative interview in IS research: Examining the craft', *Science Direct*, vol. 17, no. 1, pp. Pages 2–26.

Mylonopoulos, NA & Theoharakis, V 2001, 'On site: global perceptions of IS journals', *Communications of the ACM*, vol. 14, no. 9, pp. p29-33.

Nandhakumar, J & Jones, M 1997, 'Too close for comfort? Distance and engagement in interpretive Information Systems research', *Information Systems Journal*, no. 7, pp. 109-131.

Nandhakumar, JJ 1993, The practice of executive information systems development: an in-depth study., Dissertation thesis, University of Cambridge

Nel, J 1997, 'IT investment management : a case study and survey of effects of IT useage on organisational strategic performance', in *3rd Pacific Asia Conference on Information Systems*, eds GG Gable & RAG Weber, Information Systems Management Research Concentration, School of Information Systems, Faculty of Information Technology, Queensland University of Technology, Brisbane, Qld, pp. 461-474.

O'Driscoll, A, Carson, D & Gilmore, A 2001, 'The Competence Trap: Exploring issues in winning and sustaining core competence', *Irish Journal of Management*, vol. 22, no. 1, pp. pp 73-91.

O'Neill, P & Sohal, AS 1999, 'Business Process Reengineering A review of recent literature', *Technovation*, vol. 19, no. 9, pp. 571-581.

OECD 1998, *SMEs and Electronic Commerce*, DSSTI/IND/PME(98)18/REV1, Directoriate for Science, Technology and Industry Committee, OECD.

Ojal, M, Vilpola, I & Kouri, I 2010, 'Risks and risk management in ERP Project - cases in SME Context ', in *Lecture Notes in Informatics*, eds HC Mayr, J Becker, H Bonin, D Fellner, U Flegel, J-C Freytag, U Furbach, M Koch, A Lehmann, P Liggesmeyer, EW Mayr, H Müller, S Schubert & M Warnke, Gesellschaft für Informatik,, Bonn, pp. 179- 186.

Olve, N-G & Sjostrand, A 2002, *The Balanced Scorecard*, Capstone Publishing (a Wiley company), Oxford.

OMG 2011, *Business Process Maturity Model (BPMM)*, OMG, http://www.omg.org.

Opengroup.org 2006, *TOGAF®, an Open Group standard*, Opengroup.org, http://www3.opengroup.org/subjectareas/enterprise/togaf.

Oracle, *Service - Oriented Architecture*. Available from: <http://www.oracle.com/technologies/soa/index.html>. [Sept 2007].

Orlikowski, WJ & Baroudi, JJ 1991, 'Studying Informaiton Technology in Organizations: Research approaches and assumptions', *Information Systems Research*, vol. 2, no. 1, pp. 1-27.

Orlikowski, WJ & Hoffman, D 1997, 'An Improvisational Model for Change Management: The Case of Groupware Technologies', *Sloan Management Review*.

Palmer, I, Benveniste, J & Dunford, R 2007, 'New Organizational Forms: Towards a Generative Dialogue', *Organization Studies* vol. 28, no. 12, pp. 1829-1847.

Palvia, P & Jackson, W 2004, 'Computing practices in very small firms', in *Annual meeting of the decision sciences institute*.

Paulk, MC, Curtis, B, Chrissis, MB & Weber, CV 1993, *Capability Maturity ModelSM for Software, Version 1.1*, Technical Report CMU/SEI-93-TR-024 ESC-TR-93-177, Software Engineering Institute, Carnegie Mellon University.

Paulus, TM, Woodside, M & Ziegler, MF 2010, '"I Tell You, It's a Journey, Isn't It?" Understanding Collaborative Meaning Making in Qualitative Research', *Qualitative Inquiry*, vol. 16, no. 10, pp. 852-862.

Pawlowski, SD & Robey, D 2004, 'Bridging user organizations: knowledge brokering and the work of information technology professionals', *MIS Quarterly*, vol. 28, no. 4, pp. 645-672.

Pennsylvania State University, *Glossary*, PennState Administrative Information Services. Available from: <ais.its.psu.edu/workflow/media/glossary.doc>. [October 2007].

Performance and Information Unit 2001, *Performance and information unit (PIU) strategic thinkers seminars: Strategic opportunities for small business in the UK*, Cabinet Office, UK.

Perry, C, Riege, A & Brown, L 1998, 'REALISM RULES OK: SCIENTIFIC PARADIGMS IN MARKETING RESEARCH ABOUT NETWORKS', in *ANZMAC*, Otago NZ.

Pestorius, MJ 2006, *Applying the Science of Six Sigma to the Art of Sales and Marketing*, American Society for Quality. [April 16, 2009].

Peters, TH, 03/08/11, *A Brief History of the 7-S ("McKinsey 7-S") Model*, Tom Peters.

Peters, TJ & Waterman, RHJ 1982, *In Search of Excellence: Lessons from America's best-run companies*, 1st edn, Warner Books, New York.

Piscitello, L & Sgobbi, F 2004, 'Globalisation, E-Business and SMEs: Evidence from the Italian District of Prato', *Small Business Economics*, vol. 22, pp. 333-347.

Pollard, CE & Hayne , SC 1998, 'The Changing Face of Information System Issues in Small Firms,' *International Small Business Journal*, vol. 16, no. 3, pp. 70-87.

Pontecorvo, C 2007, 'On the conditions for generative collaboration: Learning through collaborative research', *Integrative Psychology and Behaviorial Science*, vol. 41, pp. 178-186.

Poon, S & Swatman, P 1999, 'A longitudinal study of expectations in small business internet commerce', *International Journal of Electronic Commerce*, vol. 3, no. 3, pp. 21-33.

Poon, S & Swatman, PMC 1999, 'An exploratory study of small business Internet commerce issues', *Information & Management*, vol. 35, pp. 9-18.

Poon, S, Swatman, PMC & Vitale, M 1996, 'Electronic networking among small business in Australia - an exploratory study', in *9th International conference on EDI-IOS*, eds PMC Swatman, J Gricar & J Novak, Bled, Slovenia, pp. 446-460.

Powell, WW 1998, 'Learning from Collaboration:knowledge and networks in the biotechnology and pharmaceuticals industries', *California Management Review*, vol. 40, no. 3, pp. 228-241.

Power, R 1989, 'Participant Observation and its Place in the Study of Illicit Drug Abuse.', *British Journal of Addiction*, vol. 84, no. 1, pp. 43-52.

Quinn, JB & Hilmer, FG 1994, 'Strategic outsourcing.', *Sloan Management Review*, vol. 35, no. 4, p. 43.

QUT 2007, *BPM 2007*, Queensland University of Technology, Brisbane.

Radin, BA & Coffee, JN 1993, 'A critique of TQM: Problems of implementation in the public sector', *Public Administration Quarterly*, vol. 17, no. 1, p. 42.

Rao, SS, Metts, G & Monge, CAM 2003, 'Electronic commerce development in small and medium sized enterprises', *Business Process Management Journal*, vol. 9, no. 1, pp. 11-32.

Raymond, J 1990, 'Are new units making your desktop system obsolete? Office', *111*, no. 61-62.

Raymond, L 1990, 'Organizational Context and Information Systems Success: A contingency approach', *Journal of Managemetn Information Systems*, vol. 6, no. 4, pp. 5-20.

Reference for Business, *Encyclopedia of Business, 2nd ed.*, Advameg, Inc. Available from: <http://www.referenceforbusiness.com/encyclopedia/Int-Jun/ISO-9000.html>. [2011].

Reis, HT 1994, 'Domains of experience: investigating relationship processes from three perspectives', in *Theoretical Frameworks in Personal Relationships*, ed. RaG Erber, R Erlbaum, Mahwah, NJ, pp. pp. 87-110.

Robson, PJA & Bennett, RJ 2000, 'SME growth: the relationship with business advice and external collaboration', *Small Business Economics*, vol. 15, no. 3, pp. pp. 193-205.

Rosemann, M 2002, 'Application Reference Models and Building Blocks for Management and Control'.

Rosemann, M & De Bruin, T 2004, 'Application of a Holistic Model for Determining BPM Maturity', in *3rd Pre-ICIS Workshop on Process Management and Information Systems,*, ed. Comyn-Wattiau, & Favier, (Eds.). Washington DC, USA.

Rubin, HJ & Rubin, IS 2005, *Qualitative interviewing: The art of hearing data*, 2nd ed. edn, Sage, Thousand Oaks, CA.

Rusli, A & Marshall, P 1995, 'Using an interpretivist inquiry methodology in IS research: an ethnography experience in an indonesian organisation', in *ACIS*, pp. 793-806.

SAI Global 2004, *AS/NZS 4360 Risk Mangement Guidlines*, vol. 4360, Joint Technical Committee OB-007, Canberra Australia, p. 39.

Sarbanes-Oxley Act of 2002 2002, United States of America, p. 66.

Scheer, A-W & Nüttgens, M 2000, 'ARIS Architecture and Reference Models for Business Process Management', in *Business Process Management, Models, Techniques, and Empirical Studies*, Springer-Verlag London.

Scheer, I 2000, *ARIS Toolset*, ed.^eds 5.0, Scheer.

Schein, E 1997, 'The concept of "client" from a process consultation perspective A guide for change agents', *Journal of Organizational Change Management.* , vol. 10, no. 3, pp. 202-216.

Schekkerman, J 2004, *How to survive in the jungle of enterprise architecture frameworks: creating or choosing an enterprise architecture framework*, 2nd edition edn, Trafford Publishing, Victoria, B.C.

Scherpereel, CM 2006, 'Alignment: the duality of decision problems', *Management Decision*, vol. 44, no. 9, p. 1258.

Schwandt, TA 1994, 'Constructivist, Interpretivist Approaches to Human Inquiry', in *Handbook of Qualitative Research*, eds NK Denzin & YS Lincoln, SAGE publications, California, pp. 118-137.

Scott, M & Bruce, R 1987, 'Five stages of growth in small business', *Long Range Planning*, vol. 20, no. 3, pp. pp. 45-52.

Scozzi, B, Garavelli, C & Crowston, K 2005, 'Methods for modeling and supporting innovation processes in SMEs', *European Journal of Innovation Management*, vol. 8, no. 1, pp. 120-137.

Seale, C 1999, 'Quality in Qualitative Research', *Qualitative Inquiry*, vol. 5, no. 4, pp. 465-478.

Seale, C, Gobo, G, Gubrium, JF & Silverman, D 2004, *Qualitative Research in Practice*, Sage, London.

Sedera, W, Rosemann, M & Gable, GG 2001a, 'Process modelling for enterprise systems: factors critical to success', in *12th Australasian Conference on Information Systems*.

Senge, P 1990, *The Fifth Discipline*, Doubleday, New York.

Serafeimidis, V & Smithson, S 2000, 'Information systems evaluation in practice: a case study of organizational change', *Journal of Information Technology*, vol. 15, no. 2, pp. 93 - 105.

Serenko, A, Cocosila, M & Turel, O 2008, 'The State and Evolution of Information Systems Research in Canada: A Scientometric Analysis', *Canadian Journal of Administrative Sciences*, vol. 25, no. 4, pp. pp. 279 - 294.

Sessions, R, *A Comparison of the Top Four Enterprise-Architecture Methodologies*, Microsoft Developer Network (MSDN). [Nov 2011].

Shah, H & El Kourdi, M 2007, 'Frameworks for Enterprise Architecture', *IT Professional Magazine*, vol. 9, no. 5, pp. Pages 36-41.

Shenton, AK 2004, 'Strategies for ensuring trustworthiness in qualitative research projects.', *Education for Information*, vol. 22, pp. 63-75.

Shields, R 2008, *Enabling Enterprise Business Process Management: Issues and Challenges for Coordinating and Managing BPM Initiatives*, Telelogic.

Sia, SK & Soh, C 2002, 'Severity Assessment of ERP- Organisation Misalignment: Honing in on Ontological Structure and Context Specificity', in *Twenty-Third International Conference on Information Systems*.

Silverman, D 1997, *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*, SAGE Publications, London.

Simon, SJ 2001, 'The impact of culture and gender on web sites: an empirical study', *Special Interest Group on Management Information Systems*, vol. 32, no. 1, pp. 18-37.

Simpson, M & Docherty, AJ 2004, 'E-commerce adoption support and advice for UK SMEs.', *Journal of Small Business and Enterprise Development*, vol. 11, no. 3, pp. 315-

328.

Sinur, J 2004, *Drivers for BPM: 11 Money-Relevant Reasons to Start*, COM-21-9991, Gartner.

Smyth, RW 2001a, CASE Success Factors; An Evaluation of Factors Involved in the Successful Adoption of a Computer Aided Software Engineering (CASE) Package, PhD thesis, Queensland University of Technology.

Smyth, RW 2001b, 'Challenges to successful ERP use', in *9th European Conference on Information Systems*, Bled, Slovenia, pp. 1227-1231.

Sobh, R & Perry, C 2006, 'Research design and data analysis in realism research', *European Journal of Marketing*, vol. 40, no. 11/12, pp. 1194-1209.

Software Engineering Institute, *CMMI*, Carnegie Mellon University. Available from: <http://www.sei.cmu.edu/cmmi/>. [July 2011].

Sowa, JF & Zachman, JA 1992, 'Extending and formalizing the framework for information systems architecture', *IBM Systems Journal*, vol. 31, no. 3, pp. 590 - 616.

Spann, MS, Adams, M, Rahman, M, Czarnecki, H & Schroer, BJ 1999, 'Transferring Lean Manufacturing to Small Manufacturers: The Role of NIST-MEP', in *United States Association for Small Business and Entrepreneurship Conference*, San Diego, California.

Spetzler, CS & Stael Von Holstein, C-AS 1975, 'Probability Encoding in Decision Analysis', *Management Science*, vol. 22, no. 3, pp. 340-358.

Stake, RE 1995, *The Art of Case Study Research*, Sage Publications, London.

Stake, RE 1998, 'Case Studies', in *Strategies of Inquiry*, eds NK Denzin & YS Lincoln, Sage Publications Inc., pp. 86-109.

Stalk, G, Evans, PB & Shulman, LE 2000, 'Competing on capabilities', in *Understanding Business: Processes*, ed. D Barnes, Routledge, London, pp. 42-49.

Stamatis, DH 1995, *Failure Mode and Effect Analysis: FMEA from Theory to Execution*, Quality Press, Milwaukee, Wisconsin.

Stecher, BM & Nataraj Kirby, S 2004, *Organizational improvement and accountability: lessons for education from other sectors*, Rand Corporation, Santa Monica CA.

Stenzel, PL, *ISO 9000*, Encyclopedia of Business, 2nd ed. [June 2011].

Stevenson, T 2002, 'Anticipatory action learning: conversations about the future', *Futures*, vol. 34, no. 5, pp. 417-425.

Stewart, G 2001, 'The use of Yin's case study research approach as a means to stimulating emancipatory action research', in *7th Americas Conference on Information Systems*, Boston, MA, pp. 1660-1665.

Stewart, G 2006, 'Reflections on Teaching Enterprise Architecture to Graduate Students', in *Proceedings of the Americas Conference on Information Systems*, AIS, Acapulco, Mexico, pp. 2407-2413.

Stockdale, R & Standing, C 2004, 'Benefits and barriers of electronic marketplace participation: an SME perspective', *Journal of Enterprise Information Management*, vol. 17, no. 4, pp. 301-311.

Stonehouse, G & Pemberton, J 2002, 'Strategic planning in SMEs - some empirical findings', *Management Decision*, vol. 40, no. 9, pp. pp.853 - 861.

Strauss, A & Corbin, J 1990, *Basics of Qualitative Research: grounded theory procedures and techniques*, Sage, Newbury park, Calif.

Strauss, A & Corbin, J 1997, *Grounded Theory in Practice*, SAGE Publications, Thousand Oaks.

Strauss, AL 1987, *Qualitative analysis for Social Scientists*, Cambridge University Press, New York.

Strauss, AL & Corbin, J 1998, *Basics of qualitative research : techniques and procedures for developing grounded theory*, Sage, Thousand Oaks.

Supyuenyong, V, Islam, N & Kulkarni, U 2009, 'Influence of SME characteristics on knowledge management processes: The case study of enterprise resource planning service providers', *Journal of Enterprise Information Management*, vol. 22, no. 1/2, pp. pp.63 - 80.

Tan, FB & Gallupe, RB 2003, 'A framework for research into business-IT alignment: a cognitive emphasis', in *Business strategies for information technology management*, Idea Group Publishing, Hershey, PA, USA, pp. 50-73.

Tatnall, A & Gilding, A 1999, 'Actor-Network Theory and Information Systems Research', in *Australasian Conference on Information Systems*.

Taylor, C 2003, *Development of the High-Level Model for IT Service Delivery*, C Huxley, Brisbane.

Taylor, H, Dillon, S & Van Wingen, M 2008, 'The changing face of Informatin Systems Research: A longtitudinal Study of Author Influence', *Informaing Science*, vol. 11.

Taylor, M & Murphy, A 2004, 'SMEs and e-business', *Journal of Small Business and Enterprise Development*, vol. 11, no. 3, pp. 280-289.

Taylor, SJ & Bogdan, R 1998, *Introduction to qualitative research methods: A guidebook and resource* 3rd ed edn, John Wiley & Sons Inc, Hoboken, NJ, US.

Teece, DJ 1992, 'Competition, cooperation, and innovation', *Journal of Economic behahiour and organisation*, vol. 18, pp. 1-25.

Thong, JYL, Yap, C-S & Raman, KS 1996, 'Top management support, external expertise and Information Systems implementation in small businesses', *Information Systems Research*, vol. 7, no. 2, pp. 248-267.

Thorp, J 1998, *The Information Paradox. Realizing the Business Benefits of Information Technology*, McGraw-Hill, New York.

Thorp, J & Fujitsu Consulting, CfSL 2003, *The Information Paradox. Realizing the Business Benefits of Information Technology*, New edition edn, McGraw-Hill, New York.

tmforum.org, *tmforum.org*, http://www.tmforum.org/AbouttheTMForum/730/home.html.

Trauth, E & Jessup, L 2000, 'Understanding computer-mediated discussions: Positivist and interpretive analyses of group support system use', *MIS Quarterly*, vol. 24, no. 1, pp. 43-79.

Travers, M 2001, *Qualitative research through case studies*, SAGE, London.

Tsang, AHC, Jardine, AKS & Kolodny, H 1999, 'Measuring Maintenance Performance: A holistic approach', *International Journal of Operations & Production Management*, vol. 19, no. 7, pp. pp 691-715.

Tucci, L 2011, *Two IT gurus face off on value of enterprise architecture frameworks* in IT Knowledge Exchange, vol. 2011, Techtarget.com.

Tufte, ER 2002, *Visual Explanations: Images and Quantities, Evidence and Narrative*, 2nd edn, Graphics Press, Cheshire, Connecticut.

Ulrich, F 1977, 'Enriching Object-Oriented Methods with Domain Specific Knowledge: Outline of a Method for Enterprise Modelling', *Arbeitsberichte des Instituts für Wirtschaftsinformatik*, vol. 4.

Urquhart, C 2001, 'An encounter with grounded theory: tackling the practical and philosophical issues', in *Qualitative research in IS : issues and trends*, ed. EM Trauth, Idea Group, Hershey, Pa., pp. 104-140.

van der Aalst, WMP 2003, *Business Process Management: Past, Present, Future*, Technische Universiteit Eindhoven, Eindhoven, The Netherlands.

van der Aalst, WMP & ter Hofstede, AHM 2005, 'YAWL: yet another workflow language', *Information Systems*, vol. 30, no. 4, pp. 245-275.

Van Maanen, JE (ed.) 1983, *Qualitative methodology*, Sage., Newbury Park, CA.

Vilpola, I & Kouri, I 2005, 'Improving ERP Requirement Specification Process of SMEs with a Customer-Centered Analysis Method', *Frontiers of e-Business research (FeBR)*.

Vinten, G 1999, 'Corporate communications in small- and medium-sized enterprises', *Industrial and Commercial Training*, vol. 31, no. 3, pp. 112-119.

von Weltzien Hoivik, H 2011, 'Embedding CSR as a learning and knowledge creating process: the case for SMEs in Norway', *Journal of Management Development*, vol. 30, no. 10, pp. pp.1067 - 1084.

Wadhwa, S & Karra, R, *Managing Risk in IT Operations*, ITtoolbox. Available from: <http://hosteddocs.ittoolbox.com/RK10705.pdf>. [17 October].

Walker, RW 2000, 'Assessment of Technical Risks', in *2000 IEEE Conference on Management of Innovation and Technology*, IEEE, pp. 402 - 406.

Walsh, P, McGregor-Lowndes, M & Newton, CJ 2008, 'Shared Services: Lessons from the Public and Private Sectors for the Nonprofit Sector', *The Australian Journal of Public Administration*, vol. 67 no. 2, pp. 200-212.

Walsham, G 1995a, 'The emergence of Interpretivism in IS research', *Information Systems Research*, vol. 6, no. 4, pp. 376-394.

Walsham, G 1995b, 'Interpretive case studies in IS research: nature and method', *European Journal of Information Systems*, vol. 4, pp. 74-81.

Walsham, G 2002, 'Interpretive case studies in IS research: nature and method', in *Qualitative Research in Information Systems*, eds A Myers & D Avison, Sage Publications, London, p. 312.

Walsham, G 2006, 'Doing interpretive research', *European Journal of Information Systems*, vol. 15, no. 3, pp. 320-330.

Wang, C, Walker, EA & Redmond, J 2006, 'Ownership Motivation and Strategic Planning in Small Business', *Journal of Asia Entrepreneurship and Sustainability*, vol. 11, no. 4.

Weed, J 2010, 'Factory Efficiency Comes to the Hospital', *The New York Times*, July 10 2010.

Weerakkody, V, Janssen, M & Hjort-Madsen, K 2007, 'Integration and Enterprise Architecture Challenges in E-Government: A European Perspective', *International Journal of Cases on Electronic Commerce*, vol. 3, no. 2.

Weiss, JW & Wysocki, RK 1992, *5-Phase Project Management: A practical planning and implementation guide.*, 1 edn, Perseus Books Publishing, US.

Wickramasinghe, N 2003, 'Do we practise what we preach? Are knowledge management systems in practice truly reflective of knowledge management systems in theory?', *Business Process Management Journal*, vol. 9, no. 3, p. 295.

Wiesner, R, McDonald, J & Banham, HC 2007, 'Australian small and medium sized enterprises (SMEs): A study of high performance management practices', *Journal of Management and Organization*, vol. 13, no. 3, pp. pg. 227, 20 pgs.

Wiig, KM, de Hoog, R & van der Spek, R 1997, 'Supporting knowledge management: A selection of methods and techniques', *Expert Systems with Applications*, vol. 13, no. 1, pp. 15-27.

Willis, K, Daly, J, Small, R, Green, J, Welch, N, Kealy, M & Hughes, E 2007, 'A hierarchy of evidence for assessing qualitative health research', *Journal of Clinical Epidemiology*, vol. 60, no. 1, pp. 43-49.

Wiske, MS & Breit, L 2010, *Teaching for Understanding with Technology*, Jossey-Bass.

Woods, P, *Qualitative Research*, Faculty of Education, University of Plymouth. Available from: <http://www.edu.plymouth.ac.uk/resined/resedhme.htm>. [July 2010].

Yang, B, Zheng, W & Viere, C 2009, 'Holistic Views of Knowledge Management Models', *Advances in Developing Human Resources*, vol. 11.

Yetton, P, Johnston, KD & Craig, JF 1994, 'Computer-Aided Architects: A Case Study of IT and Strategic Change', *Sloan Management Review*, vol. 35, no. 4, pp. pp. 57–67.

Yin, RK 1994, *Case Study Research: design and methods*, 2nd edn, Sage Publications Inc, Thousand Oaks California.

Yin, RK 2003, *Case Study Research: Design and Methods*, 3rd edn, Sage Publications Inc, Thousand Oaks California.

Zachman, JA 1987, 'A Framework for Information Systems Architecture', *IBM Systems Journal*, vol. 26, no. 3, pp. pp 276-293.

Zarbo, RJ & D'Angelo, R 2006, 'Transforming to a Quality Culture: The Henry Ford Production System', *Pathology Patterns Reviews*, vol. 126, no. 1, pp. S21-S29.

Zikmund, WG & J., BB 2007, *Exploring markging research*, Thomson/South-Wewtern, Mason, Ohio.

zur Muehlen, M 2008, *A Little Knowledge is a Dangerous Thing: Building Business Process Management Skills* in BPTrends, BPTrends.com, pp. 1-5.