

This item is held in Loughborough University's Institutional Repository (<https://dspace.lboro.ac.uk/>) and was harvested from the British Library's EThOS service (<http://www.ethos.bl.uk/>). It is made available under the following Creative Commons Licence conditions.



creative
commons
C O M M O N S D E E D

Attribution-NonCommercial-NoDerivs 2.5

You are free:

- to copy, distribute, display, and perform the work

Under the following conditions:

 **BY:** **Attribution.** You must attribute the work in the manner specified by the author or licensor.

 **Noncommercial.** You may not use this work for commercial purposes.

 **No Derivative Works.** You may not alter, transform, or build upon this work.

- For any reuse or distribution, you must make clear to others the license terms of this work.
- Any of these conditions can be waived if you get permission from the copyright holder.

Your fair use and other rights are in no way affected by the above.

This is a human-readable summary of the [Legal Code \(the full license\)](#).

[Disclaimer](#) 

For the full text of this licence, please go to:
<http://creativecommons.org/licenses/by-nc-nd/2.5/>

**A study of the factors that influence the perceptions of
strategic information value in major UK based
organisations**

By

Graham Doig

A Doctoral Thesis

Submitted in partial fulfilment of the requirements for the award of the degree of
Doctor of Philosophy of Loughborough University

June 2002

© by Graham Doig, 2002

Acknowledgements

I would primarily like to thank my supervisors Dr Neil Doherty and Mr Chris Marples for all their guidance, advice, and support throughout the research project. Special thanks also go to my director of research Dr David Johnson. This is not only for his encouragement and support throughout the research project, but also for providing me with the original opportunity to fulfil a long held desire to enter the world of academia.

I am indebted to many people, in many organisations, in many countries, who have provided me with support, encouragement, and assistance through the many years that this research has been undertaken. Special thanks must go to all those people who gave their valuable time to assist in case study interviews and focus group discussions.

My most special thanks goes to my wife Jenny for her love, support, and patience throughout the duration of this research project. Without her this dream would never have been fulfilled. My final thought is for my daughter Eilidh, at last she will have a Dad to play with!

Abstract

It has been argued for many years that if applied effectively, information can be a valuable organisational resource; indeed, many contend that it is the lifeblood of the organisation. This view is supported by the academic literature, which identifies a wide range of factors that influence perceptions of strategic information value. For example, information quality and information accessibility have both been widely discussed. The use of information for enabling organisational change in organisations, for marketing activities, and for strategic planning have also been the subject of academic investigation. However, whilst the literature in this domain is fairly extensive, it is largely theoretical, rather than empirical, in nature and it also tends to be highly fragmented, addressing narrow aspects of value. The primary aim of this study was to undertake a holistic exploration of the factors affecting the perceived value of strategic information, using rigorous empirical methods. Moreover, the research sought to address the question of why organisations typically fail to treat information as a formal asset, even though they perceive it to be valuable resource.

To explore these broad objectives, a three-phase approach was adopted combining the use of both quantitative and qualitative methods of research. More specifically, the study commenced with a questionnaire-based survey that was designed to validate the initial conceptual framework. This was followed by a phase of the research, which utilised detailed case studies in eight major UK based commercial organisations, to explore how perceptions of information value were affected by the implementation of data warehouses. The final phase of the study sought to validate the research findings and explore their wider implications, through the utilisation of on-line focus groups. The research project has produced several key findings. It has provided evidence that information accessibility and information quality are critical constructs that impact the perceived value of information. It has confirmed that a number of business activities, such as marketing, are highly dependent on the use of information. It has suggested that improvements in the accessibility and quality of information can lead to the improved effectiveness of these business activities, and that this can lead to the attainment of more substantial measurable business benefits. Finally, the research has also suggested that although most organisations consider information to be valuable, few give serious consideration to formally classifying information as an asset, and none appear to measure the value of their information assets. It is believed that this study has made a number of significant contributions to the literature. It has provided a holistic view of the dimensions that can impact the perceived value of strategic information. Most importantly, from an academic perspective, it has produced empirically based evidence on the relationships between a wide-range of dimensions and the perceived value of information, on attitudes to information being considered an asset, and the actions organisations take to measure the value of information assets. It has been argued that without a clear understanding of the value of information, it is difficult to manage it appropriately, and consequently it is also difficult to ultimately attain the value of the information. By providing a far clearer and holistic picture of the factors affecting the value of information, coupled with many important new insights about the management of information, the results of this study should help to ensure that organisations can fully realise the value of their strategic information resources.

Table of Contents

<i>Acknowledgements</i>	<i>i</i>
<i>Abstract</i>	<i>ii</i>
<i>Table of Contents</i>	<i>iii</i>
<i>List of Figures</i>	<i>viii</i>
<i>List of Tables</i>	<i>ix</i>
CHAPTER 1: INTRODUCTION	1
1.1 BACKGROUND TO THE RESEARCH	1
1.2 OBJECTIVES OF THE STUDY	4
1.3 SIGNIFICANCE OF THE STUDY	5
1.4 CONTEXT OF THE STUDY	7
1.5 ORGANISATION OF THE STUDY	7
CHAPTER 2: LITERATURE REVIEW	11
2.1 INTRODUCTION.....	11
2.2 THE PERCEIVED VALUE OF INFORMATION.....	12
2.2.1 <i>Impact of Information Accessibility on the Perceived Value of Information</i>	14
2.2.2 <i>Impact of Information Quality on the Perceived Value of Information ..</i>	17
2.2.3 <i>Impact of the Use of Information for Marketing Activities on the Perceived Value of Information</i>	21
2.2.4 <i>Impact of the Use of Information for Strategic Planning on the Perceived Value of Information</i>	25
2.2.5 <i>Impact of the Use of Information for the Facilitation of Organisational Change on the Perceived Value of Information</i>	29
2.2.6 <i>Impact of the Use of Information to Attain Measurable Business Benefits on the Perceived Value of Information</i>	32
2.2.7 <i>Impact of Attitudes Towards Information Value Measurement on the Perceived Value of Information</i>	35
2.2.8 <i>Literature Review Conclusions</i>	38
2.2.9 <i>Preliminary Conceptual Framework for the Perceived Value of Information, and Research Objectives</i>	39
2.3 SUMMARY	44
CHAPTER 3: RESEARCH STRATEGY	46
3.1 INTRODUCTION	46
3.2 THE RESEARCH LIFECYCLE	46
3.3 RESEARCH METHOD FRAMEWORK	48
3.4 RESEARCH STRATEGY	51
3.4.1 <i>Exploratory Research – Questionnaire Data Analysis</i>	52
3.4.2 <i>Primary Research - Multiple Case Studies</i>	53
<i>Multiple Case Studies</i>	53
<i>Multiple Sources of Evidence</i>	55
<i>Data Capture Using NUD*IST Vivo</i>	61
<i>Case Study Data Analysis</i>	63
<i>Chain of Evidence</i>	64
3.4.3 <i>Follow-up Research – Internet Focus Groups</i>	68

3.5	SUMMARY	72
CHAPTER 4: EXPLORATORY RESEARCH - QUESTIONNAIRE DATA ANALYSIS..... 73		
4.1	INTRODUCTION	73
4.2	RESEARCH BACKGROUND	74
4.3	RESEARCH DESIGN	74
4.3.1	<i>Research Objectives</i>	75
4.3.2	<i>Research Instrument Design and Validation</i>	76
4.3.3	<i>Survey Targeting and Execution</i>	78
4.4	RESEARCH RESULTS	80
4.5	RESEARCH CONCLUSIONS.....	90
4.6	REVIEW OF THE PRELIMINARY CONCEPTUAL FRAMEWORK	91
4.7	SUMMARY	92
CHAPTER 5: INFORMATION PROVISION AND THE PERCEIVED VALUE OF INFORMATION..... 93		
5.1	INTRODUCTION	93
5.2	SUMMARY OF OBJECTIVES	94
5.3	INFORMATION PROVISION AND THE PERCEIVED VALUE OF INFORMATION ...	95
5.4	INFORMATION ACCESSIBILITY	95
5.4.1	<i>Information Accessibility - Dimension Analysis</i>	103
	<i>Existence</i>	103
	<i>Awareness</i>	105
	<i>Sharing</i>	106
	<i>Delivery</i>	108
5.4.2	<i>Information Accessibility - Case Analysis</i>	109
5.4.3	<i>Information Accessibility Conclusions</i>	114
5.5	INFORMATION QUALITY	115
5.5.1	<i>Information Quality – Dimension Analysis</i>	121
	<i>Consistency</i>	121
	<i>Timeliness</i>	123
	<i>Accuracy</i>	124
	<i>Usability</i>	126
5.5.2	<i>Information Quality - Case Analysis</i>	128
5.5.3	<i>Information Quality Conclusions</i>	132
5.6	SUMMARY	133
CHAPTER 6: INFORMATION USAGE AND THE PERCEIVED VALUE OF INFORMATION..... 134		
6.1	INTRODUCTION	134
6.2	SUMMARY OF OBJECTIVES	135
6.3	INFORMATION USAGE AND THE PERCEIVED VALUE OF INFORMATION	136
6.4	USE OF INFORMATION TO FACILITATE MARKETING ACTIVITIES.....	136
6.4.1	<i>Use of Information to Facilitate Marketing Activities - Dimension Analysis</i>	144
	<i>Marketing Strategy/Planning</i>	144
	<i>Segmentation</i>	145
	<i>Product Development</i>	147

<i>Competitive Analysis</i>	148
6.4.2 <i>The Use of Information to Facilitate Marketing Activities - Case Analysis</i>	150
6.4.3 <i>Use of Information to Facilitate Marketing Activities Conclusions..</i>	154
6.5 USE OF INFORMATION TO FACILITATE STRATEGIC PLANNING ACTIVITIES.	154
6.5.1 <i>The Use of Information to Facilitate Strategic Planning - Dimension Analysis</i>	162
<i>Strategic Analysis and Choice</i>	162
<i>Strategy Implementation</i>	163
<i>Corporate Performance Measurement</i>	165
<i>Competitive Advantage</i>	167
6.5.2 <i>The Use of Information to Facilitate Strategic Planning - Case Analysis</i>	168
6.5.3 <i>The Use of Information to Facilitate Strategic Planning Activities Conclusions</i>	172
6.6 USE OF INFORMATION TO FACILITATE ORGANISATIONAL CHANGE.....	173
6.6.1 <i>The Use of Information to Facilitate Organisational Change – Dimension Analysis</i>	181
<i>Customer Service</i>	181
<i>Performance Orientation</i>	182
<i>Flexibility</i>	184
<i>Integration and Lateral Independence</i>	185
6.6.2 <i>The Use of Information to Facilitate Organisational Change – Case Analysis</i>	187
6.6.3 <i>Use of Information to Facilitate Organisational Change Conclusions ..</i>	192
6.7 SUMMARY	193
CHAPTER 7: THE MEASURED VALUE OF INFORMATION	194
7.1 INTRODUCTION.....	194
7.2 SUMMARY OF OBJECTIVES	195
7.3 THE MEASURED VALUE OF INFORMATION	196
7.4 USE OF INFORMATION TO FACILITATE THE ATTAINMENT OF MEASURED BUSINESS BENEFITS.....	196
7.4.1 <i>The Use of Information to Attain Measured Business Benefits – Dimension Analysis</i>	202
<i>Increased Market Share</i>	202
<i>Reduced Costs</i>	204
<i>Increased Profitability</i>	205
7.4.2 <i>The Use of Information to Attain Measurable Business Benefits - Case Analysis</i>	206
7.4.3 <i>The Use of Information to Attain Measured Business Benefits Conclusions</i>	209
7.5 MEASURING THE VALUE OF INFORMATION	210
7.5.1 <i>The Significance of the Measured Value of Information within Case Study Organisations</i>	215
7.5.2 <i>The Measured Value of Information – Dimension Analysis</i>	216
<i>Information as an Asset</i>	216
<i>Measurable Value of Information Assets</i>	216
7.5.3 <i>The Information Value Paradox</i>	217

7.5.4	<i>Measured Value of Information Conclusions</i>	219
7.6	THE REVISED CONCEPTUAL FRAMEWORK OF THE PERCEIVED VALUE OF INFORMATION.....	220
7.7	SUMMARY	226
CHAPTER 8: FOCUS GROUP ANALYSIS.....		227
8.1	INTRODUCTION	227
8.2	REVIEW OF THE CONCEPTUAL FRAMEWORK, THE RESEARCH OBJECTIVES, AND THE FOCUS GROUP QUESTIONS.....	228
8.3	FOCUS GROUPS PREPARATION.....	230
8.3.1	<i>Planning</i>	230
8.3.2	<i>Developing the Questions</i>	231
8.3.3	<i>Identifying the Participants</i>	232
8.3.4	<i>Pilot Testing the Focus Group</i>	234
8.4	CONDUCTING THE FOCUS GROUPS	235
8.5	ANALYSIS OF THE FOCUS GROUP RESULTS	236
8.5.1	<i>Capturing and Coding the Focus Group Data</i>	236
8.5.2	<i>Analysing the Focus Group Data</i>	236
8.6	THE FOCUS GROUP FINDINGS	237
8.6.1	<i>The Impact of Information Accessibility and its Critical Dimensions</i>	237
8.6.2	<i>The Impact of Information Quality and its Critical Dimensions</i>	238
8.6.3	<i>The Ability of Organisations to Improve the Accessibility and Quality of Information</i>	240
8.6.4	<i>The Role of Information in the Facilitation of Organisational Change..</i>	241
8.6.5	<i>The Impact of Information on Marketing Activities and Strategic Planning</i>	243
8.6.6	<i>The Use of Information for the Attainment of Measured Business Benefits</i>	244
8.6.7	<i>Considering Information as a Formal Asset of an Organisation</i>	246
8.6.8	<i>Considering the Measurement of Information Value</i>	248
8.6.9	<i>Considering the Effective Management of Information</i>	249
8.7	INSIGHTS FROM THE FOCUS GROUP RESEARCH	251
8.8	SUMMARY	252
CHAPTER 9: CONCLUSIONS AND RECOMMENDATIONS		254
9.1	INTRODUCTION	254
9.2	CONTRIBUTION OF RESEARCH FINDINGS	255
9.2.1	<i>The relationship between information accessibility, and perceptions of information value</i>	255
9.2.2	<i>The relationship between information quality, and perceptions of information value</i>	258
9.2.3	<i>The relationship between the use of information for marketing activities, and perceptions of information value</i>	260
9.2.4	<i>The relationship between the use of information for strategic planning, and perceptions of information value</i>	262
9.2.5	<i>The relationship between the use of information to facilitate organisational change, and perceptions of information value</i>	264

9.2.6	<i>The relationship between the use of information to attain measured business benefits, and perceptions of information value</i>	266
9.2.7	<i>The relationship between attitudes to measuring information value, and perceptions of information value</i>	268
9.3	IMPLICATIONS FOR RESEARCH.....	270
9.3.1	<i>Methodological Issues</i>	270
9.3.2	<i>Theoretical Issues</i>	272
9.4	IMPLICATIONS FOR PRACTITIONERS.....	275
9.5	LIMITATIONS AND AVENUES FOR FUTURE RESEARCH.....	280
9.6	CONCLUDING REMARKS AND RECOMMENDATIONS.....	285
	REFERENCES	288
	APPENDIX 3.1 - PRE-PHD RESEARCH DATA ANALYSIS EXAMPLES	
	APPENDIX 3.2 - CASE STUDY INTERVIEW QUESTIONS	
	APPENDIX 3.3 - CASE STUDY DATA CODING TABLE EXAMPLE	
	APPENDIX 3.4 - INTERNET FOCUS GROUP ACCESS AND USAGE INSTRUCTIONS	
	APPENDIX 4.1 - PRE-PHD RESEARCH QUESTIONNAIRE	
	APPENDIX 4.2 - QUANTITATIVE RESEARCH - STATISTICAL TEST OUTPUT AND SCATTERGRAM EXAMPLES	
	APPENDIX 5.1 - CASE STUDY DATA ANALYSIS MATRICES	
	APPENDIX 8.1 - FOCUS GROUP DATA CODING TABLE EXAMPLE	
	APPENDIX 8.2 - FOCUS GROUP DATA ANALYSIS MATRICES	

List of Figures

Figure 1.1 - Overview of the Thesis Structure	10
Figure 2.1 - Preliminary Conceptual Framework for the Perceived Value of Information	39
Figure 3.1 - The Research Phases.....	47
Figure 3.2 - Case Study Method (from Yin, 1994)	55
Figure 3.3 - Capturing the Multiple Sources of Evidence into the Case Study Database.....	62
Figure 3.4 - Case Study Research - Chain of Evidence.....	65
Figure 4.1 - The Preliminary Conceptual Framework for the Perceived Value of Information	91
Figure 7.1 - The Revised Conceptual Framework for the Perceived Value of Information	221
Figure 7.2 - The Perceived Value of Information Constructs and Dimensions	223
Figure 7.3 - The Measured Value of Information Constructs and Dimensions	225
Figure 8.1 - The Conceptual Framework, Project Objectives, and Focus Group Questions	228
Figure 9.1 - A Framework of Information Value Constructs and Dimensions	274
Figure 9.2 - Principles for an Information Value Measurement Method	275
Figure 9.3 - A Framework for Information Value Realisation.....	277
Figure 9.4 - Theories Underpinning the Measurement of Information Value.....	283

List of Tables

Table 2.1 - Information Accessibility Literature	17
Table 2.2 - Information Quality Literature	20
Table 2.3 - Use of Information for Marketing Activity Literature	24
Table 2.4 - Use of Information for Strategic Planning Literature	28
Table 2.5 - Use of Information for Facilitating Organisational Change Literature.....	32
Table 2.6 - Use of Information for the Attainment of Business Benefits Literature...	34
Table 2.7 - Attitudes Towards Information Value Measurement Literature.....	38
Table 3.1 - Case Study Organisation Profiles.....	58
Table 4.1 - Number of Organisations by Industry Sector & Number of Employees ..	79
Table 4.2 - Summary of Quantitative Analysis Results	90
Table 5.1 - Information Accessibility Literature – Post ‘95.....	99
Table 5.2 - Dimensions of Information Accessibility	100
Table 5.3 - The Significance of Information Accessibility within Case Study Organisations	103
Table 5.4 - Information Quality Literature – Post ‘95.....	119
Table 5.5 - Dimensions of Information Quality	120
Table 5.6 - The Significance of Information Quality within Case Study Organisations	121
Table 6.1 - Use of Information for Marketing Activities Literature – Post ‘95	142
Table 6.2 - Dimensions of Marketing.....	143
Table 6.3 - Marketing Activities Facilitated by the Use of Information	144
Table 6.4 - Use of Information for Strategic Planning Literature – Post ‘95	160
Table 6.5 - Dimensions of Strategic Planning.....	161
Table 6.6 - Strategic Planning Activities Facilitated by the Use of Information	161
Table 6.7 - Use of Information to Facilitate Organisational Change Literature – Post ‘95.....	179
Table 6.8 - Dimensions of Organisational Change	180
Table 6.9 - Organisational Change Facilitated by the Use of Information.....	181
Table 7.1 - Use of Information for the Attainment of Business Benefits Literature – Post ‘95	200
Table 7.2 - Dimensions of Measured Business Benefit.....	201
Table 7.3 - Business Benefits Gained by the Use of Information	202
Table 7.4 - Attitudes to the Measurement of Information Value Literature – Post ‘95	214
Table 7.5 - Dimensions of the Measured Value of Information.....	215
Table 7.6 - Significance of Measured Value of Information in Case Study Organisations	215
Table 8.1 - Focus Group Participants	233
Table 8.2 - Information Accessibility and its Critical Dimensions	237
Table 8.3 - Information Quality and its Critical Dimensions	239
Table 8.4 - The Ability of Organisations to Improve Information Accessibility and Information Quality	240
Table 8.5 - The Role of Information in the Facilitation of Organisational Change ..	242
Table 8.6 - Impact of Information on Marketing and Strategic Planning	243
Table 8.7 - The Use of Information for the Attainment of Measured Business Benefits	245
Table 8.8 - Considering Information as a Formal Asset of the Organisation.....	246

Table 8.9 - Considering the Measurement of Information Value248
Table 8.10 - Considering the Effective Management of Information250

Chapter 1

Introduction

1.1 Background to the Research

“The information revolution is sweeping through our economy. No company can escape its effects”; this is the sweeping statement used by Porter and Miller (1985) in the introduction to their seminal paper on the use of information to gain competitive advantage. They continued their argument by stating *“dramatic reductions in the cost of obtaining, processing, and transmitting information are changing the way we do business”*. The importance of information to business, and to society in general, had been a topic for commentators for a number of decades. *“We hear much of today’s informational revolution”* was how Marschak (1968) introduced his ideas on the economics of information. In 1973 Bell described his vision of the *“post industrial society”* which argued that postindustrial society would basically be an information society. Not only would the information industry become the largest sector, but in the opinion of some observers it would also replace many of the traditional industries, and even the shape of society (Toffler, 1980; Mackenzie-Owen and van Halm, 1989). As the information revolution advanced through the 1980’s there were a number of observers who were tracking its progress. Drucker (1988) believed that the effect these changes would have on an organisation would be quite profound. In his vision

of the “*information based*” organisation he described an organisation that would have “*fewer than half the levels of management of its counterpart today, and no more than a third of the managers*”. He was also of the opinion that “*this is already happening, quite fast, in a number of companies throughout the world*”. By 1994 there was evidence that the information revolution was having a significant effect. This could be identified by the focus on customer rather than product information within financial services organisations; the explosion of customer loyalty cards within the retail industry and the resulting accumulation of detailed customer information; the growth of direct and tele-sales operations; and the advent of the Internet which was starting to provide open access for everyone to terabytes of information in thousands of databases. The significance of the information revolution was still being commented on by a number of observers (Hamel and Prahalad, 1994; Robson 1994). It can also be argued that by 1994 we were no longer just experiencing an information revolution, but we had in fact entered an information age as described by Dizard (1989).

Having actively participated in this revolution for over twenty years I had observed at close hand the changes that had taken place. For many years I was actively involved in the management and exploitation of information. Over the years there appeared to be a repeating phenomena, a pattern, that emerged in the organisations that I was associated with. When the business was operating successfully there would be an effort to provide a level of resources that was adequate to manage and exploit information resources. However, when the business, or the market, was performing poorly these information exploitation resource levels would be rapidly reduced. Admittedly, all parts of the organisation would be subjected to these resource and expenditure reductions, but it always appeared that the information exploitation functions were dealt with much more severely. The conclusion that this led to was that business managers considered the management and exploitation of information to be a low priority for the organisation. But how could business managers have this perception? One of the most fundamental resources of these organisations was the information they used to operate and manage the business. Without information these organisations would be operating blindly, with little idea of the performance of the organisation internally, or how it was performing in comparison to its competitors. Could it be possible that the business managers really did not appreciate the extent to

which their organisations depended on the supply of good quality information? Did they have no real understanding of the amount of information that flowed through the organisation and fed all the key business processes? It was, after all, the Confederation of British Industry (1992) that had proclaimed, “*information is the lifeblood of the organisation*”. If business managers did appreciate the importance and value of the information assets held by their organisations, then why did they perceive the management and exploitation of it to be such a low priority activity where investment could be cut to the bone? These questions opened up a wide range of topics related to the management thinking that determined the resource levels provided for managing and exploiting information. This included management perceptions of the costs related to the exploitation of information compared to the value it could provide, the importance of the flow of information around an organisation, and the dependency of business decision-making on this information. Debate in the literature fuelled even more powerful arguments. If information was a valuable asset of the organisation should its value not be explicitly measured, and if value measurements could be produced should these asset values not be incorporated into the corporate balance sheet?

It appeared reasonable to assume that answers to these questions would be influenced by how strategic information was perceived within organisations. Answers would be determined by the awareness that information consumers had of the contribution made to the business by information assets, and by the recognition within the organisation of the value of this contribution. It was assumed that these perceptions of strategic information value were of vital importance in shaping opinions related to information being considered an asset, and opinions on the measurement of information value. It was concluded that the perceived value of strategic information was of paramount importance to decisions made within organisations about the treatment of information assets, the measurement of information value, and the realisation of related business benefits.

It is an amalgam of these theories, questions, and conclusions that provide the foundation for this research project, the purpose of which is to identify the major factors that influence perceptions of strategic information value in organisations. It is envisaged that if these factors can be isolated it will provide an opportunity to identify

a means of influencing them. If this can be achieved it would then be possible to influence these perceptions, perhaps leading to a situation where business managers readily perceive strategic information to be a critical asset of the organisation that should be effectively managed and exploited. The focus of this study has been strategic information value, however, for simplicity the term information value has been used extensively throughout the thesis; both terms have been used interchangeably.

1.2 Objectives of the Study

The primary theme of this study centres around a few fundamental questions such as, ‘How are perceptions of information value affected within an organisation by the ease by which information can be accessed?’, ‘how does the quality of the information provided to a business impact perceptions of information value?’, ‘what impact can the effective use of information for business activities have on the perceived value of information?’, and ‘how do attitudes towards information assets within an organisation impact perceptions of information value?’. It was envisaged that it would be possible to address these issues by empirically exploring the opinions and experiences of large commercial organisations that make significant use of information. More specifically, the primary objectives of this study are:

1. To explore the relationship between information accessibility, and perceptions of information value
2. To explore the relationship between information quality, and perceptions of information value
3. To explore the relationship between the use of information for marketing activities, and perceptions of information value
4. To explore the relationship between the use of information for strategic planning, and perceptions of information value
5. To explore the relationship between the use of information to facilitate organisational change, and perceptions of information value

6. To explore the relationship between the use of information to attain measured business benefits, and perceptions of information value
7. To explore the relationship between attitudes to measuring information value, and perceptions of information value.

1.3 Significance of the Study

As discussed in the opening section of this chapter, there is a widespread belief that we have entered an age where information is a critical component of everyday activity in business and life in general. This would suggest that in business information should be regarded as a vital and valuable asset. Experience, and sections of the literature, indicates that this is not the case in many organisations. This suggests that research into the factors that shape perceptions of information value is required. A possible reason for organisations failing to give due consideration to the value of their information assets could be that the consumers of the information have difficulty in accessing the information they require. It could also be possible that even if the information could be accessed the quality of the information creates problems. This research project explores the possibility that much of the information held by organisations is difficult to access, and that this has a detrimental impact on perceptions of information value. Very little empirical research appears to have been produced that explicitly links information accessibility and perceptions of information value. This research attempts to address this deficiency. This study also investigates whether perceptions of information value can be influenced by the quality of the information that is provided to information consumers. A number of frameworks have been produced that discuss the dimensions of information quality (Wang and Strong, 1996) however, very little academic research appears to have been produced that explicitly links information quality to perceptions of information value. Again, this research attempts to redress this imbalance. It should also be highlighted that much of the literature that has been produced is of a theoretical nature, very little empirical research appears to have been conducted.

Another important area that is addressed by this study is the impact that the use of information can have on perceptions of information value. It is possible that the

apparent reluctance to attach value to information is a result of business failures that can be partially, or even fully, attributed to the use of information. This research project investigates the use of information in three major areas of business, marketing, strategic planning, and the facilitation of organisational change. By studying the use of information for these three business activities, it is envisaged that insight will be obtained on how information can impact the success of these activities, and how this can impact perceptions of information value. There is a substantial body of literature that discusses these three areas of business, and it provides considerable detail on how these activities make use of information. However, very little research has addressed the linkage between the use of information for these activities, and the impact that this use can have on perceptions of information value. Furthermore, much of the literature that has been produced is of a theoretical rather than an empirical nature. Additional investigation is conducted into the measured business benefits that the use of information can provide. It is possible that if the attainment of measured business benefits can be attributed to the use of information then there is more likelihood that there will be a positive perception of the information value. Again, although literature exists that discusses the use of information for the attainment of measured business benefits, there appears to be very little that has explicitly attempted to link the use of information in this way to perceptions of information value.

Final areas of investigation being addressed by this study are the attitude that organisations have to information being regarded as an asset, and the valuation of information assets. If an organisation takes a positive attitude when considering information to be a valuable asset, it follows that there should be a greater likelihood that the organisation will consider measuring the value of its information assets. A substantial amount of theoretical literature has been produced on information assets, and measuring the value of information assets. However, little empirical evidence appears to exist to support the theoretical arguments. This research attempts to make an additional contribution by providing empirical evidence related to these topics.

One of the most significant contributions made by this study is the holistic view that is taken on the subject of information value. Many studies have been conducted, and substantial amounts of literature have been produced that have focussed on one, or a

number, of the major dimensions of information value. However, none of them appear to have taken such an all-encompassing view as this research project. By undertaking this holistic study it is envisaged that a valuable foundation will be established that future research can build on.

1.4 Context of the Study

To address the overall research objectives a research strategy was undertaken that combined qualitative and quantitative methods. The first analysis stage of the study was intended to gain an understanding of the relationships that could exist between information being regarded as a valuable asset, and a number of other variables such as the use of information to measure corporate performance. This involved the analysis of questionnaire data that was gathered from 49 organisations. The second analysis stage of the research consisted of detailed case study investigations in 8 UK based multi-national organisations. The purpose of these case studies included gaining an understanding of the business need for information, what the information requirements were, the benefits that the organisation expected to gain from the use of information, and whether information was regarded as being an asset of the organisation. Finally, the third analysis stage of the study involved the use of 5 focus groups, including a pilot, to gain clarification and confirmation on the key research findings from the case studies. This included gaining confirmation of the most important dimensions of information quality, seeking opinions on the role that information plays in the facilitation of organisational change, and attempting to establish whether organisations should worry about trying to classify information as an asset in a formal accounting sense. As a result of adopting this three-stage analysis approach, each stage of research had specific research objectives that are discussed in detail in the appropriate chapter.

1.5 Organisation of the Study

The content of this thesis is organised into nine chapters. Figure 1.1 provides an overview of the research process and corresponding chapters.

Chapter one provides an overview of the thesis, the identification of research problems, the reasons for undertaking the research, and the significance of the study.

Chapter two reviews the literature related to the constructs that can influence the perceived value of information. It discusses the relevance of each construct, the major dimensions associated with each construct, and the relationships that can exist between some of the constructs. A preliminary conceptual framework is developed, and the key constructs to be studied in the project are discussed.

Chapter three discusses the lifecycle of the research and provides detail on the three research project phases. It discusses the development of a research method framework, and the methods that were chosen for the research. Some of the philosophical aspects of the research are also discussed.

Chapter four focuses on presenting the exploratory research results, and provides a discussion on the pre-PhD primary data that was used, and the research methods utilised to collect it. The overall research framework is also reviewed in the light of the exploratory research analysis.

Chapter five focuses on two constructs related to information provision, information accessibility and information quality. The literature associated with these two constructs is further reviewed, and the significance that each had in the case study organisations is analysed and discussed.

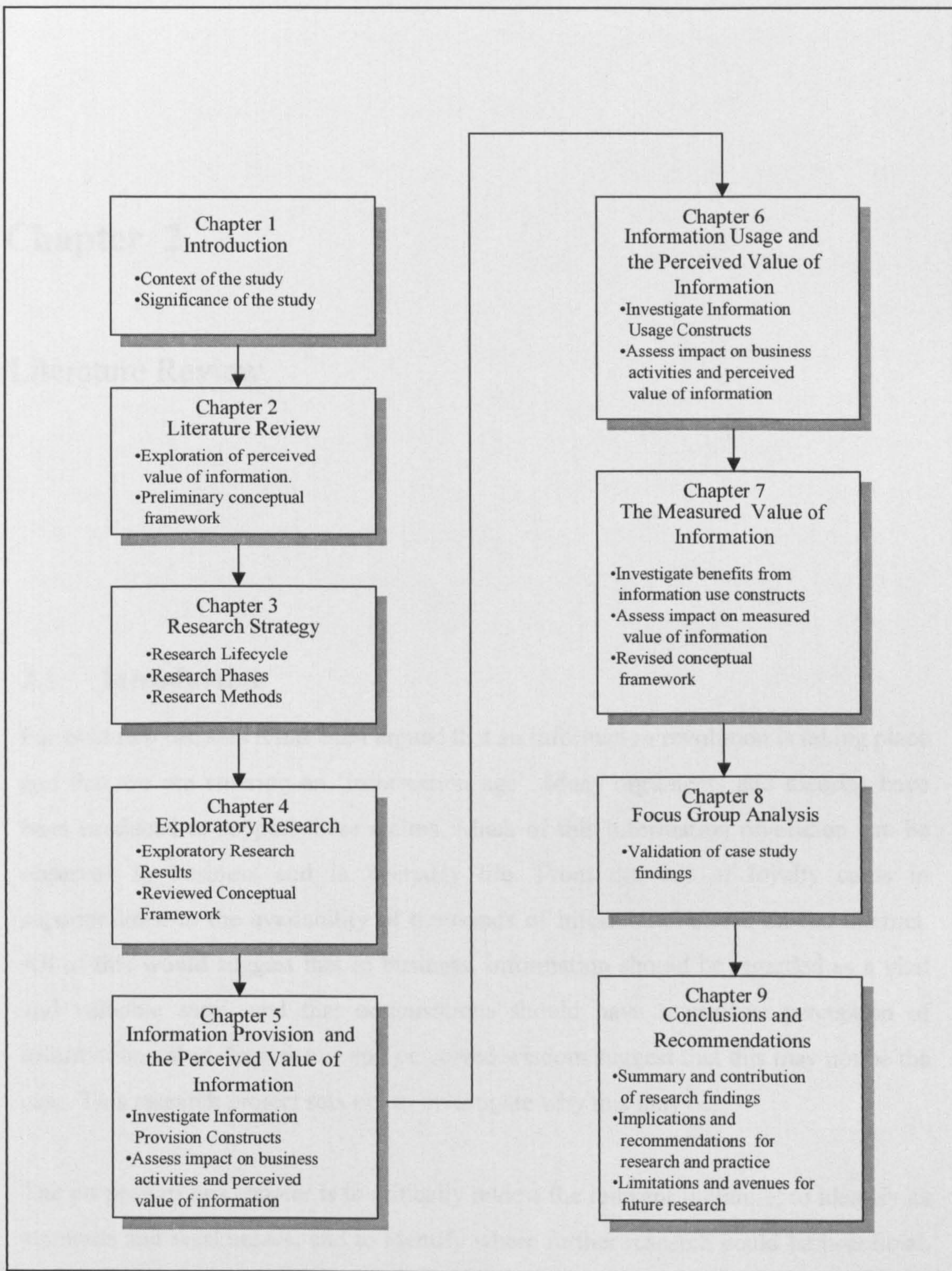
Chapter six focuses on three constructs related to information usage, the use of information for marketing, the use of information for strategic planning, and the use of information for the facilitation of organisational change. The literature associated with these three constructs is further reviewed. The significance that each one had in the case study organisations is analysed and discussed.

Chapter seven focuses on two constructs related to the measured value of information, the use of information for attaining measured business benefits, and attitudes to information value measurement. The literature associated with these two constructs is further reviewed. The significance that both had in the case study organisations is analysed and discussed.

Chapter eight discusses the key findings from the earlier chapters, and the role of the focus groups in validating and confirming these findings. The results of the discussions are presented, and they are discussed in the context of the existing literature.

Finally, chapter nine draws together the conclusions and recommendations from the research project. The key findings and contributions of the study are presented and discussed in the light of the three phases of the research, the overall research objectives, and the existing literature. The chapter also discusses the implications of the study's findings for both research and practice, the limitations of the research, and potential areas for further research.

Figure 1.1 - Overview of the Thesis Structure



Chapter 2

Literature Review

2.1 Introduction

For over two decades it has been argued that an information revolution is taking place and that we are entering an ‘information age’. Many arguments and theories have been produced to support these claims. Much of this information revolution can be observed in business and in everyday life. From the use of loyalty cards in supermarkets, to the availability of thousands of information stores on the Internet. All of this would suggest that in business, information should be regarded as a vital and valuable asset, and that organisations should have a positive perception of information value. Experience and perceived wisdom suggest that this may not be the case. This research project sets out to investigate why this may be.

The purpose of this chapter is to critically review the relevant literature, to identify its strengths and weaknesses, and to identify where further research could be beneficial. It will review existing literature associated with the perceived value of information in commercial organisations. It will review literature that has been developed around the major constructs that can impact the perceived value of information. It will identify how these constructs are related, and it will discuss a number of the dimensions that

are associated with each construct. Using these constructs and their relationships a conceptual framework will be developed that attempts to provide clarity and understanding to the constructs that can impact the perceived value of information.

2.2 The Perceived Value of Information

For many years arguments have regularly appeared that information is a valuable asset of the enterprise and that this value should be measured. It has also been argued that the measured value of information assets should be included on the corporate balance sheet. Before considering these arguments it is worth discussing information and its meaning. A simple definition of information is, 'the meaning given to data by its interpretation'. McPherson (1996) identified that information as an object is something received which can be converted into intelligence and knowledge i.e. a message, an instruction or a command; an information product of any kind. Following McPherson (1996) this research considers information to be strings of messages that can flow across an organisation, and can be held as consolidated holdings of strings of messages. It is also important at the outset to establish what this research considers an information asset to be. Information assets are those holdings of information that are used within an organisation for the benefit of the business. They are not information commodities that are traded on a market, but they do have value to the internal market of a business. As McPherson (1996) argues, "*this information is vital to the success of the business, and will be accountable for a significant share of the business's various indicators of success, including its cash flow and market value ... but such information is consumed within the business, it is not sold in the form of information products into the market place*". Making this distinction is important. For organisations that utilize information as a commodity that is traded on a market, there are already various means available for measuring the value of these information commodities. This research is focused on what is regarded as being a more important domain, which is information assets that are not traded on a market, and for which there are no widely recognised means of measuring their value. This research sets out to investigate perceptions of the value of these assets, and whether the value of these assets can be measured. To provide clarity throughout this study the following working definition for information assets has been derived based on Vincent (1983), Hawley (1995), and McPherson (1996):

Information Assets – *The information holdings of an organisation that are used within the organisation for the benefit of the business rather than being sold as a commodity on the market.*

Chapter one discussed the observation that few organisations appear to include information value on the corporate balance sheet, or even attempt to measure the value of their information assets. It was concluded that a major factor that influences this situation is the perceived value of information. This perception is formed by information consumers, based on the observations that they make when accessing and using information. It is also based on the awareness that information consumers develop on the contribution that is made by information to the success of business activities, and on the recognition that information consumers give to the value that the business attains from the use of the information. To provide clarity to the research the following working definition has been derived for the perceived value of information:

Perceived Value of Information – *The perceptions within an organisation on the value that is provided from the ownership or use of the information assets of the organisation.*

From the literature review that has been conducted it has been possible to develop a conceptual framework that has shaped the subsequent research. This framework can be found in Figure 2.1. The framework identifies six constructs that appear to have an impact on the perceived value of information. These constructs are information accessibility, information quality, the use of information for marketing activities, the use of information for strategic planning, the use of information for organisational change, and the benefits from the use of information. A seventh construct is identified in the framework on the attitudes towards information value measurement. Although it is believed that this does not have a direct relationship with the perceived value of information it is regarded as being an important component of the study. These seven constructs are discussed in more detail in the following sections.

2.2.1 Impact of Information Accessibility on the Perceived Value of Information

The literature clearly identifies that information accessibility is an important dimension when considering the perceived value of information. The literature suggests that problems can occur in organisations if the necessary information cannot be accessed (Goodman, 1993; Bariff and Galbraith, 1978). Access to the right information at the right time has a major influence on whether information is regarded as being useful (Simpson and Prusak, 1995). If the right information cannot be accessed, possibly because it does not exist or managers are unaware of its existence, managers tend to use what is available which can result in poor decision-making and defective strategies (Goodman, 1993; Crocket, 1992). As Goodman (1993) argued, *“accessibility appears to be the single most important variable governing the use of information”*. The failures that result from this poor decision-making or incorrect strategies are, more often than not, blamed on the information that was used. This has the damaging effect of devaluing the information and its potential use in the decision-making process (Goodman, 1993; Orna, 1993).

A key dimension to accessibility is having an understanding, or an awareness, of the information that is available. It is also important that managers are able to understand the meaning and content of the information being provided. This problem has been considered by a number of observers including Orna (1993), Davenport et al (1992), and Davenport (1994). There are a number of reasons why the information being presented can be difficult to understand but one of the more common, as identified by Eccles (1991) is the lack of common definitions. The work of Goodman (1993), and McKinnon and Bruns (1992) also identified the importance of being able to understand the information being presented. Without clear understanding the value of information is undermined. Problems with information accessibility are usually associated with difficulty obtaining the right amount of information. This usually implies that not enough information is being provided. However, as a number of commentators have observed, this is not always the case. Many observers believe that rather than having a dearth of information, many organisations suffer from information overload (Ackoff, 1967; Drucker, 1988; Angell and Smithson, 1991). There is no doubt that all organisations need access to relevant information but the

continual challenge is to root out the irrelevant information. Many other observers have commented on this dilemma, most significantly Meltzer (1981), Cole (1985), Moore (1988), Wormell, (1989), Kaplan and Norton (1992), McKinnon and Bruns (1992), Goodman (1993), Horton (1979, 1993), Davenport (1994), and Sinkula (1994).

Another dimension that can have a major impact on information accessibility is the attitude within the organisation to information sharing (Bariff and Galbraith, 1978; Menon and Varadarajan, 1992; Warburton, 1992). The barriers and obstructions that can hinder information sharing were discussed by Goodman (1993), Sibbert (1993), and Lingle and Schiemann (1994). The predominant opinion in the literature is that sharing information throughout the organisation is a very positive thing to do (Horton, 1993; Cole, 1985; Eccles, 1991; Bowonder and Miyake, 1992; Geanuracos and Meiklejohn, 1993; Willard, 1993; Robson, 1994). However, there have been dissenting voices. Ackoff (1967) believed that few benefits could be obtained from information sharing. He argued that the belief that an organisation's overall performance could be improved by the sharing of information was incorrect, as he stated, "*not only is this not necessarily so, but it seldom is so*". Davenport (1994) discussed the pros and cons of information sharing in some detail. Whilst being supportive of the idea he did identify a number of problems that can result from the sharing of information within the organisation, and in particular the possibility that unauthorized access would be easier. Regardless of these less positive opinions the benefits that organisations can attain from information sharing have been widely discussed, particularly in the more popular business strategy literature (Peters and Waterman, 1982; Kanter, 1983, 1989; Peters, 1987) with many examples being provided.

An organisation may establish clear, positive policies on information sharing but there are still obstacles that can inhibit these policies from being successfully implemented. Arguably the most serious of these inhibitors is internal politics and power. A significant amount of literature has been written on this topic (Bariff and Galbraith, 1978; Carter, 1985; Cole, 1985). The problems that organisations encounter include the collection of information that only meets the needs of those in power, the retention of information to ensure that power is maintained, and the

distortion of information to enhance image. The literature identifies that by exercising control over the availability of information, individuals or business units can exercise substantial amounts of power. The literature also identifies that by doing this the overall value of information to the organisation at large is usually damaged. One of the most significant theoretical studies produced on this topic was provided by Davenport et al (1992). These types of information politics have been discussed by a number of observers (Rockart and De Long, 1988; Trauth, 1989; Eccles, 1991; Goodman, 1993; Horton, 1993; Davenport, 1994; Lingle and Schiemann, 1994; Champy, 1995). Any organisation wishing to fully utilise its information assets must overcome these problems. Failure to do so results in the organisation failing to fully utilise one of its most valuable assets (Davenport et al, 1992).

Overall the literature recognises that information accessibility is a dimension that can have a significant impact on the perceived value of information. However, much of the literature is theoretical in nature and there are few examples of empirical research having been undertaken to support the theory, this is illustrated in Table 2.1. This lack of empirical research is a gap that presents an opportunity for a significant amount of new research. The literature appears to have focused on individual dimensions of information accessibility rather than consider the topic as a whole. There appears to be no evidence of a comprehensive framework of information accessibility dimensions based on empirical research. Interestingly, there also appears to be an assumption that information accessibility is important but this assumption appears never to have been fully tested. This appears to be a gap in the literature that further research, and empirical research in particular, could fill. The review of the literature also identified that although information accessibility is considered to be important, very little attention has been given to linking information accessibility to information value. This research project will attempt to fill these gaps by building on the literature and research that already exists, and by taking a holistic view of information accessibility and its impact on perceptions of information value. By taking a holistic view, this research should not only reveal more about these constructs it should also tell us something about the interrelationships. It is hoped that this investigation can provide new insights into the topic of information accessibility, and its impact on information value resulting in extensions and enhancements to the existing literature.

Table 2.1 - Information Accessibility Literature

Contributor	Summary	Type	Method	Limitations
Ackoff (1967)	Discussion on the provision of information to managers. Strongly argues that sharing information is unnecessary and is unsuccessful	T		
Bariff & Galbraith (1978)	Discussion on intraorganisational power considerations for designing information systems. Argues that information should be considered to be a valuable resource. Detailed discussion on sharing information.	T		
Cole (1985)	Discussion on the use of information for measuring performance. Detailed discussion on information sharing.	T		
Eccles (1991)	A discussion on the flow of information within organisation to support performance measurement. Discusses the steps that should be taken to avoid disruption of the delivery of information	T		
Davenport et al (1992)	Discussion on information politics. Identifies that the existence of information can be hidden and access to information can be blocked for political reasons. Provides models of information politics. Recognises that information has value.	E	O, I	Research method not discussed. Focus on politics. Information value is acknowledged but not discussed
Menon and Varadarajan (1992)	Development of a conceptual model of organisational and informational factors affecting knowledge utilisation. Discusses internal and external communication flows, information sharing.	T		
Goodman (1993)	Discussion on information needs for management decision makers. Recognises that much of the information is unavailable to managers. Also identifies a number of problems that can disrupt the delivery of relevant information.	T		
Rayport and Sviokla (1995)	Discussion on the flow of information through organisations and the value it can provide. The development of new information based products is one of the main applications.	T		

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

2.2.2 Impact of Information Quality on the Perceived Value of Information

Having access to the relevant information is very important, however, if the information provided is not of an adequate quality then the value of the information is likely to be questioned. Carter (1985), Trauth (1989), and Picot (1990) all recognised the importance of quality for the valuation of information. The lack of quality

information, and the resulting impact, was also recognised by Crockett (1992) when considering the information needs of senior executives. A wide range of discussion has been produced on information quality from observers such as Clifton (1986), McKinnon and Bruns (1992), Goodman (1993), and Klobas (1995). A key focus area of Hawley (1995) was the quality of information. This report identified that there were widespread concerns about the quality of information in organisations, especially its reliability in terms of its accuracy and the extent to which it is misinterpreted or misunderstood because the source data is flawed or the information is incomplete.

Information consistency is a dimension of information quality that presents many organisations with problems. This is primarily as a result of the haphazard way that computer systems have been developed in organisations over the last thirty years. Many organisations find that the source data that is available for the production of information is often inconsistent. As Goodman (1993) recognised when considering the plight of business managers when confronted with this situation, *“their most fundamental challenges are sorting out the uncertain, diverse, and enormous amount of potentially relevant information”*. Inconsistent definitions and meanings for information items are among the most common problems (Lingle and Schiemann, 1994; Davenport, 1994). Although these inconsistencies have little impact on the running of the operational processes, serious problems emerge when attempts are made to assemble the disparate data items to provide the business with consistent information. The importance of information consistency was also highlighted by Hawley (1995).

Another key dimension of information quality is timeliness. A number of studies identify that information value can be time sensitive. The literature recognises that perceptions of information value can be adversely affected by untimely information provision. Although a number of detailed studies have been conducted into the timeliness of information (Menon and Varadarajan, 1992; Glazer and Weiss, 1993) some of these studies have been narrowly focused on the use of information for marketing purposes, and they are of a theoretical nature. The impact that timely information has on the ability of companies to act faster, and on their ability to measure the impact of their actions faster has received wide discussion (Porter and

Millar, 1985; Eccles, 1991; McKinnon and Bruns, 1992). It has also been identified that problems can arise as a result of the late provision of information that senior managers consider crucial (Crockett, 1992). It is also recognised that temporal factors can have an impact on the perceived value of information (Carter, 1985; Menon and Varadarajan, 1992; Glazer and Weiss, 1993; Hawley, 1995). It was Glazer (1991) who recognised that, *“the value of much information is time sensitive”*.

Information accuracy is a dimension that has been recognised by a number of observers as being a critical dimension of information quality. Carter (1985), Davenport et al (1992), and Hawley (1995) all recognised the importance of accuracy for the use and valuation of information. Goodman (1993) identified that *“research has found that managers frequently plan, solve problems and make decisions based upon incomplete and sometimes inaccurate information”*. Similar problems were identified by McKinnon and Bruns (1992). They provided examples of managers ignoring the information being provided because of the known inaccuracies. An important aspect of information accuracy is that it only needs to be accurate enough for the purpose it will be used for (Clifton, 1986). A similar observation was made by Lucey (1992), he argued, *“the information should be sufficiently accurate for the intended purpose ... a reputation for accuracy will enhance the value of the information to the recipient and will make it more likely to be used”*

Usability is another dimension of information quality that has been studied. Ackoff (1967) identified a range of information usability problems. He was of the opinion that *“it is necessary to determine how well managers can use needed information”*. It was his belief that managers were being provided with information that in many cases was over-complicated and difficult for the managers to use. Similar problems were identified by Porter and Millar (1985) and Crockett (1992). Information usability has been investigated by a number of researchers (Kilmann et al, 1994; Louis, 1994; Von Gilnow and Sethia, 1994; Klobas, 1995). Menon and Varadarajan (1992) developed a model that indicated that information usability was influenced by both usefulness and credibility. They argued, *“usefulness affects usability because the potential for information to be effective is likely to influence a manager’s actual use of information”*.

Overall the literature recognises that information quality is a major construct that can have a significant impact on the perceived value of information. There is a substantial body of literature that discusses a wide range of information quality dimensions. However, as Table 2.2 illustrates much of the literature appears to be theoretical in nature and there are few examples of empirical research being undertaken to support the theory.

Table 2.2 - Information Quality Literature

Contributor	Summary	Type	Method	Limitations
Ackoff (1967)	Discussion on the provision of information to managers. Identified a range of usability problems. Argued that managers were being provided with complicated information that was difficult for them to use.	T		
Crockett (1992)	A discussion on the provision of information to executives. Identifies problems with late delivery of information and information that is over complicated.	T		
McKinnon and Bruns (1992)	A report from an investigation that was conducted into how managers obtain and use information. Conducted in manufacturing firms. The value of information is discussed.	E	Q	No major limitations. Discusses value of information but not how it can be measured.
Menon and Varadarajan (1992)	Development of a conceptual model of organisational and informational factors affecting knowledge utilisation. Identifies that temporal aspects of use are important. Discusses usability and usefulness of information.	T		
Glazer and Weiss (1993)	Detailed discussion on the time sensitivity of information and the impact this can have on decision making. Contains a brief discussion on information value.	E	S, Q	The research was conducted using the MARKSTRAT simulation game.
Goodman (1993)	Discussion on information needs for management decision makers. Recognises that information accuracy and consistency can be serious problems.	T		
Davenport (1994)	A discussion on information use within organisations. Identifies the problems that arise from inconsistent meanings of information	T		
Hawley (1995)	Report that argues information should be considered to be an asset. Identifies accuracy, consistency, and timeliness as being critical dimensions of information quality.	E	U	Research methods not disclosed

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

This lack of empirical research is another gap that presents an opportunity for a significant amount of new research. In particular, it is hoped that further empirical research can refine and improve any information quality frameworks that have already been produced. The review of the literature also suggests that although information quality is considered to be important, very little consideration has been given to how it relates to information value. This research project will attempt to explore the precise nature of this relationship in an attempt to develop the literature in this area further. Building on the literature that has already been developed, and attempting to integrate ideas on information quality and information value, should result in extensions and enhancements to the existing literature. Taking a holistic view of this topic should enable this research to reveal much about the dimensions of information quality and the relationships between information quality and information value.

2.2.3 Impact of the Use of Information for Marketing Activities on the Perceived Value of Information

The use of information for marketing purposes is another area where a significant thread of literature has been developed in recent years. A number of in-depth studies have been conducted which all recognise the value of information. Glazer (1991) developed a framework that was focused on a conceptual measure of the value of information in the marketing context. He identified a number of strategic and organisational implications that result from the use of the method. One of the main features of this measurement method is the ability to identify the degree to which an organisation is information intensive. Menon and Varadarajan (1992) proposed a framework for circumscribing the concept of marketing knowledge utilisation in organisations. They presented a conceptual model, and associated research propositions, delineating the relationship between key organisational and informational factors, and marketing knowledge utilization. A further contribution was made by Glazer and Weiss (1993), who investigated decision processes and the time sensitivity of information used for marketing in turbulent environments.

A number of marketing activities make substantial use of information and can have a significant impact on the perceived value of information. Marketing strategy and planning is one dimension that fits this category. The information used for developing

marketing strategy is gathered from a wide range of internal and external sources to ensure that the planning process is successful (Hooley and Saunders, 1993). Much of this information is related to the customers of the organisation, and the quality of this information can be a major factor in the success of the marketing strategies developed (Vavra, 1993). The ability to collect good quality information on the external environment is also very important. This was identified as being particularly important by Brush (1992) in her discussion on the launching of new ventures. The use of information within the marketing function to develop strategy was discussed in detail by Zabriskie and Huellmantel (1994). They argued that many marketing strategies failed because the information used was unsuitable. They identified that one approach for improving this situation was the adoption of “*informational objectives*”. These informational objectives could take the form of planning questions that would need to be answered if the strategic plan was to be successful.

Market and customer segmentation are another two major marketing activities that require the use of substantial amounts of information. A wide range of variables is required to undertake a successful segmentation, including information on individual customers, demographic information, and behavioral information (Dibb et al, 1991; Hooley and Saunders, 1993). A critical element of customer segmentation is the ability to capture the relevant customer information. As Clemons and Weber (1994) observed, “*it is now reasonable for vendors of financial services and household consumer products to track purchases and activities of individual customers carefully and in detail*”. They identified that by capturing this type of information it is possible for organisations to develop detailed, accurate, and profitable customer segments. Having done this it is possible to, “*woo them and win more of their business*”. Similar information requirements for segmentation were identified by Wyner (1992) and Johnson (1995).

Another important marketing activity that makes use of information in substantial quantities is new product development. During the idea generation phase of product development information is gathered from many internal and external sources. As Dibb et al (1991) argue, “*at the heart of innovation is a purposeful, focused effort to identify new ways to serve a market*”. To achieve this they identify a number of information sources that help to indicate new opportunities, including unexpected

occurrences, incongruities, new needs, industry and market changes, and demographic changes. Although marketing usually 'owns' the development of new products, input is needed from many areas of the business. This also requires the sharing of information between these different areas. This was recognised by Peskin and Adis (1993) in their discussion on the use of a concurrent method for new product development. As they stated, "*concurrency is primarily an organizational attitude dependent on communication among the disciplines involved in the product development process and in the sharing of information*". The importance of the flow of information to all parties involved in the product development process was also identified by Gerwin (1993) and Henderson (1994).

A final marketing activity to be considered is competitor analysis. There is widespread agreement that competitor analysis must focus on both the present and the future (Porter, 1980; Lovelock, 1991; Hooley and Saunders, 1993). Hamel and Prahalad (1990) were of the opinion that most traditional competitor analysis focused on the existing competitor resources such as human, technical, and financial resources. They argued that this was not a sensible approach, as "*assessing the current tactical advantages of known competitors will not help you understand the resolution, stamina, and inventiveness of potential competitors*". The importance of identifying potential competitors was also discussed by Porter (1980), although he did acknowledge that this was not an easy task. To achieve this requires the use of a substantial amount of information on the current and potential competition. Porter (1980) recommended that organisations develop complex competitor intelligence systems to achieve this. He recommended that this system should contain a wide-range of published and un-published information on competitors. The need to collect relevant information to conduct competitive analysis has also been recognised by Brush (1992), Thomas et al (1993), and Hagen and Amin (1995).

The literature has provided a number of significant discussions on the use of information for marketing activities. Some of these discussions have been theoretical, some have been based on observations in commercial organisations, and a few have an empirical basis. However, there appears to be an imbalance between the theoretical and the empirical, and there is a need for additional empirically based contributions. This is highlighted in Table 2.3.

Table 2.3 - Use of Information for Marketing Activity Literature

Contributor	Summary	Type	Method	Limitations
Porter (1980)	A general discussion on competitive strategy but with an in-depth focus on competitive analysis and the need for competitor information	T		
Hamel and Prahalad (1990)	An in-depth discussion on strategy development with a focus on competitor analysis	T		
Glazer (1991)	A conceptual framework for the valuation of information in a marketing context	T		
Peskin and Adis (1993)	Discussion on a concurrent method for new product development. Highlights the importance of information sharing.	T		
Vavra (1993)	Discussion on the development of a customer information file to support marketing activities. Highlights the importance of information for the development of marketing strategy.	T		
Clemons and Weber (1994)	Detailed investigation into segmentation strategies in a range of organisations	E	C	No details of the research methods were provided
Zabriskie and Huellmantel (1994)	Discussion on the use of information to develop marketing strategy and plans which feed into corporate strategy	T		

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

This lack of empirical research is a gap that presents an opportunity for a significant amount of new research. Additionally, the literature appears to have focused on individual dimensions of the use of information for marketing activities rather than consider the topic as a whole. A comprehensive framework, based on empirical research that encapsulates the major dimensions, appears to be lacking. The review of the literature also suggests that although the use of information for marketing activities has been considered, very little empirical research has taken place on how this is linked to the value of information. This appears to be a major omission. This research project will attempt to rectify this omission by building a combined picture of this phenomenon. From this research it should be possible to create a better understanding of the use of information for marketing activities, and its impact on perceptions of information value. This combined picture and the in-depth analysis that will be conducted is expected to result in extensions and enhancements to the existing literature.

2.2.4 Impact of the Use of Information for Strategic Planning on the Perceived Value of Information

The development of corporate strategy is another area where a substantial body of literature has been developed on the use of information. If the use of information is clearly linked to the development of corporate strategy, or even better, if the corporate strategy has a corresponding information strategy, then there is much more likelihood that information will be regarded as being a valuable asset. From the work of Porter and Millar (1985), Davenport and Cronin (1988), and Kaplan and Norton (1992), a wealth of literature has been produced on the use of information in the development of corporate strategy (Cole, 1985; Wormell, 1989; Picot, 1990; Cashmore and Lyall, 1991; Beaumont and Walters, 1991; Silk, 1991; Bowonder and Miyake, 1992; Horton 1993; Rostick, 1994; Robson, 1994). There have also been a number of studies conducted into the links between corporate and information strategies, in particular Silk (1989, 1990), and Goodwin and Hodgett (1993). A number of frameworks have been developed to assist with linking information to corporate strategy (Cashmore and Lyall, 1991; Robson, 1994). Silk (1991) argued that business and information strategies must go hand in hand and that strategic thinking “*should lead to a business strategy and a related information strategy*”. Among the many contributions that have been made on this topic a number are worthy of note, primarily because they attempt to link corporate strategy with information strategy, these include Knight and Silk (1990), Glazer (1991, 1993), Goodman (1993), and Hamel and Prahalad (1994).

Strategic analysis and choice is a critical dimension of strategic planning and it can be an information intensive activity. Strategic analysis requires information to be gathered from a wide-range of internal and external sources (Austin et al, 1995). The internal information that would typically be analysed would include current organisation structure, employee attitudes and performance, systems and procedures, core competencies, and organisational capabilities and constraints (Aaker, 1988; David, 1995). A key component of external analysis is environmental scanning (Brush, 1992; Thomas et al, 1993). As Goodman (1993) described, “*environmental scanning includes monitoring the environment for evidence of trends and incidents which could seriously impact organisational performance*”. The critical importance

of gathering relevant information during the environmental scanning process was also highlighted by Bowonder and Miyake (1992) and Hagen and Amin (1995). Strategic choice is all about reviewing the strategy options that are available and selecting those that are most appropriate, Porter (1980). The information required for this includes information on the market, on competitors, and internal financial details (Porter, 1980, 1985; Aaker, 1988; Johnson and Scholes, 1988; David, 1995).

The formulation and selection of good strategies does not guarantee success. The implementation of the strategy is an equally important activity. As David (1995) observed, *“it is always more difficult to do something (strategy implementation) than to say you are going to do it (strategy formulation)!”* The importance of information and communication in this process has been recognised by a number of commentators including Aaker (1988), Kuhn and Figgins (1994), David (1995), and Johnson and Scholes (1988). Some practical examples of this were provided by Stafford (1993). In her discussion on strategy implementation at a large insurance company, she identified the use of information for communicating the strategic thinking and the vision, for developing frameworks to shape and monitor the implementation of the strategy, and for the day to day running of the projects and programmes that were being used for the strategy implementation.

An influential body of work has been developed on the use of information to support corporate performance measurement. The success of corporate performance measurement is dependant on the quality of the information used. If the measurement of an organisation's performance is inaccurate as the result of the use of poor information, it is unlikely that the information being used will be considered to be of value, and it is unlikely to be considered to be a valuable asset. The traditional method of measuring corporate performance has been the use of historical financial measures, but this has been challenged in recent years (Geanuracos and Meiklejohn, 1993). This has led to the development of a number of information intense techniques for measuring corporate performance such as critical success factors, key performance indicators, and balanced scorecards (Daniel, 1961; Rockart, 1979; Anderson, 1984; Ferguson and Dickinson, 1982). These techniques have been discussed and enhanced by a number of observers including Boynton and Zmud (1984), Cole (1985), Jenster (1987), Rockart and De Long (1988), Silk (1991), Eccles

(1991), Beaumont and Walters (1991), Robson (1994), and Lingle and Schiemann (1994). They all developed ideas on the use of critical success factors for measuring the attainment of corporate goals. One noticeable extension to the original concept was the development of key performance indicators. These are the indicators used to measure the attainment of the critical success factors. Silk (1991) described them as “*management measures which can be used to check progress along each part of the voyage from one critical success factor to the next*”. The use of key performance indicators was discussed by Jenster (1987) and Geanuracos and Meiklejohn (1993). Arguably the most significant development since the critical success factor concept has been that of the balanced scorecard. Originally devised by Kaplan and Norton (1992), the balanced scorecard attempted to take a forward-looking view of corporate performance and to base this on a focused range of financial and non-financial measurements.

Striving for competitive advantage is one of the most important aspects of strategic planning, and there are many arguments in the literature that competitive advantage can be gained by the use of information. Porter and Millar (1985) were quite clear in their opinion on how the information revolution was affecting competition, as they stated, “*it creates competitive advantage by giving companies new ways to outperform their rivals*”. These conclusions were developed further by Davenport and Cronin (1988) who were also able to identify additional uses of information for enabling competitive advantage. The work of Wormell (1989) and Trauth (1989) continued this theme. As Trauth (1989) observed, “*information is perceived not only as a resource but as a means whereby a firm can gain strategic advantage in an industry*”. Picot (1990) identified a number of ways in which information could be used to support the achievement of competitive advantage including price leadership and product differentiation. A school of thought that started to develop during the mid to late 1980’s argued that internal resources could be used to attain competitive advantage. Significant among the contributors to this discussion are Teece (1980), Grant (1991), and Collis and Montgomery (1995), primarily because they argue that intangible assets, including information, can be used to attain competitive advantage. Among the many contributors to the discussion on the use of information to attain competitive advantage those most worthy of note include Porter (1985), Ward (1988), Hopper (1990), Silk (1991), Broadbent (1991), Bowonder and Miyake (1992),

Sibbert (1993), Glazer (1993), Davis and Botkin (1994), Lingle and Schiemann (1994), Hamel and Prahalad (1994), Itami and Roehl (1987), and Robson (1994).

The literature has provided a number of significant discussions on the use of information for strategic planning activities. Some of these discussions have been theoretical, some have been based on observations in commercial organisations, and a few have an empirical basis. However, there appears to be a need for additional empirically based contributions. This is highlighted by Table 2.4.

Table 2.4 - Use of Information for Strategic Planning Literature

Contributor	Summary	Type	Method	Limitations
Rockart (1979)	A discussion on the information needs of managers for performance measurement	E	O	Research methods not discussed. Does not link to information value.
Porter (1980)	A general but definitive discussion on competitive strategy. Provides a focus on strategic analysis and choice.	T		
Porter and Millar (1985)	A detailed discussion on how information can be used to assist organisations gain competitive advantage. The value of information is recognised.	T		
Aaker (1988)	General discussion on developing business strategies. In depth discussion on strategic analysis and choice, and strategy implementation	T		
Grant (1991)	A discussion on how an organisations resource can be used to gain competitive advantage.	T		
Kaplan and Norton (1992)	A discussion that introduces the balanced scorecard concept. Identifies the importance of information for performance measurement.	T		
Thomas et al (1993)	Detailed investigation into the use of environmental scanning as part of strategic analysis. Focuses on the importance of information.	E	Q	Identifies that information is an important component but does not consider the value of the information.
Collis and Montgomery (1995)	A discussion on how organisations can compete using internal resources	T		

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

To help investigate these issues and contribute to the literature, this research project intends to explore the factors that link the use of information for strategic planning and information value in more detail. In particular, it will consider these issues as a whole, rather than focusing on individual dimensions, as previous research appears to have done. Specifically, there appears to be an assumption that the use of information for strategic planning is important and can create value for organisations; this

assumption will be investigated further. How this relates to information value will also be given further consideration. It is expected that this research should not only reveal more about the use of information for strategic planning, it should also tell us more about the relationship between the use of information for strategic planning and information value. It is expected that this will result in extensions and enhancements to the existing literature.

2.2.5 Impact of the Use of Information for the Facilitation of Organisational Change on the Perceived Value of Information

It has been argued that for an organisation to gain the maximum benefit from its information resources it has to undertake significant changes to its culture (Drucker, 1988). The converse of this argument is that organisations that do not wish to, or have difficulty in, adjusting their culture will have major difficulties in fully utilising their information resources (Beaumont and Walters 1991; Davenport, 1994). The impact that cultural issues can have on the use of information has received widespread discussion (Horton, 1993; Bowonder and Miyake, 1992; Menon and Varadarajan, 1992).

The ability of organisational subunits to cooperate and communicate in order to achieve overall organisational goals, rather than competing, is at the heart of integration and lateral independence (Pliskin et al, 1993). This type of change can be recognised in the changes that many organisations have attempted to implement over the last decade, by moving away from tightly bound departmental structures to start-to-end, cross-functional business processes. In many cases these business processes start and end with customer interaction (Stafford, 1993). This type of organisation was identified in a study conducted by Lawrence and Lorsch (1967), and one of the key characteristics that they observed was that it “*achieved integration across departments thus enabling the form to function as a total system*”. Similar organisational characteristics were identified by Whipp et al (1989) who observed that as organisational boundaries become more porous, greater value was placed upon sharing and disseminating information vital to competitive performance. The importance of information for the success of this type of change was also recognised by Ostroff and Smith (1992).

The measurement of performance at a corporate, departmental and individual level is an organisational change that has been taking place for well over a decade in most organisations. This is an organisational change that has been widely discussed in the literature (Rockart, 1979; Child, 1984; Long, 1986; Mansfield, 1986; Townley, 1989; Eccles, 1991). Traditionally measurement of corporate performance has been based on financial measures but more recently this has started to change and a much more balanced approach has started to emerge (Kaplan and Norton, 1992). At the individual level performance orientation is related to the nature of demands that are placed upon organisation members. It requires performance expectations to be clearly defined, that subordinates should be held accountable for their performance, and performance appraisals to be formal (Pliskin et al, 1993). Successfully undertaking performance measurement at both the organisational and individual levels requires significant amounts of information.

Developing a customer orientation and providing excellent customer service is an organisational change that many organisations have attempted to implement (Peters and Austin, 1985; Peters, 1987; Armistead and Clark, 1992; Clutterbuck et al, 1993; Gutek, 1995). In the opinion of Peters and Waterman (1982), "*excellent companies really are close to their customers*". For many organisations this has been a tough challenge as they had traditionally been organised on a product basis, and have had no consolidated view or understanding of the customer. The importance of an organisation taking an external view was also highlighted by Cooper (1994). One of the first challenges has been to understand the meaning of customer service. LaLonde and Zinszer (1976) defined customer service as "*those activities that occur at the interface between the customer and the corporation which enhance or facilitate the sale and use of the corporation's products or services*". A critical component of this strategy is the ability to gather a substantial store of relevant customer information. The value of this type of information is discussed by Vavra (1993) and Gutek (1995). Using information to improve customer service, such as being more responsive and simplifying order processes, was discussed in some detail by Nath (1992).

Increasing the flexibility of the organisation is a change that a number of organisations have attempted to implement (Child, 1984; Stacey, 1993). As Wilmott

(1993) observed, *“ideas about the strengthening of Corporate Culture now infuse diverse corporate change programmes, including those introduced primarily as a means of improving quality, flexibility and or responsiveness to customer needs”*. Some commentators believe that this is one of the most important organisational changes that can be implemented (Whipp et al, 1989). They argued that the structural flexibility of successful organisations does differ from that in less successful organisations. In particular, successful organisations tend to view their structure as temporary and malleable. A similar observation had been made by Kanter (1988), *“the organisations now emerging as successful will be, above all, flexible; they will need to be able to bring particular resources together quickly, on the basis of short-term recognition of new requirements and the necessary capabilities to deal with them”*. Key to this flexibility is easy access to relevant information such as resources profiles and organisational competencies.

The literature has provided a number of significant discussions on the use of information for the facilitation of organisational change. Some of these discussions have been theoretical, some have been based on observations in commercial organisations, and a few have an empirical basis. It appears that additional empirical contributions are required. This is highlighted by Table 2.5. As very little empirical research appears to have addressed organisational change in conjunction with information value, this research project will attempt to address this deficiency. This research will attempt to encapsulate both streams of research. It will focus on a range of dimensions related to the use of information to facilitate organisational change, rather than on the individual dimensions that previous literature has tended to concentrate on. It is expected that this will result in a better understanding of the use of information for the facilitation of organisational change, and the impact that this can have on perceptions of information value. By building on the existing literature, and by taking a holistic view of the use of information for the facilitation of organisational change, and its impact on perceptions of information value, this research should provide new insights into the key dimensions of the use of information for the facilitation of organisational change. This is expected to result in extensions and enhancements to the existing literature.

Table 2.5 - Use of Information for Facilitating Organisational Change Literature

Contributor	Summary	Type	Method	Limitations
Rockart (1979)	A discussion on the information needs of managers for performance measurement	E	O	Research methods not discussed. Does not link to information value.
Child (1984)	General discussion on organisations and organisation structures. Contains a detailed discussion on integration.	T		
Whipp et al 1989	A discussion on managing strategic change. Discusses strategic and structural flexibility.	T		
Armistead and Clark (1992)	A general discussion on customer service. Has a detailed discussion on the use and value of information to customer service	T		
Kaplan and Norton (1992)	A discussion that introduces the balanced scorecard concept. Identifies the importance of information for measuring performance.	T		
Nath (1992)	A discussion on the use of information technology to improve customer service quality	T		
Townley (1989)	A detailed discussion on staff performance appraisal.	T		
Pliskin et al (1993)	Investigation into the impact information system implementation can have on organisational culture. Highlights importance of integration and performance dimensions.	E	Q, I, O	No detailed discussion on the use of information and information value not considered.

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

2.2.6 Impact of the Use of Information to Attain Measurable Business Benefits on the Perceived Value of Information

Establishing that information has the ability to facilitate a wide range of business activities that provide value to an organisation is an important step in shaping perceptions of information value. However, it is unlikely to convince managers that information is a valuable asset unless the use of information in this way is also providing the organisation with business benefits. It has been argued that owning information assets is not enough. It's true value can only be established by the benefits it provides and the benefits can only be realised if the information is used. As Cashmore and Lyall (1991) observed, "*as with all assets ownership is not important, it is the use to which the asset is put which is important*". Porter and Millar (1985) discussed the use of information at General Electric to provide a consumer hotline which "*helps differentiate GE's support from its rivals*"; this provided the potential to increase market share. They also highlighted the use of information by casinos to

develop a better understanding of customers, in one example a cost saving of more than twenty percent was achieved. Davenport and Cronin (1988) confirmed a number of the findings made by Porter and Millar and extended these findings by discussing examples such as an agricultural chemicals company which utilised its information assets to provide a value added information service to its customers. Again, this differentiation provided the firm with the opportunity to increase market share at the expense of competitors. Many of the examples discussed also provided opportunities for organisations to increase their profitability.

Using information to assist with gaining market share has been widely discussed (Porter and Millar, 1985; Davenport and Cronin; 1988; Glazer, 1991). The success of the American Airlines reservations system SABRE is a classic example. It provided American Airlines with a market leading forty percent share of the market. The importance of the use of information in gaining this success was highlighted by critics who argued, "*American's access to reservation system data regarding the booking patterns of travel agents gave an incalculable information and marketing edge over rivals*" (Hopper, 1990). Beaumont and Walters (1991) developed a framework that can assist with using information to increase market share in this manner. The framework is based on identifying the information required to support an organisations critical success factors that are linked to the corporate strategy. By doing this, it is possible to identify the information that is of most importance to the organisation, and how it can be used to support the corporate strategy and deliver benefits.

Cost reduction is another benefit that the literature claims can be attained by the use of information. An example of reduced costs resulting from the effective use of information was presented by Robson (1994) in her discussion on the US firm General Tire. The introduction of a new telemarketing system that had been introduced to avoid unprofitable accounts, "*significantly lowered the cost of making a sale*". This was only one of a number of cost reduction examples discussed by Robson (1994). She identified other major cost reduction examples at a computer manufacturer, and at the food service operation of Kraft. With this service Kraft gained, "*lower costs associated with sales and order processing*". Davenport and

Cronin (1988), Beaumont and Walters (1991), and Glazer (1991) have all provided additional examples of cost reductions being attained by the use of information.

The literature has provided a number of high-level discussions on the use of information for the attainment of business benefits. Some of these discussions have been theoretical and some have been based on observations in commercial organisations. No evidence could be found of any discussions based on solid empirical research. This is highlighted by Table 2.6.

Table 2.6 - Use of Information for the Attainment of Business Benefits Literature

Contributor	Summary	Type	Method	Limitations
Porter and Millar (1985)	A detailed discussion on how information can be used to assist organisations gain competitive advantage. A number of examples of attempting to gain advantage using a low cost strategy and increasing market share. The possibility of increasing profitability is also identified.	T		
Davenport and Cronin (1988)	A discussion on how information can assist organisations gain competitive advantage. Examples of increased market share are discussed and opportunities for increased profitability are identified.	T		
Hopper (1990)	A detailed discussion on the success of American Airlines SABRE system. Identifies how information was used to provide substantial business benefits	E	O	Based on observation within the organisation. No apparent use of formal empirical research methods
Beaumont and Walters (1991)	A discussion on how information can be used to develop and implement strategy. The use of information to increase market share is discussed.	T		
Glazer (1991)	A detailed discussion on information value. Discusses how information can be used in strategies aimed at increasing market share.	T		
Robson (1994)	General discussion on strategic management and information systems. Detailed discussions on the use of information to gain competitive advantage. Discusses the benefits that can be attained. Discusses the value of information.	T		

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

The review of the literature suggests that although the use of information for the attainment of business benefits has been considered widely, very few empirical studies have been conducted. Additionally, there appears to be a lack of studies that have considered how the use of information in this manner can be linked to

perceptions of information value. This research project will attempt to address both of these omissions. Detailed investigation will focus on the uses of information that can generate measured business benefits, and whether the contribution made by the use of information can be identified and measured. This should reveal more about the use of information for the attainment of business benefits, the value this can provide to organisations, and whether this value can be explicitly identified. It is envisaged that by conducting this research new insights will be obtained that can enhance the existing literature.

2.2.7 Impact of Attitudes Towards Information Value Measurement on the Perceived Value of Information

A final dimension to be discussed is the attitude within organisations to the suggestions that information should be considered to be an asset of the organisation, that these information assets should have a value attached, and that techniques should be identified for measuring this value. One of the major problems that is encountered when attempting to assign value to information is the type of value to be used. This is a problem that has been considered by a number of observers including Knight and Silk (1990), Angell and Smithson (1991), McKinnon and Bruns (1992), and Robson (1994). Davenport (1991) identified seven types of value that can be considered in relation to information. Prominent among these value types are value-in-exchange and value-in-use. The importance of these two types of value to the measurement of information value was discussed in detail by Repo (1986). He defined value-in-use as being "*the benefit the user obtains from the use and the effects of the use*" and exchange value as being "*the value of information products and their exchange value in the market*". These value types are at the centre of many studies and discussions on information value, including the work of Demsetz (1969), Machlup (1979), Flowerdew and Whitehead (1975), Newman (1976), Repo (1986), Glazer (1991, 1993), and Mowshowitz (1992). Much of the discussion has been based on the original work of Arrow (1962), who considered information value in some detail. He argued that information could be considered to have value. As he stated, "*information will frequently have an economic value, in the sense that anyone possessing the information can make greater profits than would otherwise be the case*". This argument suggests that information is a valuable corporate asset.

A substantial body of literature exists on the topic that discusses whether information should be considered to be an asset of the organisation. It has to be said that the vast majority of this literature supports the argument that information is a valuable asset of the organisation (Itami and Roehl, 1987; Palmer and Varnet, 1990; Glazer, 1991; Davenport et al, 1992; Horton, 1993; Glazer, 1993). Cashmore and Lyall (1991) argued that, *“information is a powerful and valuable asset which must be actively sought, guarded, and conserved”*. A similar opinion was expressed by Framel (1993), who believed that information is a valuable asset, *“an asset that needs to be managed in order to maximise value and return to the organisation”*. Even stronger opinions have argued that information should not only be regarded as a valuable asset of the firm, but that it should be formally classified as an asset and included on the balance sheet (Vincent, 1983, 1984; Willard, 1993). Vincent (1983) was convinced that *“by the end of this decade, every enlightened corporation will include the information asset in its financial reports”*. A significant contribution was made by Hawley (1995). This report produced arguments based on a business study that was conducted in a substantial number of UK based organisations, and its overwhelming conclusion was that information should be considered to be an organisational asset. The general opinion appears to agree with this view (Davenport and Cronin, 1988; Trauth, 1989; CCTA, 1990; Knight and Silk, 1990; Cronin and Davenport, 1991; Sibbert, 1993).

One of the most widely debated questions is whether financial value can be attached to information assets. Some believe that this is not necessary (Hawley, 1995), while another body of opinion believes that financial valuation of information should be attempted (Trauth, 1989; Willard, 1993). The answer to this question is directly linked to the discussions that have taken place on the techniques that could be adopted for measuring the value of information. A number of detailed studies have been conducted in an attempt to develop information valuation techniques (Carter, 1985; Burk and Horton, 1988; Mowshowitz, 1992; Glazer, 1991). These techniques have included a Bayesian approach, estimation heuristics, and the use of supply and demand prices. None of these techniques appear to have been accepted and adopted by commercial organisations. This has resulted in difficulties in applying a value, and in particular financial value, to information assets. As Bariff and Galbraith (1978) observed, *“although many measures of information value have been proposed it is not formally recognised and recorded as an asset within an organisation's financial*

reports". The debate on the valuation of information assets is closely linked to the valuation of intangible assets. Traditional accounting practices have made it difficult for financial valuation techniques to emerge for intangible assets. However, in recent years there has been a very active debate on this topic; a number of views have emerged which if accepted by the accounting establishment could lead to financial valuation techniques being accepted for intangible assets: this could include information assets. Among the key contributors to this debate have been Donaldson (1992) and Arnold et al (1994), as well as a number of proposals produced by the UK Accounting Standards Committee.

The literature has provided a number of significant discussions on information value measurement. Some of these discussions have been theoretical, some have been based on observations in commercial organisations, and a few have an empirical basis. There appears to be a significant opportunity for further empirical research to provide new insights into this subject. This is highlighted by Table 2.7. Information value and the consideration of information as an asset have been widely discussed, however, the major limitation of much of this literature is that it appears to be theoretical. The review of the literature also suggests that although information value measurement has been considered, very little empirical research has taken place on how the valuation of information is actually undertaken, if at all, in commercial organisations. This appears to be another major omission. It is intended that this research will provide insights into actual practice within organisations related to the classification of information assets and whether the value of information assets is measured. If it is, the measurement methods that are utilized will be investigated and discussed. This should result in extensions and enhancements to the existing literature.

Table 2.7 - Attitudes Towards Information Value Measurement Literature

Contributor	Summary	Type	Method	Limitations
Carter (1985)	A series of discussions on methods that can be used for valuing information.	T		
Repo (1986)	A discussion on the value of information and the types of value that can be attached to it.	T		
Burk and Horton (1988)	A general discussion on information value and techniques that can be used for establishing information value	T		
Cronin & Davenport (1991)	A general discussion on information management. Considers information value in detail. Identifies a range of value types that can be applied to information.	T		
Mowshowitz (1992)	A series of papers that discuss methods that can be adopted for measuring the value of information.	T		
Glazer (1993)	A detailed discussion on information value which argues that information is a valuable strategic asset	T		
Horton (1993)	A discussion on information management which argues that information should be regarded as being a major asset of the enterprise.	T		
McPherson (1994)	A detailed discussion on accounting for the value of information. Provides a complex method for calculating measurable value.	T		
Hawley (1995)	Report that argues information should be considered to be an asset.	E	U	Research methods not disclosed

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

2.2.8 Literature Review Conclusions

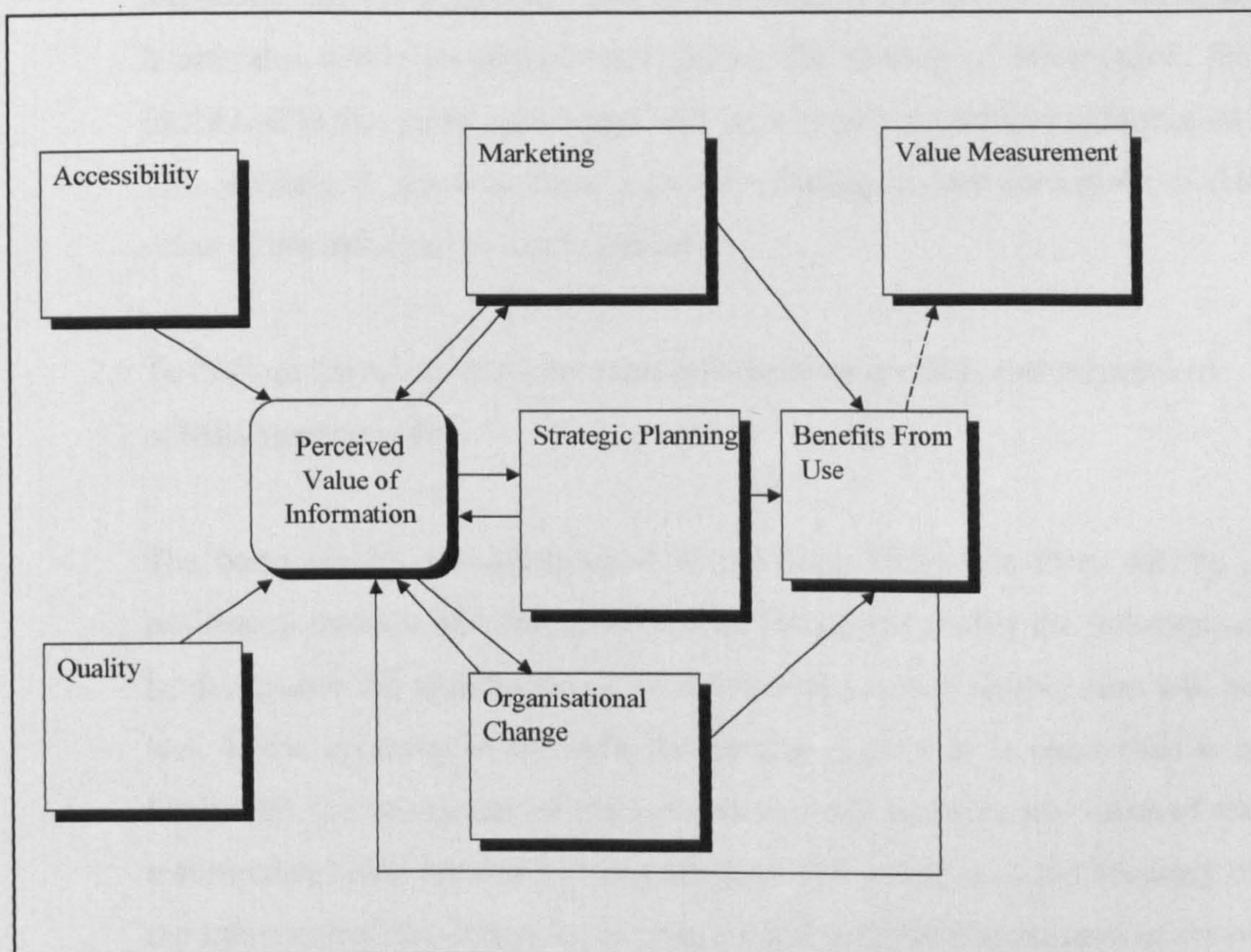
A substantial amount of literature has been produced that covers the dimensions that can have an impact on the perceived value of strategic information. This literature covers the topic in varying degrees of detail, some dimensions have been discussed in great detail with good quality empirical research being conducted, other dimensions have been considered at quite a high level with only subjective opinions being expressed. Although it has been identified that the literature covers all of the dimensions it has also been identified that no literature appears to have been produced that covers the complete range of dimensions, or is focused on the perceived value of information as the primary topic.

The overall conclusion from this critique of the relevant literature is that many good ideas and theories have been developed related to the perceived value of information, but too few of them have been tested in practice or investigated by empirical research. The work of this research project fits closely with the work that has gone before. It is designed to build on the previous literature, and to enhance and expand current knowledge. Proceeding with this research appears to be very worthwhile, not only for the reasons stated above but also because it will bind together an number of disparate strands of research. It will provide a holistic view of the perceived value of strategic information and all its constituent dimensions.

2.2.9 Preliminary Conceptual Framework for the Perceived Value of Information, and Research Objectives

The critique of the literature identified that there is substantial scope for research into the perceived value of strategic information and its associated dimensions. The review of the literature has also identified groupings of related dimensions, and these groupings suggest the main constructs of a conceptual framework. This conceptual framework is illustrated in Figure 2.1.

Figure 2.1 - Preliminary Conceptual Framework for the Perceived Value of Information



It was envisaged that by investigating the constructs identified in Figure 2.1 a better understanding would be obtained on the impact they have on the perceived value of strategic information. The main construct is the perceived value of information. The factors that affect this construct are being investigated by the use of six additional constructs, information accessibility, information quality, marketing activities, strategic planning, organisational change, and benefits from the use of information. A seventh construct, value measurement is also being investigated, as although it does not appear to have a direct relationship with the perceived value of information it is of importance to the overall study. These constructs and the relationships between them will be investigated by the following research objectives.

1. To explore the relationship between **information accessibility**, and perceptions of **information value**.

The more accessible information is to information consumers in an organisation, the more the likelihood that there will be a positive perception of the value of information. The less accessible information is, the more the likelihood that the perceived value of information will be low. For example, if attitudes within an organisation inhibit the sharing of information, the likelihood is that some consumers will have to rely on inferior information. This is likely to result in these consumers having a poor perception of the value of the information that is available.

2. To explore the relationship between **information quality**, and perceptions of **information value**.

The better quality the information is, the more likely that there will be a positive perception of information value. The poorer quality the information is, the greater the likelihood that the perceived value of information will be low. If the accuracy of the information that is provide is poor, then it is likely that the consumers of the information will perceive the value of the information being provided to be poor also. For example, if the accuracy of the information that is provide is poor, then it is likely that the consumers of

the information will perceive the value of the information being provided to be poor also.

3. To explore the relationship between the **use of information for marketing activities**, and perceptions of **information value**.

The use of information for marketing activities can have a direct impact on its perceived value. The use of information for marketing activities that generate value for the organisation ensures a greater likelihood that there will be a positive perception of information value. The use of information for marketing activities that are failing to deliver value to the organisation, the more the likelihood that the perceived value of information will be low. If information was used to produce a very successful segmentation of the customer base it is likely that the perception of the value of the information used will be very positive. However, if the segmentation proved to be unsuccessful it is likely that the perception of the information that was used will be poor. A second relationship can exist between the perceived value of information and the use of information for marketing activities. The more positive the existing perception of information value, the more likelihood the information will be used for marketing activities. The more unfavourable the existing perception of information value, the less likely the information will be used for marketing activities. If the information that was used for a successful segmentation was still available, it is likely that the organisation would wish to reuse it, if it was relevant. However, if the information was used for an unsuccessful segmentation, it is likely that there would be reluctance to reuse it.

4. To explore the relationship between the **use of information for strategic planning**, and perceptions of **information value**.

The use of information for strategic planning can have a direct impact on its perceived value. The use of information for strategic planning activities that generate value for the organisation ensures a greater likelihood that there will be a positive perception of information value. The use of information

for strategic planning activities that fail to deliver value to the organisation, the more the likelihood that the perceived value of information will be low. If the information being used to measure the performance of an organisation is meeting all the requirements and expectations of senior managers, it is likely that the perception of the value of the information being used will be very positive. However, if the information is failing to meet the requirements and expectations of senior managers, and if as a result the organisation is failing to achieve its objectives, it is likely that the perception of the information that is being used will be poor. A second relationship can exist between the perceived value of information and the use of information for strategic planning activities. The more positive the existing perception of information value, the more likelihood the information will be used for strategic planning activities. The more unfavourable the existing perception of information value, the less likely the information will be used for strategic planning activities. If the information that was used for successfully implementing a new strategy was still available, it is likely that the organisation would wish to reuse it, if it was relevant. However, if the information was used for implementing a strategy that failed, and failure was attributed in part or in full to the information that was used, it is likely that there would be reluctance to reuse the information.

5. To explore the relationship between the **use of information to facilitate organisational change**, and **perceptions of information value**.

The use of information for the facilitation of organisational change can have a direct impact on its perceived value. The use of information for the facilitation of organisational change that generates value for the organisation ensures a greater likelihood that there will be a positive perception of information value. The use of information for the facilitation of organisational change that fails to deliver value to the organisation, the more the likelihood that the perceived value of information will be low. If information is used to assist an organisation become more customer orientated and this organisational change is successful, it is likely that the perception of the value of the information used will be very positive.

However, if the information is used to assist an organisation become more customer orientated and the organisational change fails, it is likely that the perception of the information that was used will be poor. A second relationship can exist between the perceived value of information and the use of information to facilitate organisational change. The more positive the existing perception of information value, the more likelihood the information will be used for the facilitation of organisational change. The more unfavourable the existing perception of information value, the less likely the information will be used for the facilitation of organisational change. If the information that was used for successfully implementing an organisational change was still available it is likely that the organisation would wish to reuse it, if it was relevant. However, if the information was used for implementing an organisational change that failed, and failure was attributed in part or in full to the information that was used, it is likely that there would be reluctance to reuse the information.

6. To explore the relationship between the **use of information to attain measured business benefits**, and perceptions of **information value**.

The use of information for marketing activities, strategic planning, and the facilitation of organisational change can result in the organisation gaining measured business benefits. If information is used to assist with the implementation of a new strategy that results in the organisation increasing its market share, then it is possible that part of this measured business benefit could be attributed to the information used. This could result in a positive impact on the perceived value of information. The gaining of measured business benefits by the use of information can result in a beneficial impact on the perceived value of the information.

7. To explore the relationship between **attitudes to measuring information value**, and perceptions of **information value**.

If information is being used to assist with the gaining of measured business benefits, and part of the measured business benefit can be attributed to the

information that was used to attain the business benefit, it is possible that the value of the benefit attributed to the information could be measured. The measurement of this value could result in a beneficial impact on the perceived value of the information.

The first analysis stage of the research will set out to test a number of these constructs to ensure that this is a robust conceptual framework that can support the in-depth research that will follow. The conceptual framework as it stands has been built from the conclusions of pre-PhD research and a review of the literature that has identified many dimensions that can be associated with each construct. If the validity of this conceptual framework is proven and it is used as the basis for detailed research, efforts will be made to identify the key dimensions associated with each construct. Although a number of potential dimensions have already been identified the identification of the key dimensions will be undertaken with an open mind; new dimensions and relationships that emerge during the research will be evaluated and included as appropriate.

2.3 Summary

This chapter has reviewed the literature produced on a wide range of dimensions related to the perceived value of strategic information. The review has identified that whilst there is a substantial body of literature related to the perceived value of information much of this is of a theoretical nature. There appears to be a lack of literature that discusses the implementation and impact of the theory. This suggests that there is substantial scope for further research in this area, and that enhancement and extension of the existing literature is very possible. In particular there appears to be an opportunity to investigate the perceived value of strategic information in a holistic manner rather than in the piecemeal approach that appears to exist in the existing literature. The final section of this chapter has taken the findings from the review of the literature and developed a preliminary conceptual framework, and research objectives, that will be used as the foundation for further exploratory research. The exploratory research was required to further refine and develop the conceptual framework and to validate the research objectives. This was done by investigating the research constructs that were selected, ensuring that they were the most pertinent to gaining an understanding of perceptions related to the value of strategic information.

The next chapter establishes the methodological foundation for the exploratory research, and the main body of research that follows. It discusses the lifecycle of the research and the framework that the research was conducted in. The methods that were used to conduct the research are discussed as are the measures that were taken to ensure valid and reliable findings. The research design limitations are also identified and discussed.

Chapter 3

Research Strategy

3.1 Introduction

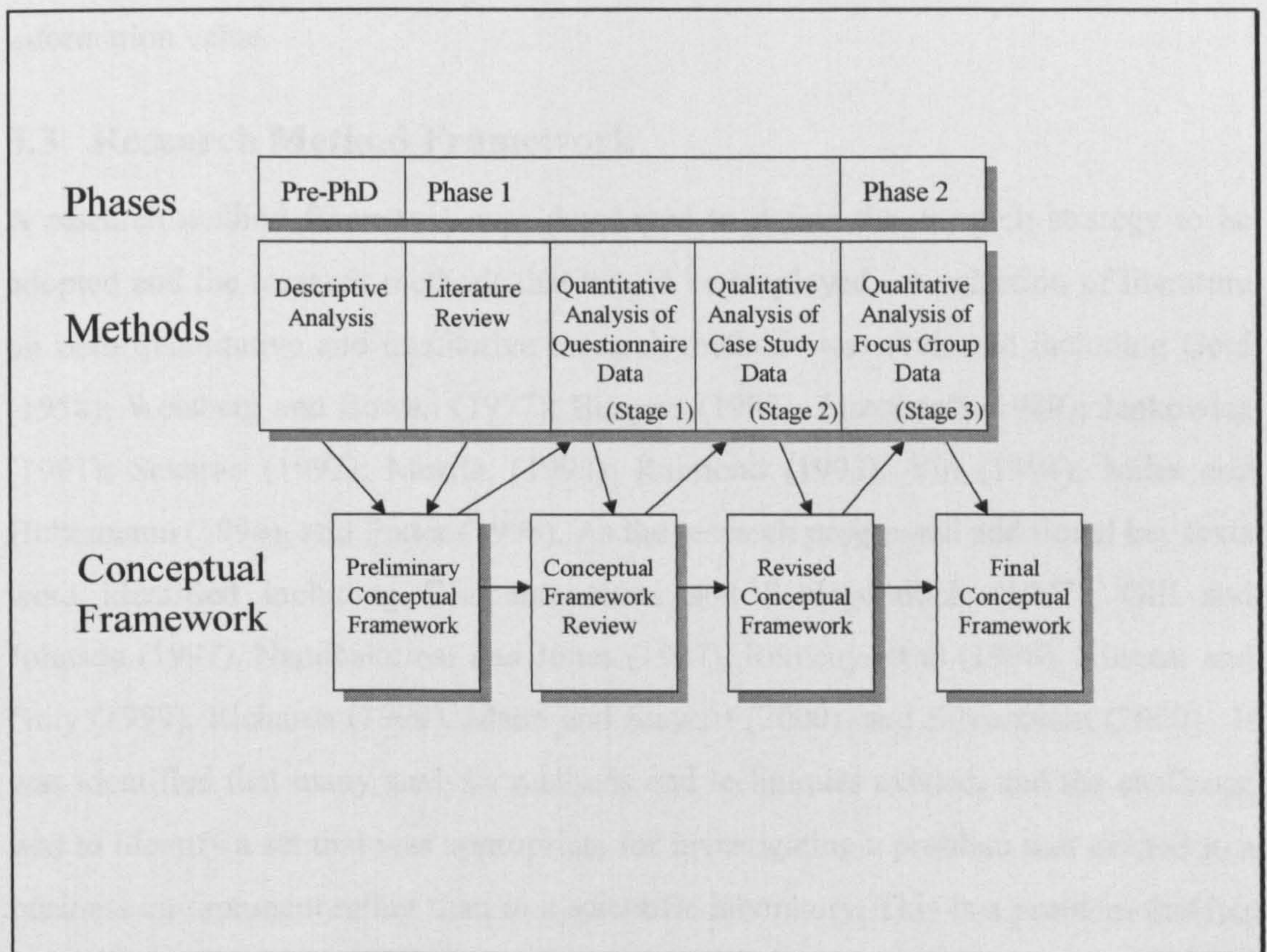
This chapter provides a methodological overview of the investigation. It presents a discussion on the lifecycle of the research and the framework that the research was conducted in. The philosophical perspective of the research and the methods chosen to investigate the research objectives are described, as are the measures that were taken to ensure valid and reliable findings. The limitations of the research design and problems faced in conducting this research are also explored.

3.2 The Research Lifecycle

The strategy that was developed for this research project was based on established research methodology foundations. It utilised standard quantitative and qualitative research methods alongside some qualitative methods that could be regarded as being more innovative. The research has been based on a conceptual framework that evolved with each phase of the research, as knowledge and learning was gained. There have been three clearly distinctive phases in the project lifecycle. As Figure 3.1 illustrates the **pre-PhD phase** of the research was conducted as part of an MBA programme. That pre-PhD research had the objective of investigating the processes

that existed within organisations for managing information, the methods that were adopted for presenting information to management, and whether any of these methods could be regarded as being best practice. Many of the research questions, and the subsequent conclusions from that pre-PhD research, formed the basis of the research questions for this main body of research. It must be stressed that the analysis undertaken during the pre-PhD phase was of a very high level descriptive nature. Examples of that analysis can be found in Appendix 3.1. No in-depth quantitative or qualitative analysis was undertaken. The lack of detailed analysis resulted in a valuable holding of un-tapped primary research data being available to provide a starting point for this much more detailed research.

Figure 3.1 - The Research Phases



The **first phase** of the six-year PhD research lifecycle formed the main body of the research project and was primarily focussed on investigating the perceived value of information, the dimensions that can impact the perceived value of information, and the measurable value of information assets. The method chosen for gathering the research data during this phase was multiple case studies. This method was chosen because it provided the opportunity to gain in-depth access to a number of organisations over a period of time. This allowed the research to probe into the

behaviours and actions of the case study organisations in an attempt to gain a deep understanding of how perceptions of information value were being formed. The first phase of the project provided many insights into the dimensions that influence the perceived value of information in organisations. It also generated a number of questions that still required answers and a number of theories that required further investigation. In order to gain answers to these questions and to test these theories a **second phase** of the project was required. Focus groups were chosen as the research method for this phase. It was hoped that from these focus groups a clearer understanding would be obtained on the dimensions that influence the perceived value of information. It was also hoped that this final phase of the project would enable the generation of new insights and extensions to the literature related to information value.

3.3 Research Method Framework

A research method framework was developed to define the research strategy to be adopted and the research methods that would be employed. A selection of literature on both quantitative and qualitative research methods was reviewed including Gold (1958); Weisberg and Bowen (1977); Burgess (1982); Eisenhardt (1989); Jankowicz (1991); Sekaran (1992); Morris, (1993); Raimond (1993); Yin (1994); Miles and Huberman (1994); and Potter (1996). As the research progressed additional key texts were identified including Diamantopoulos and Schlegelmilch (1997), Gill and Johnson (1997), Nandhakumar and Jones (1997); Remenyi et al (1998), Kinnear and Gray (1999), Richards (1999), Mann and Stewart (2000), and Silvermann (2000). It was identified that many analysis methods and techniques existed, and the challenge was to identify a set that was appropriate for investigating a problem that existed in a business environment rather than in a scientific laboratory. This is a problem that has confronted many researchers in the business world (Raimond, 1993). The problems associated with attempting to use purely scientific methods for business research had also been discussed by Sekaran (1992) who observed, "*in the management and behavioural areas it is not always possible to conduct investigations that are 100% scientific*". Among the problems that Sekaran identified were feelings, emotions, attitudes, and perceptions. Sekaran also identified that there can be difficulties in obtaining a representative sample, which can restrict the generalisability of the findings, and can make it impossible to "*meet all the hallmarks of science*

completely". This problem was considered much more critically by Jankowicz (1991) who argued that scientific research *"runs into difficulties when its used in engagements by other disciplines, and these can be severe when its used to handle a business or a management problem"*.

Underpinning many of these arguments are the philosophical differences that exist within research, and in particular the differences between the positivist approach and the interpretive approach to research. In very simple terms the positivist approach assumes that theory can be developed, or deduced, which is then tested by the use of hypothesis with the measurement of results validating and refining the theory. Within the positivist school of thought one of the most important research techniques is the hypothetico-deductive research method. This method is primarily used for scientific research and is considered by some observers to be inappropriate for a business related research project (Jankowicz, 1991). The interpretive approach attempts to understand phenomena from the point of view of participants directly involved with the phenomenon under investigation (Orlikowski and Baroudi, 1991). With this approach theory can be generated, or induced, by studying a phenomenon in detail and without the need of measurement (Gill and Johnson, 1997; Remenyi et al, 1998).

Although these two approaches to research have traditionally been considered to be opposed with irreconcilable differences, Lee (1991) has suggested that it is possible to combine the perspectives and provide different views of the same phenomenon. This research project has adopted three main research methods, survey, case studies, and focus groups. Of these approaches, survey research is typically quantitative by design, and case studies and focus groups tend to be associated with qualitative research techniques. (Remenyi et al, 1998). Lee (1991) suggests that qualitative research takes an ostensibly interpretivist philosophical perspective and quantitative research is ostensibly positivist in nature. Consequently, if these two research approaches are combined then both philosophical perspectives may be incorporated into a single study. This combining of philosophical perspectives has occurred during this research project.

This study has combined survey, case study, and focus group research methods in a three-phase approach. Consequently, the study has adopted techniques that are

predominately found in either the positivist or interpretivist schools. It is interesting to note that while Lee (1991) advocates a combining of research perspectives he also argues that a study does not need to pursue both approaches with equal emphasis. The survey research adopted a positivist perspective and utilised a hypothetico-deductive approach. This required the definition of a set of hypothesis that were tested by analysing the research data. It was from the hypothesis testing that a number of preliminary theoretical conclusions were deduced. In contrast to this the case study research adopted an interpretivist perspective. The research commenced with the creation of a preliminary conceptual framework that evolved, or was induced, as the case studies progressed. This evolutionary process was driven by considering the phenomenon from the point of view of participants in the case study organisations. The final stage of research, the focus groups, reverted to a positivist perspective. The case study research generated a number of theoretical propositions. The objective of the focus group research was to test and, if possible, validate these propositions. However, the focus group participants were not connected with the case study organisations, the research was not being undertaken from the point of view of the participants engaged in the phenomenon. The focus group participants were experts who were able to express a knowledgeable opinion on the findings generated from the case studies. Consequently, throughout the different phases of research this study has been more inclined towards a positivist view of the research environment.

During the survey, the case studies, and the focus groups the researcher set out with the belief that there are pre-existing regularities that can be discovered and investigated using constructs that the researcher has devised. This belief has been reflected in the case study interviews and the survey design. Each stage of the research has shown a considerable degree of structure and has focused on specific constructs to be explored. However, although this approach was necessary for the survey, it was not followed blindly during the case studies and focus groups. The researcher remained sensitive to additional interpretations and issues that were raised during the case study and focus group processes and these new issues, where appropriate, have been analysed and discussed in the study's findings. In this respect, the study also follows the interpretive school of thought and attempts to understand phenomena through accessing the meaning participants assign to them. Consequently,

both philosophical perspectives have been adopted that have enhanced the validity of the study's overall findings.

An important component of the non-positivist approach to research is the development of grounded theory. Remenyi et al (1998) provide a definition of grounded theory based on the work of Glaser and Strauss (1967) that states that it is *“an inductive, theory-discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or evidence”*. This is a technique that has been the subject to much discussion. In general it appears to be regarded as an appropriate method for developing new theory (Jankowicz, 1991; Gill and Johnson, 1997; Remenyi et al, 1998) but care needs to be taken in the way its associated techniques are used. Among the key characteristics of this technique one of the most critical is related to the researcher approaching the study with a reasonably open mind to the final theory that will be developed. This does not preclude an initial conceptual framework being developed from the literature or from previous experience. However, it is essential that the researcher is happy to enhance and modify the framework as the research progresses. Many of the techniques used during this research project were similar to those used for developing grounded theory. However, although there were similarities it would be incorrect to claim that grounded theory has been used. Although there are a number of similarities there are also a number of major differences. One of the key differences was in the use of interviews. Interviews are regarded as a critical component in the development of grounded theory. This research project used interviews in the development of the research but the number of interviews, the level of detail conducted during the interviews, and the use of subject matter experts, did not meet the criteria that would normally be expected for the development of grounded theory. Consequently, this project was not developing theory using a grounded theory approach.

3.4 Research Strategy

As the previous section discussed, this project used a combination of quantitative and qualitative research methods. The research conducted during the first phase used a combination of quantitative and qualitative methods with the second phase primarily using qualitative methods. This section provides a brief discussion of the research

method used in each phase, fuller discussion will be provided in the following chapters.

3.4.1 Exploratory Research – Questionnaire Data Analysis

The exploratory research set out to test the preliminary conceptual framework. In particular it had the aim of testing whether any significant relationships could be identified between the main constructs. By doing this it was hoped that relationships would be identified thereby providing a solid foundation on which to base the main research. To achieve this it was decided to utilise the holding of primary research data that had been gathered for pre-PhD research. That data had been gathered for a study that addressed a number of the questions that this new research was investigating in much more detail. Although there were a number of weaknesses in that original data it still appeared to be a substantial store of primary data that was relatively untapped. As only very high-level descriptive analysis had originally been conducted on that data, there was still great scope to conduct more detailed statistical analysis. It had the potential to reveal many interesting relationships between the key constructs that formed the core of the new research. It was decided that the analysis would be conducted at a greater level of detail and would be conducted using standard statistical analysis techniques. The objective was to obtain an initial understanding of relationships that existed, if any, between information value and a number of other variables.

The result of the analysis that was conducted suggested that there were relationships between information value and most of the other constructs tested. This provided the foundation that the research required, and it helped identify the constructs that were worthy of further investigation. The test that was used to identify if a relationship existed between the constructs was Pearson's Correlation. This test was used as the data being tested had been obtained on an interval scale, which the Pearson Correlation is ideally suited for (Diamantopoulos and Schlegelmilch, 1997). However, before calculating the Pearson Correlation a scattergram was produced for each set of constructs to ensure that the test was appropriate. A correlation was identified for all but one of the eight tests conducted with a number of them identifying a high level of significance. These tests provided the evidence required for progressing to the next stage of research with confidence.

3.4.2 Primary Research - Multiple Case Studies

Following the completion of the exploratory research it was possible to use the results to finalise the overall research objectives and questions. To be able to answer the research questions that were generated it was clear that substantial qualitative methods would be required and pure statistical quantitative methods would have little part to play. It was decided that the use of another questionnaire for collecting the data would be inappropriate. This was mainly because there was a need to really get under the skin of organisations to understand the thinking on information value. This would have been virtually impossible with a questionnaire, and interviews alone would have had a tendency to only scratch the surface of the issues. Taking these factors into account, it appeared that an appropriate method to adopt for the primary data gathering for this phase of the project would be the use of case studies. As Yin (1994) identified “*a case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*”. The ability to utilise case studies for this type of investigation has been widely recognised in the literature (Easton, 1982; Eisenhardt, 1989; Huczynski and Buchanan, 1991; Jankowicz, 1991; Yin, 1994; Gill and Johnson, 1997; Remenyi et al, 1998; Silvermann, 2000)

Multiple Case Studies

The use of a case study in one organisation had the potential to provide interesting insights, but what was of much more importance was the ability to investigate the perceptions of information value across a number of organisations. As Jankowicz (1991) argued “*it's possible to carry out a comparative case study, in which you ask the same questions in several related organisations*”. For this research project the ability to compare the different organisations being studied was essential. It would allow conclusions to be reached that could be analysed in conjunction with the information gained from the exploratory research. Undertaking multiple in-depth case studies would provide the opportunity to explore in detail the constructs that impacted the perceived value of information within organisations. It would provide the opportunity to gain greater understanding and insight into the impact that the key constructs were having in each organisation. It would also enable comparisons to be made based on the results that were obtained from the complete range of case studies.

Deciding to conduct multiple case studies immediately generated the question of how many studies should be conducted. Little guidance appears to exist in the literature regarding the ideal number of studies to undertake. Yin (1994) argues that this decision should be based on the number of case replications that are sought and it is not based on any formula. He takes the view that; *“the number of replications depends upon the certainty you want to have about your multiple-case results”*. A similar view was taken by Eisenhardt (1989) who argued that fewer than four case studies would result in the empirical grounding of the study being unconvincing. She also believed that more than ten cases studies would be difficult to cope with in terms of complexity and volumes of data. Eight case studies were chosen for this project. The choice of organisations to study was another question that needed to be addressed. The reality of the situation was that the organisations were selected based on the opportunity arising to act as a participant observer in the organisation. In many ways the selection of case study organisations was similar to convenience sampling in statistical analysis. However, the selection of case study organisations was not completely accidental; each organisation chosen had similar characteristics. Each one had made, or was making, a considerable investment in improving the provision of information, and each one had recognised that information had an important role to play in the success of the organisation. These similarities made it possible to replicate the findings in each organisation; the choice of cases could be considered to be theoretical sampling where the choice was for theoretical rather than statistical reasons. There are advantages in adopting this method. As Eisenhardt (1989) identified, *“the goal of theoretical sampling is to choose cases which are likely to replicate or extend the emergent theory”*.

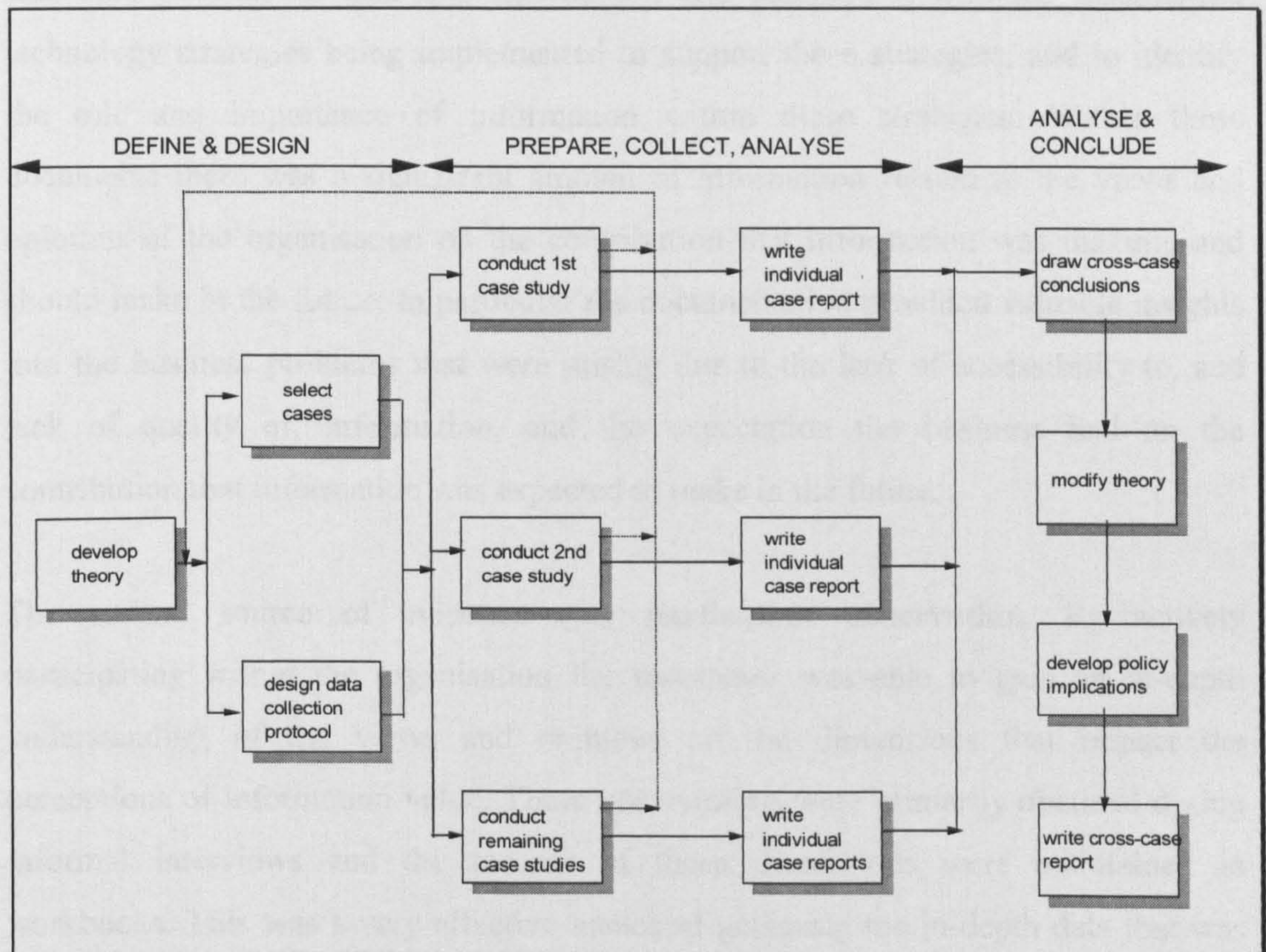
The case study research was conducted on a case-by-case basis with each individual case being developed as a whole and independent of the others. When all the individual case studies had been completed the cross-case analysis commenced. An illustration of this case study method is provided in Figure 3.2. In describing this method Yin (1994) states, *“each individual case study consists of a 'whole' study, in which convergent evidence is sought regarding the facts and conclusions for the case”*. He also states that the final cross-case report should indicate the extent of the replication across the cases. There are six main sources of evidence that are widely

recognised as being the most appropriate for gathering case study data (Eisenhardt, 1989; Jankowicz, 1991; Yin, 1994; Remenyi et al, 1998). These multiple sources of evidence are documentation, archives, interviews, direct observation, participant observation, and physical artifacts.

Multiple Sources of Evidence

Three of these sources formed the basis of the data gathering for this research project: documentation, interviews, and participant observation.

Figure 3.2 - Case Study Method (from Yin, 1994)



As Yin (1994) states *“the various sources are highly complementary, and a good case study will therefore want to use as many sources as possible”*. The use of multiple sources is important. It provides different perspectives on the phenomena being investigated, it can help identify new factors that one source may not have recognised, and most importantly it provides the ability to corroborate the evidence being gathered from different sources. This ability to corroborate, or triangulate, the evidence being gathered is of particular importance for establishing the validity of the research (Eisenhardt, 1989; Yin, 1994; Remenyi et al, 1998). As Remenyi et al (1998) argue, *“multiple sources of evidence tend to help with the problem of construct*

validity because this provides several measures of the same phenomenon ... the multiple nature of evidence collection also allows the researcher to attempt to find information convergence”.

The **documentation** that was available ranged from high-level corporate strategy documents down to detailed IT system design specifications. This range of documentation provided the opportunity to gain an understanding of senior management thinking and the corporate strategies that were being implemented. It was then possible to take this information and compare it with the information technology strategies being implemented to support these strategies, and to identify the role and importance of information within these strategies. Within these documents there was a significant amount of information related to the views and opinions of the organisation on the contribution that information was making, and should make in the future. In particular the documentation provided valuable insights into the business problems that were arising due to the lack of accessibility to, and lack of quality of, information, and the expectation the business had on the contribution that information was expected to make in the future.

The second source of evidence was **participant observation**. By actively participating within the organisation the researcher was able to gain an in-depth understanding of the views and opinions on the dimensions that impact the perceptions of information value. These observations were primarily obtained during informal interviews and the records of these discussions were maintained in workbooks. This was a very effective means of gathering the in-depth data that was required for the study, and it was an effective means of corroborating the data that was being gathered from the documentation. However, there are a number of strengths and weaknesses associated with the role of participant observer and this requires more detailed discussion. The classical definition of participant observer provided by Kluckhohn (1940) is *“conscious and systematic sharing, insofar as circumstances permit, in the life-activities and, on occasion, in the interests and affects of a group of persons. Its purpose is to obtain data about behaviour through direct contact in terms of specific solutions in which the distortion that results from the investigator’s being an outside agent is reduced to a minimum”*. A simpler definition provided by Sekaran (1992) states that a participant observer is a researcher

who “*enters the organisation or the research setting actually becoming a part of the work team*”. This definition supports the views expressed by a number of commentators (Becker, 1958; Becker & Greer, 1982; Burgess, 1982; Huczynski & Buchanan, 1991; Yin, 1991; Gill and Johnson, 1997; Remenyi et al, 1998). A detailed study was also conducted by Gold (1958) that provides a more granular categorisation of the participant observer roles. Among the strengths that have been identified for this role are: the reality of the data being collected can be far greater than data collected by other means; fuller coverage of the phenomena being studied can be obtained; the opportunity is provided to observe what people do rather than what they say they do; first hand reports are gained of the views and opinions of the organisation rather than obtaining this data second hand or worse, and it provides the ability to steer the data gathering as events unfold rather than sticking to a rigid schedule that may take the research down an unfruitful blind ally (Becker & Geer, 1982; Yin, 1991; Huczynski & Buchanan, 1991; Gill and Johnson, 1997; Remenyi et al; 1998). There are, however, a number of weaknesses associated with this role. The participant observer may ‘go native’ resulting in the objectiveness of the study being lost; or there may be bias on the part of the participant observer especially if it is possible to exert influence over the phenomena being studied (Burgess, 1982; Yin, 1991; Gill and Johnson, 1997; Remenyi et al; 1998). Beyond the role of participant observer there is also action research to be considered. Action research, as Nandhakumar and Jones (1997) describe, involves “*the researcher actively intervening in the research context to try to achieve particular outcomes, rather than simply seeking to act as a ‘normal’ member of the context*”. The researchers’ involvement in the case study organisations did place him in a position where it would have been possible to manipulate certain situations related to his immediate work if he had chosen to. However, he was not in a position, nor did he have any desire or motivation, to manipulate the decisions that were being made in relation to the main focus of the research, which were perceptions of information value. The researcher believes that there was no bias in the research being undertaken due to his involvement as a participant observer and he was not engaged in action research.

The third source of evidence was **interviews**. Interviews were conducted whenever possible and were used to corroborate the findings from the documentation and the

Table 3.1 - Case Study Organisation Profiles

Case	Size / areas of business	Strategies and Challenges	Interviews: nos. / types
Clearing Bank	Size: Large, National Business: retail banking; credit cards; mortgages; Insurance	An established clearing bank that was undertaking a number of major changes to compete in a rapidly changing market place. A major challenge was to become much more customer focused. A substantial effort was being made to achieve this and to develop products that matched the customer needs.	4: system architect; strategic analysis manager; finance manager; strategy consultant
Retailer	Size: Large, International Business: clothing; food; financial services	A well established national retailer that had an international presence but could not be considered to be a global organisation. As market leader it had been very successful for many years. The competition was changing and getting smarter. They were starting to challenge the firms' leadership. The firm was being slow to respond.	5: system architect; business manager; 3 information analysts
Insurance Company 'A'	Size: medium, national Business: motor / household insurance	This firm was a UK subsidiary of a large European insurer but it operated autonomously. Its main business was motor insurance but this business was being severely eroded by the emerging direct insurers. Its main challenge was survival. The strategy it wished to adopt to achieve this was to target profitable niches in the market.	4: IT director; underwriting manager; underwriting director; business manager
Insurance Company 'B'	Size: large, national Business: life assurance; general insurance; financial services	This firm had recently been acquired by a large global insurer but still operated as an independent business unit in the UK. Significant changes were being implemented in an attempt to reverse the reducing market share that the firm had experienced for decades. A process of continual strategic change was being adopted to re-shape and re-focus the organisation.	5: strategy director; corporate performance manager; training manager; HR manager; marketing manager
Commercial Bank	Size: medium, national Business: personal loans; insurance; mortgages	This firm was a subsidiary of a UK clearing bank but it operated as an independent business unit. It was a very successful organisation that was in a leading position in a number of the markets it operated in. It operated a very successful tele-sales operation on behalf of its many business partners.	5: system architect; marketing analyst; database administrator; information analyst; marketing manager
Insurance Company 'C'	Size: large; international Business: life assurance; general insurance; financial service	This large insurance company had an international presence that was rapidly being developed into a global brand. This brought many challenges. Traditionally the firm had allowed its subsidiaries to operate with a great deal of independence. This was changing, and it was creating a significant challenge for the management of the organisation.	5: IT strategy manager; underwriting manager; group executive; information manager; HR manager
Car maker	Size: large, international Business: Car / truck manufacturing; financial services	A significant global car manufacturer. This firm was continually seeking to identify ways of gaining competitive advantage. A number of strategies were being implemented, with a particular emphasis on reducing the time to deliver a car.	4: project director; marketing analyst; system architect; optimisation consultant
Insurance Company 'D'	Size: large, national Business: life assurance; general insurance; financial service	This firm was the UK subsidiary of a large global insurer but it operated with a great deal of independence. It had a leading position in a number of markets and its main strategy was to consolidate its position. These included the launch of a direct insurance business and the adoption of a more customer-centric focus.	5: IS director; business analyst; system architect; information architect; IT strategy consultant

observations. During each case study two types of interview were conducted, formal semi-structured interviews, and informal unstructured interviews. Table 3.1 provides a profile of each case study organisation and the interviews that were conducted in each one. The formal semi-structured interviews were focused interviews that utilised a set of pre-defined questions that were discussed over a fixed period of one hour. The questions covered a broad range of topics that were linked to the scope of the research. The questions were focused on topics such as the business need for information, the actual information requirements, and the processes adopted for gathering the information.

Within these categories questions were focused on topics such as identifying the information needs to solve business problems, identifying how this information would be obtained and from what sources, identifying the problems associated with the quality of the information, and identifying if the business was obtaining benefits from the use of this information. The questions can be found in Appendix 3.2. The use of pre-defined questions was regarded as being vitally important for maintaining the consistency and uniformity of the case study research. By doing this the validity and reliability of the research was enhanced. The format of the interviews was informal and they were fairly open-ended with topics that were not on the list of questions being discussed if they appeared to be of relevance to the study. There was a particular focus on topics that had been identified in the documents that had been reviewed, and interesting observations. The format of these interviews fitted with the standard practice of semi-structured interviews. Jankowicz (1991) argued, “*a semi-structured interview differs from an unstructured conversation because the topic and issues to be covered have been determined in advance*”. He also believed that in a semi-structured interview there is steering by the questioner to cover the previously identified issue within a topic predetermined by the questioner, and the questioner pre-sets the broad direction of the discussion. The structure in the semi-structured interview comes from the structuring of the problem, the predetermined topic and issues, and the production of a list of questions that are used to open the discussion on each of the issues. This list of questions does not impose the structure or sequence of the interview; it merely ensures that the interview focuses on the predefined topic and issues. Whyte (1982) provided the following description of a good research interview, “*it is structured in terms of the research problem ... not fixed by predetermined*

questions". He also argued that the interview structure should be "*designed to provide the informant with freedom to introduce materials that were not anticipated by the interviewer*". It was important that the views of the respondents could be expressed and be incorporated into the findings, rather than being rejected because they did not answer a specific pre-defined question. However, it was also important that specific issues were discussed during the interview and the pre-production of a list of questions assisted with this objective. Although the general form of the interviews was semi-structured the informants had been chosen because of their specific knowledge and the interviews were all undertaken within a specific time period. This type of semi-structured interview is described by Yin (1994) as a focused interview "*in which a respondent is interviewed for a short period of time ... the interview may still remain open-ended and assume a conversational manner, but you are more likely to be following a certain set of questions*". This description is similar to the description of the key informant interview provided by Jankowicz (1991). He states, "*key informant interviews differ from other forms of interview largely because respondents are chosen on the basis of their idiosyncratic, specialised knowledge rather than being randomly chosen to sample the range of issues you are investigating*". In his detailed discussion of the key informant interview technique Tremblay (1982) states "*when we use key informants, we are not randomly sampling from the universe of characteristics under study ... rather, we are selectively sampling specialised knowledge of the characteristics*".

The informal unstructured interviews were mainly meetings that took place to discuss aspects of the consulting engagement that was being undertaken. These interviews provided a wide-range of data that was very valuable to the case study research because they added a rich collection of differing perspectives and points of view to the study. As Jankowicz (1991) observed, "*you'll spend a lot of time talking informally to other people ... some of it will be gossip, some will be storytelling, and some will involve conversations; all of it is valuable*". These interviews were all with strategically selected key informants, which helped to ensure that the information being gathered was not random opinions but reliable information from knowledgeable specialists. The importance of this type of interview with knowledgeable informants during case study research was identified by Yin (1994). As he argued, "*key informants are often critical to the success of a case study ... such persons not only*

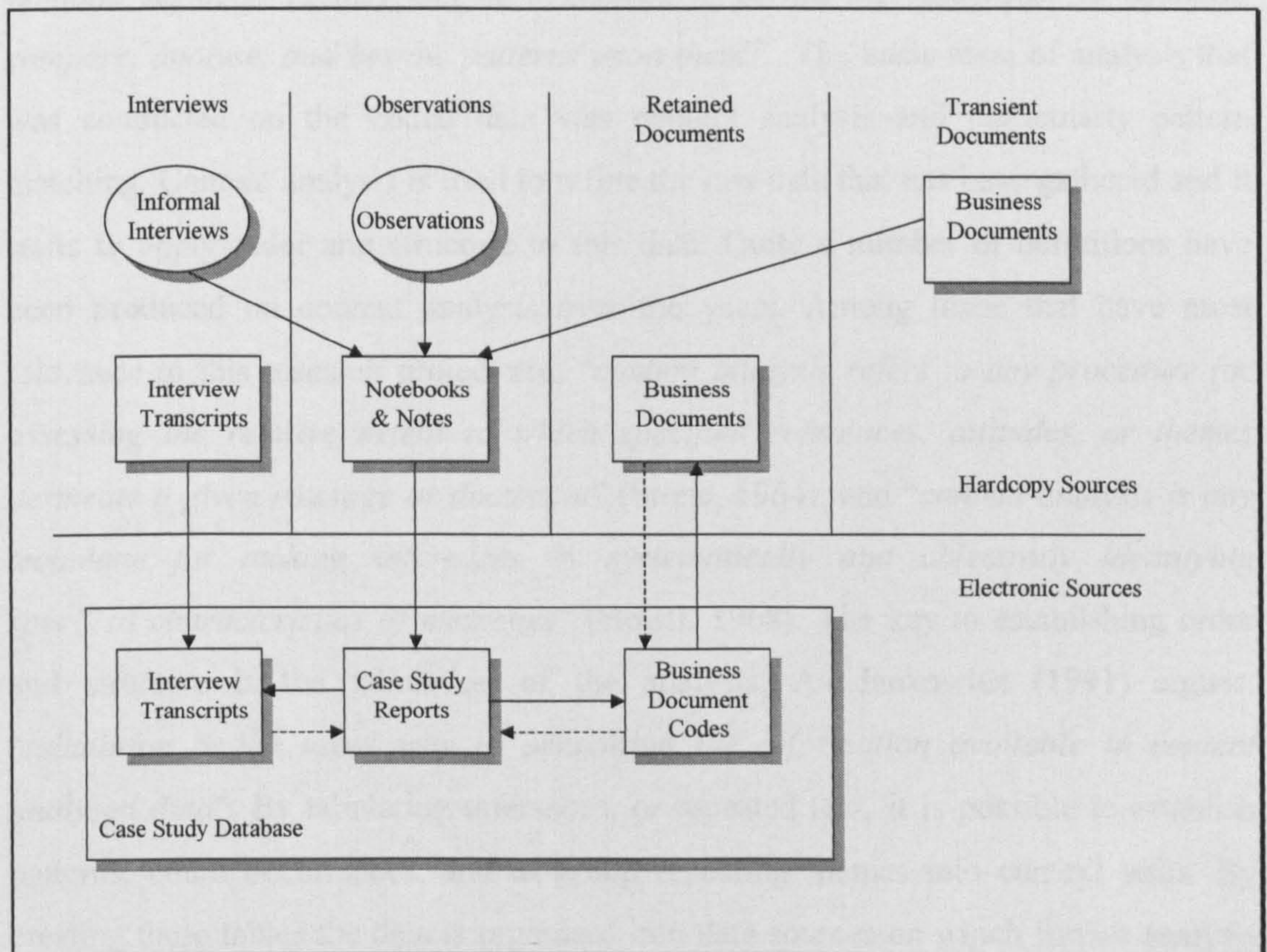
provide the case study investigator with insights into a matter but also can suggest sources of corroboratory evidence". The data from these informal unstructured interviews was captured in notebooks. In addition to these unstructured interviews there were many informal discussions, or research conversations (Jankowicz, 1991), from which interesting observations relevant to the research were made. Many of the observations from these research conversations were recorded in the case study reports. All of these informal interviews and conversations provided valuable data either about specific topics under investigation or by providing background about personalities, procedures, culture, and the values and objectives of the organisation.

Data Capture Using NUD*IST Vivo

As each case study was undertaken a varied collection of data was assembled. Initially all of this data was in hardcopy format but as each case developed various items of data were transformed into electronic form. The data that was captured from informal interviews was initially recorded in notes or notebooks depending on how formal the discussion had been. Data that could be elucidated from observations was also captured in this manner. Notes were also taken from a number of the business documents that were in the researchers' possession for limited periods of time and could not be retained. This collection of data, held in notes and notebooks, formed the basis of much of the content of the electronic case study reports. In addition, these case study reports contained information on the history of the organisation and direct input from some of the transient business documents. These reports were created as standard electronic text documents. The data captured during the formal semi-structured interviews was initially captured in hand written notes. These notes were then created as standard electronic text documents and each document was allocated a unique code. All of the hardcopy business documents that had been retained were analysed and coded and each document was also allocated a unique code. As the series of eight case study investigations came to a close the electronic documents that had been produced for each individual case study were imported into the case study database. This was created using the *QSR NUD*IST Vivo* (NVivo) software package. The gathering of the case study research data into the case study database is illustrated in Figure 3.3. Work then commenced on organising and coding the data that was held in the database. This included not only importing the electronic version of documents but also the codes that had been allocated to interview notes and

hardcopy documents. As a result of this it was possible to embed flags into the case study reports to indicate which interview or business document had originated items of coded text. This enabled the case study reports to be used as the starting point for all document searches. This feature of NVivo provided a very powerful facility for searching for the source of all coded text. The coding was undertaken at a detailed level using a coding technique recommended by Miles and Huberman (1994). An example of the coding table can be found in Appendix 3.3. The NVivo software provided powerful facilities for assembling much of the data, grouping and categorising it, and applying the coding.

Figure 3.3 - Capturing the Multiple Sources of Evidence into the Case Study Database



It proved to be an invaluable tool for managing and manipulating the raw data that had been collected. It also provided the facility to order data across cases and provided the basis for cross-case analysis. Using this product to code, organise, group, and analyse the data provided the opportunity to gain a deeper understanding of each individual case, and to identify cross-case patterns and themes.

Case Study Data Analysis

Having established order in the data it was then possible to move on to more specific analysis of the data. Whereas quantitative data analysis has an abundance of clearly defined measures and tests this is not the case for qualitative data analysis. As Morton-Williams (1985) observed, *“the analysis of a large amount of qualitative material is a daunting task, since the data are largely unstructured”*. This data is unstructured because the bulk of it is obtained in the form of written or spoken word. One of the first challenges in analysing qualitative data is to enforce some structure on it to enable analysis to take place. As Miles & Huberman (1994) state *“most analysis is done with words ... the words can be assembled, subclustered, broken into semiotic segments ... they can be organised to permit the researcher to contrast, compare, analyse, and bestow patterns upon them”*. The basic form of analysis that was conducted on the coded data was content analysis and particularly pattern matching. Content analysis is used to refine the raw data that has been gathered and it starts to apply order and structure to this data. Quite a number of definitions have been produced on content analysis over the years. Among those that have most relevance to this research project are, *“content analysis refers to any procedure for assessing the relative extent to which specified references, attitudes, or themes permeate a given message or document”* (Stone, 1964), and *“content analysis is any technique for making inferences by systematically and objectively identifying specified characteristics of messages”* (Holsti, 1968). The key to establishing order and structure is the tabulation of the analysis. As Jankowicz (1991) argues, *“tabulation is the usual way of presenting the information available in content analysed data”*. By tabulating utterances, or repeated text, it is possible to establish patterns, count occurrences, and to group repeating themes into context units. By creating these tables the data is organised into data sources on which further analysis can be undertaken. As each case study document was subjected to content analysis a set of tabulated results was produced. Each individual set of tabulated results had analytical value in its own right but much more powerful deductions were obtained by comparing and matching the results across all the content analysis output. This technique is known as pattern matching. Yin (1994) is quite adamant about the importance of pattern matching, stating, *“for case study analysis, one of the most desirable strategies is to use a pattern-matching logic”*. Miles & Huberman (1994)

also argue strongly in favour of the use of pattern matching across case studies, stating, “*by looking at a range of similar and contrasting cases, we can understand a single-case finding, grounding it by specifying how and where and, if possible, why it carries on as it does*”. Pattern matching across multiple case studies can also provide a higher level of reliability in the results obtained. As Miles & Huberman (1994) state, “*multiple case sampling adds confidence to findings*”, and Herriott & Firestone (1983) were of the opinion that the evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust. By producing findings that are compelling and more robust it is possible to be more confident in linking the findings to the initial propositions. From the data contained in the NVivo database it was possible to develop a series of data matrices based on the work of Miles and Huberman (1994). This provided a set of more focused views of the data that provided the opportunity to analyse the content and to undertake pattern matching. It was from these matrices that new insights into the data were provided and significant conclusions were drawn. The matrices are discussed in more detail in Chapter five. The tables that are presented in the qualitative analysis chapters are based on these data matrices and it is from these data matrices that the major conclusions of the qualitative analysis have been reached.

Chain of Evidence

A key element in establishing the validity and reliability of research, particularly case study research, is the establishment of a chain of evidence (Yin, 1994; Remenyi et al; 1998). This research study has been undertaken on the basis of a series of interlinking activities that has established this chain of evidence. Figure 3.4 illustrates the main components of this chain.

Conceptual Framework – this was the conceptual framework developed as a result of the pre-PhD research and the literature review.

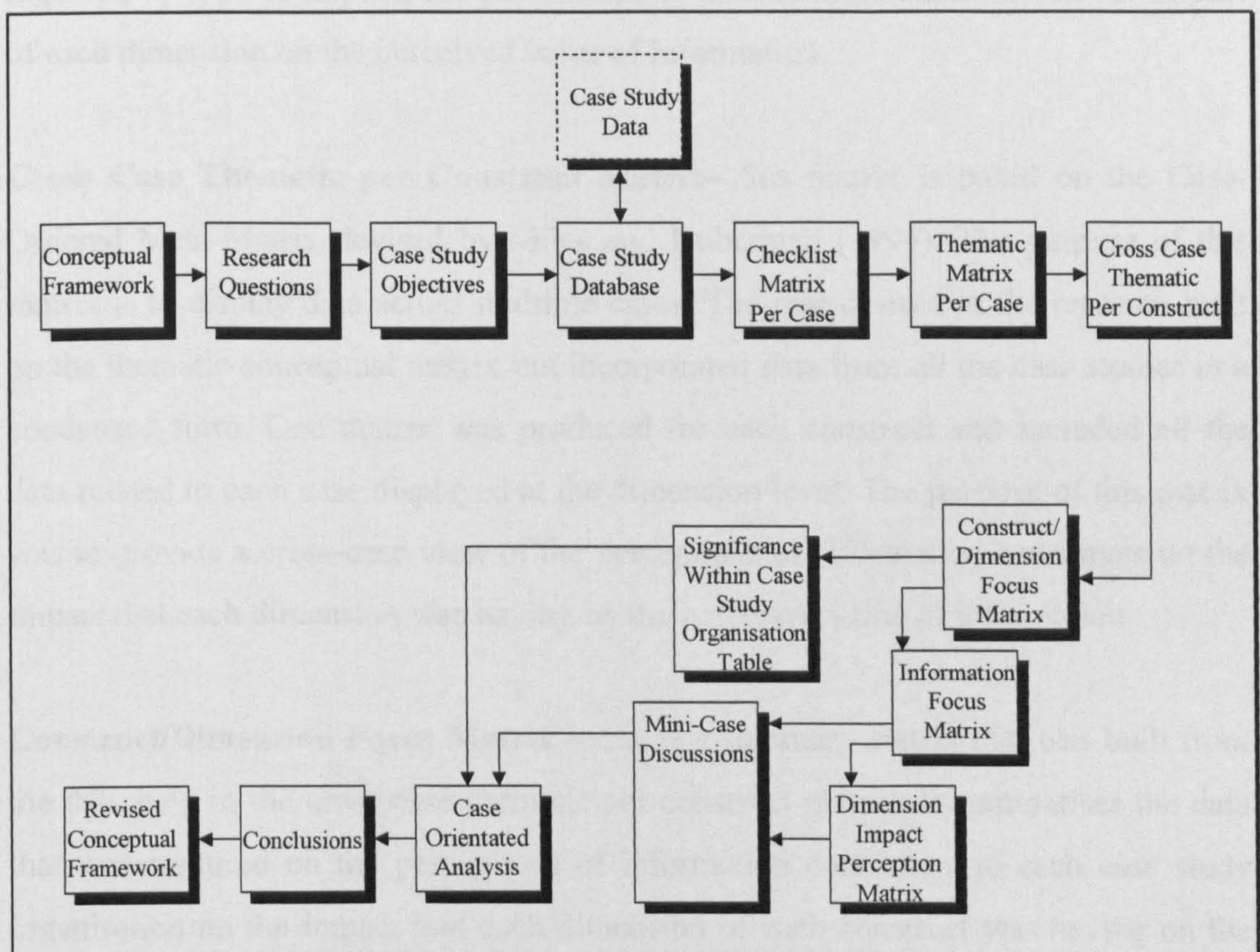
Research Questions – these are the seven main research questions derived from the conceptual framework.

Case Study Objectives – these are the objectives developed for each component of the case study investigation. They were derived from the research questions and were

designed to investigate the impact the constructs and dimensions identified in the conceptual framework were having on the perceived value of information in the case study organisations.

Case Study Database – this is the central repository of all the coded data collected during the case study investigations. This data held the answers to the questions asked by the Case Study Objectives. This data was held in documents such as interview notes and case study reports. Electronic versions of documents were held in the database and electronic codes pointed to hardcopy documents.

Figure 3.4 - Case Study Research - Chain of Evidence



Checklist per Case Matrix– this matrix was based on the Checklist Matrix identified by Miles and Huberman (1994). The purpose of this matrix was to bring some order to the data. Miles and Huberman state that its purpose is to analyse a major construct or general domain of interest but not necessarily to order the components. The checklist matrix that was used in this research grouped a number of dimensions for each construct within each case study organisation being studied. Its purpose was to interpret the perceptions of information consumers, in each organisation, on the

impact that specific examples of each dimension had on the perceived value of information.

Thematic per Case Matrix – this matrix is based on the Thematic Conceptual Matrix devised by Miles and Huberman (1994). They describe it as a matrix that can be used for organising general conceptual themes that are not ordered by persons or roles. They identified that the tactics typically used to create this matrix are clustering, pattern matching, and identifying themes. The thematic conceptual matrix that was used in this research built on the findings in the Checklist Matrix. One matrix was created for each case study organisation. Its purpose was to group together, by type of impact, the perceptions of information consumers on the impact of each dimension on the perceived value of information.

Cross Case Thematic per Construct Matrix– this matrix is based on the Case-Ordered Meta-Matrix devised by Miles and Huberman (1994). The purpose of this matrix is to display data across multiple cases. The matrix used in the research built on the thematic conceptual matrix but incorporated data from all the case studies in a condensed form. One matrix was produced for each construct and included all the data related to each case displayed at the dimension level. The purpose of this matrix was to provide a cross-case view of the perceptions of information consumers on the impact that each dimension was having on the perceived value of information.

Construct/Dimension Focus Matrix – this is a summary matrix that was built from the data held in the cross case thematic per construct matrix. It summarises the data that was captured on the perceptions of information consumers in each case study organisation on the impact that each dimension of each construct was having on the perceived value of information. This impact was measured from highly significant impact to minimal impact. One matrix was created for each construct being studied.

Information Focus Matrix – this is a summary matrix that was built from the findings in the construct/dimension focus matrix. For every dimension that was identified in that matrix as having a highly significant impact, and in some cases a significant impact, an entry was placed in this matrix. This entry identified a specific business activity that the dimension was having an impact on. It also contained a

number comments and observations which relate to the impact of the dimension (extracted from the case study database). The purpose of this matrix is to relate the impact of the constructs and dimensions to specific business activities in each organisation.

Dimension Impact Perception Matrix – this is another summary matrix. Its purpose was to build on the information focus matrix and to identify whether the impact that a dimension was having on a business activity was perceived by information consumers in the case study organisations as being positive or negative. It identified the dimension, the business purpose, and provided an assessment of the current and future information consumer perceptions of the impact of the dimension.

Significance of ‘research construct’ Within Case Study Organisation Table – this is the table in this thesis that represents the data in the construct/dimension focus matrix.

Mini-Case Discussions – these short discussions have been developed from the data contained in the Information Focus Matrix and the Dimension Impact Perception Matrix.

Case Orientated Analysis – this is the analysis contained in this thesis that takes a case orientation rather than a construct orientation. This analysis utilised the information in the Significance of ‘research construct’ Within Case Study Organisation Tables, the Mini-Case Discussions, and their three supporting matrices.

Conclusions – the conclusions to the case study research are based on both the case orientated and construct oriented data that has been utilised throughout the analysis.

Revised Conceptual Framework – the last link in the chain of evidence comes full circle back to the conceptual framework. The conclusions that were reached resulted in a number of revisions and enhancements to the framework.

This chain of evidence provides the linkage through all the steps of the case study research that is essential for establishing its reliability. As Remenyi et al (1998)

observed, *“the principle of maintaining the chain of evidence states that an external observer or reader of the case study should be able to follow the argument and the derivation of evidence from the original research design and questions to the eventual conclusions”*. Examples of all the matrices discussed can be found in Appendix 5.1; how each one was used is discussed in more detail in Chapter five.

3.4.3 Follow-up Research – Internet Focus Groups

The major objective of the second phase of the project was to validate and interpret the findings from the earlier phases and to provide additional insights that would enable a final conceptual framework to be derived. Achieving this by the use of additional case studies clearly did not appear to be appropriate as a series of quite specific questions needed to be asked. A questionnaire could have been used to ask these questions but it was considered that this would be too time consuming, and there would be great difficulty in conducting a meaningful dialogue with respondents. Interview was a more realistic option, however, it was felt that gathering the views and opinions of individuals would also be time consuming and would still create difficulties when trying to gauge a general opinion on the ideas being discussed. Having considered the options that were available the decision was made to utilise focus groups. It is recognised that focus groups are a good means of gathering follow-up data to provide additional clarification to the primary research (Morgan, 1997; Remenyi et al, 1998; Krueger and Casey, 2000). It is also recognised that focus groups can enable the gathering of data in an intense and concentrated manner from people who are similar in the knowledge they possess. This technique can ensure that large amounts of data are gathered in limited periods of time and can result in the speedier generation of ideas and opinions. Focus groups are of particular use when attempting to test ideas and uncover the factors that influence perceptions (Jankowicz, 1991; Morgan, 1997; Remenyi et al, 1998; Krueger and Casey, 2000).

Having decided to utilise focus groups the question of how many groups had to be answered. The literature provides a reasonably consistent view on this. It is generally accepted that one focus group is never enough and that the objective is to conduct focus groups until saturation is reached. This is the point at which no new ideas or opinions are being generated. However, the rule of thumb appears to be that between three and five focus groups is usually adequate to reach this point (Jankowicz, 1991;

Morgan, 1997; Krueger and Casey, 2000). If saturation does not occur it could suggest that the questions are not clear enough or the people participating in the groups are too heterogeneous. The number of people in each group is also important. The general view on this is that each group must consist of at least four people; further, that a group should never exceed twelve people to avoid the group fragmenting (Jankowicz, 1991; Morgan, 1997; Krueger and Casey, 2000). There are a number of other issues that need to be considered when creating the focus groups. Key factors that need to be considered are homogeneity and segmentation. To ensure that there is a free flow of quality discussion and idea generation there needs to be a degree of homogeneity in each group (Morgan, 1997; Krueger and Casey, 2000). This is the reason for selecting people who are similar in the knowledge and experience they bring. Segmenting the participants across the groups is a technique that can be used for achieving homogeneity within each group. If the topic being discussed can be enhanced by segmenting the groups on variables such as sex, race age, or social class this is a valid means of structuring the groups (Morgan, 1997). Conventional wisdom on the structure of focus groups has also suggested that the members of each group should be strangers but more recently this view has been challenged (Jankowicz, 1991; Morgan, 1997; Krueger and Casey, 2000). What is not disputed is that within each group it is advisable to have individuals who are peers and to avoid people in supervisor-subordinate relationships (Jankowicz, 1991).

Taking the views of the literature into account a strategy for conducting the focus groups was created. It was decided that four focus groups should be created with six participants in each group. The participants would be chosen based on the knowledge and experience that they could contribute to the discussion. To ensure that this was achieved it was decided that the participants would either have to be known personally to the researcher, or be recommended by someone who knew them. It was decided that preceding the main focus groups a pilot focus group with four participants would be conducted. The purpose of the pilot was to test the questions and the mechanisms that would be used for conducting the main focus groups. It was decided that to ensure a reasonable level of homogeneity the participants would be drawn from a number of categories that were of relevance to the research topic, and would typically have an opinion on information use and information value. The categories identified were marketing, corporate strategy, senior management,

information exploitation, and academia. By doing this it was hoped that robust discussion would be generated from the potentially conflicting opinions that would be grouped together. From this it was hoped that new ideas and insights might be generated. The final decision that was made regarding the creation of the focus groups was that instead of setting up traditional face-to-face meetings the groups would interact over the Internet.

The use of the Internet for conducting focus groups is a recent phenomenon. However, as Mann and Stewart (2000) identified, "*the Internet constitutes an important new domain in which the focus group method may be adapted and even transformed*". By choosing this method for staging the focus groups a number of additional factors had to be considered. One of the first factors was whether the focus groups would be conducted in real-time (synchronously) or non-real time (asynchronously). The real time focus group would provide an environment that was very similar to the traditional focus group in that a dynamic discussion would take place in the space of minutes or hours. Attempting to run a focus group in this manner could present a number of significant challenges. As Mann and Stewart (2000) identified, "*real-time focus groups can be fast, furious, and highly interactive*". They also identified that the participant who is most proficient at typing is the one with the power. An alternative approach is the non-real time focus group. With this method the group works at a much more leisurely pace with participants contributing when it is most convenient (Gaiser, 1997). This method also overcomes the difficulties that can arise for participants with low typing skills and it can also provide more detailed and reflective input (Mann and Stewart, 2000). Having considered the pros and cons of both approaches it was decided that the non-real time method would be more appropriate. This immediately overcame the typing deficiencies of the moderator, that being the researcher. It also provided the opportunity for much richer data to be obtained, as the participants would be able to provide responses that had been given much more consideration (Gaiser, 1997). A final benefit was the fact that by adopting this approach it would be possible to select the participants on a global basis, this opened up the possibility of significantly enhancing the quality of the participants.

Another important factor that had to be considered was the environment to be used for hosting the focus group. The solution to this was the use of a number of MSN

(Microsoft Network) communities that were created for the purpose of managing and conducting the focus groups. MSN was selected because the creation of communities within this Internet portal is very simple, there were no costs involved, and access to MSN communities is very straightforward. All the participants were experienced computer and Internet users but clear instructions on how to access and use the relevant focus group community were provided. These instructions can be found in Appendix 3.4.

The factors that need to be considered for a traditional focus group that were discussed earlier remain the same; however, the Internet requires a few additions. Participants need to be computer and Internet literate, they also need to have easy access to a computer with Internet access. Mann and Stewart (2000) also identified that unless the researcher meets each participant in person it is not possible to be completely sure that each participant is who they claim to be. For this research project all the participants were known personally by the researcher, or by someone known to the researcher who had recommended the participant. The factors relating to homogeneity and participant numbers are basically the same as for a traditional focus group although Mann and Stewart (2000) are of the opinion that for a non-real time focus group the number of participants is almost limitless. This view appears to disregard the task of managing the volume of data that could be captured from an excessively large group.

The use of the Internet has a number of benefits over traditional methods. Obvious benefits are the removal of the administrative overhead of arranging locations for the focus group and the need for participants to travel there. The use of a non-real time focus group enables participants to contribute when it is most convenient for them and it allows the participants to give much more thought to the answers they are providing. A critical benefit is that it is much less likely that any individual will be able to dominate the proceedings; everyone can make sure that their opinion is heard. However, there are also potential weaknesses to this form of focus group. A major weakness is uneven participation. In a traditional focus group all the participants have made the effort to attend and can be encouraged to participate. For an Internet focus group all the encouragement from the moderator may still fail to get a reluctant participant to contribute. Another potential weakness is the lack of dynamism in the

discussion. Traditional focus groups develop the discussion and ideas by building on the discussion taking place. There is a risk with non-real time focus groups that this dynamism will be lacking in the resulting discussion and idea generation will be inferior. A final potential weakness is related to the validity of the focus group data. With a traditional focus group the background of each participant is usually known to the researcher and from this the validity of the views being expressed. While this may not be the case for an Internet focus group, for this research project all the participants were known directly or via a reliable source, and the validity of the data obtained from the participants is believed to be high.

3.5 Summary

This chapter discussed the three main phases of the research project and the methods that were employed within each. It considered the philosophical arguments related to research and the impact that the different approaches have had on this project. The research strategy and the methods and techniques to be utilised during the research were considered in detail. The rationale behind the choice of methods was also discussed. In particular the use of both quantitative and qualitative techniques for research was discussed and the rationale behind the use of both was explored.

The next chapter utilises the research strategy. In particular it will use the quantitative methods discussed to explore the relationships between the constructs that are believed to impact the perceived value of information.

Chapter 4

Exploratory Research – Questionnaire Data Analysis

4.1 Introduction

The review of the literature in chapter two resulted in the production of a preliminary conceptual framework. The aim of this stage of the research is to explore the validity of that conceptual framework before exploring it in detail by undertaking an extensive research exercise.

This chapter describes the exploratory research that was undertaken to prove the conceptual framework. It provides a brief background to the research before identifying the research objectives that shaped this exploratory research. A discussion on the design of the research and the analysis methods is provided, supported by theory and practice from the literature. The results of the analysis are presented, and a number of conclusions drawn, based on the result of the hypothesis testing. The chapter closes by reviewing the preliminary conceptual framework in the light of the findings of this exploratory research.

4.2 Research Background

One of the main catalysts for this research project is a previous short research project undertaken during 1995 as part of an MBA programme. That initial project had the aim of “*identifying the processes that exist within organisations for the management of information, the methods adopted for presenting this information to management, and whether any of these methods could be considered as being best practice*” (Doig, 1995). Among the topics investigated were, opinions organisations had on information being considered as an asset, the benefits that could be obtained from the use of information, opinions on information value, and the exploitation of information within organisations. The results from that research were subjected to some simple descriptive analysis and a set of conclusions was produced. The conclusions from that study helped to generate a number of the questions that have been investigated in this current research project. The original research also produced a valuable store of primary data. This datastore was created from data gathered from a wide range of organisations in many different industries by the use of a questionnaire. The questionnaire was issued to 326 recipients from which 58 usable responses were received; a response rate of almost 18%; these responses formed the basis of the original data analysis. The questionnaire can be found in Appendix 4.1. As the original research had only conducted simple descriptive analysis there was an opportunity to revisit the primary data and to undertake much more detailed and rigorous statistical analysis. It was envisaged that by undertaking this additional analysis it would be possible to establish whether relationships existed between a number of the key constructs and to establish a solid foundation for this new research being conducted.

4.3 Research Design

The research design objective was to provide a series of tests that would explore the findings and relationships that the original research had indicated. This investigation had to be done in a more rigorous fashion using standard statistical analysis techniques. Whereas the original research results had indicated the potential for relationships this new analysis had to provide the statistical confirmation that the relationships do or do not exist.

4.3.1 Research Objectives

The original research had identified the possibility that relationships existed between some of the variables investigated. A number of these variables were of importance to this new research and establishing whether relationships existed between these variables could establish a good foundation for the bulk of the research that was to follow. These variables were incorporated into the constructs of the preliminary conceptual framework discussed in Chapter two. From this preliminary conceptual framework eight research objectives were developed for analysing the questionnaire data using quantitative techniques.

Survey Objective A – Identify whether a significant relationship exists between information used for corporate performance measurement being regarded as **good quality**, and information being regarded as a **valuable asset**.

Survey Objective B – Identify whether a significant relationship exists between the use of **critical success factors** for the measurement of corporate performance, and information being regarded as a **valuable asset**.

Survey Objective C – Identify whether a significant relationship exists between information being regarded as a **valuable asset**, and corporate strategy including an **information management** strategy.

Survey Objective D – Identify whether a significant relationship exists between the measurement of **corporate performance** being regarded as a critical activity in an organisation, and information being regarded as a **valuable asset**.

Survey Objective E – Identify whether a significant relationship exists between **clear ownership** being established within an organisation for corporate performance measurement information, and information being regarded as a **valuable asset**.

Survey Objective F – Identify whether a significant relationship exists between information being **freely available** to managers when they require it, and information being regarded as a **valuable asset**.

Survey Objective G – Identify whether a significant relationship exists between managers within an organisation **being aware** of the information that is available to them, and information being regarded as a **valuable asset**.

Survey Objective H – Identify whether a significant relationship exists between information management providing the organisation with clear and **tangible benefits**, and information being regarded as a **valuable asset**.

4.3.2 Research Instrument Design and Validation

The questionnaire that was used to gather the original primary data consisted of 47 questions. There were a number of question types used in the questionnaire but the majority of them were statements that required a response on a five point Likert scale. Some required a ranking to be provided; others required a selection of one or many from a given list, and a few questions allowed free format text to be entered. The questionnaire can be found in Appendix 4.1. As a result of that range of question types, the data gathered by the questionnaire can be measured on the nominal, ordinal and interval scales. Each one of these scales requires a different kind of statistical analysis, and as Sekaran (1992) argues *“the degree of sophistication to which the scales are fine-tuned increases as we move from the nominal to the ratio scale”*.

Once all the questions were developed and the creation of the first draft of the questionnaire had been completed it was necessary to test its effectiveness. It was recognised that this would be an iterative process consisting of pre-tests and piloting. This was achieved by having the questionnaire tested by experienced researchers in the Pearl Assurance marketing department and at Loughborough University. It was also issued on a pilot basis to a small number of recipients to further verify its effectiveness. As a result of this testing a revised questionnaire was developed before being released generally. The original analysis of the data collected by the questionnaire was very basic and consisted only of descriptive statistics. In its simplest form statistics can be used to describe the data that has been gathered. As stated by Diamantopoulos and Schlegelmilch (1997) *“the aim is to paint a summary picture of the sample (or population) in terms of the variable(s) of interest”*. These

types of statistics are known as descriptive statistics. The original analysis of the research questionnaire data only produced frequencies, proportions, and percentages.

The purpose of the analysis that has been conducted for the new research project is to establish whether relationships exist between the constructs identified in the preliminary conceptual framework. This is usually achieved by using measurements of association that test whether two variables are related, and if so the nature and strength of the relationship (Weisberg and Bowen, 1977; Sekaran, 1992; Diamantopoulos and Schlegelmilch, 1997). A set of statistical tests was identified that would provide this information, taking into account the type of primary data that was available, and the tests that can be performed on this data.

The first set of tests selected had the objective of producing descriptive statistics for each of the variables. These descriptive statistics provided more detail than those that had been produced during the original analysis. There were a number of measurements of association that could have been used for analysing the questionnaire data. However, all the variables that were being tested had been captured by the use of a five point Likert scale placing the data in an interval scale. This suggested that the most suitable test to use was Pearson's Product Moment Correlation, or 'Pearson's r ', which is the most widely used test for examining relationships between interval variables. It was recognised that some care had to be exercised when using this test. As Diamantopoulos and Schlegelmilch (1997) explained, "*if two variables are linked together by a non-linear relationship the Pearson correlation coefficient cannot detect it*". They recommend that to avoid such pitfalls, it is always a good idea to plot the relationship between the variables in a scattergram before applying Pearson's r . By undertaking these two tests, confident conclusions were reached on the existence of relationships between the variables. Although conclusions were reached on the existence of relationships, it is important to note that no conclusions were reached on the cause of the relationship. As Diamantopoulos and Schlegelmilch (1997) strongly argue "*whenever you are examining a relationship between two variables, there is always a temptation to draw causal inferences on the basis of correlation results ... this temptation must be firmly resisted*". This opinion was supported just as strenuously by Weisberg and Bowen (1977), and Morris (1993).

4.3.3 Survey Targeting and Execution

The questionnaire was designed primarily to obtain data from a wide range of organisations on the importance of information management within the organisation. The population for that questionnaire was all medium and large commercial organisations in the UK that undertook information management, but the size of that population was unknown. The distribution lists that were obtained from the British Computer Society (BCS) and the Data Warehouse User Group (DWUG) determined the sampling frame and the sample size.

There was no pre-defined definition of the characteristics of who should be in the sample, or of the size of the sample in relation to the population. The sample was selected only on the basis of convenience and ease of management. These characteristics placed the sample directly into the category of non-probability sampling (Jankowicz, 1991; Sekaran 1992; Diamantopoulos and Schlegelmilch, 1997). Jankowicz (1991) defined non-probability sampling as *“identifying and questioning informants because you are interested in their individual positions, roles and background experience”*. A more technical definition of non-probability sampling provided by Diamantopoulos and Schlegelmilch (1997) states, *“the selection of the sampling elements is left to the discretion of the researcher and there is no explicit scientific model which can be used to assess the degree of sampling error”*. Although the sample was chosen on the basis of convenience it was not chosen completely at random. Convenience, or accidental, sampling does, as Jankowicz (1991) states, *“involve the choice of a sample from the population whose views you want to discover, on the basis of convenience only”*. Or as Sekaran (1992) states *“involves collecting information from members of the population who are conveniently available to provide the information”*. However, the sample for that research was chosen with a purpose. That purpose was to identify individuals who were knowledgeable in the topic of information management and who were likely to have an affinity with the research. It was for this reason that distribution lists were obtained from the BCS and the DWUG. These two organisations contained members who were at the forefront of information management. This type of non-probability sample falls into the category of purposive sampling that Jankowicz defines as *“choosing people whose views are relevant to an issue because you make a judgment*

that their views are particularly worth obtaining and typify important varieties of viewpoint". A similar definition of purposive sampling is provided by Sekaran (1992) who describes it as *"obtaining information from specific targets, that is, specific types of people who will be able to provide the desired information, either because they are the only ones who can give the needed information, or because they conform to some criteria set by the researcher"*. Sekaran takes the definition of purposive sampling down to another level of detail by describing Quota and Judgment Sampling. The sample that was used for that research falls into the judgment-sampling category as it clearly meets Sekaran's criteria that it *"involves the choice of subjects who are in the best position to provide the information required"*.

Although the responses could be returned anonymously most respondents identified the organisation they represented, and it was clear from this information that responses were received from a wide range of organisations in industry, commerce and government. It was also evident from this information that responses had been received from many large well-known firms many of which were listed in the FTSE 100. This is illustrated in Table 4.1.

Table 4.1 - Number of Organisations by Industry Sector & Number of Employees

	1 - 99	100 - 499	500 - 999	1000 - 1999	2000+	Total
Manufacturing	1	1	0	0	5	7
Retailing	0	2	0	0	0	2
Services	7	2	3	1	25	38
Government	1	1	2	1	4	9
Other	2	0	0	0	0	2
Total	11	6	5	2	34	58

As Table 4.1 also highlights, because of the random nature of the sample a large number of responses were received from large organisations, those with 2000+ employees, which represented 59% of the responses. There was also a high concentration of responses from service industries and this amounted to 66% of the responses.

From the description provided on the data gathering methods, the type of sample used, the analysis techniques, and the response level to the questionnaire, it is obvious that there were a number of problems and limitations related to the original research. The objective of the questionnaire was to gather information that represented an organisation not an individual. Care was taken to ensure that the responses to the questionnaires were not duplicated across organisations; however, this possibility cannot be ruled out completely. It is also possible that responses to the questionnaire came from individuals who did not hold positions within their organisations that would allow them to have access to the information needed to provide accurate answers. The individuals who responded to the 20 questionnaires sent out members of the DWUG could have had a bias in favour or against some of the issues raised in the questionnaire and these responses may have distorted the results. The sample was produced from distribution lists that were conveniently available. As a result of the lack of information on population size and the method used to select the sample, consideration must be given to the generalisability of the results. As Sekaran (1992) identifies, for results that are produced from judgment sampling “*generalisability is questionable*” but by implication, not impossible. Jankowicz (1991) also recognises the problem of generalisability from non-probability sampling and that for the given sample there is usually “*no particular wish or need to generalise their answers directly to other people*”. For this research project the analysis of the data that was undertaken was for exploratory purposes only and there was no need or desire to generalise the results.

4.4 Research Results

The quantitative analysis tests compare a number of variables against the main variable ‘**valuable asset**’, which represents the opinions expressed on whether information was regarded as being a valuable asset in the organisation. When this question was asked in the original research the response was a resounding ‘yes’. When presented with the statement “*Information is regarded as a valuable asset within your organisation*”, 40% of respondents answered ‘always’, and an additional 41% tended to ‘always’ giving an 81% positive response. All these responses were captured by the use of a 5-point Likert scale with the value of 1 representing a response of Never, a value of 5 representing a response of Always, and a value of 9

representing missing values. No responses indicated that information is ‘never’ regarded as being a valuable asset.

It is important to note that these results were produced from the original dataset that was assembled from 58 usable responses. A number of these responses were from very small organisations such as one-man consultancies. Those responses tended to skew the results towards the views of these small organisations. This was not acceptable for this study, which is focused on organisations of a substantial size. For this reason the responses from these very small organisations, those with 99 employees or less, were removed for the new data analysis. This resulted in 47 responses being available; to this an additional two late responses to the original research were added resulting in a total number of usable responses of 49. The new analysis was conducted on this base of 49 responses. Having established that the vast majority of organisations regarded information as being a **valuable asset** the objective of the remaining tests was to identify any relationships that existed between this variable and the other variables of relevance to this new study.

Survey Objective A – Identify whether a significant relationship exists between information being used for corporate performance measurement being regarded as **good quality**, and information being regarded as a **valuable asset**.

The original research had contained two questions that gathered the data for the two variables being tested. The first question on information being regarded as being a valuable asset has already been discussed. The second question, investigating information quality, contained the statement “*The information used for corporate performance measurement is regarded as being of good quality*”. The response to this statement was generally favourable with a total of 45% positive responses and 7% stating that this was ‘always’ the case. However, 3% believed that this was ‘never’ the case with a further 19% suggesting that the answer tended to ‘never’. 33% of respondents were neutral on the subject.

The new research was interested in identifying whether a relationship exists between these two variables, one representing information being regarded as being a **valuable asset**, the other representing information used for corporate performance being

regarded as being of **good quality**. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H₀ – The quality of information being considered to be good within an organisation has no impact on information being regarded as a valuable asset.

H₁ – Information is regarded as being a valuable asset in organisations where the quality of information is considered to be good.

A scattergram was produced using all the data values available, which suggested that a correlation did exist. To investigate this relationship further and to identify whether the relationship was significant a Pearson's Product Moment Correlation (Pearson Correlation) was produced. The result of the test suggests that a positive correlation exists between the two variables ($r=.321$) and it also suggests that the relationship is significant at the 5 per cent level ($p=.024$). An example of a statistical test and a scattergram can be found in Appendix 4.2.

Survey Objective B – Identify whether a significant relationship exists between the use of **critical success factors** for the measurement of corporate performance, and information being regarded as a **valuable asset**. The original research had contained two questions that gathered the data for the two variables being analysed.

The first question was related to critical success factors being used for corporate performance measurement. The respondents were presented with the statement "*Corporate performance is primarily measured by the use of Critical Success Factors (CSF's)*" that resulted in 9% answering 'always' and another 36% tending to 'always'. This produced a total positive response of 45%. However, 19% of the respondents stated that CSF's were 'never' used in their organisation for corporate performance monitoring. And an additional 14% claimed that they tended to 'never'. This resulted in a negative total of 33%.

The second question was whether information was regarded as being a valuable asset. There was a highly positive response to this question with 40% of respondents

answering ‘always’, and an additional 41% tending to ‘always’ giving an 81% positive response.

The new research was interested in identifying whether a relationship exists between these two variables, one representing information being regarded as a **valuable asset** and the other representing **critical success factors** being used to measure corporate performance. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H₀ – The use of critical success factors for the measurement of corporate performance has no impact on information being regarded as a valuable asset.

H₁ – Information is regarded as being a valuable asset when critical success factors are used for the measurement of corporate performance.

A scattergram was produced using all the data values available, which suggested that a strong correlation did not exist. To investigate this conclusion further a Pearson Correlation was produced. This test agreed that a significant correlation between the two variables did not exist ($r=.138$), it also confirmed that the relationship that did exist is not significant and well above the 5 per cent level ($p=.346$).

Survey Objective C – Identify whether a significant relationship exists between information being regarded as a **valuable asset**, and corporate strategy including an **information management** strategy.

The original research had contained two questions that gathered the data for the two variables being analysed. When the statement “*Your corporate strategy includes an information management strategy*” was presented the majority of respondents believed that this was ‘always’ the case or tended to ‘always’. 21% of respondents believed that their organisations corporate strategy ‘always’ contained an information strategy, and there was an overall positive response of 52% when the organisations that tended to ‘always’ were included. It should be noted, however, that a significant number of responses, 27%, were negative. The second question was whether

information was regarded as being a valuable asset. There was a highly positive response to this question with 40% of respondents answering ‘always’, and an additional 41% tending to ‘always’ giving an 81% positive response.

The new research was interested in identifying whether a relationship exists between these two variables, one representing information being regarded as a **valuable asset**, the other representing corporate strategy incorporating an **information management** strategy. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H₀ – Regarding information as being a valuable asset has no impact on the incorporation of an information strategy into the corporate strategy.

H₁ – Organisations that regard information as being a valuable asset incorporate an information strategy into the corporate strategy.

A scattergram was produced using all the data values available, which suggested that a correlation did exist. To investigate this conclusion further a Pearson Correlation was produced. This also suggested that a significant correlation between the two variables exists ($r=.339$) and it also suggests that the relationship is significant at the 5 per cent level ($p=.017$).

Survey Objective D – Identify whether a significant relationship exists between the measurement of **corporate performance** being regarded as a critical activity in an organisation, and information being regarded as a **valuable asset**.

The original research had contained two questions that gathered the data for the two variables being analysed. The first question was related to the measurement of corporate performance being regarded as being a critical activity for the organisation. When presented with the statement “*The measurement of corporate performance is regarded as being a critical activity in your organisation*”, 28% of the responses were that it ‘always’ was with an additional 46% tending to always. This produced a total positive response of 74%. Not surprisingly none of the respondents believed that their organisation ‘never’ regarded this as being critical and only 7% tended towards

‘never’. The second question was whether information was regarded as being a valuable asset. There was a highly positive response to this question with 40% of respondents answering ‘always’, and an additional 41% tending to ‘always’ giving an 81% positive response.

The new research was interested in identifying whether a relationship exists between these two variables, one representing information being regarded as a **valuable asset**, and the other representing **corporate performance** being regarded as a critical activity. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H₀ – The measurement of corporate performance being regarded as a critical activity in an organisation has no impact on information being regarded as a valuable asset.

H₁ – Information is regarded as a valuable asset in organisations where the measurement of corporate performance is regarded as being a critical activity.

A scattergram was produced using all the data values available, which suggested that a correlation did exist. To investigate this conclusion further a Pearson Correlation was produced. This test also suggested that a significant correlation between the two variables does exist ($r=.384$) and it also suggests that the relationship is significant at both the 5 per cent level and the 1 per cent level ($p=.006$).

Survey Objective E – – Identify whether a significant relationship exists between **clear ownership** being established within an organisation for corporate performance measurement information and information being regarded as a **valuable asset**

The original research had contained two questions that gathered the data for the two variables being analysed. The first question was related to clear ownership being established for corporate performance measurement information. When presented with the statement “*Clear ownership is established within the organisation for corporate performance measurement information*”, 28% of the respondents stated

that clear ownership was ‘never’ established for corporate performance measurement information. A further 26% tended to ‘never’. This resulted in a total negative response of 54%. Only 9% stated that establishing clear ownership of this information ‘always’ occurred and the total positive response was 26% with the addition of those who tended to ‘always’. The second question was whether information was regarded as being a valuable asset. There was a highly positive response to this question with 40% of respondents answering ‘always’, and an additional 41% tending to ‘always’ giving an 81% positive response.

The new research was interested in identifying whether a relationship exists between these two variables, one related to information being regarded as a **valuable asset** and the other related to **clear ownership** being established for corporate performance measurement information. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H₀ – Establishing clear ownership for corporate performance measurement information has no impact on information being regarded as a valuable asset.

H₁ – Information is regarded as being a valuable asset in organisations that establish clear ownership of corporate performance measurement information.

A scattergram was produced using all the data values available, which suggested that a correlation did exist. To investigate this conclusion further a Pearson Correlation was produced. This test also suggested that a significant correlation between the two variables does exist ($r=.350$) and it also suggests that the relationship is significant at the 5 per cent level ($p=.014$).

Survey Objective F – Identify whether a significant relationship exists between information being **freely available** to managers when they require it and information being regarded as a **valuable asset**.

The original research had contained two questions that gathered the data for the two variables being analysed. The first question was related to making information freely available to management when they required it. The statement “*Information is freely available to managers when they require it*” was presented to the respondents. The response was far from conclusive, only 10% of the respondents believed their organisations ‘always’ made information freely available to management when required, and a further 31% tended to ‘always’ producing a total positive response of 41%. Although only one respondent indicated that information was ‘never’ available freely another 22% tended to ‘never’ producing a total negative response of 24%. The second question was whether information was regarded as being a valuable asset. There was a highly positive response to this question with 40% of respondents answering ‘always’, and an additional 41% tending to ‘always’ giving an 81% positive response.

The new research was interested in identifying whether a relationship exists between these two variables, one related to information being regarded as a **valuable asset**, and the other related to information being made **freely available** to management. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H₀ – Making information freely available to management when required has no impact on information being regarded as a valuable asset.

H₁ – Information is regarded as being a valuable asset when it is made freely available to management when required.

A scattergram was produced using all the data values available, which suggested that a correlation did exist. To investigate this conclusion further a Pearson Correlation was produced. This test also suggested that a correlation between the two variables does exist ($r=.348$), it also suggests that the relationship is significant at the 5 per cent level ($p=.014$).

Survey Objective G – Identify whether a significant relationship exists between managers within an organisation **being aware** of the information that is available to them and information being regarded as a **valuable asset**.

The original research had contained two questions that gathered the data for the two variables being analysed. The first question investigated was related to managers being aware of the information that was available to them. The statement “*Senior managers are aware of the information available within your organisation*” was presented to the respondents. Of the responses, 12% stated that senior managers were ‘always’ aware of the information that was available within the organisation, and a further 31% tended towards ‘always’ resulting in a total positive response of 43%. This was countered by a total negative response of 33% made up of 9% who stated that senior managers were ‘never’ aware of the information that was available and an additional 24% who tended to ‘never’. The second question was whether information was regarded as being a valuable asset. There was a highly positive response to this question with 40% of respondents answering ‘always’, and an additional 41% tending to ‘always’ giving an 81% positive response.

The new research was interested in identifying whether a relationship exists between these two variables, one related to information being regarded as a **valuable asset**, and the other related to senior management **being aware** of the information that was available. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H₀ – Senior managers being aware of the information that is available within an organisation has no impact on information being regarded as being a valuable asset.

H₁ – Information is regarded as being a valuable asset in organisations where senior managers are aware of the information that is available.

A scattergram was produced using all the data values available, which suggested that a correlation did exist. To investigate this conclusion further a Pearson Correlation was produced. This also suggested that a correlation between the two variables does

exist. ($r=.525$) and it also suggests that the relationship is significant at both the 5 per cent level and the 1 per cent levels ($p=.000$).

Survey Objective H – Identify whether a significant relationship exists between information management providing the organisation with clear and **tangible benefits** and information being regarded as a **valuable asset**

The original research had contained two questions that gathered the data for the two variables being analysed. The first question was based on the premise that by managing information effectively organisations would be able to identify clear tangible benefits from its use. However, there was no overwhelming agreement with this from the respondents. When presented with the statement “*Information management provides your organisation with clear and tangible benefits*”, 39% of respondents agreed or tended to agree. However, 29% disagreed or tended to disagree, and the remaining 32% were undecided. The second question was whether information was regarded as being a valuable asset. There was a highly positive response to this question with 40% of respondents answering ‘always’, and an additional 41% tending to ‘always’ giving an 81% positive response.

The new research was interested in identifying whether a relationship exists between these two variables, one related to information being regarded as a **valuable asset** and the other related to information providing the organisation with **tangible benefits**. To investigate this further a hypothesis was developed to enable more detailed statistical analysis to be conducted.

H_0 – Information management providing the organisation with tangible benefits has no impact on information being regarded as being a valuable asset.

H_1 – Information is regarded as being a valuable asset when information management provides an organisation with tangible benefits.

A scattergram was produced using all the data values available that suggested that a correlation did exist. To investigate this conclusion further a Pearson Correlation was

produced. This test also suggested that a correlation between the two variables does exist ($r=.513$). It also suggests that the relationship is highly significant at both the 5 per cent level and the 1 per cent level ($p=.000$).

4.5 Research Conclusions

This quantitative research provides an indication of the relationships that may exist between some of the constructs related to the perceived value of information. For seven of the relationships tested there appears to be a correlation, and in two instances this correlation appears to be strong. In only one test was the correlation found to be insignificant. Although these results suggest that some strong relationships do exist they must be considered with care. As previously discussed, the methods used for gathering the research data, the quality of the sample, and the appropriateness of the questionnaire questions, all affect the validity of the results. The tests that were conducted were also undertaken within the bounds of the limited data that was available. What these results suggest is that relationships do exist between some of the constructs. They also suggest that there are a number of constructs that can have an impact on the perceived value of information. This indicates that further in-depth investigation should be conducted to gain a better understanding of these constructs, and their associated dimensions, and to better understand the impact they can have on the perceived value of information.

The results from this exploratory research are summarised in Table 4.2. This table also identifies the construct in the conceptual framework that each test was associated with. This is discussed in more detail in the following section.

Table 4.2 - Summary of Quantitative Analysis Results

Objective	Conceptual Framework Construct	Significant	Further Research
A	Quality	Yes	Yes
B	Strategic Planning	No	Yes
C	Strategic Planning	Yes	Yes
D	Organisational Change	Yes	Yes
E	Accessibility	Yes	Yes
F	Accessibility	Yes	Yes
G	Accessibility	Yes	Yes
H	Benefits from Use	Yes	Yes

4.6 Review of the Preliminary Conceptual Framework

The results from the exploratory research confirm that there are a number of constructs that can impact the perceived value of information. They also confirm that these relationships are worthy of further investigation. The exploratory research also provides a number of new insights into the relationships between the constructs. In particular the exploratory research confirms the possible existence of a number of the relationships identified in the preliminary conceptual framework illustrated in Figure 4.1.

Figure 4.1 - The Preliminary Conceptual Framework for the Perceived Value of Information

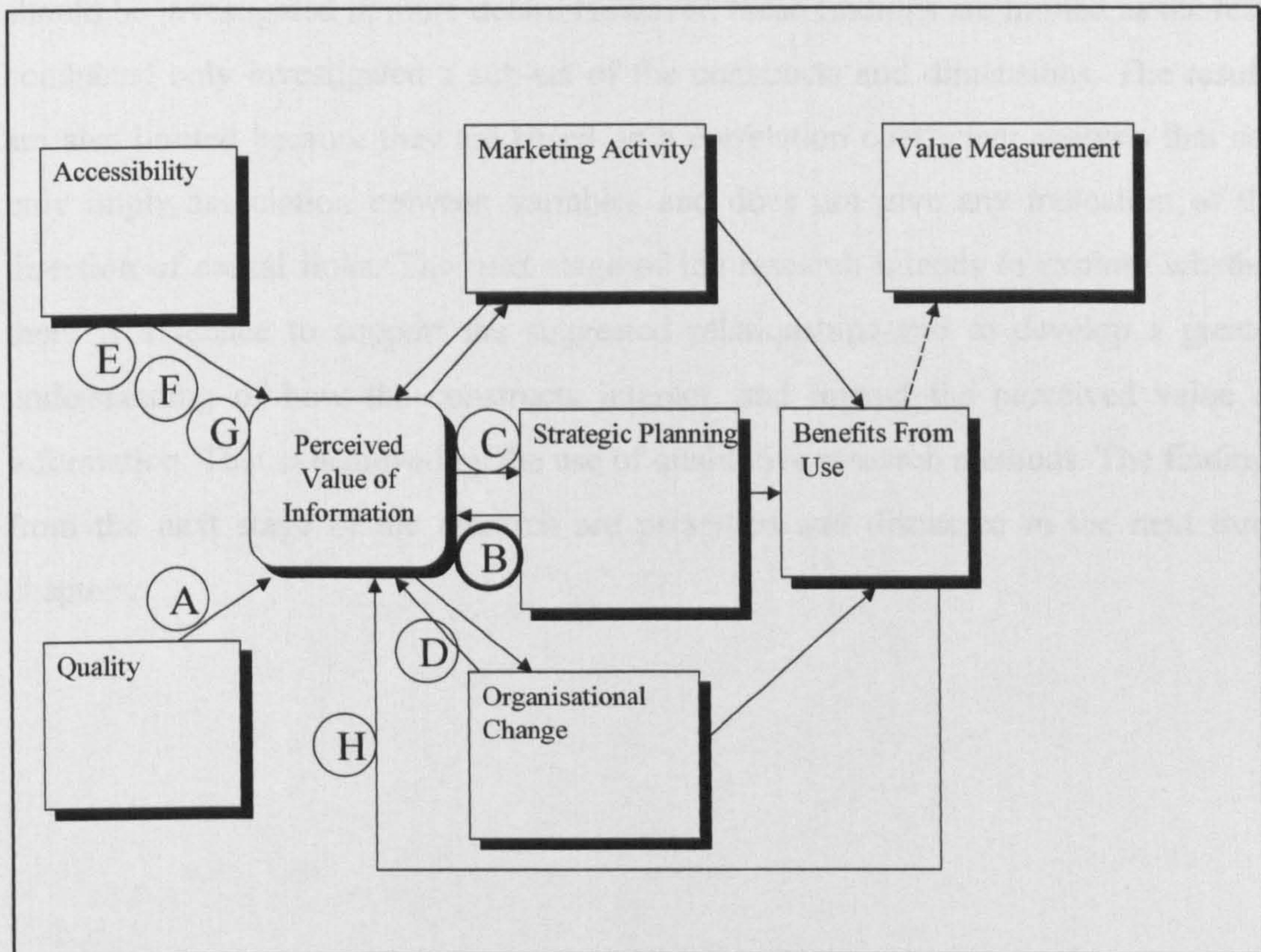


Figure 4.1 illustrates that most of the relationships in the conceptual framework were tested by the exploratory research. Almost all the tests suggested that the relationships in the conceptual framework do exist. One of the exceptions to this was the relationship between the use of critical success factors for corporate performance measurement and the perceived value of information, where a strong correlation could not be found. The linkage between marketing activities and the perceived value of information was also unproven as no tests were conducted to examine this relationship. Overall the results from these tests suggest that the conceptual

framework is basically sound and can be used as the foundation for more in-depth research. On this basis it was decided that no alterations needed to be made to the conceptual framework before moving into the second analysis stage of research.

4.7 Summary

The exploratory analysis of the questionnaire data provided evidence to suggest that relationships do exist between information accessibility, information quality, strategic planning activities, organisational change activities, the benefits from information use, and the perceived value of information. It also suggested that these relationships should be investigated in more detail. However, these findings are limited as the tests conducted only investigated a sub-set of the constructs and dimensions. The results are also limited because they are based on a correlation coefficient analysis that can only imply association between variables and does not give any indication of the direction of causal links. The next stage of the research intends to explore whether there is evidence to support the suggested relationships and to develop a greater understanding of how the constructs interact, and impact the perceived value of information. That is achieved by the use of qualitative research methods. The findings from the next stage of the research are presented and discussed in the next three chapters.

Chapter 5

Information Provision and the Perceived Value of Information

5.1 Introduction

The previous chapter reported how several key constructs appeared to have an impact on the perceived value of information. In particular the exploratory research identified that information accessibility and information quality both appeared to have this ability. Consequently, this chapter presents the results of the initial steps of the second analysis stage of the research that investigates these two constructs in more detail.

This chapter begins by outlining the main objectives of the research undertaken. It revisits the literature that has been produced on the two constructs being investigated paying particular attention to the dimensions associated with each. It develops a working definition for each of these constructs, and it explores, describes, and analyses a number of the dimensions. Each dimension identified is discussed giving consideration to the literature that is related to it. The significance of each construct within the case study organisations is discussed and the impact each dimension has on the perceived value of information in each organisation is analysed. The findings are

also analysed from a case orientated perspective. This chapter also discusses a number of the lessons learnt within and across the case study organisations.

5.2 Summary of Objectives

Before discussing the more specific research objectives that were set for this stage of the research, it is useful to remind ourselves of the overall research objectives pertinent to this stage of the research:

1. To explore the relationship between **information accessibility**, and perceptions of **information value**;
2. To explore the relationship between **information quality**, and perceptions of **information value**.

As was indicated in the introduction to this chapter, the aim of this stage of the research is to investigate the significance of each construct within the case study organisations, and to identify and understand the impact the associated dimensions had on the perceived value of information in each organisation. To achieve this the following objectives were developed to focus the research:

1. To investigate whether the perceived **value of information** is influenced by its **ease of accessibility** to all those who require it within the organisation;
2. To investigate whether the perceived **value of information** is influenced by the **quality of information** provided to those who use it within an organisation.

It was envisaged that through the exploration of these issues it would be possible to develop an understanding of the constructs and dimensions that impact perceptions of information value in the case study organisations.

5.3 Information Provision and the Perceived Value of Information

When considering the constructs that can impact the perceived value of information it was recognised that a number of them were primarily related to the provision of information. As a result information provision was identified as being another important construct that needed to be considered by the study. To provide clarity to the research the following working definition has been derived for information provision:

Information Provision: To provide information in the appropriate form, so that it can be used effectively.

The two constructs that are encapsulated by information provision, and being investigated by this research, are information accessibility and information quality.

5.4 Information Accessibility

For information to be recognised as a valuable asset that makes a significant contribution to the success of an organisation it is important that managers are able to access the information they require. The literature has provided many examples of organisations and managers being frustrated by their inability to gain access to the information they require (Crockett, 1992; Cravens, 1998). In his investigation into the use of information Klobas (1995) identified the importance of information quality and information accessibility. He was unable to provide a definition for information accessibility but stated, “*commonly, participants have been left to interpret accessibility according to their own definition*”. He identified a number of dimensions of information accessibility that included ease of use, physical access, and intellectual access. Wang and Strong (1996) included accessibility as a dimension of data quality. In their description of accessibility they stated “*the system must present data in such a way that they are interpretable, easy to understand, and represented concisely and consistently*”. Alter (1999) believed that information accessibility was “*how easy it is to obtain and manipulate the information, regardless of how good it is*”. He identified two dimensions of information accessibility, availability and admissibility. Based upon the review of the literature and the findings of the research, the following working definition for information accessibility has been derived:

Information Accessibility – All required elements of information exist within the organisation and can be readily retrieved by information consumers.

Information accessibility was discussed in the review of the literature in Chapter two. From the review of the literature, and from their significance during the case studies, four dimensions of information accessibility were selected for investigation by this research. These dimensions are existence, awareness, sharing, and delivery.

Existence – for information to be accessible it must first of all exist, and exist in a form that is usable by the consumer. The existence of information is a major dimension that affects the use and perceived value of information. Components such as availability, rarity, and identifiability are interlinked with information existence (Palmer and Varnet, 1990; Davenport et al, 1992; Clifton, 1986; Klobas, 1995; Alter, 1999). Alter (1999) identified the link between information availability and information accessibility. If the right information is not available when required, managers tend to use what is available, which can result in poor decision-making and inferior strategies. It was identified that much of the information provided is that which exists and is easily available rather than what is required (Cole, 1985). Based upon the review of the literature and the findings of the research, the following working definition for information existence has been derived:

Existence – All elements of the information that are required by the consumer are available within the organisation.

Awareness - if the information exists then it is potentially available to the consumer but the consumer must be aware of its existence. If the consumer has no awareness of the information then it is unlikely to be accessed. A critical component of awareness is being able to understand what the information represents and how it can be used (Ackoff, 1967; Crockett, 1992; Davenport et al, 1992; Goodman, 1993; Orna, 1993; Davenport, 1994; Klobas, 1995). Other components include clarity (Bocij et al, 1999; O'Brien, 2001), and comprehension, (Maltz, 2000). There is a general opinion that providing clear terminology is an important step towards understanding and awareness (Lucey, 1992). Without a clear awareness of the information that is

available the usability and perceived value of information is undermined. Based upon the review of the literature and the findings of the research, the following working definition for information understanding has been derived:

Awareness – *All the required elements of the available information are known to, and well understood, by the consumer.*

Sharing - If the information exists and the consumer is aware of it there is a much greater likelihood that it will be accessible. However, it is possible that there may still be difficulties that make the information difficult to access. One reason can be internal power and politics and the attitudes in an organisation towards sharing information (Bariff and Galbraith, 1978; Trauth 1989; Davenport et al, 1992; Horton, 1993; Davenport, 1994; Lingle and Schiemann, 1994; Rayport and Sviokla, 1995). If the culture of the organisation is to retain information for the maintenance of power and position then information is unlikely to be shared, and unlikely to be accessible to many people who require it (Bariff and Galbraith, 1978; Cole, 1985; Wormell, 1989; Davenport et al, 1992; Goodman, 1993; Horton, 1993; Davenport, 1994; Lingle and Schiemann, 1994). The literature has identified a number of components that can be associated with information sharing. These components include ease of access (Klobas, 1995; Wang and Strong, 1996), secrecy, (Wang and Strong, 1996), and integration (Rayport and Sviokla, 1995; Orna ,1999). One of the major benefits that can be attained by sharing information and allowing it to flow through the organisation is the ability to integrate and improve business processes (Rayport and Sviokla, 1995; Cravens, 1998; Orna, 1999). This is using information “*as the glue that holds the organisation together*” (Warburton, 1992). Based upon the review of the literature and the findings of the research, the following working definition for information sharing has been derived:

Sharing – *Information 'owners' are prepared to eliminate all barriers and restrictions, so that all the elements of the information are freely available to all consumers who require it.*

Delivery - An information consumer may be aware of the existence of information that is required, and this information may be freely available. However, if there are problems related to the delivery of this information the information consumer may still find that the information is inaccessible. This can result in serious business problems arising (Cole, 1985; Truath, 1989; Wormell, 1989; Broadbent, 1991; Eccles, 1991; Crocket, 1992; Goodman, 1993; Horton, 1993; Willard, 1993; Davenport, 1994; Rostick, 1994). The literature has identified a number of components that can be associated with information delivery. These components include ease of retrieval (Wang and Strong, 1996), transportability (Wang and Strong, 1996), interface, (Klobas, 1995), and presentation (Alter, 1999; Bocij et al, 1999; O'Brien, 2001). The delivery of information can be disrupted in a number of ways such as technology problems related to the capture or extraction of the information, multiple sources of the same information, and connections to the stores of information being unavailable. A number of these problems were discussed by Strong et al (1997). For an organisation to make effective use of its information assets and generate the full value from this information, delivery problems must be overcome. Based upon this review of the literature and the findings of the research, the following working definition for information delivery has been derived:

Delivery – *An appropriate technological infrastructure has been created, so that all the elements of the information are readily available to all consumers who require it.*

The literature review in Chapter two identified that information accessibility was a construct that can have a significant impact on the perceived value of information. It also identified that much of the literature was of a theoretical nature and there were few examples of empirical research being undertaken to support the theory. Having revisited the literature produced after 1995 a number of noticeable additions have been identified. They are listed in Table 5.1.

Table 5.1 - Information Accessibility Literature – Post '95

Contributor	Summary	Type	Method	Limitations
Wang & Strong (1996)	Data quality research that provides substantial framework of data quality dimensions. Recognises accessibility and availability as important factors.	E	S	Excellent framework of data quality dimensions. No discussion on data/information value
Strong et al (1997)	Study into data quality issues in 3 US organisations. Uses the framework of data quality dimensions produced by Wang and Strong. Accessibility is major category.	E	I	Good empirical use of DQ dimensions framework but no reference to data/information value
Alter (1999)	A short and clear discussion on information accessibility and availability	T		
Bocij et al (1999)	A brief discussion on information quality. Identifies that presentation of information is an important dimension.	T		
Orna 1999	A general discussion on the information policies that organisations should consider implementing. Discusses a wide range of issues related to information value. This includes using information to assist with the integration of business processes.	T		

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

Very solid empirical contributions have been made by both Wang and Strong (1996), and Strong et al (1997); however, both of these studies consider information accessibility to be a dimension of information quality. This research does not agree with this conclusion; this research takes the view that information accessibility is a construct in its own right. Apart from these two contributions there still appears to be a noticeable lack of empirical research. The conclusions reached in Chapter two regarding the need for further empirical research still appears to hold true.

Overall information accessibility is an important construct in the use of information and in the shaping of perceptions of information value. The four dimensions selected: existence, awareness, sharing, and delivery are the dimensions of information accessibility that are considered by this research. These have been selected primarily because that have received attention in the literature, or they emerged as being significant during the development of the case studies, or both. Although these four dimensions have been given attention in the literature no literature was found that provided a comprehensive foundation for considering information accessibility. Information accessibility has been discussed by a number of observers but unlike

some other constructs, such as information quality, a solid academic framework for the discussion of information accessibility does not appear to exist. Therefore, the framework of dimensions of information accessibility that this research has developed is considered to be a valuable addition to the literature. The four dimensions that have been selected, illustrated in Table 5.2, have been used throughout the project as the common basis for establishing the nature of factors impacting access to information.

Table 5.2 - Dimensions of Information Accessibility

Dimension	Supportive Literature
Existence	Davenport et al (1992) Goodman (1993) Alter (1999)
Awareness	Eccles (1991) Davenport et al (1992)
Sharing	Ackoff (1967) Bariff and Galbraith (1978) Cole (1985) Davenport et al (1992) Menon and Varadarajan (1992) Rayport and Sviokla (1995)
Delivery	Eccles (1991) Goodman (1993) Bocij et al (1999)

This research study set out to identify whether the consumers of information in the organisations investigated had difficulty gaining access to the information they required, and whether this was having an impact on perceptions of information value. For each case study organisation it was possible to use the collected evidence, with respect to each of the four selected dimensions, to evaluate the extent of the impact these dimensions were having on the perceived value of information. The overall impact was measured on a four-point scale: highly significant, significant, moderate and minimal. It is important to stress that the analysis undertaken was focused solely on dimensions that were impacted by the accessibility, or lack of accessibility, of information. The results of this analytical exercise have been summarised in Table 5.3.

Table 5.3 is an example of a Construct/Dimension Matrix as identified in the discussion on the chain of evidence in Chapter three. As that discussion identified, this matrix was produced as the result of a number of analysis steps. Once all the data

related to information accessibility had been collected it was coded using the techniques recommended by Miles and Huberman (1994). An example of the coding table can be found in Appendix 3.3. From the coded data the first matrix that was produced was the Checklist per Case Matrix that was based on the Miles and Huberman (1994) Checklist Matrix. The information accessibility Checklist per Case Matrix for insurance company 'B' can be found in Appendix 5.1. This matrix gathered together the data from all the sources that were coded as being related to information accessibility. From this a second set of matrices was developed based on the Thematic Conceptual Matrix recommended by Miles and Huberman (1994). These Thematic per Case Matrices pulled together all the data gathered for one particular theme, in this case information accessibility. The information accessibility matrix produced for insurance company 'B' can also be found in Appendix 5.1. Whereas the Checklist per Case Matrix had simply identified if the data represented a positive, negative, or neutral impact, the Thematic per Case Matrix grouped the data in columns representing positive, negative, and neutral impact. This provided a consolidated view of the data related to information accessibility, and it provided an initial indication of the overall perceptions of information consumers within a case study organisation on the impact the individual dimensions were having on information value. Having produced a consolidated set of data for each dimension for each case study organisation the next step was to produce a cross case view of the data. This was achieved by producing a Cross Case Thematic per Construct Matrix. The matrix produced for information accessibility can be found in Appendix 5.1. This matrix brought together all the data related to information accessibility for all the case study organisations. By doing this, a consolidated view was obtained of all the data related to each dimension of information accessibility together with an indication of whether each data item represented a positive, negative, or neutral impact. This matrix became one of the key sources of data for the analysis that took place as it provided a consolidated view of all the data that was required to investigate each dimension. It was from the data contained in this matrix that the Construct/Dimension Focus matrix was produced. This matrix can be found in Appendix 5.1. It represents a summarised view of the data contained in the Cross Case Thematic per Construct matrix. For the information consumers within each case study organisation it provides an overall rating on the perceived impact each dimension of information accessibility had on the value of information. Four possible ratings were identified, highly

significant, significant, moderate, and minimal. This matrix is reproduced as Table 5.3, The Significance of Information Accessibility within Case Study Organisations. A similar set of matrices has been produced for all the other constructs and dimensions of information value that were investigated during the study.

In addition to this analysis, specific business activities, and the problems related to each one, were identified for a number of the information accessibility dimensions. The impact of each dimension was considered from both a current/historical perspective and a future perspective. This analysis provided an indication of the impact that information accessibility dimensions had on specific business activities and particularly the impact they had on perceptions of information value. The results of this analysis can be found in the Mini-Cases embedded in the Information Accessibility - Dimension Analysis section of this chapter.

A summary matrix was developed from the data held in the Construct/Dimension Focus matrix. This was the Information Focus Matrix, an example of which can be found in Appendix 5.1. An entry was created in this matrix for every dimension and case study organisation where the dimension was expected to have a highly significant, and in some cases significant, impact. Each entry in the matrix identified the specific business activity that was impacted by the dimension. Additional analysis was provided in the form of the Dimension Impact Perception matrix, an example of which can be found in Appendix 5.1. This contains a summary of the data contained in the Information Focus Matrix. This matrix represents the final step in the analysis of the data that was gathered during the case studies.

The results from the analysis highlighted the fact that all the case study organisations expected information accessibility dimensions to have some impact on business activities. Of these dimensions, information existence was one that was expected to have a widespread and significant impact. In particular, there were a significant number of occurrences of the problem of information existing within the organisation, but being difficult or impossible to access. As analysis at the car manufacturer identified “*most of the information existed within the firm, it was contained in a wide range of sources many of which were difficult to access*” [c7pildel]. This mirrored

the conclusion reached at the clearing bank that “*the business lacks good quality information; the raw data exists, but it is not readily available*” [c1feastu].

Table 5.3 - The Significance of Information Accessibility within Case Study Organisations

Case	Existence	Awareness	Sharing	Delivery	Overall Impact
Clearing Bank	***	*	*	***	**
Retailer	***	**	***	***	***
Insurance Company 'A'	**	-	-	*	*
Insurance Company 'B'	***	***	***	**	***
Commercial Bank	***	-	*	**	**
Insurance Company 'C'	***	-	***	*	**
Car Manufacturer	**	-	-	-	*
Insurance Company 'D'	***	-	-	*	**

Key : *** highly significant impact; ** significant impact; * moderate impact; - minimal impact

5.4.1 Information Accessibility - Dimension Analysis

Existence

As Table 5.3 illustrates a major consideration for all the case study organisations was the existence of information. The **clearing bank** had created a strategic analysis unit within the marketing department to support product managers. However, this unit had been encountering severe problems due to a lack of availability of information. Analysis of the situation had identified that the product managers only had a limited amount of information about products and customers available and much of what they required did not exist [c1feastu]. The **commercial bank** was also experiencing information availability problems. As one internal study identified, “*there were key areas of business performance measurement where adequate information was not available*” [c5busreq] and this was qualified by the observation that “*information needed to answer many of these questions accurately simply did not exist or was virtually impossible to obtain*” [casenote5]. Problems with the non-existence of important information also affected **insurance company 'D'** (see Mini-Case 5.1 below). As in internal report identified, “*much of the base data that was required was missing ... this was primarily because the processes in place for capturing this data were flawed*” [c8ifamis]. In a number of the case study organisations the problem was not so much a complete non-existence of information but rather it did not always exist

in a form that was useful. This problem was highlighted at the **retailer**, “*data is available on a departmental basis but a corporate view is unavailable*” [c2propre], and at the clearing bank they recognised that, “*some of the information required to gain in-depth knowledge is not available ... some of the information is held but is often difficult to extract*” [c1dwsd]. The **commercial bank** highlighted that although information may not have existed within the organisation it could be obtained elsewhere, “*much of the information was only available from external sources which would require expenditure for its purchase and possibly additional network infrastructure for its capture*” [c5datsou].

Mini-Case 5.1

Existence – Insurance Company ‘D’

Insurance company ‘D’ had embarked on two major strategic initiatives to consolidate their leading position in the UK insurance market. The need to have significant amounts of good quality information available to support these initiatives was widely recognised. Unfortunately, the development and implementation of these strategies was being hampered because much of the information that was required did not exist. To address this the insurer initiated a number of activities that had the objective of providing the necessary information. Although clearly acknowledging that much of the information that was required did not exist, and that the success of the strategies being implemented was dependent on this information being made available, the management of the firm still appeared to be reluctant to make the necessary investments. There was a lack of clarity between the activities being undertaken, and there was a constant tension between the need to take short-term tactical steps to provide some information versus longer-term strategic initiatives that would have satisfied most of the organisations information needs. This resulted in doubts as to whether much of the information that was required would ever exist in the organisation and whether the strategies being implemented would ever be successful.

Despite these problems more positive opinions did exist. At the **retailer** a business manager believed that productivity gains would be achieved as more information became available. He was of the opinion that “*in terms of tangible benefits people should become more productive, moving away from data gathering and formatting to data analysis*” [cas2int2]. There was also a more positive expectation for the future at **insurance company ‘C’**. Here an IT strategy manager was of the opinion that “*access to better information should also help with relationship management, identifying the winners, ‘size does matter’, it should help with working with proactive intermediaries, the winners ... it should help build relationships, help internally to build the business, and help maximise relationships*” [cas6int2].

Awareness

Three of the case study organisations regarded awareness of information as being a challenge. **Insurance company 'B'** was attempting to provide the business with consistent and accurate company-wide information. They had identified that one of the major hurdles that had to be overcome was to provide information in a manner that could be clearly understood by the information consumers (see Mini-Case 5.2 below). Providing large amounts of information, even if it was of excellent quality and very timely, would still not necessarily lead to the business improvements that were being sought if the consumers of the information had doubts about its meaning or difficulties in interpreting it. This was recognised in the conclusion that *"the first challenge was the need for a common understanding of the information we have available to us, as well as an understanding of the information which is desired"* [c4infman]. There was recognition of more serious problems at the **retailer**. They had identified one of the greatest difficulties that confronted the information consumer was that it was *"difficult to gain an understanding of the information that is available"* [casenote2]. As an internal report identified *"it is difficult to help users with queries regarding the data ... it is also not possible to advise the business on the information currently available"* [c2datan]. A similar situation existed at the **clearing bank** where a need had been identified for providing managers *"with interpretation and understanding of information"* [c1feastu].

Mini-Case 5.2

Awareness – Insurance Company 'B'

As part of the change programme that was being implemented at insurance company 'B', providing information to all staff that required it at all levels of the business, regardless of their computer literacy, was a key objective. A number of activities were being undertaken to achieve this objective including the development of a corporate data warehouse. One of the major challenges this objective presented was ensuring that everyone who had access to it would have awareness of the information that was available, and could easily understand the information. To assist with this the insurer initiated an activity that had the aim of developing facilities that would enable the business to interrogate and understanding the corporate-wide information that would be provided. The development of this 'information directory' was regarded as being a vital element of the strategy to make understandable information available to all who needed it. By taking these steps the insurer was creating a much more positive perception of the value of the information that was starting to be provided.

When looking to the future **Insurance Company 'B'** had a much more positive outlook. One of the key principles that they had developed was that *"all information*

should be easily available to all business areas and should be in common formats allowing easy consolidation and comprehension” [c4fearep]. In addition to this the insurer was developing an information directory that would assist information consumers interrogate and understand the information that was available. A similar requirement was identified at **Insurance Company ‘A’** where the IT director believed, *“management changes within the business have also helped identify the need for decision making to be based on clear, understandable information rather than on gut feeling as has happened in the past and still happens today”* [cas3int1]. These changes were driving the insurer to improve its information provision facilities. This included components that would make the understanding of the information much easier. Part of this solution envisaged that the features for understanding information would be integrated into the information analysis facilities that were being provided.

Sharing

Five of the case study organisations recognised the importance of sharing information. At the **retailer** there was recognition that although steps were taken to provide senior management with information, this information was not shared outside of the executive. A description of this situation provided by a business manager was of a *“backbone of control documents regarded as being ‘almost sacred’ and heavily relied upon (by executives) ... beyond these there is more of an attitude that it is everyone for themselves”* [cas2int2]. There was also recognition that the structure of the organisation created problems. As an IT architect observed, *“organisational boundaries do create problems when trying to identify the full data requirements, cross-functional co-operation is difficult to achieve”* [cas2int1]. The sharing of information at an executive level was also recognised at **insurance company ‘C’** where *“there was a requirement for both the collation of key information globally and for consistent information to be shared between Group Executives and Business Units”* [c6miapps]. The **retailer** was developing a strategy that had the objective of breaking down supply chain barriers and to integrate suppliers more tightly (see Mini-Case 5.3 below). It was recognised that an integral element of this strategy was sharing and integration of information.

Mini-Case 5.3

Sharing - Retailer

One of the major objectives of the retailer was to break down supply chain barriers and integrate with suppliers more tightly. This was a medium to long-term aim and a key component of the strategy was the ability to share information with suppliers. It was recognised that there would be substantial benefits if this could be achieved. There was a belief that stock holdings could be reduced significantly in warehouses and stores, and that stores could concentrate more on selling rather than on managing stock. Achieving this objective was not viable in the short term because the information that the retailer had available did not meet the requirements, and there was little to be gained by sharing it. There were a number of information improvement exercises being undertaken and the mood within the organisation was quite optimistic that they would be able to have closer integration, and have information that could be shared with suppliers in the future. This created a positive perception of the value of the information that would enable this objective to be achieved.

This was recognised in the strategy that was being developed which stated *“to enable store management and staff to concentrate on shop keeping there would be a number of information requirements including consistency of information between suppliers, buying departments and stores”* [c2rm2000]. One of the informants who had recognised this challenge had the opinion that *“more information would be shared directly with suppliers with some development of merchandising detail”* and that *“in five years time suppliers will be regarded as being an internal source of information ... there are massive benefits in heading in this direction”* [cas2int1]. **Insurance company ‘B’** was attempting to transform from operating within line of business silos to start-to-end business processes had also recognised the importance of information sharing for the success of this strategy. In the development of the strategy it was identified that *“the insurer, as a single business unit, would want to understand and view the business as a whole without being constrained by boundaries between line-of-business systems, or between line of business systems and corporate support systems”* [c4fearep]. It was also recognised that *“the successful collection, management, and flow of information group-wide was a major critical success factor information being recognised as a valuable shared asset of the business”* [c4prigui]. A second **insurance company, ‘C’**, had adopted a major globalisation strategy that required the implementation of flows of information between business units and group executive management, between business units, and with intermediaries. To be able to operate on a global basis and build relationships

between business units and with business partners it was recognised that “*global management information was important ... the importance of sharing information across different company territories was recognised, managing brokers and intermediaries who already operated worldwide, for sharing information related to underwriting practices and experiences, and for sharing risk on a worldwide basis*” [casenote6].

Delivery

The delivery of information created problems of varying degrees for all the case study organisations. This was recognised by an underwriting manager at **insurance company ‘C’**, “*a haphazard information strategy exists, it is very ad-hoc, information is available but it is not readily available ...it is difficult to gather together the information the business requires*” [cas6int1]. The most common problem appeared to be the difficulty encountered when attempting to capture and deliver information that consumers had a particular interest in obtaining. There were a number of reasons for this but technology issues appeared to be the primary difficulty. This was recognised at the **retailer** where an internal report identified that “*a diverse range of incompatible software products which made the sharing of data across the organisation virtually impossible*” [c2curarc]. Tactical solutions existed for many of the information requirements but in most cases the information being provided was regarded as being inadequate. Dealing with new requirements was a much greater challenge, “*access to a limited amount of data to meet a specific business requirement ... new requirements cannot be satisfied ... data cannot be obtained from more than one application due to the stand-alone nature of the infrastructure*” [c2curarc]. These deficiencies were identified and acknowledged, as the internal report stated, “*attempting to obtain this information in the past was tackled on a tactical basis with no consideration to a consistent, strategic information gathering and delivery processes*” [c2curarc]. There were similar problems identified at the **clearing bank** where much of the information required for analysis purposes was extracted from operational computer systems, however, “*it often has to be manually adjusted to provide users with the required information*” [c1dwsd] (see Mini-Case 5.4 below). This situation was mirrored at the **commercial bank** where it was recognised that, “*most information was from operational computer systems ...*

they did not have the flexibility or the robustness which would allow the organisation to easily extract the necessary data in a timely and structured manner” [casenote5].

Mini-Case 5.4

Delivery – Clearing Bank

The clearing bank was implementing a number of strategies that were dependent of the delivery to the business of improved information. Significant problems had been encountered with information delivery that were jeopardising the success of these strategies. It was recognised that much of the raw data that was required did exist but that it was exceptionally difficult to obtain and convert to meaningful information. It was also recognised that the information that could be delivered to the business had to be manually adjusted to make it usable by the information consumers. The bank was taking active steps to rectify this situation. This included the development of a data warehouse and the provision of sophisticated information analysis environment. By developing these facilities the bank was optimistic that substantial improvement could be made in information delivery that would enable the strategies to be implemented successfully.

The need to tackle information delivery problems was recognised by a number of organisations. At **insurance company ‘B’** a principle was being adopted which stated *“a comprehensive source of consistent data will be available to all users without internal constraints as to how the data elements can be accessed or viewed together”* [casenote4]. At **insurance company ‘A’** it was recognised that substantial technology changes would be required, *“it was unfeasible to attempt to supply the business with information directly from the existing data sources, a new information provision infrastructure was required”* [c3datsou]. One of the most positive opinions expressed on future expectations on information delivery came from the **clearing bank**, *“technology solutions present the Bank with the opportunity to access the quality information it requires”* [c1str2ksep].

5.4.2 Information Accessibility - Case Analysis

All the case study organisations recognised the importance of information accessibility but the impact that information accessibility dimensions were expected to have varied considerably across the organisations. This can be identified by taking a case-orientated approach to compare and contrast the experiences of two of the organisations where information accessibility improvements were expected to have a noticeable impact, with two organisations where little impact was expected. The

analysis suggests that insurance company 'B' and the retailer were likely to experience a highly significant impact as information accessibility improved:

Insurance company 'B': Following a takeover the insurer had embarked on a major change program. There were a number of elements to this program but one of them had the objective of restructuring the company to operate along business process lines rather than in departmental silos. Essential to this change was accessibility to information for managing and monitoring from one end of a business process to the other. It was recognised within the firm that there was a need to make information available and to *“improve the flow of information across business function and computer system boundaries”* [c4fearep]. It was also recognised that there would be challenges that would need to be overcome to achieve this, *“a number of barriers were recognised and had to be overcome to improve access to information”* [c4strrev]. It was also recognised that if these barriers could be overcome there were substantial benefits to be obtained and the firm had a vision to *“provide a comprehensive source of consistent data available to all users without internal constraints as to how the data could be accessed or viewed”* [c4fearep]. There was also recognition that by *“making consistent information widely available to support quality business decision making would be key to achieving flexibility and maintaining alignment”* [c4fearep]. The overwhelming opinion within the insurer was that for the change programme as a whole and for the introduction of business process management specifically, accessibility to the 'right' information was essential.

Retailer: The retailer was searching for improvements in its business that could be used to counter the growing competition that was starting to erode its leading position in the market. Among the initiatives it was developing was a breaking down of supply chain barriers and integrating its suppliers more tightly. As the firm itself acknowledged there was a need have access to information which could be provided to partners, *“more information would be shared directly with suppliers with some development of merchandising detail”* [c2rm2000]. To achieve this it first had to make much of the information that was currently difficult to access more accessible. If this could be achieved there was a belief that substantial benefits could be obtained. The view of an IT architect was *“in*

five years time suppliers will be regarded as being an internal source of information ... there are massive benefits in heading in this direction" [cas2int1]. Among the benefits that were identified if this could be achieved were a number related to the management of stock and better usage of space within the stores. One report identified that *"better quality information would assist with monitoring supplier performance ... more proactive management of stock could be achieved by providing the suppliers and stores with better information"* [c2usereq]. Critical to all of this was unlocking the information that was required within the retailer and making it accessible to the business areas that required it.

By contrast, it can be seen from the following discussion that it was envisaged that improvements to information accessibility would have little impact at insurance company 'D' and the car manufacturer.

Insurance Company 'D' - Insurance company 'D' was giving serious consideration to information accessibility, *"there is significant frustration across the business with current information availability"* [c8mispro], There was a clear need in the firm for more information to support the strategies it was implementing, *"these problems jeopardised the successful implementation of the strategies being developed ... it was recognised that significant improvements in information quality and availability were required"* [c8busreq]. The development and implementation of these strategies was being hampered by the lack of access to the information that was required. However, despite all of this there was a lack of impetus in the firm to change this situation. Initiatives had been attempted in the past that had failed to make any major improvement to the situation and had resulted in unfavourable perceptions of what could be achieved in the future. There were also budget constraints in place that made it difficult for the new initiatives to make the impact that was required and to make the necessary information accessible. There was potential for improvements in information accessibility to have a positive impact but it did not appear that this was likely to happen in the short term.

Car Manufacturer – The car manufacturer was primarily focussed on improving the performance of its business processes. To achieve this it was recognised that improvements in information accessibility would be beneficial especially in its efforts to improve the time taken from an order being placed to a car being delivered, “*good quality information was required to improve the performance of key processes and to achieve nimbleness*” [c7pildel]. There were a number of challenges that needed to be overcome before this could be achieved, “*most of the information existed within the firm, contained in a wide range of sources, many of which were difficult to access*” [c7pildel]. This was a significant problem. To obtain the information that was needed to support these processes required the accessing of twenty-one different source systems. To achieve this in a consistent manner was a long-term activity and one that was not going to deliver significant benefits in the short term.

This analysis suggests that information accessibility dimensions have an important impact on consumers’ perceptions of the value of information. It also suggests that information accessibility is an important construct for most organisations. The analysis of the individual case study organisations also identified a number of lessons learnt, some specific to each organisation, and others that appear to be common across a number of organisations. This section highlights some of the strategies to improve information accessibility that have been identified by the case study organisations:

- **Sharing information with business partners can produce significant benefits:** A number of the case study organisations had recognised the benefits that could be obtained from sharing information with business partners. This was a major strategy for the retailer where it was believed that “*there is now a trend to move applications and data out of the centre, in particular to integrate with suppliers*” [cas2int1]. By integrating with suppliers and sharing information with them the retailers expected that “*in five years time suppliers will be regarded as being an internal source of information ... there are massive benefits in heading in this direction*” [cas2int1]. Among the benefits that were expected were major improvements in stock control leading to a reduction in costs. Whereas the retailer was considering backward integration with its

suppliers, insurance company ‘C’ had a forward integration strategy which would enable it to work much more closely with its major channel to market, the brokers. There was recognition of the importance of “*sharing information across different company territories, of managing brokers and intermediaries who already operated worldwide, for sharing information related to underwriting practices and experiences, and for sharing risk on a worldwide basis*” [casenote6].

- **Making information more accessible accelerates the move away from information gathering to information analysis:** Many organisations wish to move their valuable human resources away from information gathering by the consumer to information analysis. This is based on the premise that information gathering is an overhead whereas information analysis adds value. This desire to have resources working on information analysis rather than information gathering was identified in a number of the case study organisations. This was identified at the retailer where a business manager was of the opinion that “*in terms of tangible benefits people should become more productive, moving away from data gathering and formatting to data analysis*” [cas2int2]. A similar expectation existed at insurance company ‘B’ where “*there were clear expectations that there would be a reduction in the amount of effort expended in data gathering with more effort being focused on information analysis*” [c4fearep]. At insurance company ‘C’ there was a view that improvements could be made if there was an understanding of the costs of gathering and analysing information. The IT strategy manager observed, “*the measurement of business benefit capture could be enhanced if information on the time spent accessing and gathering information rather than analysis information was available*” [cas6int2]. At the root of this problem was the difficulty organisations were having accessing the information they required. Substantial effort, in time and money, was being spent on gathering information rather than the value generating activity of information analysis. By making information more accessible the costs of information gathering could be reduced and information analysis could generate more value.

In addition to highlighting some practical steps that organisations can adopt to improve information accessibility, and in so doing their information value, this research also highlights a fundamental lesson about the nature of information accessibility problems. The evidence from the case study organisations suggests that information accessibility problems typically manifest themselves across a range of dimensions rather than a single dimension. This view was well summarised by a number of opinions from the retailer, “*data is available on a departmental basis but a corporate view is unavailable*”, [c2propre]; “*difficult to gain an understanding of the information that is available*”, [casenote2]; “*organisational boundaries do create problems ... cross-functional co-operation is difficult to achieve*” [cas2int1]. This suggests that information accessibility problems might best be tackled holistically rather than at the level of the individual dimensions.

5.4.3 Information Accessibility Conclusions

All the case study organisations believed that information accessibility dimensions would have an impact on the operation of the business. The majority of the organisations that expected a highly significant or significant impact believed that the failings in the information that was currently accessible were having an adverse impact on business activities. This suggests that information accessibility problems were also having an adverse effect on perceptions of information value. However, when information that was expected to be accessible in the future was considered there was a change of opinion within the majority of organisations. There was a view within these organisations that access to relevant information would improve and that this would result in improvements in business performance. Whether this information would ever become accessible, and whether the expectations of improved business performance would ever result, are questions that can only be answered by additional research.

Whilst the literature with regard to the accessibility of information and the impact that accessibility dimensions can have on perceptions of information value are both growing, little previous research has sought to explicitly link these two themes together. The research therefore makes an important contribution in that it shows how the accessibility of information is being explicitly targeted to improve its value, in

eight large, multi-national organisations. Moreover, it provides some important insights into how this process can best be achieved.

5.5 Information Quality

Most organisations rely on information for running the business, for making important strategic decisions, and for monitoring corporate performance (Eccles, 1991; Goodman, 1993; Kaplan and Norton, 1996; Finlay, 2000). These activities are instrumental in steering the course of the organisation and ultimately determine the organisation's long-term success. The information that is used in these activities is a vital component in this process. With such an important role to play, the quality of the information being used is an important factor in the success of these activities and the long-term success of the organisation. If the information provided is inaccurate, inconsistent, or not provided in a timely manner then there is a likelihood that the managers of the organisation will make poor decisions or steer the firm in the wrong direction (Crockett, 1992; Goodman, 1993). For these reasons it is essential that organisations have good quality information available for running the business, supporting the decision making processes, and for monitoring corporate performance. As O'Brien (2001) observed "*information that is outdated, inaccurate, or hard to understand would not be very meaningful, useful, or valuable ... people want information of high quality, that is, information products whose characteristics, attributes, or qualities help to make the information more valuable to them*". If poor quality information is provided which results in poor decision-making, it is very likely that there will be disillusioned opinions within the organisation on the perceived value of information. Information quality can be measured by a number of dimensions. Davenport et al (1992) identified integrity, accuracy, currency, interpretability and overall value as being key dimensions. Based upon the review of the literature and the findings of the research, the following working definition for information quality has been derived:

Information Quality – Information that is fit to be used for the purposes that the consumer wishes to use it for.

(from Wang and Strong, 1996).

Information quality was discussed in the review of the literature in Chapter two. From the review of the literature, and from their significance during the case studies, four dimensions of information quality have been selected for investigation by this research. These dimensions are consistency, timeliness, accuracy, and usability.

Consistency - inconsistency of information is one of the most significant problems that business managers are confronted with (Goodman, 1993). These inconsistencies consist of multiple occurrences of the same data items and different values being maintained for these same data items, such as mis-spelt names, multiple codes being assigned to one entity, and inconsistent data values and formats (Wang and Strong, 1996; Lingle and Schiemann, 1994; Davenport, 1994). The problems associated with information inconsistency were also highlighted by Hawley (1995) who identified, *“organisations whose performance has been measured on the outcome of two sets of separately manipulated data”*. One of the key conclusions from Hawley was that *“organisations should ensure that accuracy and consistency of information is maintained”*. Some empirical research has been conducted in the area of data and information quality. It was an empirical study conducted by Wang and Strong (1996) that identified consistency as a dimension of information quality. Based upon the review of the literature and the findings of the research, the following working definition for information consistency has been derived:

Consistency – *All elements of the information that is provided to the consumer are in agreement*

Timeliness - another of the information quality dimensions that is regularly identified in the literature is timeliness (Clifton, 1986; Palmer and Varnet, 1990; Strong et al, 1997; Alter, 1999; Bocij et al, 1999; Maltz, 2000, O’Brien, 2001). The perception of information as a valuable asset is affected not only by having consistent information but also by having the information at the right time. Maltz (2000) defines timeliness as the dimension that *“refers to whether information is transmitted quickly enough to be utilized”*. In their study into how managers obtain the information they require McKinnon and Bruns (1992) identified timeliness as being a major problem. They provided a number of examples where managers were being impeded from doing an effective job because of the un-timeliness of the information they received. Similar

problems were identified by Hawley (1995). The research published by Wang & Strong (1996) identified timeliness as being a key dimension of information quality. The importance of providing information in a timely manner, and that timeliness is a critical dimension of information quality has also been discussed by a number of observers (Clifton, 1986; Strong et al, 1997; Alter, 1999; Bocij et al, 1999; Maltz, 2000; O'Brien, 2001). A key observation has been that information should be available when needed and is of little use if supplied too late (Clifton, 1986; Bocij et al, 1999; Maltz, 2000; O'Brien, 2001). Based upon this review of the literature and the findings of the research, the following working definition for information timeliness has been derived:

Timeliness – *All elements of the information are made available to the consumer of the information at a time that ensures that actions and decisions can be accomplished in an appropriate manner.*

Accuracy – having consistent information available at the right time is very important, however, if the information provided is not accurate then the usability and value of the information will be questionable (Carter, 1985; Davenport et al, 1992; Goodman, 1993; McKinnon and Bruns, 1992). Accuracy is generally acknowledged as one of the most critical dimensions of information quality (Clifton, 1986; Klobas, 1995; Strong et al, 1997; Raghunathan, 1999; Bocij et al, 1999; Alter, 1999; O'Brien, 2001). As defined by Alter (1999) it relates to “*the extent to which information represents what it is supposed to represent*”. A key focus area of Hawley (1995) was the accuracy of information. This report identified that there were widespread concerns about the quality of information in organisations. Especially of concern was its reliability in terms of its accuracy and the extent to which it is misinterpreted or misunderstood because the source data is flawed or the information partial. The importance of information gaining a reputation for accuracy has also been identified (Wang and Strong, 1996). As Lucey (1992) identified, “*a reputation for accuracy will enhance the value of the information to the recipient and will make it more likely to be used*”. Similar observations were made by Strong et al (1997). Based upon the review of the literature and the findings of the research, the following working definition for information accuracy has been derived:

Accuracy – *All elements of the information that is provided to the consumer are correct within a permissible level of deviation.*

Usability - it is quite possible to provide managers with adequate quantities of the right information but for managers to still experience problems when using the information. It has been argued that many managers are provided with information that in many cases is over-complicated and difficult to use (Ackoff, 1967; Porter and Millar, 1985). Crockett (1992) believed that “*an executive may also find that the level of detail is overwhelming and unhelpful and may ask that the reports be simplified*”. Consideration of the usability of information has been given wide consideration in the literature. Views have been expressed that usability means capable of being used and that usability expressed a feeling of purpose and direction and being towards some end (Kilmann et al, 1994; Louis, 1994; Von Gilnow and Sethia, 1994). Consideration has also been given to the difference between the usability and usefulness of information (Menon and Varadarajan, 1992; Souchon and Diamantopoulos, 1996). In relation to this Klobas (1995) argued that, “*people are prepared to overcome difficulties associated with use, if they expect that using the information resource will be useful to them*”. Based upon this review of the literature and the findings of the research, the following working definition for information usability has been derived:

Usability – *All elements of the information available to the consumer of the information can be easily assimilated and applied.*

The literature review in Chapter two identified that information quality was a construct that can have a significant impact on the perceived value of information. It also identified that much of the literature was of a theoretical nature and there were few examples of empirical research being undertaken to support the theory. Having revisited the literature produced after 1995 a number of noticeable additions have been identified. They are listed in Table 5.4. A number of strong empirical contributions have been made related to information quality. However, none of these contributions have addressed information value and this still appears to be a gap in the literature. The conclusions reached in Chapter two regarding the need for further empirical research on information value are still considered to be valid.

Table 5.4 - Information Quality Literature – Post '95

Contributor	Summary	Type	Method	Limitations
Wang & Strong (1996)	Data quality research that provides substantial framework of data quality dimensions. Recognises consistency as being a significant dimension.	E	Q	Excellent framework of data quality dimensions. No discussion on data/information value
Souchon and Diamantopoulos (1996)	Development of a conceptual framework of export marketing information use. Discusses information use and usability.	T		
Strong et al (1997)	Study into data quality issues in 3 US organisations. Uses the framework of data quality dimensions produced by Wang and Strong. Timeliness is major dimension.	E	I	Good empirical use of DQ dimensions framework but no reference to data/information value
Alter (1999)	A short and clear discussion on information quality. Recognises timeliness as being a key dimension.	T		
Raghunathan (1999)	An investigation into the impact of information quality and decision maker quality has on decision quality	E	S	Good discussion on information quality but no link to information value
Maltz (2000)	An investigation into the effects of communication mode on perceived information quality. Identifies timeliness and comprehensibility as key dimensions of information quality.	E	Q	Good discussion on dimensions of information quality. No link to information value.

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

Information quality is an important construct in the use of information and in the shaping of perceptions of information value. The four dimensions of information quality: consistency, timeliness, accuracy, and usability, have been chosen based on the significance they have been given in the literature, or they have emerged as being significant during the development of the case studies, or both. Consistency and usability have not received as much attention in the literature as the other two, therefore, their inclusion is believed to add further value. The four dimensions selected have been used throughout the project as the common basis for investigating the impact information quality can have on the business activities. This research study set out to identify whether the consumers of information in the case study organisations investigated were provided with information that was of good quality and whether the quality of the information being provided was having an impact on perceptions of information value. The evidence for this study was collected and measured as described in Section 5.4 – Information Accessibility above. The results of this analytical exercise have been summarised in Table 5.6.

Table 5.5 - Dimensions of Information Quality

Dimension	Supportive Literature
Consistency	Wang and Strong (1996) Goodman (1993)
Timeliness	Wang and Strong (1996) Strong et al (1997) Alter (1999)
Accuracy	Wang and Strong (1996) Strong et al (1997) Alter (1999)
Usability	Kilmann et al (1994) Menon and Varadarajan (1992) Souchon and Diamantopoulos (1996) Wang and Strong (1996)

The impact of each dimension was considered from both a current/historical perspective and a future perspective. This analysis provided an indication of the impact that information quality had on business activities in the case study organisations, and particularly the impact it had on perceptions of information value. The results of this analysis can be found in the Mini-Cases embedded in the Information Quality – Dimension Analysis section of this chapter.

The results highlighted the fact that all the case study organisations expected information quality dimensions to have some impact on business activities. Of these, information usability was expected to have the highest level of impact followed by information timeliness, then information consistency. This highlighted the view that having information provided was an important step but unless the information was usable it did not add very much value. The conclusions reached at insurance company ‘D’ encapsulated this view, *“much of this information was inaccurate, untimely, and in many instances, irrelevant to the actual business needs [c8miscat]. With the development of new business strategies it had become apparent that the provision of good quality, timely and relevant information would be essential if the strategies were to succeed” [c8busreq].*

Table 5.6 - The Significance of Information Quality within Case Study Organisations

Case	Consistency	Timeliness	Accuracy	Usability	Overall Impact
Clearing Bank	***	***	**	***	***
Retailer	***	***	*	***	***
Insurance Company 'A'	-	-	-	*	-
Insurance Company 'B'	***	**	*	***	**
Commercial Bank	**	**	-	**	**
Insurance Company 'C'	**	**	-	**	**
Car Manufacturer	-	*	-	***	*
Insurance Company 'D'	*	***	**	***	**

Key : *** highly significant impact; ** significant impact; * moderate impact; - minimal impact

5.5.1 Information Quality – Dimension Analysis

Consistency

For six of the case study organisations information consistency was an information quality dimension that was regarded as being significant. An internal study at the **clearing bank** identified “*there are issues of data consistency, both across the varied operational systems, and also over time ... these problems of lack of accuracy and consistency in the underlying data, limit the value of any analysis or report based on the data*” [c1dwsd] (see Mini-Case 5.5 below). The problems at the **retailer** were primarily the result of a tactical approach that had been adopted for many years for dealing with the provision of information. The basic problem identified was that “*the information that had been provided, in addition to the control documents, had been collected in a piecemeal manner and distributed by many different methods ... this resulted in a lack of consistency and quality*” [casenote2]. This problem had a direct impact on the management of the business, “*management reports suffer from data inconsistency*” [c2datan]. Information inconsistency was also hampering **insurance company 'B'**. A primary reason for this failure was the difficulty to obtain the information from the sources that existed. As the insurer identified “*the business need for good quality information is being continually hampered by these diverse (source) systems with inconsistent and inaccessible data*” [c4fearep]. There was a general recognition that if these problems were resolved then consistent information would have an important role to play in the future success of the organisation.

Mini-Case 5.5

Consistency – Clearing Bank

The bank had initiated a project for key performance indicator prototyping and analysis. Its primary objective was to enable the measurement of corporate performance against the Bank's critical success factors. This was dependant on information being accumulated from many sources. It also required this information to be provided at summary and aggregate level, and with the ability to drill down to much lower levels of detail when required. Much of the information that was currently obtained from these multiple sources did not match when it should have done; there were serious inconsistencies. This made it difficult to conduct accurate information analysis. However, there were a number of activities being conducted in the bank that had the objective of improving the consistency of the information that was currently available. One of the most important activities was the development of a marketing information system that would be provided with information from a corporate data warehouse. These activities, and the information they would provide in the future, were expected to have a highly significant impact on this project. This resulted in a positive perception of the value of the information that was expected to be provided in the future.

At the **clearing bank** the importance of providing information to support the business strategies was acknowledged by an internal review that identified *“the Bank has a growing requirement for timely, flexible and consistent information to enable strategic decisions to support the business”* [c1dwsd]. There was also recognition that information was required for monitoring the success of the corporate strategies. As the study conducted in the bank identified *“the provision of accurate and consistent information would be required to enable measurement of performance against the bank's critical success factors”* [c1dwsd]. At the **retailer** competitive pressures had started to have an effect, *“the scale and complexity of the problem started to become apparent as a result of competitive pressures driving the need for good quality, timely, and consistent information being made available on the performance of the organisation internally, and on the external environment”* [casenote2]. **Insurance company ‘B’** had the challenge of providing information of an improved quality to support decision-making and the measurement of corporate performance. As an internal study identified *“making consistent information widely available to support quality business decision making is key to achieving flexibility and maintaining strategic alignment”* [c4fearep]. This was required to support the major changes taking place within the organisation. This was summarised in the view that *“a comprehensive source of consistent data would be available to all users without*

internal constraints as to how the data elements can be accessed or viewed together” [c4defrep].

Timeliness

All but one of the case study organisations was contemplating the importance of the timeliness of information. The exception was insurance company ‘A’. The **clearing bank** wished to provide the business with timely company-wide information to support its attempt to become more customer focused. However, problems were being encountered, *“the ability of product managers to access information about customers and products is severely limited at present ... such information as is available is difficult to get at or provides only a snap-shot of the data which is often too old to be of practical use” [c1feastu]*. A similar situation existed at the **retailer** where one manager observed, *“being able to obtain the right information and providing the right infrastructure takes time ... the organisation moves like a tortoise” [cas2int1]*. Similar observations were made at the **clearing bank**, *“it is often difficult to extract information in a timely fashion in a usable form” [c1dwsd]*, or *“frequently, by the time the report is available the information it contains is out of date and therefore of no benefit to the user” [c1dwsd]*, and *“the long lead times to gather information also prevents iterative exploration of information” [c1dwsd]*. The situation at **insurance company ‘D’** was not much different, *“some of the data is only transferred on a monthly basis, leaving management unaware of business levels during the month” [c8busreq]*. One of the key objectives of the **retailer** was to ensure that sales and stock information was the basis for every buying and selling decision taken in the organisation. Being able to provide this information in a timely fashion was vital (see Mini-Case 5.6 below). Steps had been taken to achieve this but this was not proving to be as successful as hoped, *“in the past the business was managed on sales data that was provided on a two weekly basis, this data is now provided daily but this is too difficult to use effectively” [cas2int2]*. The managers were being drowned by information overload! Instead of identifying what information was required on a daily basis the information providers had simply increased the delivery of the two-week data to once a day. When looking to the future there were more positive expectations. As the **retailer** identified *“by gathering good quality data together in a timely fashion senior management could be provided with a facility that provides Group/Corporate*

views of company performance ... improvements could be made in strategic decision making” [c2usereq].

Mini-Case 5.6

Timeliness - Retailer

One of the primary strategic objectives of the retailer was to ensure that sales and stock information was the basis for every buying and selling decision taken. However, it was proving to be very difficult to obtain the right information that was required for this purpose at the right time. This was the result of the disparate, stand alone nature of the information system infrastructure, and the problems this created in assembling the information in a timely manner. In an attempt to provide more timely information a number of changes had been instigated. However, these changes had only exacerbated the problems the managers were confronted with. Information that had in the past been provided on a two weekly basis was now being provided daily. No thought had been given to what information was really required or the volume of data that the managers could deal with. This change resulted in the managers being swamped with excessive amounts of information that they could not analyse. The decision makers were being drowned in information overload. These problems had been recognised and the firm was actively engaged in improving the situation. These improvements took the form of a data warehouse that would collect the information that was required, and to make it available to information analysis systems in a timely manner. This development resulted in a much more positive perception of the impact information would have in the future and on the value of the information.

Insurance company ‘D’ had recognised that for the development of new business strategies “it had become apparent that the provision of good quality, timely and relevant information would be essential if the strategies were to succeed” [casenote8]. A similar opinion had been reached at the **clearing bank** where it was recognised that “there is a business need for good quality, consistent and timely information to support and monitor progress towards the achievement of the corporate objectives” [casenote1]. At the **commercial bank** there was a view that the timeliness of information could have an impact on the management of customer relationships. The managers were of the opinion that “the tracking of these relationships could be improved if they were provided with timely information on loan performance, product penetration, product profitability, commission, and costs” [c5busreq].

Accuracy

Half of the case study organisations believed that information accuracy could have a significant impact in the organisation although none of them believed that it could

have a highly significant impact. The **clearing bank** had identified what was required in terms of information quality dimensions but was having difficulty in delivering the requirements. As an internal study identified *“in addition to problems with accuracy, there are issues of data consistency, both across the varied operational systems, and also over time ... these problems of lack of accuracy and consistency in the underlying data, limit the value of any analysis or report based on the data”* [c1dwsd]. **Insurance company ‘D’** was experiencing similar problems. The development of its two main strategies was dependent on the provision of good quality and accurate information (see Mini-Case 5.7 below). However, the information being provided was not of the required quality and the company had started to recognise *“much of this information was inaccurate, untimely, and in many instances, irrelevant to the actual business needs”* [c8miscat]. This situation was very similar to that at the clearing bank where it was recognised that *“while the Bank may have immense volumes of operational data, the current processes for extracting business information from this data are inadequate ... these processes act as a bottleneck, delivering inaccurate or inconsistent data too late”* [c1dwsd]. Information accuracy was also recognised as being a problem at **insurance company ‘B’** where they identified that *“a number of data quality issues were identified which still needed to be tackled ... a key problem was a perceived lack of accuracy”* [c4strrev].

Mini-Case 5.7

Accuracy – Insurance Company ‘D’

One of the major strategies of the insurer was to develop its business with independent financial advisers (IFA’s). A major impediment to this strategy was the lack of good quality information on which to make decisions, and to manage the relationships with its IFA partners. One of the most critical problems was information accuracy. The insurer realised that it needed to develop much more sophisticated information analysis systems but that without better and more accurate information these systems would still be unable to deliver any significant benefit. The view within the firm was that the provision of accurate new information was a minimum basic requirement for the successful implementation of these systems. A number of projects were being taken to improve the situation. Some were of a tactical nature and had the objective of making a number of quick changes to improve matters. The long-term solution was seen as being a company wide data warehouse that would build up a substantial store of good quality and accurate information. This was resulting in an improved perception of the value of the information that was expected.

As with the other information quality dimensions the opinions of the case study organisations changed when consideration was given to the information they expected to be provided with in the future. With the objective of providing the business with

the data it required for improved decision-making and for monitoring corporate performance, the accuracy of the information was an important dimension for the **clearing bank**. This had been identified in an internal study that had recognised “*the provision of accurate and consistent information would be required to enable measurement of performance against the bank’s critical success factors*” [c1dwsd]. This study also stressed the importance of managers being provided with accurate information, “*the quality of data must be appropriate in the first instance ... information which is both relevant, and accurate enough, for the purposes of the business*” [c1dwsd]. A similar situation existed at **insurance company ‘D’** where there was a view within the company that “*the provision of accurate new data should be seen as a minimum basic requirement*” [c8ifamis]. Without this there was a feeling that the strategies being adopted could result in failure. The improvement of management decision-making was also an objective of **insurance company ‘B’**. The provision of accurate information was seen as a key prerequisite to achieving this objective. As internal analysis of the situation identified “*there is also an expectation that by providing consistent, timely, and more accurate information there will be noticeable improvements in the decision making process*” [c4fearep].

Usability

At the **commercial bank** it was identified that a significant amount of manipulation was needed to make the information usable within the marketing function. Analysis of the situation identified that “*information needs to be in a structure designed for marketing analysis*” [casenote5]. A similar problem existed at the **clearing bank** where problems were being encountered when attempting to use one of the main databases. Its usability was very poor; it could only be used with a specialised tool, and the structure of the information made it awkward for analysis and reporting. As an internal report identified “*although some required information is held in existing systems, it is often difficult to extract the information in a timely fashion in a usable form*” [c1dwsd]. Usability problems were also being experienced at the **retailer** where much of the information was manipulated to make it more usable. One of the reasons for this manipulation was that the base information that was available was not usable for the analysis the business wished to conduct. This was summarised by an IT architect who was of the opinion that “*the information that has been available has been okay for operational processing but it has not been very useful for informational*

processing” [cas2int1]. A similar situation existed at **insurance company ‘C’**. They had a pressing need to obtain usable information to assist in their attempts to gain competitive advantage. The major problem that they were confronted with was that the usability of the information that was available was considered to be adequate but this *“adequacy was often obtained at the expense of large amounts of time and money”* [c6miapps] to prepare the information for use. Again, the unfavourable perceptions of the information currently available were overshadowed by positive perceptions of the impact that was expected once more usable information was provided in the future.

Mini-Case 5.8

Usability – Insurance Company ‘B’

A key component of the changes being implemented at the insurer was the objective to make information available to those who needed it at all levels of the business regardless of their computer literacy. This required that all elements of the information were provided in formats or values that were suitable for the purposes of the information consumers. In the past this had not been the case. Typically much information had been provided in an unsatisfactory form, summary information was provided when detail was required; complex sets of figures were presented to people who could not interpret them, graphs and charts would have been more suitable; reports full of technical jargon were presented when plain language was what was required by the consumer. There was recognition that to make information more usable there was a need to provide it in more acceptable formats. This was starting to be achieved by the development of a number of information analysis systems that were tailored to the requirements of specific groups of users. One example of this was the development of an executive information system which primarily used charts and graphs for the presentation of information, but which also allowed the consumer to drill down to the detailed supporting information when required. The development of these usable information systems was starting to have a positive impact across the organisation that was resulting in a more positive perception of the value of information.

As part of the major change programme that was being undertaken within **insurance company ‘B’** there was an objective to provide usable information at all levels of the business (see Mini-Case 5.8 above). This was supported by a strategic objective, which was to *“deliver in a flexible and convenient fashion high quality business information to all staff, agents, and managers who need it, regardless of their level of computer literacy”* [c4fearep]. The insurer conducted analysis into the factors that affected the usability of information. Among the factors that were identified was the need to hold information at the lowest level of granularity rather than at summarised levels, the need to hold historical versions of the information, and the need to know

the point in time that the information was relevant. The **car manufacturer** had the objective of improving the efficiency and effectiveness of some of its major selling and manufacturing process. In particular, it had the objective of speeding-up the time-cycle from placement of customer order to delivery of vehicle. A key component of the strategy was to provide usable information. There was a view within the firm that *“effective use of information could significantly improve the manufacturing performance of the firm”* [c7pildel].

5.5.2 Information Quality - Case Analysis

All the case study organisations expected information quality to have an impact on business activities. However the impact that the information quality dimensions were expected to have varied considerably across the case study organisations. This can be identified by taking a case-orientated approach to compare and contrast the experiences of two of the organisations where information quality improvements were expected to have a noticeable impact, with two organisations where little impact was expected. The following analysis suggests that the clearing bank and the retailer were likely to experience a highly significant impact as information quality improved:

Clearing Bank: The clearing bank was attempting to implement major changes in the organisation. In particular it was attempting to become much more customer focussed, and it wished to tailor its products much closer to customer requirements. It recognised that to implement these fundamental changes much better quality information was required. A typical view within the bank was *“the Bank has a growing requirement for timely, flexible and consistent information to enable strategic decisions to support the business”* [c1dwsd]. Information related to its customers was of special importance. There was a real belief within the bank that significant changes could be made if information of the right quality was provided. This was acknowledged in statements such as *“as the quality of information improves ... our central marketing will become increasingly focused and more productive”* [c1str2ksep]. Steps were being taken, and investments made, to improve the quality of the information that was available. Improving the quality of the information being captured was a critical component of the changes being implemented. This was highlighted by the view that *“the quality of data must be appropriate in the first instance ... information*

which is both relevant, and accurate enough, for the purposes of the business” [c1dwsd].

Retailer: There had been a gradual realisation in the retailer that the competition was starting to erode its market leading position, and that one of the weapons being used by the competition was better quality information. The retailer had for many years adopted a very haphazard approach to information gathering and provision. It was being recognised that *“the information that had been provided, in addition to the control documents, has been collected in a piecemeal manner and distributed by many different methods. This resulted in a lack of consistency and quality” [casenote2].* As these pressures started to mount there was recognition that improvements were required and that if these improvements were successful there could be a significant impact on the performance of the business. It was recognised that *“by gathering good quality data together senior management could be provided with a facility that provides Group/Corporate views of company performance ... improvements could be made in strategic decision making” [c2usereq].* A wide range of improvements to the performance of the organisation was identified. These included improvements in decision-making, the allocation of stock, and developing relationships with suppliers. As an experienced business manager identified *“the benefit should primarily be better decision making and better buying decisions if the data is used effectively. Good quality information should also lead to better selling decisions in terms of reductions and locations” [cas2int2].* As this information required to implement these changes became available there was a clear expectation that improvements to business performance would be achieved.

By contrast, it can be seen from the following discussion that it was envisaged that improvements to information quality would have little impact at insurance company ‘A’ and the car manufacturer.

Insurance Company ‘A’ - Insurance company ‘A’ was fighting a battle for survival. One of its greatest areas of weakness in this battle was its lack of information on the market, its competitors, and its customers. It was

acknowledged by the IT director that “*significant changes are taking place in the market, particularly the advent of direct writers ... there is now much more competition which has resulted in a need for management to understand the business better ... information is needed to assist with this*” [cas3int1]. Obtaining and providing the right information to management was the paramount requirement for the firm, information quality would have been icing on the cake. Just having the information available was what mattered. It had a specific need to understand the market and required the ability to identify potentially profitable niches in the market. The view expressed by one interviewee was that “*the identification of new niche business areas that the company has not operated in is another benefit ... this information would also assist with ensuring consistency of performance, enabling a smoother performance that avoided peaks and troughs*” [cas3int1]. Information quality was given little consideration by the insurer primarily because little of the information that was required was available. As a result of the crisis they found themselves in they were happy to accept anything that was provided. As information started to become available it is likely that more attention would be given to information quality but at this stage in the process it was given little attention.

Car Manufacturer – Improving the performance of the production processes and reducing the delivery time of new cars was the primary objective of the car manufacturer. The firm was one of the leaders in the market and it was searching for innovative solutions for improving customer service. The time taken from an order being placed to the car being delivered was identified as an area of customer service where significant improvements could be made. The car manufacturer recognised that additional and more detailed information would be required if it was to achieve this. It was recognised within the firm that “*good quality information was required to improve the performance of key processes and to achieve nimbleness ... the Global Vehicle Programming optimisation process itself was dependent on good quality information being provided*” [c7pildel]. The primary requirement was the provision of information. As the information was currently not available little attention had

been given to its quality. As with insurance company 'A' this was a situation that was likely to change as information started to become available.

This analysis suggests that information quality dimensions can have an important impact on information consumers' perceptions of the value of information. It also suggests that information quality is an important construct for most organisations. The analysis of the individual case study organisations also identified a number of lessons learnt, some specific to each organisation, and others that appear to be common across a number of organisations. This section highlights some of the strategies to improve information quality that have been identified by the case study organisations:

- **Need to clean-up data sources:** The introduction of new information sources, such as data warehouses, will only improve the overall quality of information if the quality of all up-stream data sources is also tackled. As an internal report at **insurance company 'B'** identified *“the business need for good quality information is being continually hampered by these diverse (source) systems with inconsistent and inaccessible data”* [casenote4]. A similar situation was identified at the **clearing bank** where it was observed that *“in addition to problems with accuracy, there are issues of data consistency, across the varied operational systems ... these problems of lack of accuracy and consistency in the underlying data, limit the value of any analysis or report based on the data”*, [c1dwsd]. The bank also had problems with the processes used for capturing information from its sources, *“while the Bank may have immense volumes of operational data, the current processes for extracting business information from this data are inadequate ... these processes act as a bottleneck, delivering inaccurate or inconsistent data too late”* [c1dwsd]. **Insurance company 'C'** had also recognised the problems associated with the sources of its information *“these systems were not only maintained on a wide variety of hardware and software platforms but there was also little, if any, consistency in the data structures that they each employed”* [casenote6].
- **Don't tamper with the source data:** Another major factor, which contributed to the information quality problems that faced the **retailer**, was the practice of

manipulating data before information was passed to management. It was admitted by an IT architect that *“in the past much of the data used for strategic decision making has been manipulated which has created a false inference ... by the time it has been through the mill it has changed”* [cas2int1]. This resulted in a spider’s web of mismatching and incomplete information with many answers being unavailable and many answers being available for the same question, and with no one really knowing what the correct answer was.

In addition to highlighting some practical steps that organisations can adopt to improve their information quality, and in so doing their information value, this research also highlights a fundamental lesson about the nature of information quality problems. The evidence from the case study organisations suggests that information quality problems typically manifest themselves across a range of dimensions rather than a single dimension. This view was well summarised by one manager who noted *“while the Bank may have immense volumes of operational data, the current processes for extracting business information from this data are inadequate ... these processes act as a bottleneck, delivering inaccurate / inconsistent data too late”* [c1dwsd]. This suggests that information quality problems might best be tackled holistically rather than at the level of the individual dimensions.

5.5.3 Information Quality Conclusions

Overall, the case study organisations believed that information quality dimensions would have an impact on business activities. The majority of the organisations that expected a highly significant or significant impact believed that the failings in the information that was currently provided were having a detrimental impact on these activities. This suggests that there were also dissatisfied perceptions of information value. However, when the quality of information that they expected to be provided in the future was considered there was a significant change of opinion within the majority of organisations. These organisations expected that information quality improvements would have very positive impact on business activities. Whether this information would ever be provided, and the positive expectations of improved information quality would ever be fulfilled, are questions that future research may need to address.

Whilst the literatures with regard to the quality of information and perceptions of information value are both growing, little previous research has sought to explicitly link these two themes together. The research therefore makes an important contribution in that it shows how the quality of information is being explicitly targeted to improve its value, in eight large, multi-national organisations. Moreover, it provides some important insights into how this process can best be achieved.

5.6 Summary

The qualitative analysis discussed in this chapter has confirmed that information accessibility and information quality are key constructs that can impact the perception of information value. The findings from the case study organisations confirm that information accessibility can be a significant problem and that failure to access relevant information can be detrimental to the performance of the business. These problems have a direct impact on perceptions of information value. The findings also confirm that information quality can be a significant problem and that failure to provide the business with information of an acceptable quality can also be detrimental to the performance of the business. Again, these problems have a direct impact on perceptions of information value. Interestingly, in all the case study organisations the accessibility and quality of information was currently viewed as being poor, however, there was an overwhelming belief that this situation would improve and that information accessibility and quality would improve, and information would become a major contributor to business success in the future.

The next chapter discusses the analysis and conclusions from the investigation of three more constructs related to the use of information. It explores, describes, and analyses the dimensions associated with these constructs giving consideration to the literature that is related to each one. The significance of each construct is discussed and the impact each dimension has had on the perceived value of information in each case study organisation is analysed.

Chapter 6

Information Usage and the Perceived Value of Information

6.1 Introduction

Chapter four reported how several key constructs appeared to have an impact on the perceived value of information. In particular the exploratory research identified that the use of information for marketing activities, for strategic planning, and for the facilitation of organisational change are constructs that all appeared to have this characteristic. Consequently, this chapter presents the results of part of the second analysis stage of the research that investigates these three constructs in more detail.

This chapter begins by outlining the main objectives of the research undertaken. It revisits the literature that has been produced on the three constructs being investigated, paying particular attention to the dimensions associated with each. It develops a working definition for each of these constructs, and it explores, describes, and analyses a number of the dimensions of each construct. Each dimension identified is discussed giving consideration to the literature that is related to it. The significance of each construct within the case study organisations is discussed and the impact each dimension has had on the perceived value of information in each

organisation is analysed. The findings are also analysed from a case orientated perspective. This chapter also discusses a number of the lessons learnt within and across the case study organisations.

6.2 Summary of Objectives

Before discussing the more specific research objectives that were set for this section of the research, it is useful to remind ourselves of the overall research objectives pertinent to this stage of the research:

3. To explore the relationship between the **use of information for marketing activities**, and perceptions of **information value**
4. To explore the relationship between the **use of information for strategic planning**, and perceptions of **information value**
5. To explore the relationship between the **use of information to facilitate organisational change**, and perceptions of **information value**

As was indicated in the introduction to this chapter, the aim of this section of the research is to investigate the significance of each construct within the case study organisations, and to identify and understand the impact the associated dimensions had on the perceived value of information in each organisation. To achieve this, the following objectives were developed to focus the research:

1. To investigate whether the **perceived value of information** is influenced by its use in the **development of marketing activities** and strategies.
2. To investigate the role of information in the **facilitation of strategic planning** and the impact this can have on the **perceived value of information**
3. To investigate the role of information in the **facilitation of organisational change** and the impact this can have on the **perceived value of information**.

It was envisaged that through the exploration of these issues it would be possible to develop an understanding of the constructs and dimensions that impact perceptions of information value in the case study organisations.

6.3 Information Usage and the Perceived Value of Information

When considering the constructs that can impact the perceived value of information it was recognised that a number of them were primarily related to the use of information. As a result information usage was identified as being another important construct that needed to be considered by the study. To provide clarity to the research, the following working definition has been derived for information usage:

Information Usage: Using information to enhance the performance of the organisation, and to add value to key business activities and processes.

The three constructs encapsulated by information usage, which the research is investigating, are the use of information to facilitate marketing activities, the use of information for strategic planning, and the use of information to facilitate organisational change.

6.4 Use of Information to Facilitate Marketing Activities

The use of information to facilitate the development of successful marketing activities and strategies was identified as one of the most common uses of information in the case study organisations. Marketing requires a wide range of information from many internal and external sources. The use of information for marketing activities was discussed in Chapter two. Such information is used in a wide-range of analysis activities, including understanding the customers within the target market, grouping these customers by various characteristics, identifying which customer groups the firm wishes to target, and developing strategies to market products to these customer groups. The importance of information to marketing was recognised by Dibb et al (1991) who stated, “*management must establish an information system that enables it to discover customers’ real needs and to use the information to create satisfying products ... without an adequate information system, an organisation cannot be customer orientated*”. There are a number of dimensions that can be considered when discussing marketing activities. In their detailed discussion on all the facets of

marketing Dibb et al (1991) identified a number of primary dimensions that included marketing strategy development, market analysis, consumer analysis, market segmentation, targeting, product development, and product management. Hooley and Saunders (1993) and Lovelock (1991) identified similar dimensions including industry analysis, customer analysis, identifying target markets, product portfolio planning, and the creation and delivery of the service. Based upon the review of the literature and the findings of the research, the following working definition for marketing activities and strategies has been derived:

Marketing Activities and Strategies – Processes responsible for identifying, anticipating, and satisfying consumers requirements

(from the UK Chartered Institute of Marketing)

The use of information for marketing purposes was discussed in the review of the literature in Chapter two. From this literature review, and from their significance during the case studies, four dimensions of the use of information for marketing were selected for investigation by this research; marketing strategy, competitive analysis, segmentation, and product development.

Marketing Strategy – the development of a marketing strategy is an information intense activity. The importance of gathering good quality information to support the development of marketing strategies has been widely recognised (Brush, 1992; Vavra, 1993). Zabriskie and Huellmantel (1994) recognised the importance of linking marketing strategy information to the objectives of the corporate strategy. They argued that when developing marketing strategies marketers should understand the purpose of the strategic plan and the decisions that will be made from the marketing information they submit. Once they achieve this, *“they and their staffs can better innovate and be creative about the market information”*. The importance of gaining timely access to information for the development of marketing strategies was recognised by Cravens (1998). He identified that wider and more timely access to information, *“should enhance strategy implementation efforts ... the changing economics of information should also help to compress the time required for implementation”* Another important aspect of these observations was that, *“extensive access to information may offer the advantages of more complete analysis within a*

short time span". The information used for developing the marketing strategy is gathered from a wide range of internal and external sources to ensure that the planning process is successful (Hooley and Saunders, 1993). This can include information related to production, finance, personnel, know-how, and the environment (Dibb et al, 1991; Lovelock, 1991). This information is used to answer questions such as what is the business doing now, what is happening in the environment, and what the business should be doing (Hooley and Saunders, 1993). As they argued "*in deciding on core strategy, full regard must be taken of the skills and distinctive competencies of the company, defining what the company is good at*". Based upon this review of the literature and the findings of the research, the following working definition for marketing strategy development has been derived:

Marketing Strategy - *the development of a vision and plan for the achievement of the organisation's objectives related to the offering of its products or services to the consumer.*

Segmentation – segmentation of markets and the customer base are critical activities of most marketing departments (Lovelock, 1991; Wyner, 1992; Johnson, 1995). As Foxman and Kilcoyne (1993) observed, "*marketers' use of the new information technologies has provided the opportunity for improved market segmentation and target marketing*". A wide range of information is required to undertake the complex analysis that is required. Arguably the most critical information component of segmentation is customer information (Dibb et al, 1991). Wyner (1999) recognised that marketers often want to know the segment to which a customer belongs, but often lacks an individual identifier needed to do so. As he observed, "*this dilemma limits the marketer's ability to treat the customer differently with tailored messages and offers*". To resolve this problem he argued that detailed information on the customer such as transaction histories and account information has to be collected. Similar customer information requirements were identified by Dibb et al (1991) and Vavra (1993). As Dibb et al (1991) state "*segmentation variables are the dimensions or characteristics of individuals, groups, or organisations that are used for dividing a total market into segments*". The variables used for segmentation include customer characteristics, customer attitudes, and customer behaviour, purchase behaviour, demographics, and geographic location (Dibb et al, 1991; Hooley and Saunders,

1993). Once the relevant information has been collected the marketer is in a position to conduct the analysis. As Goodwin and Ball (1999) observed, this can yield important strategic insights into new segmentation categories and emerging markets. In their opinion “*the strategic insight you can gain will allow you to segment based on what customers need and what's important to them*”. Key factors in the success of the complex analysis that is conducted are the quality and timeliness of the information provided. Failure to provide information of the required standard can result in a failure of the segmentation strategy (Dibb et al, 1991; Hooley and Saunders, 1993; Finlay, 2000). Based upon this review of the literature and the findings of the research, the following working definition for the use of information for segmentation has been derived:

Segmentation – *identification of customer groupings in the market that share common characteristics.*

Product Development – Products are a complex bundle of tangible and intangible attributes including functional, social, and psychological utilities or benefits (Dibb et al, 1991). Undertaking the development of products that consist of these complex attributes is difficult and requires a significant amount of information (Lovelock, 1991; Wind and Mahajan, 1997). As Sheremata (2000) recognised, “*organizations trying to develop new products must solve a steady stream of problems to attain their goals ... solving these problems requires new knowledge and information*”. Borg (2001) argued that the most innovative enterprises gain valuable information about technological advances if they are prepared to share information. In their investigation of the shared development of new products across organisations, Rindfleisch and Moorman (2001) identified that the sharing of information between the organisations was essential. However, they did identify that some organisations had great concerns about the firm’s ability to acquire information from fellow alliance participants as well as their ability to use this information to enhance new product-related outcome. Similar findings were produced by Sethi (2000) in his investigation of the use and sharing of information in self contained new product development teams. He concluded that information quality, and information sharing, directly affected product quality. The importance of obtaining information from customers was specifically highlighted, particularly during the initial stages of product

development. The importance of the flow of information between all parties involved in the product development process had previously been identified by Gerwin, (1993), Peskin and Adis, (1993), and Henderson (1994). Significant quantities of information are required during product development. This information is gathered from a wide range of internal and external sources. As Dibb et al (1991) identified “*in the business analysis stage, firms seek market information ... the results of consumer polls, alongside secondary data, supply the specifics needed to estimate potential sales, costs, and profits*”. Based upon this review of the literature and the findings of the research, the following working definition for the use of information for product development has been derived:

Product Development – *The design and development of products that meet the wants and needs of the customers in a chosen market segment*

Competitive Analysis - competitive analysis has the aim of identifying the relative strengths and weaknesses of all the competing businesses, both the present competitors and those that might be competitors in the future (Hamel and Prahalad, 1990; Lovelock, 1991; Finlay, 2000). It also requires gaining an understanding of how well the organisation competes relative to the competition (Goodwin and Ball, 1999). It is one of the most important activities undertaken by an organisation. As Montgomery and Wienberg (1998) stated, “*knowledge of a competitor's intentions can be the key determinant of a strategy*”. In order to achieve this, information from a wide variety of formal and informal sources is required. This may include information from informal sources such as the stakeholders and employees of an organisation engaged with competitors on a regular basis (Finlay, 2000). When considering the information that needs to be gathered for competitive analysis Hooley and Saunders (1993) provide an interesting list of ethical and less than ethical sources. As they admit “*we follow a sequence of declining morality but seek to make no judgment about the ethics of many approaches mentioned*”. Among the approaches they identify are published statistical information, competitor publications, former employees of competitors, surveillance, and dirty tricks! The depth of information that needs to be gathered to effectively conduct competitive analysis can also be considerable. As Porter (1980) identified, “*a further difficulty is that in-depth competitor analysis requires a great deal of data, much of which is not*

easy to find without considerable hard work". The simple conclusion that Porter reached was that the lack of good information makes it very hard to do sophisticated competitive analysis. If this information can be gathered, then it enables an organisation to compete more effectively. As Beal (2000) observed, "*obtaining and analyzing information on competitors' lowering or raising its product prices may enable a firm to formulate and implement strategic actions to maintain current customers or secure additional ones*". Based upon this review of the literature and the findings of the research, the following working definition for the use of information for competitive analysis has been derived:

Competitive Analysis – *The analysis required to gain an understanding of competitors and potential competitors in the marketplace*

The literature review in Chapter two identified that the use of information for marketing activities was a construct that can have a significant impact on the perceived value of information. It also identified that much of the literature was of a theoretical nature and there were few examples of empirical research being undertaken to support the theory. Having revisited the literature produced after 1995 a number of noticeable additions have been identified, which are listed in Table 6.1. The major contribution to the literature still appears to be of a theoretical nature, although since 2000 a number of empirical studies have been produced related to the use of information for marketing activities. However, none of these studies appear to have linked the use of information for marketing with its perceived value. This suggests that there is still scope for detailed empirical research in this area. The use of information for marketing is an important construct in the shaping of perceptions of information value. From the broad range of marketing activity dimensions that are available four were chosen for this research: marketing strategy, competitive analysis, segmentation, and product development. They have been selected primarily because that have received significant attention in the literature and because they were of particular relevance to a number of the case study organisations.

Table 6.1 - Use of Information for Marketing Activities Literature – Post '95

Contributor	Summary	Type	Method	Limitations
Cravens (1998)	A detailed discussion on the development of marketing strategy. Highlights the importance of information in the process.	T		
Montgomery and Wienberg (1998)	A discussion on the use of strategic intelligence systems. Particular focus on use for competitive analysis.	T		
Goodwin and Ball (1999)	A detailed discussion on developing customer relationships and customer loyalty. Provides a detailed discussion on segmentation.	T		
Wyner (1999)	A detailed discussion on customer segmentation. Highlights the importance of information in the process.	T		
Beal (2000)	An investigation into environmental scanning and competitive analysis. Detailed discussion on use of information for competitive analysis.	E	Q	No linkage to the value of the information being used
Sethi (2000)	An investigation into new product development. Argues that information integration is a critical feature that can impact product quality.	E	Q	No discussion on information value
Sheremata (2000)	A detailed discussion on new product development. Identifies the importance of information in the process.	T		
Rindfleisch and Moorman (2001)	An investigation into the acquisition and use of information in multi-organisation product development	E	Q	No discussion on information value

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

By giving consideration to perceptions of the value of the information being used for these marketing activities a valuable insight into this topic is presented. The four dimensions selected have been used throughout the project as the common basis for establishing the nature of factors related to the use of information to facilitate marketing activities. This research study set out to identify whether information had been used in the case study organisations to develop successful marketing activities and whether this was having an impact on perceptions of information value. The evidence for this study was collected and measured as described in Chapter five (5.4 Information Accessibility). The results of this analytical exercise have been summarised in Table 6.3. The impact on each dimension was considered from both a current/historical perspective and a future perspective. The results of this analysis

can be found in the Mini-Cases embedded in the Use of Information to Facilitate Marketing Activities – Dimension Analysis section of this chapter.

Table 6.2 - Dimensions of Marketing

Dimension	Supportive Literature
Marketing Strategy	Vavra (1993) Cravens (1998)
Segmentation	Clemons and Weber (1994) Goodwin and Ball (1999) Wyner (1999)
Product Development	Peskin and Adis (1993) Sheremata (2000) Rindfleisch and Moorman (2001)
Competitive Analysis	Porter (1980) Montgomery and Wienberg (1998) Beal (2000)

The analysis identified that for some case study organisations marketing was a priority activity. For these organisations there was an expectation that information would have a highly significant impact on their marketing activities. It was also very evident from the analysis of the case studies that in the vast majority of circumstances these marketing activities were viewed very positively, which contributed to the perception that information was viewed as an increasingly important asset. However, it was also recognised that providing access to the good quality information that was required was only a first step. How the information is used is critical to the success of the marketing activities. The importance of this factor was recognised in an internal report at the clearing bank which observed that “*benefits will not be derived from information directly, the benefits will accrue from the quality of the commercial and marketing thinking and practice within the bank ...information will be fundamental enabler*” [c1proext].

Table 6.3 - Marketing Activities Facilitated by the Use of Information

Case	Marketing Strategy/ Planning	Segmentation	Product Development	Competitive Analysis	Overall Impact
Clearing Bank	***	**	***	*	**
Retailer	-	-	-	-	-
Insurance Company 'A'	***	-	*	**	**
Insurance Company 'B'	*	-	-	*	*
Commercial Bank	*	-	-	-	-
Insurance Company 'C'	-	***	*	***	**
Car Manufacturer	-	-	-	-	-
Insurance Company 'D'	**	***	-	-	*

Key : *** highly significant impact; ** significant impact; * moderate impact; - minimal impact

6.4.1 Use of Information to Facilitate Marketing Activities - Dimension Analysis

Marketing Strategy/Planning

Over half of the case study organisations were engaged in marketing activities that were dependent on a supply of good information. To assist with its marketing activities the **clearing bank** wished to provide the business with comprehensive and reliable information about customers, products, channels, and markets. This was primarily because investigations had identified that *“marketing decision are being made with little or no reference to reliable information ... the ability of product managers to access information about customers and products is severely limited at present”* [c1feastu]. A primary area of concern for **insurance company ‘A’** was the intense competition that was taking place in the motor insurance market as a result of the entry of direct insurers (See Mini-Case 6.1 below). They realised that to enable them to compete in this market they would require substantially more and better quality information. As they observed *“the primary activity is to set prices that can deliver profits to the business ... this is achieved by monitoring statistics and marketing information in an attempt to identify trends in the motor insurance business”* [c3buspur]. The **clearing bank** identified that not only did it have a need for information to support product managers; they also needed information to identify the best markets to be operating in. As further analysis identified the marketing unit

required “*access to information ... to enable detailed analysis to take place in order to understand areas of potential new profit*” [c1prodef].

Mini-Case 6.1

Marketing Strategy/Planning – Insurance Company ‘A’

Insurance company ‘A’ had experienced a sheltered existence operating primarily in the UK provincial broker market. In this market there had been little need for marketing activities and the firm possessed a very limited marketing capability. With the emergence of the direct insurers all of this had changed. The very existence of the firm was at risk and the firm needed to take swift action to survive. The management had recognised that the firm had to make a much more strenuous effort to bring its products to the attention of brokers who were being swamped with an ever increasing portfolio of products. Insurance company ‘A’s’ products were disappearing in the deluge. The firm recognised that it now had to have a much greater emphasis on marketing than it had in the past. This required improving the planning and delivery capabilities of the marketing department. Hiring new resources and developing marketing campaigns could all be achieved but the one critical element that was lacking was access to good quality information. This information was essential for the marketers to develop a much better understanding of the market, and for identifying niches where the firm’s products could be targeted. This lack of information was recognised, and steps were being taken to improve the situation. This included the development of a data warehouse and information analysis functionality that would enable the marketing department to conduct the analysis that was required.

At insurance company ‘A’ there was an expectation that many of their problems could be resolved if there were improvements to the planning capabilities of the marketing department. The firm believed that “*marketing planning would be enhanced by the provision of better quality marketing information to the business as a whole ... this type of information would include demographics from internal and external sources, and geological information*” [c3buspur]. Another insurer, company ‘D’ was expecting a significant impact from the use of information for marketing purposes. To this effect it was attempting to implement new marketing strategies within its independent financial advisor (IFA) division. To do this the firm recognised that information availability would be a major factor in the success of their strategies. As they identified “*the development of new and enhanced market solution plans to meet the different requirements of IFA segments will not be accomplished without the development of robust and effective information systems*” [c8ifamis].

Segmentation

For three of the case study organisations segmentation of the customer base was a major activity where the use of information would have a significant impact. The

clearing bank which was attempting to develop a much more customer orientated culture, identified the need for good quality information to succeed with this strategy. As they had identified *“the bank is committed to a customer orientation in all its marketing and sales activities and information about customers will be of fundamental importance in the future ... these data will support customer segmentation and profiling and measurement of business performance by customer sector or group”* [c1feastu]. At **insurance company ‘D’** there was a clear vision on the need for segmentation, *“this is the principal strategic programme which will underpin the performance towards targets set by the IFAD strategy”* [c8ifamis] (see Mini-Case 6.2 below). However, they were faced with some fundamental problems, *“there are currently no information developments which comprehensively respond to the needs of the IFA segmentation strategy”* [c8ifamis].

Mini-Case 6.2

Segmentation – Insurance Company ‘D’

Being a market leader, insurance company ‘D’ was more focused on the profitability of its business than on increasing market share. It had developed a number of strategies for achieving this and amongst these there was recognition that by better understanding the characteristics of the markets it operated in, there would be more opportunity to increase the profitability of its business. A major component of its drive to understand its markets better was market segmentation analysis. The insurer believed that by developing a better understanding of the market segments, it could start to identify the more profitable areas of the market to target its products. To undertake the segmentation that was needed required a considerable amount of information related to the market and the firms’ customer base. Unfortunately this information was not readily available. This was having a major impact on the business being able to implement its segmentation strategy and was leading to a very negative perception of the value of the information that was available. Action was needed to rectify this situation and to this affect a number of tactical and strategic projects had been launched. The objective of these projects was to provide as much information as could be accessed in the short term while developing a more comprehensive long-term solution.

There were also some very positive views on what could be achieved by segmentation. **Insurance company ‘C’**, which was attempting to develop a global brand, had a requirement to identify and exploit chosen customer and product segments, and geographies. To achieve this there were significant information requirements. In the development of the strategy it had been identified that *“information on sales and profitability would be required as well as external demographic and geo-demographic data to allow market segmentation calculations*

to take place ... the availability of this type of information would provide the company with the ability to develop expertise in segmentation and to understand target customers” [casenote6]. These needs were also identified during interviews with managers of the firm. It was the belief of the IT strategy manager that “*Information is also required to assist with segmentation, to provide the ability to identify niche markets and to understand the shape, size and players in these markets*” [cas6int2]. Although a lack of information presented **insurance company ‘D’** with a number of problems it still had a clear view of what could be achieved. It had identified that information would have a major role to play in implementing the strategy; as analysis of the strategy identified, “*to enable the segmentation analysis to be undertaken it was identified that a significant amount of information would be required ... one key message produced from the strategic analysis was that segmentation would not succeed without this information*” [casenote8].

Product Development

Product development was a high priority activity that three of the case study organisations were actively engaged in. **Insurance company ‘A’** was battling against the onslaught of the emerging direct insurers. They recognised that to survive they had to be much smarter at developing the right products that could be targeted at the right customers. To achieve this they acknowledged the need for much better quality information. The managers of the firm recognised that they required a flexible information system that could satisfy current and future needs. They were particularly anxious to “*obtain information that would enable them to exploit the existing customer base and enable new product development to be better focused*” [c3dwprop]. The **clearing bank** had an objective that was similar to this which was to develop products that are always attractive to the market and are seen as fair and offering value for money (see Mini-Case 6.3 below). To achieve this they recognised that significant investments would be needed in the product development areas of the bank, and that providing the appropriate information to these functions would be essential to the success of the strategy. As they identified “*information will help the bank to make products more appropriate, this will apply to new and existing products ... information will help identify needs and requirements, it should help the bank understand who the products are for and when they are needed*” [cas1int1].

Mini-Case 6.3

Product Development – Clearing Bank

The clearing bank was implementing a strategy that was to transform the organisation into being much more customer focused. Part of this strategy was to develop products that were based on the needs and desires of the customers. A critical feature of these products was that they were always to be attractive to the market, and seen as fair and offering value for money. A product development unit was created to undertake the identification and development of these products. For this initiative to be successful it was essential that the product development unit be provided with access to good quality information. The main problem that this unit was encountering was that this information was not available. This lack of information had resulted in a number of their initiatives being cancelled due to the unit's inability to produce credible business cases. This was resulting in a poor perception of the value of the information that was being provided. The bank had initiated a number of activities to improve this situation including the development of a data warehouse and the provision of information analysis applications.

The ability to develop innovative products was seen as part of the solution by **insurance company 'C'**. They believed that obtaining and sharing the right information with business partners would *“make it easier for brokers to do business with the company and for the company to be an innovative product developer”* [casenote6]. However, the main objective of all these companies was to obtain the right information. At the **clearing bank** the need for information to help develop the new products had been identified on a number of occasions, as the corporate strategy stated, *“reliable and objective information is essential to determine what products are wanted and how they should be sold”* [c1str2ksep]. This need was also identified when developing the key marketing processes the firm required, *“new product development was identified as being a key marketing process which would require information about customers, their needs and preferences, and historical product performance”* [c1feastu].

Competitive Analysis

Half of the case study organisations identified competitor analysis as being an important marketing activity that was dependent on good information being provided. **Insurance company 'A'** had identified that to compete in its rapidly changing market it had an urgent need to understand the competition and their products. This was essential to ensure that the company's products were recognised as being as competitive as the other products on the market. This was strongly argued by an

underwriting manager who recognised the need for *“information which provides the ability to compare where we are and where we want to be ... competitor information is also used ... speed to market is dependant on quick access to data at a detailed level”* [cas3int2]. The level of detail that was required was highlighted by an internal report that reinforced the importance of gaining competitor information. As it identified *“monitoring the rating actions of competitors in the market is also important ... this analysis can take place by broker, geographical area, age, car group and a number of other key parameters.* [c3buspur].

Mini-Case 6.4

Competitive Analysis – Insurance Company ‘C’

For many years insurance company ‘C’ had operated globally. However, its global operations had been fragmented and operated as a federation of companies rather than a one whole unit. As globalisation gathered pace the firm realised that it had an excellent opportunity, but that to succeed it would need to establish a single global identity and operate as a unified business unit. It also realised that although it had a fairly good understanding of its competitors in local territories it did not have an adequate view or understanding of its global competitors. There was recognition that to be successful it would need to provide access to competitor information at several levels within the global organisation in support of all its key corporate themes. The immediate problem that confronted the firm was that this information was not readily available. This was resulting in a negative perception of the value of information. To rectify this situation a project was initiated to develop the strategy for gathering and disseminating competitor information on a global basis. One of the outcomes of this project was the proposal for a data warehouse to support global information provision, and a set of standard information analysis applications to provide the information to management. The proposals from this project were looked on favourably and the perception of information value was becoming much more positive.

To develop competitive products the **clearing bank** recognised that it had to develop a much better understanding of its competitors and their products. Gathering information to conduct competitor analysis was identified as being an important activity. As the bank identified *“competitor tracking is a key marketing process which will require information on competitor activity at each level of the branch hierarchy, market share information, and customer segment volumes”* [c1feastu]. In addition to the need for significant quantities of data from internal sources it was also recognised that data from external sources was also essential. Within the bank they identified the need for *“gathering external data relating to the business environment, the market and competition”* [c1prodef]. A similar need was identified at **insurance company**

'C' (see Mini-Case 6.4 above) where the IT strategy manager recognised that *"some of the most important information needed by the business will come from the external environment. This will include information on competitors and commoditisation"* [cas6int2]. The objective of insurance company 'C' was to provide access to market and competitor information at several levels within the global organisation in support of all key corporate themes. As one interviewee clearly recognised *"there is a need for information that can provide an understanding of how competitors operate within the same channels and with the same distributors"* [cas6int1]. They had also recognised that by providing this information they would be able to improve the performance of the business globally. There was a belief within the company that by providing this information they would *"be able to build a world class marketing capability and maintain a keen awareness of primary competitors"* [c6coitstra].

6.4.2 The Use of Information to Facilitate Marketing Activities - Case Analysis

All but one of the case study organisations were actively involved in marketing activities that made significant use of information; the one exception was the car manufacturer. The impact that the use of information to facilitate these activities was having varied considerably across the case study organisations. This can be identified by taking a case-orientated approach to compare and contrast the experiences of two of the organisations where the use of information to facilitate marketing activities was expected to have a noticeable impact, with two organisations where little impact was expected. The analysis suggests that the clearing bank was likely to experience a significant impact, and insurance company 'C' a moderate impact from the use of information to facilitate marketing activities:

Clearing Bank: As part of its transformation, the bank realised that there was a need to develop its marketing capability to ensure that the right products were being developed for its chosen customer segments. A number of steps had been taken to assist with this including the creation of a product development unit. This unit was responsible for *"leading and directing retail banking in the development, management and monitoring of marketing and product strategies"* [c1feastu]. In addition a strategic analysis unit had been created which had the primary responsibility for conducting the information analysis that was required to develop the strategies. Internally it was identified that the marketing unit required

“access to information ... to enable detailed analysis to take place in order to understand areas of potential new profit” [c1prodef]. As the expected information came on-stream there was high expectations of the benefits that the bank would attain. The contribution that was expected from the work of these units was quite substantial. They believed that the analysis that would be conducted would identify areas of product development that would provide significant returns. The content of one report suggested, “very clear tangible benefits were expected to be obtained ... the projected return on investment was substantial ... millions of pounds per year were projected using very conservative models” [c1buscas].

Insurance Company ‘C’: This large insurer wished to take advantage of its global presence and the resources it had worldwide. One of its perceived weaknesses was that it did not have a good enough understanding of its global competitors. In an attempt to address this it initiated a number of activities to improve the competitive analysis it was able to undertake. One strand of this was to initiate a project that would design and develop the capabilities to provide management information on a worldwide basis. There was a belief in the firm that if the right information could be provided, *“it would be able to build a world class marketing capability and maintain a keen awareness of primary competitors” [c6coitstra].* Segmentation was another area of its marketing capabilities that it wished to improve. A major component was providing the marketers with access to good quality information. The firm recognised that there were important benefits to be obtained if this could be achieved, *“the availability of this type of information would provide the company with the ability to develop expertise in segmentation and to understand target customers ... it would also allow the company to be positioned and respond quickly to opportunities for acquisition or withdrawal” [c6coitstra].*

By contrast, it can be seen from the following discussion that there were unlikely to be any improvements from marketing activities facilitated by the use of information at the retailer and the commercial bank.

Retailer: The retailer was the market leader and a household name. It had very little need to engage in elaborate and expensive marketing campaigns as it was so well known, particularly for its ability to provide value for money products. Developing its marketing capabilities and expending resources to provide improved information to its marketing function was not a top priority. The only area where improved information for marketing purposes was of any real importance was for its embryonic direct sales unit. There was recognition that being able to target products at specific customers could provide benefits, *“providing the ability to mail customers about tailored products could provide major tangible benefits in the future”* [cas2int2].

Commercial Bank: The commercial bank was also a market-leading firm. It was a very sales orientated organisation but because of its business model it had very little need for marketing activities. Its primary channel to customers was through its business partners who used the bank to operate financial services on their behalf. It was the customers of these business partners that the banks tele-sales operation was targeting. The development of business with these business partners resulted in the bank taking a low profile, it did not engage in a great deal of publicity or marketing for itself. Most of the marketing that was undertaken was on behalf of, and usually in the name of, the business partners. There was a limited amount of attention given to marketing to business partners and there was a belief that, *“cost reductions could be achieved if consistent information was provided which allowed them to undertake effective marketing selection”* [c5busreq].

This analysis suggests that the use of information for marketing activities has an important impact on information consumers' perceptions of the value of information. It also suggests that the use of information for marketing is an important activity for most organisations. The analysis of the individual case study organisations also identified a number of lessons learnt, some specific to each organisation, and others that appear to be common across a number of organisations. This section highlights some of the strategies where the use of information for marketing has been beneficial to the case study organisations :

- **Having access to the right customer information is essential for an organisation adopting a strategy based on segmentation:** This was identified by a number of organisations including **insurance company ‘D’**, *“the development of new and enhanced market solution plans to meet the different requirements of IFA segments would not be accomplished without the provision of robust and effective information”* [casenote8]. A similar situation existed at **insurance company ‘C’** where they wished to identify and exploit chosen customer and product segments and geographies. The firm identified that, *“for this business driver to be achieved there would be a need for an integrated, holistic view of customer information”* [c6coitstra]. The **clearing bank** also recognised the importance of customer information, *“information about customers will be of fundamental importance in the future ... these data will support customer segmentation and profiling and measurement of business performance by customer sector or group”* [c1feastu].
- **The development of successful new products is dependent on the availability of good quality information on the market and customer desires:** the **clearing bank** in particular had recognised this requirement, *“new product development was identified as being a key marketing process which would require information about customers, their needs and preferences, and historical product performance”* [c1feastu]. The problems that were confronting **insurance company ‘A’** had also led them to the recognition that to develop new products much better information was required and they were *“anxious to obtain information that would enable them to exploit the existing customer base and enable new product development to be better focused”* [casenote3]. **Insurance company ‘C’** believed that better information would enable them to become *“an innovative product developer”* [casenote6]. However, the **clearing bank** had also recognised the problems that would occur if this information was not available, *“marketing decisions are being made with little or no reference to reliable information ... the ability of product managers to access information about customers and products is severely limited at present”* [c1feastu]. At the clearing bank this had led to a

number of failed initiatives, which was stalling the strategy to develop new customer-focused products.

6.4.3 Use of Information to Facilitate Marketing Activities Conclusions

Most of the case study organisations believed that the use of information would have an impact on business activities. The one exception was the car manufacturer, but this was mainly because marketing was not a primary function of the area of the company being investigated. None of the organisations studied believed that the information currently being provided was having a significant positive impact on the marketing activities that were being undertaken. However, all of the organisations that expected a highly significant impact from marketing activity dimensions had a much more positive perception of the information that was expected to be provided in the future. Whether this information would ever materialise, and whether it would really deliver the positive impact that was expected, will only become apparent over time. Further research in the future may be able to answer these questions.

Most organisations appear to have a high level of confidence that the use of good quality, timely information can have a highly significant impact on marketing activities. This is despite the fact that few organisations believed that the information currently being provided was making a significant positive contribution. This was highlighted very simply at the clearing bank where it was observed that, "*the information requirements for marketing analysis and planning are not currently being met*" [c1feastu]. Whilst the literature with regard to the use of information to facilitate marketing activities and its perceived value are both growing, there is little previous research that has sought to explicitly link these two themes together. The research therefore makes an important contribution in that it shows how information was being used to facilitate marketing activities in eight large, multi-national organisations and the impact this was having on the perceived value of information. Moreover, it provides some important insights into the problems that were being encountered and highlights a number of the lessons learnt.

6.5 Use of Information to Facilitate Strategic Planning Activities

The use of information to facilitate strategic planning activities was identified as one of the most common uses of information in the case study organisations. The use of

information for assisting with corporate strategy was discussed in Chapter two. Most organisations utilise information when undertaking major strategic activities such as strategy development and implementation, corporate performance measurement, and when striving to attain competitive advantage (Porter, 1980; Porter and Millar, 1985; Hopper, 1990; Kaplan and Norton, 1992, 1996). These activities are instrumental in steering and monitoring the course of the firm and they ultimately determine the firm's long-term success (Porter and Millar, 1985). As these activities have such an important role to play in the success of the organisation the information being used is an important factor. It is therefore essential that organisations have good quality information available to support these strategic business activities (Cole, 1985; Hopper, 1990; Bowonder and Miyake, 1992; Goodman, 1993). If poor quality information is provided which results in unsuccessful strategic planning activities, this is likely to have a detrimental effect on the perceived value of information. There are a number of dimensions that can be considered when discussing the strategic planning activities that most commercial organisations undertake. Among the dimensions that were discussed by Finlay (2000) were environmental analysis, strategic choice, strategic control, and portfolio development. A number of dimensions of strategic planning were considered by Johnson & Scholes (1988), including strategic analysis, strategic choice, strategy evaluation, and strategy implementation. They argued that strategy is about the matching the activities of an organisation to the environment in which it operates, and to its resource capability. In defining competitive strategy Porter (1980) identified a number of important dimensions including industry analysis and strategic choices. Competitive advantage was an important addition. Porter (1985) added competitive advantage to this list and argued that it was important to "*build a bridge between strategy formulation and implementation*". Based upon the review of the literature and the findings of the research, the following working definition for strategic planning activities has been derived:

Strategic Planning Activities – *The activities undertaken by an organisation to plan, determine and implement its overall direction in its chosen markets.*

(from Finlay 2000)

The use of information for developing corporate strategy was discussed in the review of the literature in Chapter two. From the review of the literature, and from their significance during the case studies, four dimensions of the use of information for strategic planning were selected for investigation by this research. These dimensions are strategic analysis/choice, strategy implementation, corporate performance measurement, and competitive advantage.

Strategic Analysis and Choice - strategic analysis and choice have generally been recognised as two key components of corporate strategy development (Aaker, 1988; Johnson and Scholes, 1988; David, 1995; Luffman et al, 1996; Cravens, 1998). Porter and Millar (1985) recognised the importance of information when developing corporate strategies and that the availability of new information enables “*more comprehensive analysis*”. Similar conclusions were reached by Austin et al (1995) and Hitt et al (1998). The quality of the information utilised is also of great importance; as Montgomery and Weinberg (1998) argue, “*the quality of strategic planning depends on the quality of information gathering*”. Broadbent (1991) discussed the findings of research that identified that one of the features of organisations that had achieved some information-based advantage over their competitors was flexible strategic planning processes. Environmental information was identified as being critical by Goodman (1993), and by Bowonder and Miyake (1992) when they discussed strategic analysis at Nippon Steel Corporation. Internal analysis typically has two main areas of focus; organisation structure and culture, and internal resources; both require a significant amount of information (Aaker, 1988; David, 1995; Luffman et al, 1996). The importance of this type of analysis was identified by Luffmann et al (1996), and by Johnson and Scholes (1988) who stated that “*a resource analysis needs to build on a bank of data, much of which will be in quantitative form ... if the strategic capability of an organisation is to be understood then this analysis must go beyond a simple listing of resources*”. During strategic choice, there are two main activities that are undertaken, the review of strategic options and the choice of the appropriate strategies. To identify which is the best strategy for a firm, a substantial amount of analysis is required which utilises a significant amount of information (Porter, 1980, 1985; Aaker, 1988; Johnson and Scholes, 1988; David, 1995; Luffman et al, 1996). Information is required on long-term objectives, financial objectives, the range of strategic options, current corporate

performance, risk, and internal capabilities (Aaker, 1988; Finlay, 2000; David, 1995; Luffmann et al, 1996). It is from this final analysis that the preferred strategies will be selected. Based upon this review of the literature and the findings of the research, the following working definition for strategic analysis and choice has been derived:

Strategic Analysis and Choice – *The activities that have the objective of identifying the markets and products that an organisation wishes to develop and the selection of the strategic options it has available for developing them.*

Strategy Implementation - the strategy implementation process is a very important step and one that can go wrong if it is not adequately planned. As Johnson and Scholes (1988) recognised “*strategic analysis and choice are of little value to an organisation unless the proposals are capable of being implemented*”. When implementing strategy there are number of areas that must be given attention including, objectives, planning, organisation culture, organisation structure, resource allocation, logistics, and internal systems (Aaker, 1988; David, 1995; Johnson and Scholes (1988); Luffmann et al, 1996). To analyse, understand, and plan for the implementation of a new strategy there is a requirement for a significant amount of information (Austin et al, 1995). This is likely to include information related to the items listed above and additionally key performance indicators, skill profiles, staff attitudes, staff morale indications, and details of the new strategy (Aaker, 1988; David, 1995; Finlay, 2000; Johnson and Scholes, 1988; Luffmann et al, 1996). Among the uses of this information the planning process is of particular importance. This was recognised by Luffmann et al (1996) who argued that many failures to implement strategy were the result of the misuse, or lack of use, of available information. Based upon this review of the literature and the findings of the research, the following working definition for strategy implementation has been derived:

Strategy Implementation – *An activity that has the objective of managing and delivering the strategies selected by the organisation to develop its products and markets.*

Corporate Performance Measurement - during the early nineteen nineties a body of opinion started to grow that argued that corporate performance measurement

should take a much broader view and move away from the traditional financial measures that had previously been used (Geanuracos and Meiklejohn, 1993; Eccles, 1991; Lingle and Schiemann, 1994; Kaplan and Norton, 1992, 1996; Cravens, 1998). Since then the topic of corporate performance measurement has received ever-increasing attention (Light, 1998; Neely, 1999; Neely et al, 2000; De Toni and Tonchia, 2001). In developing this topic the literature has recognised that there are a wide range of methods and structures that can be adopted for the measurement of corporate performance (Bond, 1999; Neely et al, 2000; De Toni and Tonchia, 2001). What has also emerged from this growing understanding is the need for wider and more complex sets of information to support the sophistication of the performance measurement requirements. These requirements are identified in empirical studies that have been conducted (Neely et al, 2000; De Toni and Tonchia, 2001) and from the practical experience gained by commercial organisations (Threat, 1999). A broad range of categories of information has been identified in the literature (Bond, 1999; Frost, 1999; Threat, 1999; Neely et al, 2000; De Toni and Tonchia, 2001). Based upon this review of the literature and the findings of the research, the following working definition for corporate performance measurement has been derived:

Corporate Performance Measurement – *An activity that has the objective of monitoring and controlling the implementation and success of corporate strategies.*

Competitive Advantage - There are many arguments in the literature that competitive advantage can be gained by the use of information (Porter and Millar, 1985; Itami and Roehl, 1987; Davenport and Cronin, 1988; Wormell, 1989; Trauth, 1989; Hopper, 1990). Much of the early discussion in the literature was based on the ideas on competitive advantage promoted by Michael Porter (1985). These ideas were concentrated on the attainment of competitive advantage by focusing on the external environment. During the early nineteen nineties a complementary school of thought started to emerge which argued that another major factor was the use of internal resources. The key argument states that, “*competitive advantage, whatever its source, ultimately can be attributed to the ownership of a valuable resource that enables the company to perform activities better or more cheaply than competitors*” (Collis and Montgomery, 1995). As the theory has developed a number of strategic resources have been identified including all structural assets, brand names, reputation,

capabilities, finance, and processes. Of particular importance to this study has been the inclusion of information and knowledge resources in some of the literature (Teece, 1980; Barney, 1991; Amit and Schoemaker, 1993; Collis and Montgomery, 1995). By establishing this link a solid foundation is established for arguing that information should be considered to be a valuable asset and that the use of information can provide organisations with competitive advantage. The use of information in this manner can have a significant impact on perceptions of information value. Based upon this review of the literature and the findings of the research, the following working definition for competitive advantage has been derived:

Competitive Advantage – *An activity that has the objective of converting the corporate strategies implemented by an organisation into sustainable advantage over the competition.*

The literature review in Chapter two identified that the use of information for strategic planning can have a significant impact on the perceived value of information. It also identified that much of the literature was of a theoretical nature and there were few examples of empirical research being undertaken to support the theory. Having revisited the literature produced after 1995, a number of noticeable additions have been identified. They are listed in Table 6.4. A number of very solid empirical contributions have been made that discuss corporate performance measurement and the information that is used for this. However, none of these contributions appear to address information value. Apart from these contributions most others related to strategic planning and the use of information appear to be theoretical. The conclusions reached in Chapter two regarding the need for further empirical research are not altered by these findings. The use of information for strategic planning is an important factor in the shaping of perceptions of information value. From the broad range of strategic planning dimensions that are available four were chosen for this research; strategic analysis/choice, strategy implementation, corporate performance measurement, and competitive advantage. The literature provides a comprehensive range of material on the dimensions that were selected for investigation. However, no consideration appears to have been given to the value that this information provides when used for these strategic planning purposes.

Table 6.4 - Use of Information for Strategic Planning Literature – Post '95

Contributor	Summary	Type	Method	Limitations
Luffman et al (1996)	A general discussion on strategic management. Strategic choice discussed in detail as is the use of internal resources to implement strategy.	T		
Montgomery and Weinberg (1998)	A discussion on the use of strategic intelligence systems. Provides a discussion on the use of information for strategic planning.	T		
Bond (1999)	A detailed discussion on the role of performance measurement in continuous improvement. Identifies a wide range of information requirements	T		
Neely et al (2000)	A detailed discussion of the development of performance measurement systems. Identifies a wide range of information that is required.	E	A	No discussion of information value.
De Toni and Tonchia (2001)	A detailed discussion on models for developing performance measurement systems. Identifies a wide range of information is required.	E	Q	No discussion of information value

Type: Empirical (E); Theoretical (T) – **Method:** Action Research (A); Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

The four dimensions selected have been used throughout the project as the basis for discussing strategic planning activities. This research study set out to identify whether the case study organisations were using information for strategic planning activities, and if the use of information for these activities was having an impact on the perceived value of information. The evidence for this study was collected and measured as described in Chapter five (5.4 Information Accessibility). The results of this analytical exercise have been summarised in Table 6.6. In addition, business activities were identified for a number of the uses of information for strategic planning. The impact on each dimension was considered from both a current/historical perspective and a future perspective. The results of this analysis can be found in the Mini-Cases embedded in the Use of Information to Facilitate Strategic Planning – Dimension Analysis section of this chapter. The results highlighted the fact that all the case study organisations expected that the use of information would impact strategic planning activities. The greatest impact was expected on corporate performance measurement followed by strategy implementation. A lesser impact was expected on strategic analysis/choice and competitive advantage. The general

conclusion was that information was expected to make a significant impact on the success of strategic planning activities in the future even although the evidence was inconclusive on whether this was currently happening.

Table 6.5 - Dimensions of Strategic Planning

Dimension	Supportive Literature
Strategic Analysis/Choice	Aaker, (1988) Johnson and Scholes, (1988) Luffman et al, (1996)
Strategy Implementation	Aaker, (1988) Johnson and Scholes, (1988) Luffman et al, (1996) Finlay (2000)
Corporate Performance Measurement	Rockart (1979) Kaplan and Norton (1992) Neely et al (2000) De Toni and Tonchia (2001)
Competitive Advantage	Porter (1985) Porter and Millar (1985) Grant (1991) Collis and Montgomery (1995)

An indication of the importance of information and these expectations for the future was highlighted by insurance company 'D' where it was recognised that *“as part of the development of the direct insurance strategy a number of critical success factors have been developed which will require significant amounts of information for their achievement and measurement”* [casenote8].

Table 6.6 - Strategic Planning Activities Facilitated by the Use of Information

Case	Strategic Analysis/Choice	Strategy Implementation	Corporate performance measurement	Competitive Advantage	Overall Impact
Clearing Bank	*	***	***	***	***
Retailer	*	**	***	*	**
Insurance Company 'A'	**	-	-	-	-
Insurance Company 'B'	*	**	***	*	**
Commercial Bank	*	-	***	**	**
Insurance Company 'C'	***	***	***	*	***
Car Manufacturer	-	-	**	-	-
Insurance Company 'D'	**	**	***	-	**

Key : * highly significant impact; ** significant impact; * moderate impact; - minimal impact**

6.5.1 The Use of Information to Facilitate Strategic Planning - Dimension Analysis

Strategic Analysis and Choice

Seven of the case study organisations were concentrating on strategic analysis and choice. Knowing what information is required and having it readily available is critical for these activities. For the **commercial bank** the importance of information in this process was only just starting to be realised. Observation of the situation appeared to suggest that *“the importance of information had started to be recognised and senior management had realised that good quality information was of great importance ...attempts had been made to rectify the situation but these had largely failed due to a lack of strategic vision and the failure to link information strategy to business strategy”* [casenote5].

Mini-Case 6.5

Strategic Analysis/Choice – Insurance Company ‘C’

There were a number of major changes being implemented at insurance company ‘C’. One of the most significant was the effort to capitalise on the global presence of the firm and to establish a global brand. To achieve this there was a significant amount of strategic analysis required and many strategic choices to be made. It was recognised that to undertake this successfully on a global basis there would be a need for effective processes that captured and made accessible vital information from all the territories the firm operated in. This type of information was not available to the management of the firm, and this had an adverse effect on the perception of information value. However, a major project had been initiated with the objective of developing global information capabilities. As this project proceeded and senior management became more aware of the potential information availability and analysis possibilities, they also became much more positive in their attitude to information value.

For a number of the case study organisations there was positive recognition of the importance of good information to support strategic analysis and the choice of strategic options. At the **clearing bank** there was recognition that *“the bank has a growing requirement for timely, flexible and consistent information to enable strategic decisions to support the business”* [c1dwsd]. **Insurance company ‘B’** recognised that *“a substantial amount of information was required to develop and maintain the corporate strategy ... this was used to develop the change model, the business context model, and the financial model”* [c4strchg]. One of the major conclusions being reached by a number of these organisations was the need to have

an information strategy that was linked to the business strategy. The **commercial bank** had encountered problems because this had not been done but they were being much more positive about the latest initiatives, *“the latest attempt at improving information provision was attempting to take a more strategic view and was linking information provision directly to business needs and business priorities”* [casenote5]. A similar situation existed at **insurance company ‘B’** where they had also recognised that *“a key element of the corporate strategy was linking it with an information strategy”* [c4strchg]. **Insurance company ‘A’** had also recognised the importance of information for strategic analysis and choice and the need to develop an information strategy. The motor underwriting manager acknowledged that *“an information strategy does not exist in concrete but we know what we want, we know where we want to be, and where we are going in terms of information ... although it is not written down the information strategy can be linked to the business strategy”* [cas3int2]. The development of a corporate strategy that was linked to an information strategy was also an objective of **insurance company ‘C’** (see Mini-Case 6.5 above). This was explained by an underwriting manager who believed that, *“the emerging information strategy is linked, even being driven, by corporate strategy ... information strategy is coming from the top. People at the operational level must think about what they need. Leadership from the top is definitely emerging, a group strategy is emerging”* [cas6int1]. This situation was confirmed by the IT strategy manager who was of the opinion that, *“to a certain extent there is a linkage between information strategy and corporate strategy. The global MI strategy is linked to corporate strategy even though there is no formal information strategy”* [cas6int2].

Strategy Implementation

Strategy implementation was a dimension of strategic planning to which five of the case study organisations were giving particular attention. **Insurance company ‘C’** had the objective of ensuring that the strategies being developed by individual business units were aligned with the overall corporate strategy (see Mini-Case 6.6 below). To successfully achieve this it was recognised that the provision of good quality and timely information would be essential. One of the primary reasons for this was that, *“business units have strategies which are aligned with corporate themes, and the types of information analysis required to support these strategies are common between business units”* [c6find]. However, problems existed with the

availability of the information that was required, *“progress of strategies is being impacted by a shortfall in the provision and exploitation of quality information within business units”* [c6find]. It was also recognised within the firm that this was a difficult problem to resolve. This was based on the knowledge of previous failed attempts to improve the situation. Within the insurer it was recognised that *“previous attempts had been made to rectify the situation within business units but these had largely failed due to a lack of strategic vision and the failure to link information strategy to business strategy”* [casenote6].

Mini-Case 6.6

Strategy Implementation – Insurance Company ‘C’

As the insurer began to understand its strategic options, and specific strategies were selected, it was faced with the challenge of implementing these strategies on a global basis. This was a major challenge. Although having had a global presence for a number of decades, the firm had operated as a federation of companies each one exercising a high degree of autonomy. The new globalisation strategy meant that this could no longer be the case, and all the companies of the group would have to adhere to a common brand image and common strategies. Managing this implementation process required that substantial quantities of good information had to pass between group management and the individual business units. Little of this type of information was available and there were few effective processes in place to facilitate the flow of information that was required. This was having a negative impact on the implementation of the globalisation strategy and on the perceived value of the information that was available. A key element of the global information project was to identify the information that was required and to propose the facilities that were required for making the information available to those who needed it..

The **clearing bank** also had ambitious strategies that were dependent on the provision of information. However, there were potential pitfalls that could derail these plans. The availability of the required information was one of the major problem areas. As an internal report for the bank had identified *“the information that was identified as being required for the bank to achieve the corporate objectives was identified in a top down manner with no consideration being given to the actual information that was available or from where it could be obtained”* [c1feastu].

However, there was still a great deal of optimism within the **clearing bank** that if the right information was provided the strategies being adopted would be successful. It was identified within the bank that, *“a critical factor for the success of this corporate strategy will be the availability of good quality information. This information will be required not only for the implementation of the strategy but also for the monitoring of*

progress towards its success” [casenote1]. There were optimistic views in the bank related to the impact of the change programme, and the contribution that could be made by information assets. There was a view that through the implementation of the corporate strategy and the effective use of the information being provided, “*very clear tangible benefits were expected to be obtained*” [c1buscas]. The information that was required to support the implementation of strategy at the **retailer** was also being identified, and was being incorporated into a strategic roadmap. As one informant identified “*the business requirement for information is linked to corporate strategy in the form of the five year strategy, the (strategic) roadmap*” [cas2int2]. This was reinforced by the view that “*informally information is part of the roadmap strategy and via this information is linked to the corporate strategy*” [cas2int2]. There was additional evidence to support this especially when the intended uses of information were considered. As an internal study identified, “*the strategic roadmap identified a number of key uses of information including enabling consistency along the value chain, performance reporting, and improved decision making*” [c2propre].

Corporate Performance Measurement

The **retailer** had been utilising the same process for monitoring corporate performance for many years. There was a view within the company, predominately at senior levels, that this process was adequate for managing the business effectively. The explanation given by a business manager in the sales and stock area was, “*top management prefer to review detailed information which is contained in management control documents, this has occurred for many generations and there have been very few mistakes made. There is a backbone of control documents which are regarded as being 'almost sacred' and these documents are heavily relied upon*” [cas2int2]. However, the confidence of senior management was not shared at lower levels, particularly amongst managers who understood the effort that was required to produce the information, and the poor quality and consistency of the information being provided. It was not until the late 1990’s that “*the scale and complexity of the problem started to become apparent and this only occurred as a result of competitive pressures driving the need for good quality, timely, and consistent information being made available on the performance of the organisation internally, and on the external environment*” [casenote2]. Managers within the firm who had started to identify these problems believed that, “*by gathering good quality data together in a timely fashion*

senior management could be provided with a facility that provides Group/Corporate views of company performance” [c2usereq].

Mini-Case 6.7

Corporate Performance Measurement - Insurance Company ‘B’

Many strategic changes were being implemented at insurance company ‘B’ and there was recognition that processes had to be provided for monitoring and measuring progress. As the management of the firm were capable of taking an innovative and forward-looking view of how the company should be managed, they concluded that the performance measures that should be adopted would go beyond the traditional financial measures. To this effect they introduced critical success factors and key performance indicators that were bundled together into a balanced scorecard. The effectiveness of the balanced scorecard was completely dependant on the provision of good quality information. Very little of the required information was readily available which resulted in a less than positive perception of the value of the information that was currently available. A number of actions were being taken to improve this situation. A data warehouse was being developed which would gather together much of the information that was needed. In addition an executive information system was being developed to feed off of the data warehouse, and this would be used to provide executives with an easy to use access facility to the balanced scorecard information.

Gaining a better understanding of the performance of the business was the objective of the **commercial bank**. There was a belief in the bank that if this could be achieved it would have a positive effect on the performance of the bank. Observations identified that, *“they believed that they needed to know what their current market share was, what dealer turnover was, who were the good and bad performing dealers, how many good dealers were being lost and why. They also felt that it was important to understand the terms that competitors were offering to dealers and how they compared with their own” [c5busreq]*. This type of requirement was identified elsewhere in the bank with a recognised focus being *“on sales targets and sales growth, two areas that were identified where the business needed better, and more, information to understand the market and their own performance” [c5buspur]*. At **insurance company ‘B’** there was a specific objective to actively manage the company by the use of a balanced scorecard utilising critical success factors and key performance indicators (see Mini-Case 6.7 above). It was recognised that, *“a significant amount of information was required to support the individual measures on the corporate balanced scorecard” [c4balsco]*. It was also recognised that once these facilities had been developed there would be an ongoing need to use and maintain them. In a review that was conducted some time after the implementation, it was

recognised that this was not happening as well as it should. As the study identified *“although a considerable amount of good strategic planning was being undertaken which included the identification of major Critical Success Factors (CSF's) it was recognised that not enough had been done to monitor the progress of the strategic plan or of the achievement of the CSF's”* [casenote4].

Competitive Advantage

Attempting to gain competitive advantage was a dimension of strategic planning that was at the forefront of attention for five case study organisations. The **commercial bank** already had a competitive advantage in many of the markets it operated in. The bank believed that its main challenge was to maintain this advantage and sustain its market leadership. However, by the mid 1990's managers in the bank had also started to acknowledge, *“it was becoming apparent that the bank was deficient in much of the information that was required to compete in a market where good quality information could provide substantial competitive advantage”* [casenote5]. It was also observed that, *“the importance of information had started to be recognised and senior management had realised that good quality information was of great importance and that without it they would have difficulty competing and maintaining their leading position in the UK market”* [casenote5]. Striving to obtain a competitive advantage over the competition, and to be seen as the best retail bank by customers, was a major objective of the **clearing bank** (see Mini-Case 6.8 below).

Mini-Case 6.8

Competitive Advantage – Clearing Bank

A major programme had been initiated in the bank that had the main objectives of obtaining a competitive advantage over the competition and for ensuring that customers saw the bank as the best retail bank. There were a number of strands to this programme including branch renewal activities, the development of new channels to market such as telephone banking, and the transformation of the bank into a customer-centric organisation. Much of this programme was dependent on the accessibility and quality of the right information. Unfortunately, substantial amounts of the information that was required could not be obtained due either to it not existing, or because it was extremely difficult to obtain in a timely manner. This was having a negative impact on the perceived value of information. The bank was taking steps to remedy this and these steps took the form of a data warehouse, and information analysis facilities that would be made available to different areas of the business.

The use of information was seen as a major enabler to achieving this objective. One of the most critical types of data that the bank realised was required to achieve this

objective was information on the customer base. Research conducted by the Bank identified, *“a number of areas where good quality customer information will be essential to succeed with the corporate strategy and gain competitive”* [casenote1]. Another internal bank study identified that *“the bank is facing pressures which are leading to an increasing demand for good business information ... these include the need to focus on customers; the use of information for competitive advantage; and the trend to delegate decision making to all levels of the organisation”* [c1dwsd]. A third study reiterated the importance of customer information in the quest for competitive advantage by stating, *“holding accurate and complete customer information allows the bank to maintain a competitive edge”* [c1dwpap]. **Insurance company ‘B’** was also focused on objectives to improve the quality of decision making through the provision of improved information, and there was a belief that *“this improvement in decision making would in turn lead to competitive advantage by enabling faster and more incisive moves into profitable, or out of unprofitable, markets”* [c4fearep]. At **insurance company ‘C’** there was a similar belief that *“providing the necessary information would also enable managers to drive for market leadership with the best positioned units and when necessary wind down or exit from unprofitable businesses”* [c6coitstra].

6.5.2 The Use of Information to Facilitate Strategic Planning - Case Analysis

All the case study organisations were concentrating on dimensions related to the use of information to facilitate strategic planning. The impact that the use of information to facilitate strategic planning was expected to have varied considerably across the case study organisations. This can be identified by taking a case-orientated approach to compare and contrast the experiences of two of the organisations where the use of information to facilitate strategic planning was expected to have a noticeable impact, with two organisations where little impact was expected. The analysis suggests that the clearing bank and insurance company ‘C’ were likely to experience a highly significant impact from the use of information to facilitate strategic planning:

Clearing Bank: The bank was implementing a major strategic change programme. It had been recognised that the market was changing, competitors were changing, and most importantly customers were changing. The bank realised that it also had to change, *“amidst all this turmoil, it becomes even more*

important to plan for the future and to formulate a strategy which will allow the bank to prosper in the new competitive environment” [c1str2ksep]. There were a number of interlinked strands to the strategy that was being developed and implemented. An overhaul of the branch network was being undertaken, telephone banking was being introduced, new products were being developed, and there was a much greater customer focus. The bank had recognised that, *“we must keep on looking for new places and methods to meet our customers’ needs”* [c1str2ksep]. A critical component to the success of all the major strands of the strategic change programme was good information. This was clearly recognised for the development of new products, *“reliable and objective information is essential to determine what products are wanted and how they should be sold”* [c1str2ksep]. A similar requirement existed for the development of customer relationships and the need to, *“maintain a history of customer contact so that we can identify patterns of behaviour”*. The importance of having access to good customer information was also important to the development of the telephone banking channel, *“the phonenumber system will be linked to the customer information file to provide easier access and allow information to be shared with branches”* [c1str2ksep].

Insurance Company ‘C’: the insurer had developed a major corporate strategy that it was implementing. Among the major objectives of this strategy was a desire to develop its global capacity and to focus on customer needs. The firm wished to become a world-class underwriting company and this could be achieved by creating and sharing underwriting competencies across business units. It realised that it had to be able to identify good markets to be in and poor markets to exit. It had to develop the products and services that met customer requirements, and it had to build relationships with distributors and customers, sustainable in the long term. The firm had realised that customer preferences and behaviours were changing, it recognised that there were, *“more sophisticated customers seeking best fit for individual needs and expectations amongst an increasing proliferation of rival offerings”* [c6corstr]. All of these themes were being implemented across the global organisation, *“business units have strategies which are aligned with corporate themes, and the types of information analysis required to support these strategies are common between business units”* [c6find].

This need for good information across the organisation had already been recognised during the development of the corporate strategy. As the strategy itself stated, *“having good management information which is applied to establishing a deep knowledge of the portfolio, its performance and behaviour and on which to make informed decisions”* [c6corstr].

By contrast, it can be seen from the following discussion that there were unlikely to be any improvements from strategic planning activities facilitated by the use of information at insurance company ‘A’ and the car manufacturer.

Insurance Company ‘A’: Lou Gerstner had famously stated when joining IBM, *“the last thing IBM needs is a vision”*; the last thing that insurance company ‘A’ needed was a corporate strategy. What insurance company ‘A’ did need was immediate and decisive action to correct its business performance. This had been realised, and the firm was very focussed on developing its operational abilities. This included improving its marketing capabilities, developing relationships with brokers, and developing profitable products. The dilemma that the firm was faced with was starkly highlighted by an underwriting manager who stated, *“at present the company is not aiming to gain competitive advantage, it is just trying to keep-up with the competition”* [cas3int2].

Car Manufacturer: Although not being anywhere near as perilous a position as insurance company ‘A’, the business area of the car manufacturer being investigated also had very little current interest in corporate strategy. The main focus of this area of the business was improvements to the performance and effectiveness of the production process, and the ability to speed up the delivery of cars to customers. Good information was required for this but not for undertaking any strategic activities, *“the need was identified for good quality, timely information to support program profitability analysis and program analysis against key business objectives”* [c7rfq].

This analysis suggests that the use of information to facilitate strategic planning activities has an important impact on information consumers' perceptions of the value of information. It also suggests that the use of information to facilitate strategic

planning is an important factor for most organisations. The analysis of the individual case study organisations also identified a number of lessons learnt, some specific to each organisation, and others that appear to be common across a number of organisations. This section highlights some of the strategies where the use of information to facilitate strategic planning has been identified by the case study organisations :

- **A balanced approach to corporate performance measurement can be effective but it does require a significant commitment in terms of the information gathering process:** A substantial weight of opinion has built up in the literature that a balanced approach, rather than a pure financial approach, is a more effective way to monitor the performance of an organisation. It was identified in a number of the case study organisations that this view was starting to take root. In particular insurance company 'B' was engaged in the "*development of a Balanced Business Scorecard to assist executive management implement the change programme and to manage the business in a more effective manner*" [c4balsco]. Although being very effective this approach to corporate performance measurement does require a significant information gathering effort. The insurer had already identified this, "*a significant amount of information was required to support the individual measures on the corporate balanced scorecard*" [c4balsco]. This had also been recognised by the commercial bank, "*the measurement of business performance is an activity that requires the gathering of information from all areas of the business and from external sources*" [c5busreq]. The clearing bank had also identified the need for this information, "*a critical factor for the success of this corporate strategy will be the availability of good quality information ... this information will be required not only for the implementation of the strategy but also for the monitoring of progress towards its success*" [casenote1].
- **Information does have the potential to enable the gaining of competitive advantage:** Since Porter and Millar (1985) put forward the argument on "*how information gives you competitive advantage*" much attention has been given to the topic in the literature. In almost all the case study organisations there was a

belief that this was possible. The ability to gain and use information to understand customers better, to identify niches in the market, to make better decisions, or to develop products with features that were closer to customer desires than any other, was an objective of many of the organisations. From this they believed that an advantage could be obtained over the competition. The clearing bank believed that this was possible, *“holding accurate and complete customer information allows the bank to maintain a competitive edge”* [c1dwpap]. Insurance company ‘B’ believed that by providing the right information and using it to make better decisions, *“would in turn to lead to competitive advantage by enabling faster and more incisive moves into profitable, or out of unprofitable, markets”* [c4fearep].

In addition to highlighting some practical steps that organisations can adopt to improve their use of information for facilitating strategic planning, and in so doing their information value, this research also highlights a fundamental lesson about the nature of the use of information for facilitating strategic planning. The evidence from the case study organisations suggests that the information used to facilitate strategic planning is significantly impacted by the information accessibility and information quality constructs discussed earlier. To effectively use information for strategic planning the information must be easily accessible to the consumers and it must be of good quality. If there is a failure to meet either of these requirements the likelihood is that the strategic planning activity will fail and the perception that the information is valuable will deteriorate.

6.5.3 The Use of Information to Facilitate Strategic Planning Activities Conclusions

All the case study organisations believed that the use of information would have an impact on specific strategic planning activities. In general the case study organisations had a neutral perception on the impact that the information currently provided was having on strategic planning activities. However, these perceptions changed when information that was expected to be provided in the future was considered. In all cases a positive perception was exhibited on the impact this information would have. This was based on the assumption that all the information that was required would be provided. Whether this information would ever be

provided, and if the positive impact that was expected would really materialise, are questions that may be answered by additional research.

Most organisations appear to have a high level of confidence that the provision of good quality and timely information can have a highly significant impact on the strategic planning activities that they are undertaking. This is despite the fact that most organisations believed that the information that was currently being provided was failing to make a positive impact. This was highlighted by insurance company 'C' where there was a belief that, "*progress of strategies is being impacted by a shortfall in the provision and exploitation of quality information within business units*" [c6find]. Whilst the literature with regard to the use of information to facilitate strategic planning activities and its perceived value is growing, there is little previous research that has sought to explicitly link these two themes together. The research therefore makes an important contribution in that it shows how information was being used to facilitate strategic activities in eight large, multi-national organisations and the impact this was having on the perceived value of information. Moreover, it provides some important insights into the problems that were being encountered and highlights a number of the lessons learnt.

6.6 Use of Information to Facilitate Organisational Change

Whilst previous research has focussed upon the impact of information technology in engendering organisational change, the aim of this research is to focus explicitly on the role of information. Academics typically define organisational culture in terms of the way people think, which has a direct influence on the ways in which they behave. For example, Williams et al (1990) and Sathe (1985) both describe culture in terms of shared and relatively stable "*assumptions, beliefs and values*" that exist within an organisation. Organisational culture can therefore be viewed as the "*the social or normative glue that holds the organisation together*" (Smircich, 1983). Whilst accepting these definitions, in principle, it is important to make two caveats. Firstly, it has been recognised that as organisations grow it is likely that a number of sub-cultures, based upon functions or teams, will proliferate as opposed to the existence of one all pervading culture shared by the entire organisation (Zammuto & Krakower, 1991). Secondly, although culture is usually considered to be relatively stable, in practice it evolves over time in response to changes in the internal and external

environments (Brown, 1995). Many management gurus, in particular Peters and Waterman (1982) have vigorously promoted the idea of developing a “strong” corporate culture, as a mechanism for improving organisational effectiveness and ultimately financial performance. As Willmott (1993) notes “*ideas about the strengthening of Corporate Culture now infuse diverse corporate change programmes, including those introduced primarily as a means of improving quality, flexibility and or responsiveness to customer needs*”. Consequently, there is now a common management perception “*of culture as a manipulable variable for gaining competitive advantage*” (Willmott, 1993), which has brought organisational culture to the forefront of much management thinking. The view that organisation culture is something that can be manipulated to promote organisational effectiveness, has increased the need for methods and strategies that can be used to effectively manage cultural change (Williams et al, 1990). Unfortunately, organisational change typically brings considerable uncertainty, with employees feeling that their job security or status is under threat (Furnham & Gunter, 1993). Consequently, it is important that organisational change programmes explicitly recognise the likelihood of resistance to change and take effective steps to counteract the threat (Williams et al, 1990). Based upon the review of the literature and the findings of the research, the following working definition for organisational change has been derived:

Organisational Change - Modifications and enhancements to the social, normative or structural glue that holds the organisation together.

(from Smircich, 1983).

A number of frameworks related to cultural change have been used extensively by this study, but the term organisational change has been used in the discussion. This reflects the scope of this research, which has gone beyond pure cultural change and has incorporated working practice and process change. This is based on the fundamental belief that cultural change more often than not must be preceded by organisational change. The use of information for facilitating organisational change was discussed in the review of the literature in Chapter two. From the review of the literature, and from their significance during the case studies, four dimensions of the use of information for facilitating organisational change were selected for

investigation by this research; integration and lateral independence, customer service, flexibility, and performance orientation.

Integration and Lateral Independence - integration and lateral independence is the first dimension to be considered. It is identified in the framework developed by Romm et al (1991) and has received attention in the wider literature (Lawrence and Lorsch, 1967; Kast and Rosenzweig, 1979; Child, 1984; Huczynski and Buchanan, 1991; Pliskin et al, 1993; Gould, 1996; Payne, 2000). A definition provided by Lawrence and Lorsch (1967) stated, *“integration is defined as the process of achieving unity of effort among the various subsystems in the accomplishment of the organisation’s task”*. The implications of implementing this type of change was highlighted by Whipp et al (1989). They observed that *“successful firms have understood the need to cultivate formal and informal relationships across functions and hierarchies as well as outside the organisation”*. One of the major changes that organisations have attempted to implement is a move away from tightly bound departmental structures to start-to-end, cross-functional business processes. In many cases these business processes start and end with customer interaction (Braganza, 2001). In her discussion of a change of this nature Stafford (1993) argued, *“individual departments or functions may excel, but unless they work together effectively in the processes that deliver customer value, their efforts may well be futile”*. This ability to operate in a coordinated fashion and across traditional boundaries is the essence of integration and lateral independence. A critical component of this structure is the flow of information. In recognising this Ostroff and Smith (1992) argued that information should be provided, *“just-in-time – on a need to perform basis, not a need to know basis”*. This was also identified by Heracleous and Langham (1996). Evidence that supports the argument that the flow of information, in the form of workflow management, can have an important role to play in facilitating change with respect to the degree of integration was presented by Doherty and Perry (2001). Based upon this review of the literature, and the findings of the research, the following working definition for integration and lateral independence has been derived:

Integration and Lateral Independence – *An organisational change that requires the organisation to alter behaviours towards traditional organisational boundaries*

resulting in cross-functional, start to end business processes along which the information required to support the process freely flows.

Performance Orientation - Performance orientation is another dimension of organisational change that has been discussed widely and implemented in many organisations. At the organisational level much of this has been a movement away from the traditional financial measures towards a much more balanced set of measures. At the individual level it has seen a move towards objective setting and measurement of performance against objectives. The changes that organisations can implement to manage performance has been the focus of some significant contributions to the literature, (Daniel, 1961; Rockart, 1979; Kast and Rosenzweig, 1979; Child, 1984; Mansfield, 1986; Peters, 1987; Eccles, 1991; Wilderom et al, 2000). It was Peters (1987) who observed that the traditional methods of corporate performance appeared to be inadequate, "*our systems invariable measure the wrong stuff*". This observation was developed most famously by the work of Kaplan and Norton (1992, 1996) with their development of the balanced scorecard. Critical to the success of a balanced approach to performance measurement, is the ability to collect substantial quantities of excellent information from internal and external sources. The developments that have taken place with regard to the performance of individuals in the organisation have also received wide attention in the literature (Kast and Rosenzweig, 1979; Child, 1984; Long, 1986; Mansfield, 1986; Townley, 1989; Huczynski and Buchanan, 1991). At the individual level, the major organisational change that has taken place has been the focus on the performance of the individual at all levels of the organisation (Long, 1986; Townley, 1989). As with organisational performance measurement, significant amounts of information are required for a performance appraisal scheme to work effectively. Another substantial performance orientated change that organisations have been introducing is the linkage of organisational and individual performance measurement (Kast and Rosenzweig, 1979; Peters, 1987; Kaplan and Norton, 1996; Finlay, 2000). This is usually achieved by rippling the objectives of senior managers down the organisation (Whipp et al, 1989). Based upon this review of the literature and the findings of the research, the following working definition for performance orientation has been derived:

Performance Orientation – *An organisational change that requires individuals within the organisation to develop an awareness of organisational and individual performance and to adopt an attitude that is focused on enhancing performance.*

Customer Service - customer service is another organisational change that has been considered and implemented by many organisations. It is also a dimension that has received significant attention in the literature (LaLonde and Zinszer, 1976; Peters and Waterman, 1982; Peters and Austin, 1985; Lovelock, 1991; Armistead and Clark, 1992; Clutterbuck et al, 1993; Willmott, 1993; Champy, 1995; Gutek, 1995). “*The customer, in spirit and in flesh, must pervade the organisation – every system in every department, every procedure, every measure, every meeting, every decision*”, (Peters, 1987). This was an impassioned plea to every organisation to view the customer as the prime focus for all operations. Hofstede (1997) also recognised that the degree that organisations adopt a “*customer orientation*” is a key dimension of corporate culture, with organisations being characterised as either “*pragmatic*” or “*normative*”. Pragmatic organisations focus externally upon “*meeting the customers' needs*”, whereas *normative* companies are more concerned with “*correctly following organisational procedures*”. The recognition of the importance of the customer, and the need to provide excellent customer service, has been one of the most dramatic changes in organisational culture over the last decade. This organisational change has been based on one simple premise, “*define your goods and services from the point of view of what the customer wants, not from the point of view of what the company can do*” (Champy, 1995). However, this has proven to be one of the most challenging organisational changes that organisations have had to face. To provide excellent customer service an organisation must first have a good idea of who the customer is and what products the customer desires. At the heart of this is a deep understanding of the customer. To achieve this a significant amount of information is required about the customer. This typically includes demographic, behavioural, financial, and personal details. Once obtained this information is used to develop and manage the customer relationship by many areas of the business (Gutek, 1995). Failure to gather the relevant information makes it virtually impossible to build the understanding of the customer and to establish the close relationship required (Peters and Waterman, 1982; Bradshaw and Brash, 2001). Based upon this review of the literature and the

findings of the research, the following working definition for customer service has been derived:

Customer Service – *An organisational change that requires individuals within an organisation to gain a detailed understanding of their customers and to behave in a manner when interacting with the customer that will delight the customer.*

Flexibility - developing an organisation that has the flexibility to change and compete in a volatile environment is another organisational change that has been the focus of many organisations. This is another dimension that has been widely discussed in the literature (Child, 1984; Kanter, 1988; Kanter et al 1992; Stacey, 1993; Zammuto et al, 2000; Sathe and Davidson, 2000). As Whipp et al (1989) argued, “*in order to survive in the 1990’s organisations will have to remain flexible in the sense of responding not only to shifting market pressures but also creating the required internal innovations*”. Organisations wish to become more flexible in the way they can develop new products; they wish to become more flexible in the way they can enter and exit the market when new opportunities are identified; they have a desire for the organisation internally to be extremely flexible to enable it to re-organise itself quickly to meet the rapidly changing external environment (Stacey, 1993). Flexibility within an organisation depends heavily on a supply of good quality and timely information. New product development requires an understanding of the market and of customer desires. Entering and exiting markets requires information on the market product sales, competitive products, and customers. A flexible internal organisation requires information on staff numbers, staff competencies, geographical locations, and strategic resources. Without this information the likelihood of an organisation being able to develop the required flexibility is almost impossible. Based upon this review of the literature and the findings of the research, the following working definition for flexibility has been derived:

Flexibility – *An organisational change that requires the organisation to develop internal structures, behaviours and competencies that enables it to rapidly respond to changing internal and external pressures.*

The literature review in Chapter two identified that the use of information to facilitate organisational change was an activity that can have a significant impact on the perceived value of information. It also identified that much of the literature was of a theoretical nature and there were few examples of empirical research being undertaken to support the theory. Having revisited the literature produced after 1995 a number of noticeable additions have been identified. They are listed in Table 6.7.

Table 6.7 - Use of Information to Facilitate Organisational Change Literature – Post '95

Contributor	Summary	Type	Method	Limitations
Kaplan and Norton (1996)	Discusses the use of a balanced scorecard for measuring the performance of corporate strategy	T		
Zammuto et al (2000)	A general discussion on organisational culture and organisational innovation. Provides a detailed discussion on organisational flexibility.	T		
Sathe and Davidson (2000)	A general discussion on organisational change. Discusses organisational flexibility in detail.	T		
Doherty and Perry (2001)	An investigation into the implementation of workflow management. Discusses the impact this flow of information had on integration within the organisation.	E	Q, C	No discussion of information value.

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

Very few empirical contributions appear to have been made and those that have been made have made no explicit references to the value of information. The conclusions reached in Chapter two regarding the need for further empirical research are still valid conclusions. The use of information for the facilitation of organisational change is an important construct in the shaping of perceptions of information value. From the range of organisational change dimensions that are available four were chosen for this research, integration and lateral independence, customer service, flexibility, and performance orientation. They have been selected primarily because that have received significant attention in the literature, or they have emerged as being significant during the development of the case studies, or both. The four dimensions selected have been used throughout the project as the basis for discussing the dimensions related to the use of information to facilitate organisational change. This study set out to identify whether information was being utilised to facilitate organisational change in the case study organisations, and whether this use of information was having an impact on the perceived value of information.

Table 6.8 - Dimensions of Organisational Change

Dimension	Supportive Literature
Integration and lateral independence	Kast and Rosenzweig (1979) Child (1984) Romm et al (1991) Doherty and Perry (2001)
Performance orientation	Rockart (1979) Kaplan and Norton (1992) Romm et al (1991) Townley (1989)
Customer service	Armistead and Clark (1992) Clutterbuck et al (1993) Guttek (1995)
Flexibility	Kanter et al (1992) Stacey (1993) Zammuto et al (2000) Sathe (2000)

It was envisaged that the exploration of this construct might provide some important insights into the value of information, and information facilitated organisational change. The evidence for this study was collected and measured as described in Chapter five (5.4 Information Accessibility). The results of this analytical exercise have been summarised in Table 6.9. In addition, a number of business activities were identified where information was being used to facilitate organisational change. This analysis provided an indication of the impact that the use of information to facilitate organisational change had on business activities in the case study organisations, and particularly the impact it had on perceptions of information value. The results of this analysis can be found in the Mini-Cases embedded in the Use of Information to Facilitate Organisational Change – Dimension Analysis section of this chapter. It was also very evident from the analysis of the case studies that in the vast majority of circumstances the organisational change was viewed very positively, which contributed to the perception that information is viewed as an increasingly important organisational asset. This was recognised at insurance company ‘C’ where the overall opinion was that: *“the importance of information is being recognised by the company as being imperative to future success and serious steps were now being taken to ensure that information is regarded as being a valuable asset”* [casenote6].

Table 6.9 - Organisational Change Facilitated by the Use of Information

Case	Customer Service	Flexibility	Performance Orientation	Integration and Lateral Independence	Overall Impact
Clearing Bank	***	*	-	-	*
Retailer	*	-	***	***	**
Insurance Company 'A'	*	-	**	-	*
Insurance Company 'B'	*	***	*	***	**
Commercial Bank	***	-	***	-	**
Insurance Company 'C'	***	*	***	***	***
Car Manufacturer	*	***	***	*	**
Insurance Company 'D'	***	-	-	-	*

Key: *** highly significant impact; ** significant impact; * moderate impact; - minimal impact

6.6.1 The Use of Information to Facilitate Organisational Change – Dimension Analysis

Customer Service

It can be seen from Table 6.9 that one of the most widespread organisational changes, facilitated through the wider accessibility and quality of information, was related to enhancing 'customer service'. Among the changes with a focus on customer service that were taking place were strategies for transforming the organisation from being product centric to customer centric, gaining a better understanding of customers to enable more effective marketing and sales, and attempting to build better relationships with customers. Within all the organisations the changes focused on customer service were perceived almost universally as being positive. One of the very few negative perceptions was from **insurance company 'A'** that believed "*that it did not 'own' the customers, the customers are 'owned' by the brokers*" [casenote3]. Otherwise, all the perceptions were positive. One of the **banks** recognised that it was "*necessary to understand customer needs and to meet those needs by providing excellence of service*" [c1str2ksep] (see Mini-Case 6.9 below). The view of one insurance company, **insurance company 'D'**, was that it was essential to "*develop an intimate understanding of the customer, and provide convenience of access to the customer*" [c6coitstra]. For all the customer focus changes that were being implemented the use of information was a key factor. As an internal study at the

clearing bank observed *“the bank is committed to a customer orientation in all its marketing and sales activities and information about customers will be of fundamental importance in the future”* [c1feastu].

Mini-Case 6.9

Customer Service – Clearing Bank

The clearing bank had realised that it had to become much more customer centric to compete effectively. It recognised that it had to be 'special' and provide excellent service quality. A wide range of activities were being undertaken to achieve this from re-designing bank branches, implementing telephone-banking services, and instigating customer retention programmes. At the heart of all these initiatives was the need to develop a detailed understanding of the customers and their needs. Gaining this understanding was dependent on gathering excellent information on the customers and being able to use it effectively. Much of the information that was required was not available. It either did not exist, or was extremely difficult to access. This was hampering the efforts of areas of the bank that were actively attempting to develop a good customer understanding. Within these areas the perception of the value of the information that was being provided was low. However, actions were being taken to rectify the situation. This included the development of a data warehouse where customer information would be consolidated, and the creation of a marketing analysis system to enable marketers and product developers to start analysing and understanding the customer base.

This was reinforced by the strategy being adopted at the **commercial bank** that was to *“drive towards being a customer centric organisation rather than product centric”* [casenote5]. However, they recognised that *“there was a serious lack of consolidated information on the customers and that this was an area where significant improvement was required”* [casenote5]. Views of this nature were expressed by all the organisations.

Performance Orientation

A dimension of organisational change that received almost as much attention as customer service was performance orientation. Two of the insurers were undertaking organisational changes within the firm in an effort to develop organisations that would be capable of regaining market share. For one of them, **insurance company 'B'** this included the creation of an organisational culture of continuous improvement. One of the banks was undergoing major internal changes to develop an organisation that was focused on increasing profitability. For the **retailer** the organisational change that could lead to substantial performance improvements was to get the organisation to mentally break down the barriers of the supply chain and to consider

suppliers as an 'integral' part of the organisation. This was simply moving away from 'them' and 'us'.

Mini-Case 6.10

Performance – Commercial Bank

The bank was a market leader in a number of its markets. One of these markets was tele-sales. It had a substantial tele-sales operation that provided significant revenues and profits to the business. However, this was a market where there was intense competition, and the firm realised that it had to be more efficient in the way it ran its tele-sales operation if it was to maintain its market leading position. To achieve this a number of initiatives had been started, one being a drive to improve performance of the tele-sales department. The managers of this department were quite candid about their lack of knowledge as to the performance of the department and the individual agents. They had a pressing need to understand departmental and individual performance. The managers believed that if they had a better understanding of the performance of individuals they could initiate performance improvement programmes and set objectives that would lead to the overall improvement of the department's performance. Key to the success of this initiative was capturing information on the performance of individual agents, being able to analyse this information, then setting objectives for all the agents based on the findings. Little of this information was available to the managers and this was resulting in a negative perception of the value of the information provided. To change this situation a number of steps were being taken. A data warehouse was being developed to support this type of information requirement and the needs of the tele-sales department were being given top priority. In addition, an information analysis application was being developed to provide the managers of the tele-sales department with the facilities they required to analyse, understand, and improve the performance of the department.

Most of these changes were being perceived positively within the organisations that were undertaking them. The **commercial bank** was "*convinced that significant improvements could be made to the performance of this operation if we could better understand the performance of the individual sales people*" [casenote5] (see Mini-Case 6.10 above). One **insurer** was attempting to alter the culture of the organisation so that it could "*develop low cost distribution and achieve high efficiency standards through superior execution of all processes and transactions*" [c6coitstra]. Again, much of this organisational change was being facilitated through enhancements in the quality and availability of information. The **car manufacturer** acknowledged that, "*good quality information was required to improve the performance of key processes and to achieve nimbleness*" [casenote7]. One of the insurance companies, **insurance company 'C'** had recognised that "*it was becoming apparent that the company was deficient in much of the information that was required to compete in a market where good quality information could provide substantial competitive advantage*"

[c6miapps]. Another insurance company that was under severe pressure from the entry of new types of competition into the market realised that *“an area that needs urgent attention to combat the market share problems is obtaining better quality information for managing the business operations and in particular for the motor underwriting business”* [c3dwprop]. The importance of providing the right information for improving performance was also recognised by the **retailer**. As one of the interviewees observed, *“by utilising information effectively we hope to obtain better productivity from our people; shifting effort from low value to high value tasks is the most important priority. This will require information that is appropriate, not raw data”* [cas2int2].

Flexibility

A third dimension of organisational culture where a number of the organisations were implementing change was that of 'flexibility'. The **insurer** that was implementing the greatest organisational change in this dimension was attempting to break down many of the internal barriers within the firm by transforming the management of the firm from departmental silos to start-to-end business processes. The **car manufacturer** was attempting to implement business process change that would introduce much more flexibility in the ordering, specifying, and manufacturing of vehicles processes (see Mini-Case 6.11 below). The objective of this enhanced flexibility was to significantly reduce the time between a customer ordering a vehicle and the vehicle being delivered. In general, there was a positive perception to flexibility although some organisations could identify a lack of it. *“Being able to obtain the right information and providing the right infrastructure takes time. The organisation moves like a tortoise”* [cas2int1] was the opinion of one interviewee at the **retailer**. The situation at **insurance company 'A'** was summed up as being *“managers cannot really understand the business ... currently there is a complete lack of flexibility”* [cas3int2]. Where these changes were considered to be of great importance the opinions were more positive. **Insurance company 'B'** believed that it needed to *“operate along cross company end to end business processes rather than narrow departmental lines ... need to be flexible enough to respond to changing customer needs”* [casenote4].

Mini-Case 6.11**Flexibility – Car Manufacturer**

As one of the world's leading car manufacturers the firm had a substantial market share and competing for more was very difficult. The firm was continually in search for initiatives that could provide a competitive advantage over its competitors. One initiative that was being pursued was the ability to substantially reduce the time between a car being ordered by a customer, till the time it was delivered. Currently this took about six weeks. The firm had a desire to reduce this to fifteen days. To achieve this there was a need to introduce much more flexibility into all the processes that were involved from order to delivery. A critical component that had to be developed was a new process that calculated the allocation of car production across all the firm's European plants. A significant amount of flexibility had to be built into the overall process as it had to take into account all the customer preferences, and all the constraints imposed by legislation in different countries. This process would be dependent on information being provided from many sources such as orders from car dealers, capacity from manufacturing plants, and car specification details. This type of information was currently very difficult to obtain, it was held in over twenty different sources and there was little compatibility between the sources. This had led to a negative perception of the value of the information that was available. To overcome this problem, and to capture and consolidate the information that was required, a data warehouse was being created. This would be used as the source of the information required by the vehicle programming application that would calculate much more flexible and speedy production allocations, and provide the ability to deliver the 'fifteen day car'.

The **car manufacturer's** drive towards flexibility was encapsulated by the view that "*nimbleness is about having processes that improve our understanding of the consumer, support fast decision-making, reduced time to market, reduce costs and improve quality*" [c7annrep]. Information had an important role to play in all of the changes being implemented. The **clearing bank** recognised that "*with the right information the bank should be able to spot opportunities and act proactively*" [caslint1] and the **car manufacturer** realised that "*good quality information was required to improve the performance of key processes and to achieve nimbleness*" [casdoc7].

Integration and Lateral Independence

A final dimension of organisational culture to be considered in detail, is integration and lateral independence. This was being addressed by four of the case study organisations. In the cases of the **retailer** and **insurance company 'C'**, the improvements in information availability were having highly significant impacts to the level of integration. For example, the retailer was attempting to remove internal

and external barriers to improve the performance of its supply chain. A specific component of this change was to improve the quality and flow of information along the supply chain. **Insurance Company 'B'** was attempting to ensure that as part of its drive to implement end-to-end business processes that all areas of the business had the necessary levels of independence to be effective (see Mini-Case 6.12 below). This type of organisational change was perceived to be positive within all the organisations involved.

Mini-Case 6.12

Integration & Lateral Independence – Insurance Company 'B'

There were major changes being implemented at insurance company 'B'. These changes all had the objective of turning around a firm that had been in decline for many years. A primary reason for this decline had been the stagnation of company operations and structures. A key element of the change was to implement new ways of running and structuring the firm. One of the steps being taken to achieve this was to transform the company from operating within line of business silos to end-to-end business processes. A consequence of restructuring in this way was that information would flow across traditional business boundaries along customer focused business processes. It was recognised that significant amounts of information would be required to support these processes and that facilities would be required for making the information available at all points in the process where it was required. Workflow and information reporting facilities were of particular importance. The major problem that confronted the insurer was that much of the information that was required was difficult to obtain or was not of a satisfactory quality. This resulted in a poor perception of the value of the information that was available. However, another element of the change programme was the development of an information provision environment consisting of a data warehouse, information analysis applications, and an information directory. These developments were starting to deliver some of the information that was required and with this the perception of information value was starting to improve.

Among the positive views that were expressed, **insurance company 'B'** was of the opinion that *“there was also recognition that, as a single business unit, we would want to understand and view the business as a whole without being constrained by the boundaries between line-of-business systems, or between the line of business systems and corporate support systems”* [c4fearep]. **Insurance company 'C'** *“believed that it would be able to remove the barriers between underwriters, actuaries, claims handlers, and loss adjusters”* [c6coitstra]. The role of information in all these changes was substantial. The **retailer** had no doubt about the importance of information in the change it was implementing, *“in five years time suppliers will be regarded as being an internal source of information. There are massive benefits in heading in this direction”* [cas2int1]. **Insurance company 'B'** also had a clear

opinion on the importance of information to its strategy “*information should be regarded as being a critical shared asset of the business ...it should be made available for use across the whole organisation and not exclusively to any one business unit*” [c4prigui]. Insurance company ‘C’ had equally clear opinions on the importance of information to its globalisation strategy “*sharing information across the different company territories was recognised and in particular for sharing information related to underwriting practices and experiences, and for sharing risk on a worldwide basis*” [casdoc6].

6.6.2 The Use of Information to Facilitate Organisational Change – Case Analysis

All the case study organisations were using information to facilitate organisational change. However, the impact that the use of information to facilitate organisational change was expected to have varied considerably across the case study organisations. This can be identified by taking a case-orientated approach to compare and contrast the experiences of two of the organisations, where the use of information to facilitate organisational change was expected to have a noticeable impact, with two other organisations, where little impact was expected. The analysis suggests that the clearing bank and insurance company ‘B’ were both likely to experience a significant impact from the use of information to facilitate organisational change:

Clearing Bank: One of the major organisational changes that was being implemented by the bank was the transformation of the firm into a customer centric organisation. It was recognised within the bank that a critical component of this change was the ability to quickly develop new products that met the requirements of the customers they were rapidly beginning to know and understand. To achieve this the bank had created a strategic analysis unit that had the responsibility for analysis customer information and assisting with the development of new products. This was a major organisational change in the bank. All of this change was dependent of the accessibility of good quality information. Managers in the bank recognised that it was “*necessary to understand customer needs and to meet those needs by providing excellence of service*” [c1str2ksep]. It was also recognised that if good quality information could be provided the bank would be “*better able to identify customer needs and*

requirements and be more effective in targeting products at the right customers at the right time” [casenote1]. The bank firmly believed that if the right information could be provided and the implementation of these strategies was successful then there were substantial benefits to be obtained. As an internal study identified “*the provision of information can improve profitability by helping to obtain a deeper understanding of customers, products, or channels and move closer to discovering knowledge about which customers, products, or channels are most/least profitable*” [casenote1].

Insurance Company ‘B’: This insurer was also involved in a major change program. A key component of this was a transformation of the firm from departmental silos to being a business process orientated organisation. As an internal report identified there was a need to “*operate along cross company end to end business processes rather than the narrow departmental lines ... need to be flexible enough to respond to changing customer needs*” [c4strchg]. To enable this change there was another major stand to the change that required substantial changes to the organisation structure. This whole change programme had a heavy requirement for good quality information. Some was needed for managing the change; more was needed for managing the restructured business. It was clearly recognised in the firm that the “*flow of information group-wide was a major critical success factor*” [c4fearep]. In moving to a business process management model this flow of information was essential and this was recognised in one of the key principles that was established which stated “*information should be regarded as being a critical shared asset of the business ... should be made available for use across the whole organisation and not exclusively to any one business unit*” [c4fearep]. There were many benefits expected from these strategic changes and from the information that was expected to start flowing through the organisation. This was articulated in the findings of a report which stated “*The benefits included an improvement in the delivery of key information to senior management, improved ability to react to changes in the internal and external business environment, unlocking of the business value of corporate information by providing new and company wide perspectives, and improving the quality of decision making*” [c4fearep].

By contrast, it can be seen from the following discussion that there were unlikely to be any improvements from organisational changes facilitated by the use of information at insurance company 'A' and insurance company 'D'.

Insurance Company 'A': Insurance company 'A' was fighting a desperate battle to survive the onslaught of the direct insurers. It realised that a major weapon it could use was information and information analysis. The major focus of the company was to obtain the information it believed was required to understand the markets it operated in, or should operate in. This problem was highlighted by one informant who stated "*the business is unable to analyse data in sufficient depth and there is not enough analysis functionality available ... managers cannot really understand the business ... currently there is a complete lack of flexibility*" [cas3int2]. If any organisational change was taking place at this firm it was its desperate attempt to become information centric. The organisation was certainly not attempting to become customer centric; they did not even believe that they 'owned' their customers. As was identified during the case study investigation, "*the Insurer does not believe that it 'owns' the customers, but that the customers are 'owned' by the brokers*" [casenote3]. The focus of the organisation was totally on survival and its attempt to stop losing market share and money. This was neatly summed up in an internal study that stated, "*better quality information would assist with monitoring positive and negative profitability*" [c3buspur].

Insurance Company 'D': Insurance company 'D' had the key objective of maintaining its top two market position. This was a confident company that apart from launching a new channel to market was not involved in any other major organisational change. The new channel was a direct to customer channel but whether the launch of this new business area was an attempt to seriously change culture to become more customer focussed is debatable. It is more likely that it was an attempt to gain or defend market share from the already established direct insurers. However, by adopting this strategy it was recognised that a significant quantity of customer information would be required. As was identified in the insurer "*for the direct to customer strategy there would be a need for detailed information on the existing customer base and on new customers*" [C8vision].

Apart from this there was no evidence of any other major organisational changes being implemented or being considered.

This analysis suggests that the use of information to facilitate organisational change has an important impact on users' perceptions of the value of information. It also suggests that the use of information to facilitate organisational change is an important construct for most organisations. The analysis of the individual case study organisations also identified a number of lessons learnt, some specific to each organisation, and others that appear to be common across a number of organisations. This section highlights some of the strategies where the use of information to facilitate organisational change has been identified by the case study organisations:

- **Substantial amounts of customer information are required for an organisation to become customer-centric:** The study identified that a number of the case study organisations were attempting to transform themselves into customer-centric organisations. As a report at the clearing bank stated *“the bank is committed to a customer orientation in all its marketing and sales activities and information about customers will be of fundamental importance in the future”* [c1feastu]. The objective at the commercial bank was to *“increasingly taking a customer centric viewpoint, which is the best way to drive down the cost/income ratio ... business planning and sales planning extends down to the relationship with each customer as well as including planning for the acquisition of new relationships”* [c5buspur]. A primary reason for these transformations was to provide better customer service. The clearing bank believed that it was *“necessary to understand customer needs and to meet those needs by providing excellence of service”*. To successfully achieve this, the organisation would have to gain a detailed understanding of its customer base as a whole, the segments of its customer base, and customers as individuals. To do this significant quantities of customer information would need to be captured and made available to the areas of the organisation that required it. Insurance company ‘C’ believed that this meant, *“there would be a need for an integrated, holistic view of customer information”* [c6coitstr]. For the commercial bank the result of this would *“enable them to develop an understanding of customer behaviour which*

would help them to increase profitability” [c5busreq]. Failure to capture the relevant information and to make it available throughout the organisation would undoubtedly lead to the failure of the customer centric strategies.

- **Breaking down internal boundaries and barriers can lead to improved information sharing and can provide significant benefits to the organisation:** The study identified that in a number of the case study organisations there were internal boundaries and barriers that made information sharing difficult or impossible. In all of these organisations there was a view that these barriers were damaging to the organisation and that action was required to remove them. Insurance company ‘B’ was at the forefront of this strategy, *“data is a critical, shared asset of the business and will be exploited and protected accordingly”* [c4prigui] They were also of the opinion that to achieve this *“information should be regarded as critical shared asset of the business, it should be made available for use across the whole organisation and not exclusively to any one business unit”* [c4fearep]. By breaking down these barriers the insurer believed that there were substantial benefits to be gained. They believed that by *“providing the right information at the right levels within the organisation is vital to empower staff in operational process roles ... cycle times and management and supervisory intervention could be minimised”* [c4fearep]. Other case study organisations recognised these barriers. At the retailer there was a view that *“organisational boundaries do create problems ... cross-functional co-operation is difficult to achieve”* [cas2int1]. They also recognised that technology is a major contributor to this problem stating that, *“a diverse range of incompatible software products made the sharing of data across the organisation virtually impossible”* [c2curarc]. A similar problem was recognised at insurance company ‘C’ where the *“business need for good quality information was being continually hampered by diverse systems with inconsistent and inaccessible data”* [casenote6]. There was a belief in all these organisations that if the barriers could be broken down there were benefits to be obtained. At insurance company ‘C’ there was a view that *“all of the business drivers that had been identified had a substantial information requirement and each one was expected to deliver tangible benefits ... these*

benefits included an increase in market share, increased profits, becoming the preferred supplier in chosen segments, and the reduction of costs” [c6coitstra].

In addition to highlighting some practical steps that organisations can adopt to improve their use of information for facilitating organisational change this research also highlights a fundamental lesson about the nature of the use of information for facilitating organisational change. The evidence from the case study investigation suggests that the perceived value of the information used to facilitate organisational change is significantly impacted by information accessibility and information quality dimensions. To effectively use information for these organisational changes the information must be easily accessible to the organisation and it must be of good quality. If there is a failure to meet this requirement the likelihood is that the organisational change will fail and any positive perception of information value will be damaged.

6.6.3 Use of Information to Facilitate Organisational Change Conclusions

Overall, the case study organisations believed that information would be used to facilitate some form of organisational change. The majority of the organisations believed that the information that was currently provided was having an unsatisfactory impact on business activities. However, this opinion changed considerably when consideration was given to information that was expected to be available in the future. All the case study organisations expected a much more satisfactory impact from this information. These expectations also indicated a much more positive perception of information value.

Whilst the value of information has long since been recognised in the literature, it is typically with respect to decision making and measuring corporate performance measurement. The principle contribution of this topic of research is the demonstration that the value of information is not confined solely to decision-making and measurement processes, but also lies in its ability to facilitate organisational change. As the literature with regard to the use of information to facilitate organisational change and its perceived value are both growing, little previous research has sought to explicitly link these two themes together. The research therefore makes an important

contribution in that it shows how information was being used to facilitate organisational change, in eight large, multi-national organisations. Moreover, it provides some important insights into how successful these initiatives were and what impact they had on the perceived value of information.

6.7 Summary

This chapter has presented the results of the case study analysis of data collected from eight UK based multi-national organisations. The analysis has addressed the overall research objectives related to information usage in turn, and has provided a significant number of findings and conclusions related to the factors that can influence perceptions of information value. The qualitative analysis discussed in this chapter has confirmed that the use of information for marketing, strategic planning, and for the facilitation of organisational change can impact perceptions of information value. The findings from the case study organisations confirm that information is an important component of all three of these activities and that the effective use of information during these activities can have a significant impact on the success of each one. In all the case study organisations there was general disappointment with the impact that was being made by the information currently available to undertake these activities. However, in all the case study organisations there was an overwhelming belief that this situation would improve and that the use of information for these activities in the future would make a major contribution to business success.

The next chapter continues the case study analysis and focuses on constructs related to how information can be used to assist with the attainment of measured business benefits, and whether the value of information itself can be measured.

Chapter 7

The Measured Value of Information

7.1 Introduction

The findings in Chapter six identified that information can be used to facilitate major business activities such as marketing, strategic planning and organisational change. These findings also suggested that the use of information for these purposes could provide value to organisations. However, the findings did not provide any significant insight into the type of value that could be attained, or whether this value could be measured. Consequently, this chapter presents the results of the research that investigates how information can be used to assist with the attainment of measured business benefits, and whether the value of the information itself can be measured.

This chapter begins by outlining the main objectives of the research undertaken. It revisits the literature that has been produced on the two constructs being investigated, benefits from use (renamed measurable benefits from information use) and value measurement (renamed attitudes towards information value measurement), paying particular attention to the dimensions associated with each. It develops a working definition for each of these constructs, and it explores, describes, and analyses a number of the dimensions. Each dimension identified is discussed giving

consideration to the literature that is related to it. The significance of each construct within the case study organisations is discussed and the impact each dimension has had on the perceived value of information in each organisation is analysed. The findings are also analysed from a case orientated perspective. A discussion is provided on the apparent paradox that exists between the views expressed by the case study organisations and the actions they take with regard to the management and valuation of information assets. The chapter finishes by undertaking a review of the conceptual framework that results in a number of modifications.

7.2 Summary of Objectives

Before discussing the more specific research objectives that were set for this section of the research, it is useful to remind ourselves of the research objectives pertinent to this stage of the research:

6. To explore the relationship between the **use of information to attain measured business benefits**, and perceptions of **information value**.
7. To explore the relationship between **attitudes to measuring information value**, and perceptions of **information value**.

As was indicated in the introduction to this chapter, the aim of this section of the research is to investigate the significance of each construct within the case study organisations and to identify and understand the impact the associated dimensions had on the perceived value of information in each organisation. To achieve this the following objectives were developed to focus the research:

1. To investigate the **role of information** in the facilitation of the **attainment of measured business benefits** within organisations.
2. To investigate whether the case study organisations attach value to their information holdings, whether they regard these information holdings as assets of the organisation, and whether **measurable value** is attached to these **information assets**.

It was envisaged that through the exploration of these issues it would be possible to develop an understanding of the constructs and dimensions that impact perceptions of information value in the case study organisations.

7.3 The Measured Value of Information

The primary focus of the research was the constructs and dimensions that impact the perceived value of information. As the research progressed it became apparent that situations could arise where the potential value of information could become a real value, and that this real value could be measured. This is termed the measured value of information. To provide clarity to the research the following working definition has been derived for the measured value of information:

Measured Value of Information: The measurable value that can be attributed to the information assets of an organisation that are utilised to attain measured business benefits.

7.4 Use of Information to Facilitate the Attainment of Measured Business Benefits

Utilising information to facilitate the attainment of measured business benefits is a topic that has received much attention in the literature (Owens et al, 1996). Many of the benefits identified by Porter and Millar (1985) and Davenport and Cronin (1988) assisted with the gaining of increased profitability. However, using information with the specific purpose of increasing profitability is not quite so straightforward. As Wormell (1989) observed, “*turning information into profit is one of the challenges today’s managers have to respond to; however, they don’t know how*”. Glazer (1991, 1993) identified benefits being attained from the use of information by Inland Steel, and by McKesson, a large US pharmaceutical wholesaler. He discussed that at McKesson information “*is perhaps more valuable than the pharmaceutical products*”. Earl (1999) discussed the use of information to attain business benefits in a number of organisations and their attitudes to their information assets. He provided a startling example from American Express where the former chairman stated, “*all the financial analysts keep saying we’re in the financial services business. They’re wrong. American Express is in the information business*”. In addition to these

examples Hopper (1990), McKinnon and Bruns (1992), and Bowonder and Miyake (1992) have provided discussions on the benefits being obtained from the use of information in specific industries. Kanter (1983, 1989) identified a number of examples where information has been a critical factor in entrepreneurial success, as did Peters and Waterman (1982). Peters (1987) identified numerous examples of successful organisations that had made extensive use of information in gaining success. The importance of making information available throughout the organisation was again identified as being a critical factor in most of the organisations that had attained significant business benefits and competitive advantage. A much more critical opinion was expressed by Robson (1994). She acknowledged that the evidence from the classic examples indicated that the use of information itself, rather than information systems, could provide benefits. However, she argues “*the real meat to these ‘tales told’ is to be found in the decision making processes and strategy which led from the identification of these opportunities to their realisation*”. Based upon the review of the literature and the findings of the research, the following working definition for the attainment of business benefits has been derived:

Attainment of Measured Business Benefits – Using information to directly support actions within an organisation that lead to the realisation of business benefits that can be measured.

The use of information for assisting with the attainment of business benefits was initially discussed in the review of the literature in Chapter two. From the review of the literature, and from their significance during the case studies, three dimensions were selected for investigation by this research, increased market share, reduced costs, and increased profitability.

Increased Market Share – an increase in market share is a measured business benefit that most organisations strive to attain. Increasing market share is an indicator of success and the market share of an organisation is a critical indicator of the relative position of an organisation in the market. The use of information by organisations to assist with the gaining of market share has been discussed by a number of commentators (Porter and Millar, 1985; Hopper, 1990). Davenport and Cronin (1988) identified the example of American Hospital Supply (AHS), which gained and

maintained a seventy percent market share from the use of information and information technology. This was achieved because the information and services that AHS was able to provide to its customers provided it with differentiation over its competitors. A similar example was provided by Robson (1994) when discussing the cash management account developed by Merrill Lynch. They were able to provide customers with this account by pooling information from many sources and thus provide customers with seamless access to many banking services. By providing this service Merrill Lynch were able to gain ninety percent of the market, which they were able to hold for five years. The work of Beaumont and Walters (1991) and Glazer (1991) attempted to provide an insight as to how information can be used to attain these benefits. In his framework for valuing information Glazer (1991) discussed the role of information in detail. Based upon this review of the literature and the findings of the research, the following working definition for increased market share has been derived:

Increased Market Share – *The ability of an organisation to use information to attract more customers and generate more business resulting in its volume of business increasing at the expense of its competitors.*

Reduced Costs - Cost reduction is another major measured business benefit that most organisations strive for. A low cost strategy is one of the most common business strategies that can be adopted. The use of information to attain this business benefit has also been widely discussed (Porter and Millar, 1985; Burk and Horton, 1988; Palmer and Varnet, 1990; Orna 1999). The use of information to enable organisations to, “*contain operating costs throughout the business and thereby increasing contribution margins*” was recognised by Beaumont and Walters (1991). They believed that if information on costs by activity and value can be provided throughout the business then cost containment and reduction can be achieved. Cost reduction was one of the major business benefits identified by Porter and Millar (1985). They identified examples of successful cost reduction from the use of information in a number of industries including insurance, manufacturing, and leisure. Additional examples have been provided by Davenport and Cronin (1988), and Robson, (1994). The work of Glazer (1991) also provided input into how information can be used to

reduce costs. Based on the review of the literature and the findings of the research, the following working definition for reduced costs has been derived:

Reduced Costs – *The ability of an organisation to use information to work more efficiently and effectively causing the operating costs of the organisation to decrease.*

Increased Profitability - increased profitability is arguable the primary measured business benefit that all organisations seek to attain. Failure to increase profitability over a period of time would usually indicate that an organisation was in decline. The use of information in the attainment of increased profitability is linked to many of the measured business benefits that have already been discussed (Porter and Millar, 1985; Davenport and Cronin, 1988; Palmer and Varnet, 1990; Robson, 1994; Orna, 1999; Sutherland, 2001a, 2001b). Specifically identifying how information makes a direct contribution to increased profitability is more challenging. Robson (1994) identified a number of examples where profitability had been impacted by the use of information. In particular she discussed General Tire where information was used to ensure that all the firms accounts were profitable, and American Airlines where more profit was being made from the use of information than from flying aeroplanes. Roy (2000) investigated the impact that information can have on increased profitability, and his findings strongly suggested that improvements to the accuracy of information could result in profit increases. Although it is widely recognised that a strong correlation exists between market share and profitability, (Gale, 1972; Shepherd, 1972; Laverty, 2001) this has been regularly re-investigated in the literature. The objective has been to identify whether any other factors or actions can assist with attaining increased profitability (Rumelt and Wensley, 1981; Jacobson, 1988; Montgomery and Wernerfelt, 1991). From this work the argument that the use of internal resources can result in increased profitability has emerged. In particular an argument has emerged that profit opportunities can be leveraged by the use of “*existing resource endowments*”. (Winter, 1995). This use of internal resources to increase profitability has received wide attention in the literature (Conner, 1991; Grant, 1991; Petaraf, 1992; Amit and Schoemaker, 1993; Winter, 1995; Collis and Montgomery, 1995). This has resulted in claims that there is a wide-range of internal resources, including information and knowledge, which can be used to generate profits (Teece, 1980;

Barney, 1991; Amit and Schoemaker, 1993; Collis and Montgomery, 1995). If these arguments are correct then a direct link between the use of information and increased profitability can be established. Based upon this review of the literature and the findings of the research, the following working definition for increased profitability has been derived:

Increased Profitability – *The ability of an organisation to use information to implement strategies that result in the revenue of the organisation growing more substantially than its costs.*

The literature review in Chapter two identified that the use of information for attaining business benefits was a construct that can have a significant impact on the perceived value of information. It also identified that much of the literature was of a theoretical nature and there were few examples of empirical research being undertaken to support the theory. Having revisited the literature produced after 1995 a few noticeable additions have been identified. They are listed in Table 7.1.

Table 7.1 - Use of Information for the Attainment of Business Benefits Literature – Post '95

Contributor	Summary	Type	Method	Limitations
Owens et al (1996)	An investigation into the impact that information and information systems can have on business performance. Identifies that information can have an impact on the ability of an organisation to attain measured benefits.	E	Q, I	The value of information was considered by the research, and conclusions reached on how information value was perceived in the organisations being studied. However, no attempt appears to have been made to consider how this value could be measured.
Orna (1999)	A general discussion on the information policies that organisations should consider implementing. Discusses a wide range of issues related to information value. This includes the benefits that organisations can attain from the use of information.	T		
Roy (2000)	A investigation into how information can assist with increasing profitability	E	Q	No attempt was made to consider whether the information being used could have its value measured.
Sutherland (2001)	A discussion on how information can be used to improve profitability	T		

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

Two of the four most recent contributions to the literature are of an empirical nature, but the majority of literature produced on this topic still appears to be theoretical.

Although information value has been considered by some of the studies no attempt appears to have been made to consider how this value could be measured. In many ways the literature perpetuates the view that although information is acknowledged as having value, this value is too difficult to measure. This appears to have resulted in few studies considering the matter in-depth. This strongly suggests that there is still scope for detailed empirical research in this area. From the review of the literature and from the observations made within the case study organisations, three main measured business benefit dimensions were identified: increased market share, reduced costs, and increased profitability. These dimensions have been used to investigate the use and value of information for attaining measurable business benefits throughout this study.

Table 7.2 - Dimensions of Measured Business Benefit Attainment

Dimension	Supportive Literature
Increased Market Share	Davenport and Cronin (1988) Beaumont and Walters (1991) Glazer (1991)
Reduced Costs	Porter and Millar (1985) Davenport and Cronin (1988) Beaumont and Walters (1991) Glazer (1991)
Increased Profitability	Porter and Millar (1985) Barney (1991) Grant (1991) Roy (2000)

This research study set out to identify whether organisations do consciously utilise information to attain business benefits, and if so, how successfully this is achieved. The research also had the aim of identifying whether the perceived value of information is impacted by the use of information for these purposes. The evidence for this study was collected and measured as described in Chapter five (5.4 Information Accessibility). The results of this analytical exercise have been summarised in Table 7.3. The impact of information on each dimension was considered from both a current/historical perspective and a future perspective. This analysis provided an indication of the impact that the use of information to assist with the attainment of measured business benefits had on business activities in the case study organisations, and particularly the impact it had on perceptions of information value. The results of this analysis can be found in the Mini-Cases embedded in the Use of Information to Attain Measured Business Benefits – Dimension Analysis

section of this chapter. It was very evident from the analysis of the case study data that in the majority of cases the attainment of business benefits, facilitated by the use of information, was viewed very positively. However, it was also very evident that although there was a very positive opinion on the use of information to gain business benefits in the future, there was a clear indication that this was not occurring with the information that the case study organisations currently had available. As was observed during the investigation at the Retailer “*the benefits that had been provided by the use of information were limited. The organisation could see, however, that by providing the information that was required significant benefits, both tangible and intangible, could be obtained*” [casenote2].

Table 7.3 - Business Benefits Gained by the Use of Information

Case	Increased Market Share	Reduced Costs	Increased Profitability	Overall Impact
Clearing Bank	*	**	***	*
Retailer	-	-	-	-
Insurance Company 'A'	***	-	***	**
Insurance Company 'B'	-	***	-	*
Commercial Bank	*	*	*	*
Insurance Company 'C'	**	***	***	***
Car Manufacturer	-	-	-	-
Insurance Company 'D'	**	-	*	*

Key : *** highly significant impact; ** significant impact; * moderate impact; - minimal impact

7.4.1 The Use of Information to Attain Measured Business Benefits – Dimension Analysis

Increased Market Share

Half of the organisations studied envisaged that an increase in market share could be facilitated through the use of information. **Insurance company ‘A’** had a pressing need to increase its market share, which had been significantly reduced over a period of a few years (see Mini-Case 7.1 below). There was an expectation of a highly significant impact in this dimension, especially as the firm had the objective of expanding the business by identifying and entering new and improving profitable segments of the market. They believed that “*better quality information would assist*

business expansion by allowing analysis which could identify new or improved profitable segments of business” [c3buspur].

Mini-Case 7.1

Increased Market Share – Insurance Company ‘A’

For a number of years Insurance Company ‘A’ had been experiencing a rapid decrease in market share as a result of direct insurers moving into the motor insurance market. There was a recognition that action was required to reverse this trend and that this had to be done quickly. The insurer had identified a number of strategies that it could adopt to start re-gaining market share. One of these strategies was to expand the business by identifying and quickly entering new and improving profitable segments of the market. There was a great deal of optimism that being more focused on increasing market share in niches of the market where a profit could be made that the fortunes of the firm could be improved. There was also recognition that to achieve this strategy a significant amount of new information would be required to gain the understanding of the market and customers. Without this information it would be impossible for the firm to successfully implement the strategy. Action was being taken to capture this information and make it available to the business.

Another of the insurance companies, **company ‘C’**, had adopted a strategy of focusing its business only in key market segments, its heartlands, where it was either one of the top three operators, or where it wished to be in the top three. Achieving this objective required that they gain the necessary market share. They were of the opinion that *“providing the necessary information would enable managers to drive for market leadership with the best positioned units and when necessary wind down or exit from unprofitable businesses” [c6coitstra]*. A similar situation existed at the **commercial bank** where the managers had a belief that, *“they could gain an increase in motor insurance market share if they were provided with information on customer behaviour, dealer performance, loan performance, and existing market share” [c5busreq]*. A third insurance company, **company ‘D’**, had a leading position in the market and already had a substantial market share. However, they recognised that there was still a need to continue attempting to improve the market share they had. It was recognised that to do this they would be dependent on the provision of good quality information. They believed that *“providing relevant customer information is needed to enable cross-selling, up-selling, and effective customer management” [c8busreq]*.

Reduced Costs

Half of the organisations investigated also believed that cost reduction was a measured benefit where the use of information could have a highly significant impact. The **clearing bank** had a primary focus on increasing revenue and profitability, but they also recognised that there was a need to reduce costs and that providing the right information could assist with this. They identified that providing relevant information would enable the attainment of a number of benefits. As they concluded “*potential tangible benefits were identified in three main areas, reduced opportunity costs, increased revenue from new accounts, and more effective use of advertising budgets*” [c1buscas].

Mini-Case 7.2

Reduced Costs – Insurance Company ‘B’

Insurance company ‘B’ was making a major effort to have information available to those who needed it within the business when they needed it. As part of this initiative efforts were being made to improve the efficiency and effectiveness of the processes that were used to gather and deliver information to the business. There was a belief that by improving these processes significant cost reductions could be achieved. One of the main areas for cost reduction was the avoidance of the duplication of processes that captured the same information. A key principle was that every piece of information should only be captured once and held in a manner that made it available to everyone who had a need to use it. The difficulties that existed in the current processes for making information available and the associated cost resulted in a poor perception of the value of information. As the new information provision environment started to emerge with more information becoming available and the costs of provision starting to reduce.

Insurance company ‘B’ believed that they could make significant reductions in the cost of gathering and delivering information (see Mini-Case 7.2 above). They believed that “*among the tangible benefits that were identified there were reduced data gathering costs, and reduced MIS development costs*” [c4fearep]. There was also a view that “*a number of benefits were obtainable by improving the quality and timeliness of the information being provided. This included cost and time reductions in the provision of information*” [casenote4]. The **commercial bank** had also identified opportunities for substantial cost reductions, “*business managers were of the opinion that cost reductions could be achieved if consistent information was provided which allowed them to understand the customers and delivery channels, undertake effective marketing selection, and for monitoring sales force effectiveness*” [c5busreq]. A second insurer, **company ‘C’**, had a key objective of ensuring

containment of claims costs and continuous base cost reductions. As one interviewee observed *“internal information is needed to help reduce costs, leverage the global position, be smarter, quicker and more innovative”* [cas6int2]. There was a firmly held view within the firm that *“having this information provided would allow the firm to develop low cost distribution and to achieve high efficiency standards through superior execution of all processes and transactions”* [c6coitstra]. The importance of having the right information provided to enable these benefits to be attained was being recognised in the firm and it was also recognised that the firm needed to *“aggressively manage costs throughout all operations and achieve high efficiency. The information critical to this business driver was mostly related to costs but claims information was also important”* [c6coitstra].

Increased Profitability

For three of the case study organisations the use of information to assist with the attainment of increased profitability had the potential of having a highly significant impact. For another two there was an expectation of a moderate impact. The **clearing bank** was attempting to achieve substantial revenue and profit increases from improved advertising effectiveness and from the opening of new accounts (see Mini-Case 7.3 below). It was identified that *“the provision of information can improve profitability by helping to obtain a deeper understanding of customers, products, or channels and move closer to discovering knowledge about which customers, products, or channels are most/least profitable”* [c1dwsd]. The bank was exceptionally optimistic about the improvements that could be made *“very clear tangible benefits were expected to be obtained”* [c1buscas]. *“The projected return on investment was phenomenal, running into tens of million per year and this was based on very conservative models”* [c1buscas]. For **insurance company ‘A’** the objective was to increase profitability by setting competitive prices based on an understanding of market trends and the identification of new markets. The managers of the firm believed that *“the primary activity is to set prices that can deliver profits to the business. This is achieved by monitoring statistics and marketing information in an attempt to identify trends in the Motor Insurance business”* [c3buspur]. Another insurer, **insurance company ‘C’**, had the objective of providing long-term value for shareholders by producing superior sustained results.

Mini-Case 7.3

Increased Profitability – Clearing Bank

The clearing bank had an objective of attaining increased profitability from improving the effectiveness of its advertising which would lead to the creation of profitable new accounts. It was recognised that a critical factor for this objective would be the ability to obtain and use relevant information. This was particularly true of the effort to improve the effectiveness of advertising. There was a need to achieve a higher rate of return on the advertising that was currently being undertaken. Not only were higher response rates required but many more of the responses had to be positive and lead to the creation of new business. This new business would provide the increased profitability. It was believed that the provision of improved information would improve profitability by helping to obtain a deeper understanding of customers, products, and channels. This would move the bank closer to discovering knowledge about which customers, products, and channels were the most and least profitable. From this information it was expected that more targeted advertising campaigns could be mounted which would lead to the creation of profitable new accounts.

They believed that by providing the necessary information they would enable managers to better understand the market and when necessary wind down or exit from unprofitable businesses. One interviewee observed that there was a need to “*identify good niches of the right size that can deliver the best returns*” [cas6int2].

7.4.2 The Use of Information to Attain Measurable Business Benefits - Case Analysis

The impact that the use of information to facilitate the attainment of measured business benefits was expected to have varied considerably across the case study organisations. This can be identified by taking a case-orientated approach to compare and contrast the experiences of two of the organisations where the use of information to facilitate the attainment of measured business benefits was expected to have a significant impact, with two organisations where little impact was expected. The following analysis suggests that the clearing bank and insurance company ‘C’ were both likely to experience a significant impact from the use of information to facilitate the attainment of measured business benefits:

Clearing Bank: The bank had embarked on a major strategic change program. There were a number of business benefits that that bank was attempting to gain from this programme including reduced costs and increased market share, but increased profitability was the major objective. A major element of the change programme was gaining a better understanding of customers, and providing

products and services that were tailored to the customer needs. These objectives were highlighted in statements such as, “*we have to satisfy their (customers) differing needs efficiently and profitably – if we don’t, our competitors will*” [c1str2ksep]. The need to be able to retain the existing customer base and to generate more profit from it was identified in statements such as, “*it is therefore more profitable for us to nurture existing customers and build our business on long term relationships*” [c1str2ksep]. Although the main focus was maximising the profitability of the existing customers there was also recognition that increasing the number of customers and market share was still important. This was recognised in statements such as, “*clearly, we must still seek new customers to develop our business and expand market share*” [c1str2ksep]. Behind all the objectives for expanding the business there was also the recognition that costs had to be contained and reduced whenever possible. This objective could be identified from statements such as, “*staffing levels are kept under constant review and reflect the commercial necessity to keep costs down*”, and “*we actively look for ways to do things better, quicker and more effectively*” [c1str2kdec]. To successfully achieve the objectives it was recognised that substantial quantities of information would be required. “*Reliable and objective information is essential to determine what products are wanted and how they should be sold*” and “*as the quality of information on the databases improves our centralised marketing will become increasingly focused and productive*” were two statements that highlighted the importance that was being placed on the use of information [c1str2ksep].

Insurance Company ‘C’: This insurer was also implementing a wide range of strategic changes all of which had the objective of improving business performance. Again, it was recognised that information had a vital part to play in the success of these changes. It was identified that, “*all of the business drivers that had been identified had a substantial information requirement and each driver was expected to deliver tangible benefits. These benefits included an increase in market share, increased profits, becoming the preferred supplier in chosen segments, and the reduction of costs*” [c6coitstra]. The importance of information in the attainment of business benefits was widely recognised in the firm. The IT strategy manager was of the opinion that tangible and intangible

benefits could be identified from the use of information. These included, *“reduced costs, improved profit, better relationships with intermediaries, and better internal knowledge”* [cas6int2]. Another manager was also able to identify benefits that could be gained from the availability and use of better information, *“if the right information can be provided it will provide a better portfolio from a risk perspective, in motor major dealerships will be recognised as a better risk ... it will be possible to understand the elements of risk much better”* [cas6int1].

By contrast, it can be seen from the following discussion that there were unlikely to be any significant measured benefits attained from the use of information at the car manufacturer or the retailer.

Car Manufacturer: Using information to improve the activities that the car manufacturer was focused on would have minimal direct impact on the attainment of measured business benefits. However, it was hoped that indirectly these improvements would result in measured benefits such as increased market share and reduced costs. The benefits that the use of information in these processes would have were expected to be of an intangible nature. This was primarily related to the provision of decision support facilities leading to improved decision making. It was recognised that access to improved information would, *“make significant improvements to decision making ... this would enable quality, timely decision support capabilities for programme profitability evaluation”* [c7rfq].

Retailer: The situation at the retailer was similar to that at the car manufacturer. Although there were expectations that business benefits would be obtained from the use of information these were mainly expected to be of an intangible nature. Again, improved decision-making was a key benefit that was expected. As a business manager observed, *“the benefit should primarily be better decision making and better buying decisions ... good quality information should also lead to better selling decisions in terms of reductions and locations”* [cas2int2]. In addition there was an expectation for improved communication with suppliers and a better understanding of customers.

This analysis suggests that the use of information to facilitate the attainment of measured business benefits has an important impact on information consumers' perceptions of the value of information. It also suggests that the use of information to facilitate the attainment of measured business benefits is an important factor for most organisations.

7.4.3 The Use of Information to Attain Measured Business Benefits Conclusions

All the case study organisations believed that the use of information would assist the business attain some form of business benefit whether tangible or intangible. The majority of the organisations believed that the use of information would assist with the attainment of measured business benefits. However, none of the organisations studied believed that the information that was currently being provided was having a significant positive impact on its ability to attain measured business benefits. In most cases the perception appeared to be one of disappointment towards the impact of the information currently available. However, all of the organisations had much more positive perceptions towards information expected to be provided in the future. The key questions from these findings are: would the information that was required ever materialise? And if so, would the positive impact that was expected really occur? The answers to these questions may only be provided by future research. The main conclusion to be reached is that most organisations appear to have a high level of confidence that access to good quality and timely information can have an impact on the attainment of business benefits. This is despite the fact that few organisations believed that the information that was currently being provided was making a significant positive contribution.

Whilst the literature with regard to the use of information to facilitate the attainment of business benefits and its perceived value are both growing, little previous research has sought to explicitly link these two themes together. The research therefore makes an important contribution in that it shows how information was being used to facilitate the attainment of business benefits in eight large, multi-national organisations and the impact this was having on the perceived value of information.

Moreover, it provides some important insights into the problems that were being encountered and highlights a number of the lessons learnt.

7.5 Measuring the Value of Information

Many examples of information being used for business activities that create value for organisations were discussed in Chapter six. The findings suggest that the information used for attaining these business benefits is a valuable asset, and that it may be possible to measure the value of the information itself. This section of the study attempts to identify whether this proposition holds true. Information value is a topic that has been considered by a wide-range of commentators. The value of information has been considered from both a non-financial (Carter, 1985; Burk and Horton, 1988), and financial perspective (Burk and Horton, 1988; Palmer and Varnet, 1990; Glazer, 1991, 1993; Mowshowitz, 1992; McPherson, 1994, 1996). Almost all of the opinions expressed have been in favour of the argument that information should have a measurable value. There has also been a healthy stream of proposals and theories as to how the value of information can be measured. These theories have been based on statistical analysis (Carter, 1985), on the price that information can attract (Mowshowitz, 1992), and more traditional financial methods (Burk and Horton, 1988; McPherson, 1994, 1996). These ideas have taken the discussion on information value beyond the bounds of the information value literature into the accounting arena where a robust debate has been conducted for many years on the topic of the valuation of intangible assets (Donaldson, 1992; Arnold et al, 1994; Brockington, 1996).

There are a number of dimensions that can be considered when discussing the measured value of information. McPherson (1994) identified dimensions such as instrumental value, intrinsic value, and intangible value. He also identified some basic questions that had to be considered such as what exactly is information, how does it contribute to the success of an organisation, and *“how does one present an abstract multi-dimensional value space that will not put a layman off his food?”* Burk and Horton (1988) identified dimensions such as the nature of values, the impact of information on organisational effectiveness, impact on the financial position of the organisation, and impact of organisational productivity. They were of the belief that, *“by understanding the nature of the values that we attach to information we are not*

only better equipped to see information resources for what they are, we are better equipped to seek out those information resources having the values that match our needs". Glazer (1991) believed that, *"traditional attempts at measuring the value of information have been inherently problematic"*. He identified a number of dimensions that should be considered to develop an information valuation framework. Among these were measures of the value of information and information intensiveness. The work conducted by Mowshowitz (1992) considered dimensions such as information as a commodity, the supply price of information and the demand price of information.

The dimensions related to the valuation of information were discussed in the review of the literature in Chapter two. From the review of the literature, and from their significance during the case studies, two key dimensions were selected for investigation by this research, information as an asset, and the measurable value of information assets.

Information as an Asset - it appears clear from the literature that a strong body of opinion believes that information can have some form of value attached to it, but how explicit can this value be? Is it possible that information can be considered to be a formal asset of an organisation? Hawley (1995) had a clear opinion on this, *"the Hawley committee proposes that all significant information in an organisation, regardless of its purpose, should be properly identified, even if not in an accounting sense, for consideration as an asset of the business"*. This statement reflected an opinion that had been stated by many observers over a number of years (Itami and Roehl, 1987; Palmer and Varnet, 1990; Glazer, 1991; Davenport et al, 1992; Framel 1993; Horton, 1993). An even stronger opinion was expressed by Willard (1993) who argued that information should not only be regarded as an important asset of the firm but that, *"there will clearly be increasing pressure to write information assets into the balance sheet"*. This reflected the arguments put forward by Vincent (1983, 1984). An equally strong view was expressed by Glazer (1993) who argued that information was not merely another asset of the firm but in his opinion *"the firm's primary strategic asset"*. A study conducted by Owens et al (1996) appears to support most of these arguments. One of the key conclusions from their report was that, *"the view that information is a valuable asset is almost universally accepted by the companies surveyed"*. All these opinions firmly establish the idea that information is a valuable

asset of the firm, and not only should it be treated as such, but serious consideration should also be given to treating information as an economic asset which can be entered on the corporate balance sheet. If these arguments are correct, they provide a significant foundation for establishing information as a formal asset of the firm. Other significant contributions have been made on this topic by Davenport and Cronin (1988), Trauth (1989), CCTA (1990), Knight and Silk (1990), Cashmore and Lyall (1991); Cronin and Davenport (1991), and Sibbert (1993). Based upon this review of the literature and the findings of the research, the following working definition for information as an asset has been derived:

Information as an Asset – *The information holdings of an organisation that are used within the organisation for the benefit of the business and can be uniquely identified.*

Measurable Value of Information Assets - If information is recognised as being a valuable asset of the organisation it leads to the question, how can this value be measured? Devising a means for measuring the value of information has been considered on a number of occasions (Carter 1985, Repo 1986, Knight and Silk, 1990; Glazer 1991, 1993, Mowshowitz 1992, Mc Pherson 1994, 1996, Orna, 1999). A number of these observers have argued that until this can be achieved the true value of information will not be recognised (Bariff and Galbraith 1978, Trauth 1989). One of the first difficulties that is encountered when attempting to attach measured value to information is whether the valuation should be defined in financial terms or not. Hawley (1995) highlighted this difficulty, “*financial valuation of information assets is fraught with difficulties ... this does not, however, invalidate sensible processes for categorising assets in terms of comparative value*”. This difficulty was also recognised by Orna (1999), “*this is a notoriously difficult subject, which economists have grappled with rather unsuccessfully for many years*”. Among the most significant contributions to the study of information valuation methods has been the work of Burk and Horton (1988) and Cronin and Davenport (1991). Skyrme (1998) makes a valuable contribution by identifying the information that is typically of high importance and can be of high value. Although a number of attempts have been made at devising formal information valuation methods, (Carter 1985, Burk and Horton 1988, Mowshowitz 1992, McPherson 1994), none appear to have been adopted on a

widespread basis. A possible reason for this is that none of these valuation techniques appear to utilise standard accounting practices. By failing to adopt standard practices it makes it difficult for most commercial organisations to adopt these techniques. It seems clear that for any information valuation method to gain widespread acceptability, it must be based upon standard accounting practices, and be adopted by accounting practitioners (Vincent, 1983, 1984). If the arguments related to the accounting for intangible assets were to be resolved, it could provide the opportunity for formal accounting techniques for the financial valuation of information to be developed (Egginton, 1990; Donaldson, 1992; Arnold et al, 1994; Brockington, 1996). This could lead to the capitalization of information assets. Based upon this review of the literature and the findings of the research, the following working definition for the measurable value of information assets has been derived:

Measurable Value of Information Assets – The measurable value that can be attributed to uniquely identifiable information assets that are used to facilitate the attainment of measurable business benefits.

The literature review in Chapter two identified that attitudes to the measurement of information value are a factor that can have a significant impact on the perceived value of information. It also identified that much of the literature was of a theoretical nature and there were few examples of empirical research being undertaken to support the theory. Having revisited the literature produced after 1995 a number of noticeable additions have been identified. They are listed in Table 7.4. Very few empirical contributions appear to have been made. The only significant exception appears to be Owens et al (1996). Apart from this most other contributions related to attitudes to the measurement of information value appear to be theoretical. The conclusions reached in Chapter two regarding the need for further empirical research still appear to be valid. From the broad range of measured value of information dimensions that are available two were chosen for this research, information as an asset, and the measurable value of information assets. They have been selected primarily because they have received significant attention in the literature (Hawley, 1995; Owens et al, 1996; Glazer, 1991, 1993; McPherson, 1994, 1996) and because they were of relevance to the studies conducted in the case study organisations. They have also been chosen because they group together a number of the more detailed

dimensions that have been identified in the literature such as considering information as a strategic resource, the cost of acquiring and managing information, and information valuation techniques.

Table 7.4 - Attitudes to the Measurement of Information Value Literature – Post ‘95

Contributor	Summary	Type	Method	Limitations
Owens et al (1996)	An investigation into the impact that information and information systems can have on business performance. Identifies that information is regarded as being a valuable asset by many organisations.	E	Q, I	The value of information is considered by the research, and conclusions reached on how information value was perceived in the organisations being studied. However, no attempt appears to have been made to consider how this value could be measured.
Skyrme (1998)	A discussion on the valuation of knowledge and information. Identifies information that typically has high importance and high value	T		
Orna (1999)	A general discussion on the information policies that organisations should consider implementing. Discusses a wide range of issues related to information value. This includes the value of information, information being considered to be an asset, and information valuation techniques.	T		

Type: Empirical (E); Theoretical (T) – **Method:** Questionnaire (Q); Interview (I); Observation (O); Simulation (S); Case Study (C); Unknown (U)

Although these two dimensions have been given attention in the literature, no literature was found that provided a comprehensive foundation for considering the measured value of information. The measurement of information value has been discussed by a number of observers but unlike some other constructs such as information quality and strategic planning, a solid academic framework for the discussion of the measurement of information value does not appear to exist. The framework of dimensions for the measurement of information value this research has developed is considered to be a valuable addition to the literature. The two dimensions selected have been used throughout the project as the common basis for establishing the nature of dimensions related to the measurement of information value.

Table 7.5 - Dimensions of the Measured Value of Information

Dimension	Supportive Literature
Information as an Asset	Vincent, (1983, 1984) Glazer, (1993) Horton, (1993) Hawley, (1995)
Measurable Value of Information Assets	Carter, (1985) Repo, (1986) Burk and Horton, (1988) Glazer, (1991) Mowshowitz, (1992) McPherson, (1994)

7.5.1 The Significance of the Measured Value of Information within Case Study Organisations

As the review of the literature identified there are a number of dimensions related to the measured value of information. These dimensions are critical to how an organisation perceives the value of its information, and to the extent that an organisation acts to measure the value of its information. This research study set out to identify whether the case study organisations considered their information assets to be valuable, whether these information assets were of such value to be considered as formal assets, and whether measurable value was attached to these assets. The evidence for this study was collected and measured as described in Chapter five (5.4 Information Accessibility). The results of this analytical exercise have been summarised in Table 7.6. An additional dimension is included in this table, Information Value, which is based on the findings from Chapters five (5.4.3, 5.5.3, 5.6) and six (6.4.3, 6.5.3, 6.6.3, 6.7) on perceptions of information value.

Table 7.6 - Significance of Measured Value of Information in Case Study Organisations

Case	Information Value	Information as an Asset	Measurable Value of Information Assets	Overall Impact
Clearing Bank	***	-	-	*
Retailer	***	-	-	*
Insurance Company 'A'	**	-	-	*
Insurance Company 'B'	***	-	-	*
Commercial Bank	**	-	-	*
Insurance Company 'C'	***	-	-	*
Car Manufacturer	*	-	-	-
Insurance Company 'D'	**	-	-	*

Key : * highly significant impact; ** significant impact; * moderate impact; - minimal impact**

7.5.2 The Measured Value of Information – Dimension Analysis

Information as an Asset

Many of the case study organisations considered information to be a valuable asset. This suggests that for some of the case study organisations information would be classified as a formal asset of the organisation. However, analysis of the findings clearly indicates that none of the case study organisations formally classified information as an asset. Across all the case study organisations the same situation was found. At the **clearing bank** a systems architect clearly stated, *“information has not been regarded as an important asset of the bank, it has certainly not been costed as an asset”* [cas1int1]. At the **retailer** where there was recognition of the value of information, the view was still expressed that, *“although information has traditionally been regarded as a valuable asset it has never been acknowledged in any formal manner”* [cas2int2]. The situation at the **car manufacturer** was very similar, *“although recognising that better quality information was required there was little evidence that information was being regarded as a valuable asset ... it would be more realistic to say that information was regarded as being a useful commodity that could assist in improving business processes”* [casenote7]. Across all the case study organisations there was a similar situation. The value of information was becoming recognised more widely. There were expectations that information would start to deliver value and benefits to the organisations and information was considered to be an asset. However, although the situation appeared to be very positive the reality was summed up by an observation from the **commercial bank**, *“although information was starting to be recognised as being a valuable asset no attempt was being made, or being considered, to attach financial value to it or include it as an asset on the balance sheet”* [casenote5].

Measurable Value of Information Assets

Although none of the case study organisations attempted to classify information as a formal asset, there was still a possibility that some of them may have attempted to attach measurable value to their information assets. The analysis of the findings clearly indicates that this was not attempted, or even considered, by any of the case

study organisations. This is despite that fact that in a number of cases information was making, or was expected to make, a significant contribution to the attainment of substantial measured business benefits. At the **clearing bank** there was recognition that although information was valuable, *“there was no attempt to attached financial value to it and certainly no consideration was given to information appearing on the balance sheet as a corporate asset”* [casenote1]. The bank did not even consider taking any steps to identify what valuable information holdings they possessed, *“no methods existed for identifying the key stores of information or for calculating the value of these stores ... there was no indication that this was likely to change in the foreseeable future and no 'champion' appeared to exist who would be able to argue the case for this change in attitude to take place”* [casnote1]. This situation was also observed at most of the other case study organisations. At the **retailer** there was no wide recognition that information was a valuable asset and no attempt had been made to attach financial value to it. A slightly more positive opinion was expressed by the IT director at **insurance company ‘A’**. He stated that, *“there is no formal method for valuing information within the firm, although it should be possible for insurance companies to apply value to their pools of information”* [cas3int1]. A similar circumstance existed at **insurance company ‘C’** where an underwriting manager confirmed that, *“no financial value is attached to the information and it is not included on the corporate balance sheet”* [cas6int1]; this was confirmed by a second manager who stated, *“no formal method is used for attaching financial value to information”* [cas6int2].

7.5.3 The Information Value Paradox

The analysis identified that information value was recognised by all the case study organisations. Almost universally across the case study organisations information was referred to as being an *‘asset’*. The analysis of the findings from the research conducted in the case study organisations identified that all of the organisations could recognise the impact that information provision dimensions had on the performance of the business. At **insurance company ‘C’** it was recognised that, *“access to better information should also help with relationship management ... it should help with working with proactive intermediaries ... it should help build relationships”* [cas6int2]. At the **clearing bank** this recognition materialised in a number of ways including, *“as the quality of information improves ... our central marketing will*

become increasingly focused and more productive" [c1str2ksep]. Most of the case study organisations expected a highly significant impact from the dimensions that affect information provision. They also indicated that they expected an improvement to information provision dimensions to have a positive impact on information usage. At the **commercial bank** it was observed that, "*the provision of the right information would enable the bank to develop an understanding of customer behaviour which would help them to increase profitability*" [c5busreq]. In its battle for survival **insurance company 'A'** was, "*anxious to obtain information that would enable them to exploit the existing customer base and enable new product development to be better focused*" [c3dwprop]. All of the case study organisations expected a highly significant impact from at least one dimension related to information usage. The use of information to facilitate the attainment of measurable business benefits, both tangible and intangible, was recognised by all the case study organisations. However, despite these positive opinions and expectations the research findings also identified that none of the case study organisations considered information to be a formal asset of the business, or attempted to attach measurable value to information assets. These conflicting findings present an interesting insight into the treatment of information within the case study organisations; they identify a potential information value paradox. A situation appears to exist where organisations say that they consider information to be a valuable asset, and they can clearly recognise the benefits that its use can provide, yet their actions related to information management and exploitation investment contradicts this. The actions taken, rather than the words spoken, suggest that the real value of information has still not been recognised.

How can this situation exist? How can a resource of an organisation that so clearly provides value, and is instrumental in the attainment of significant measured business benefits, fail to have its real value recognised or measured? There are a number of potential answers to this question. One answer is probably related to the fact that information has traditionally been taken for granted in many organisations. Another is likely to be that traditional management practices have tended to utilise a small subset of information and this has typically only been financial information (Cole, 1985; Kaplan and Norton, 1992). A third reason, and one that is likely to be very close to the root of the problem, is that the measurement of information value, and the formal classification of information as an asset, is very closely tied to accounting practices.

Until now the valuation of intangible assets, which information assets should be considered to be, has been very strongly opposed by many accounting practitioners. Until the valuation of intangible assets is resolved it is unlikely that the measurement of information value will ever become a widely accepted practice.

There are some straightforward reasons why this would be expected to bring the debate on information value measurement to a standstill. The classification of corporate assets and the calculation of asset value are undertaken by business managers and accountants. When undertaking asset valuations these professionals work within the bounds of professional standards, regulations, and legislation. While the standards and guidelines discourage the capitalisation of intangible assets, managers within most organisations are unlikely to argue for the capitalisation of traditional intangible assets, let alone information. However, this is only part of the problem. If it were assumed that at some point in the future intangible assets started to become a standard entry on corporate balance sheets, with the blessing of the accounting establishment, it would still be difficult to include information assets. This is because no widely accepted method exists for measuring the value of information. For information assets to become formally accepted as corporate assets, and to have their value measured, straightforward valuation methods must be devised that are clearly integrated with standard business and asset valuation practices. Until these methods are developed information assets will not be formally recognised or be capitalised.

7.5.4 Measured Value of Information Conclusions

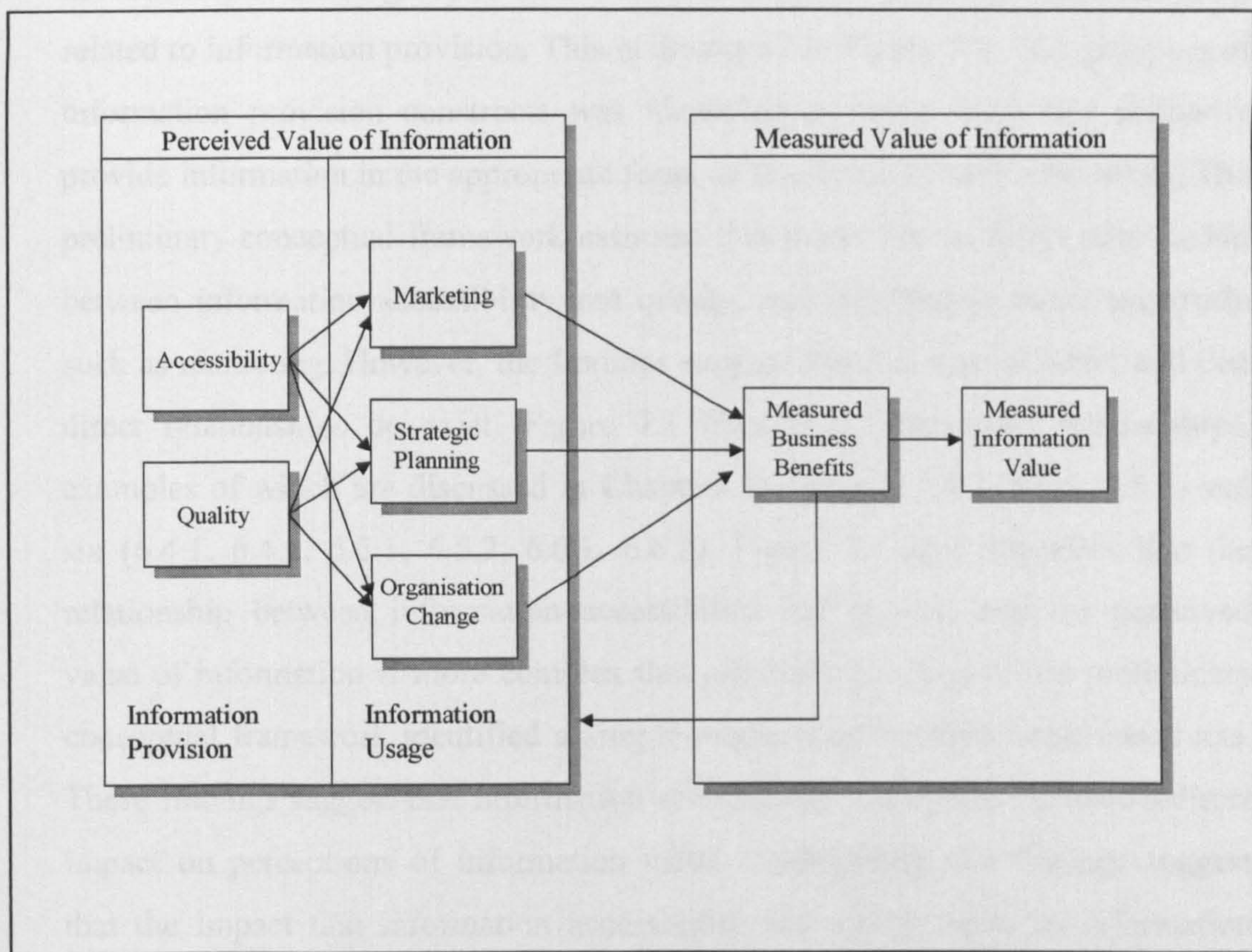
All the case study organisations recognised information as being valuable, and it was widely considered to be an 'asset' of the organisation. There was also recognition that information could add value to the performance of the business. However, despite this very positive view expressed on the value of information, none of the case study organisations gave any serious consideration to formally classifying information as an asset of the organisation. In addition, none of the case study organisations gave any serious consideration to measuring the value of information assets. It is concluded that this finding highlights an information value paradox. A situation exists where organisations say that they consider information to be a valuable asset yet their actions do not indicate that this is really the case. A number of reasons for this

paradox are suggested but the primary reasons appears to be a lack of information valuation methods built on recognised accounting and business practice. Until these matters are resolved it is unlikely that information value measurement will be undertaken on a widespread basis.

Whilst the value of information and information valuation have been recognised in the literature, the contributions have typically been of a theoretical nature; little empirical evidence appears to have been presented to support these arguments. The principle contribution of this research is the empirical evidence that is presented. It provides evidence on the perceptions within organisations on information value and information value measurement. Moreover, it provides evidence that there is a contradiction between the views expressed by organisations on information value and the actions that are actually taken. The fact that a contradiction has been identified makes the research findings potentially more valuable.

7.6 The Revised Conceptual Framework of the Perceived Value of Information

The preliminary conceptual framework was based on the findings of pre-PhD research, and an initial literature review that was conducted at the commencement of the research. As the study developed much more in-depth investigation was conducted and additional reviews of the literature were undertaken. As the findings and conclusions from the research emerged it became clear that changes were required to the preliminary conceptual framework to reflect the research findings. The revised conceptual framework is illustrated in Figure 7.1. As can be seen in Figure 7.1 the original six constructs that were believed to impact the perceived value of information still remain. They are information accessibility, information quality, marketing activities, strategic planning, organisational change, and benefits from use (renamed measured business benefits). The seventh construct that was identified in the preliminary conceptual framework, value measurement, still exists but it is renamed measured information value. However, as Figure 7.1 also illustrates the relationships between these constructs, and their relationship with the perceived value of information, is now considered to be somewhat different.

Figure 7.1 - The Revised Conceptual Framework for the Perceived Value of Information

The investigation into these constructs and the relationships between them resulted in the following conclusions:

1. The relationship between information provision, and perceptions of information value.

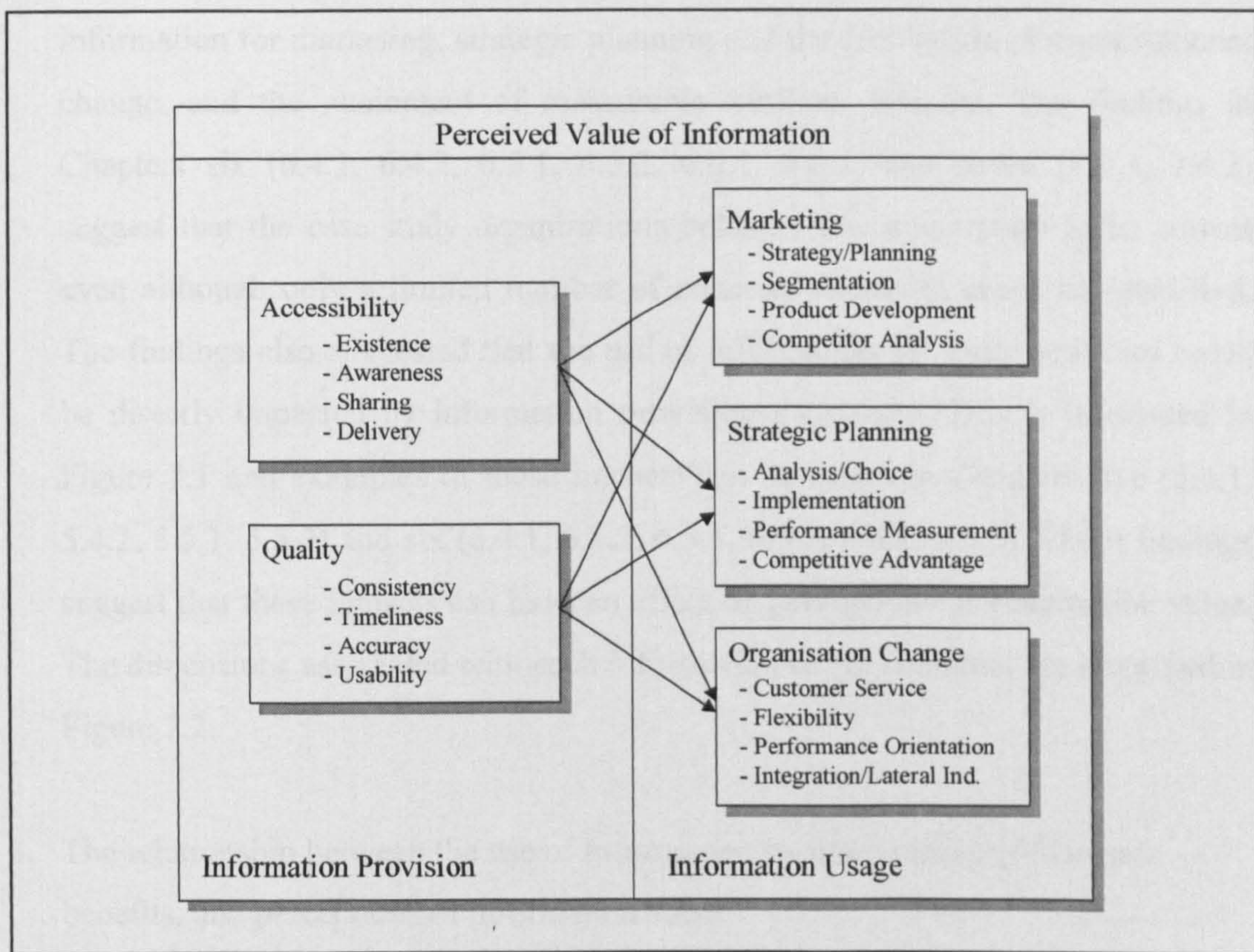
The preliminary conceptual framework assumed that the more accessible information is to information consumers the more likelihood there will be a positive perception of the value of information, and the less accessible information is the greater the likelihood that the perceived value of information will be low. The research findings in Chapter five (5.4.1, 5.4.2, 5.4.3) suggest that these assumptions are correct. The preliminary conceptual framework assumed that the better the information quality, the more likely there will be a positive perception of information value, and the poorer the information quality, the greater the likelihood that the perceived value of information will be low. The research findings discussed in Chapter five (5.5.1, 5.5.2, 5.5.3) suggest that these

assumptions are also correct. These findings also suggested that information accessibility could be grouped with information quality as they are both primarily related to information provision. This is illustrated in Figure 7.1. This grouping of information provision constructs was identified as being those that primarily provide information in the appropriate form, so that it can be used effectively. The preliminary conceptual framework assumed that there was no direct relationship between information accessibility and quality, and information usage constructs such as marketing. However, the findings suggest that this was incorrect and that direct relationships do exist. Figure 7.1 illustrates these direct relationships, examples of which are discussed in Chapters five (5.4.1, 5.4.2, 5.5.1, 5.5.2) and six (6.4.1, 6.4.2, 6.5.1, 6.5.2, 6.6.1, 6.6.2). Figure 7.1 also illustrates that the relationship between information accessibility and quality, and the perceived value of information is more complex than originally envisaged. The preliminary conceptual framework identified a simple relationship between these constructs. These findings suggest that information accessibility and quality do have a direct impact on perceptions of information value. Additionally, the findings suggest that the impact that information accessibility and quality have on information usage constructs can also have an impact on the perceived value of information. This is illustrated in Figure 7.1 where the perceived value of information is represented as a super-construct that embodies all the information provision and information usage constructs. This represents the conclusion that the perceived value of information is impacted by all the information provision and information usage constructs and their interrelationships. The research also investigated the dimensions related to each construct and identified those that appeared to have most relevance to this study. The dimensions identified for the perceived value of information are identified in Figure 7.2. As this figure illustrates the dimensions identified for information accessibility were existence, awareness, sharing, and delivery, and the key dimensions associated with information quality were consistency, timeliness, accuracy, and usability.

2. The relationship between information usage, and perceptions of information value.

The preliminary conceptual framework assumed that the use of information for activities such as marketing, strategic planning, and the facilitation of organisational change could have a direct impact on its perceived value. It assumed that the use of information for activities that generate value for the organisation the greater the likelihood that there will be a positive perception of information value.

Figure 7.2 - The Perceived Value of Information Constructs and Dimensions



It also assumed that the use of information for activities that failed to deliver value to the organisation the more the likelihood that the perceived value of information will be low. The findings of the study discussed in Chapter six (6.4.1, 6.4.2, 6.5.1, 6.5.2, 6.6.1, 6.6.2) suggest that these assumptions are correct. These findings also suggested that the use of information for these activities could be grouped together as they are all related to information usage. This is illustrated in Figure 7.1. This grouping of information usage constructs was identified as being those that involve using information to enhance the performance of the organisation and to add value to key business activities and processes. The preliminary conceptual framework assumed that a second relationship could exist between the use of information for marketing, strategic planning and the

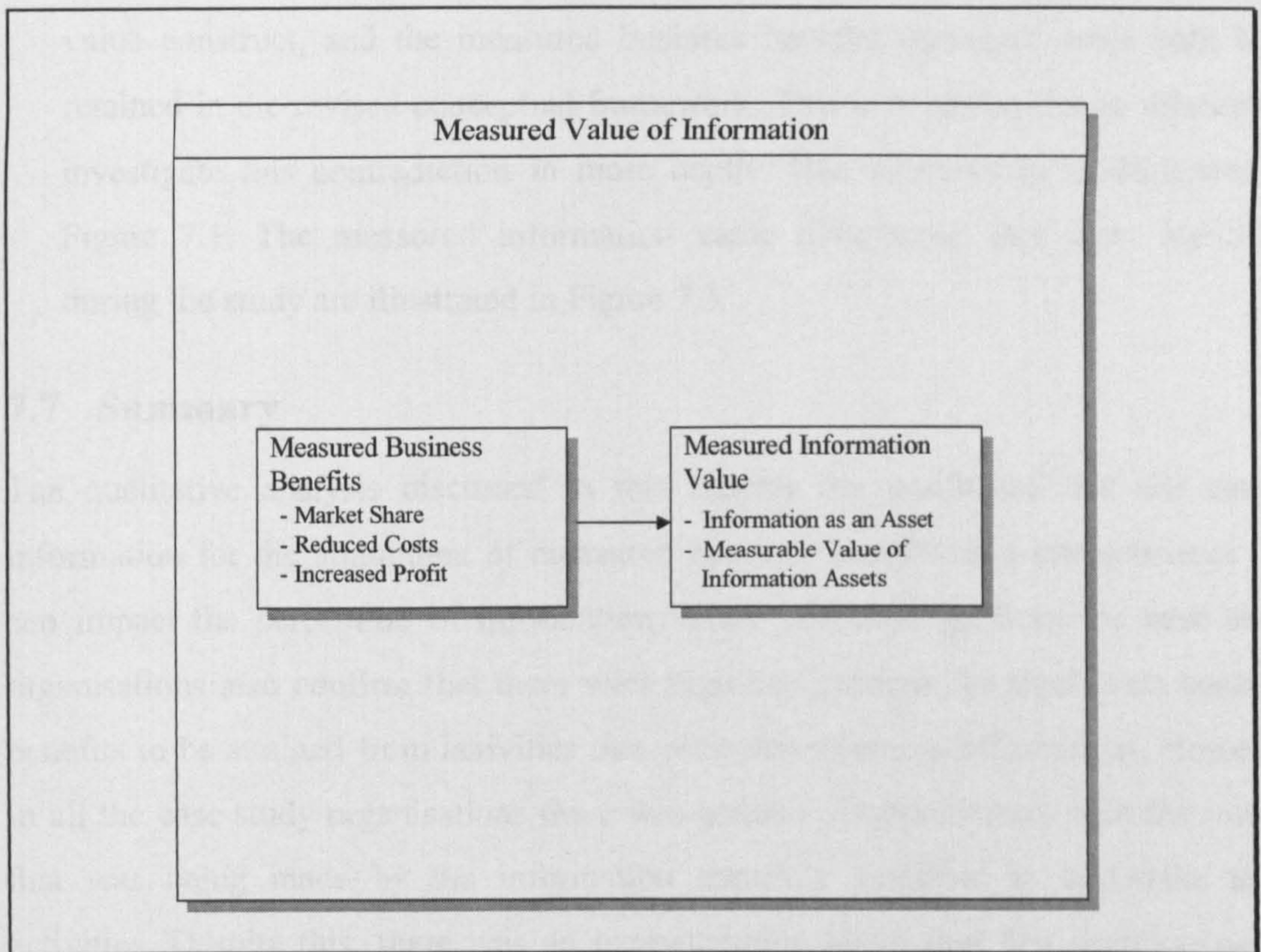
facilitation of organisational change, and the perceived value of information. The more positive the existing perceptions of information value, the more likelihood that the information will be used for these activities. The more dissatisfied the perceptions of information value, the less likely the information will be used for these activities. There was less evidence available to confirm these assumptions, however, the findings did tend to suggest that they are correct. The preliminary conceptual framework had assumed that a relationship existed between the use of information for marketing, strategic planning and the facilitation of organisational change, and the attainment of measurable business benefits. The findings in Chapters six (6.4.1, 6.4.2, 6.5.1, 6.5.2, 6.6.1, 6.6.2) and seven (7.4.1, 7.4.2) suggest that the case study organisations believed this assumption to be correct even although only a limited number of concrete examples could be identified. The findings also suggested that the use of information for these activities could be directly impacted by information provision constructs. This is illustrated in Figure 7.1 and examples of these impacts can be found in Chapters five (5.4.1, 5.4.2, 5.5.1, 5.5.2) and six (6.4.1, 6.4.2, 6.5.1, 6.5.2, 6.6.1, 6.6.2). These findings suggest that these impacts can have an effect on perceptions of information value. The dimensions associated with each information usage construct are identified in Figure 7.2.

3. The relationship between the use of information to attain measured business benefits, and perceptions of information value.

The ability to gain benefits from the use of information was recognised in the preliminary conceptual framework. It assumed that the use of information for marketing activities, strategic planning, and the facilitation of organisational change can result in the organisation gaining measured business benefits. It was also assumed that if measured business benefits were attained in this way it could result in the perceived value of the information being positively impacted. As discussed above, the research tended to suggest that the case study organisations believed this assumption to be correct, however, few specific examples could be identified. This relationship is identified in Figure 7.1. The findings of the study also suggested that this construct, along with measured information value, was more related to the measurement of actual value rather than perceptions of value.

For this reason they have both been placed within a super-construct, the measured value of information, which represents the conclusion that there is a range of constructs and interrelationships that can have an impact on the measurement of information value rather than just influencing perceptions of value. A number of measured business benefit dimensions were identified during the study and these are illustrated in Figure 7.3.

Figure 7.3 - The Measured Value of Information Constructs and Dimensions



4. To explore the relationship between attitudes to measuring information value, and perceptions of information value.

The preliminary conceptual framework identified that the attainment of measurable business benefits could enable the value of the information that was used to gain the business benefit to be measured in its own right. It assumed that if information is used to assist with the attainment of measured business benefits, and part of the measured business benefit can be attributed to the information, it is possible that the value of the information that was used can be measured. The findings in Chapter seven (7.4.1, 7.4.2, 7.5.2) suggest that measurable business benefits can be attained by the use of information, but there was no evidence to support the argument that any of the business benefit value can be attributed to the

information used, or that the value of the information used could be measured. The general attitude within the case study organisations was that although information was increasingly being considered to be a valuable asset no serious consideration was being given to formally measuring this value. This finding contradicts a substantial body of literature that argues that the value of information assets can, and should, be measured. Even although there is a contradiction between the findings and the literature the measured information value construct, and the measured business benefits construct, have both been retained in the revised conceptual framework. This is to enable future research to investigate this contradiction in more depth. This relationship is illustrated in Figure 7.1. The measured information value dimensions that were identified during the study are illustrated in Figure 7.3.

7.7 Summary

The qualitative analysis discussed in this chapter has confirmed that the use of information for the attainment of measured business benefits is a key construct that can impact the perception of information value. The findings from the case study organisations also confirm that there were high expectations for significant business benefits to be attained from activities that were dependent on information. However, in all the case study organisations there was general disappointment with the impact that was being made by the information currently available to undertake these activities. Despite this, there was an overwhelming belief that this situation would improve and that information would become a major factor in the attainment of measurable business benefits.

The analysis also identified that although information was regarded as being a valuable asset by all the case study organisations, none of them considered formally classifying information as an asset of the organisation. There was also no consideration being given to measuring the value of information assets. It was concluded that this creates an information value paradox; organisations say they consider information to be a valuable asset but their actions do not appear to match this. The conceptual framework for the project was reviewed and revised based on the research findings, and on the review of the literature in this Chapter, and Chapters five and six.

Chapter 8

Focus Group Analysis

8.1 Introduction

The previous chapters discussed the findings from the case study research. These findings resulted in a number of conclusions being reached and thus, revisions to the conceptual framework. They also resulted in a number of additional questions arising that required focus group research to obtain answers. This chapter discusses the focus group research that was undertaken. As well as seeking to obtain answers to new questions generated during the case study research, this phase of the research also has the objective of validating and interpreting the findings from the earlier phases of the study, and to provide additional insights. Additionally it has the objective of validating the revised conceptual framework that was developed in chapter seven.

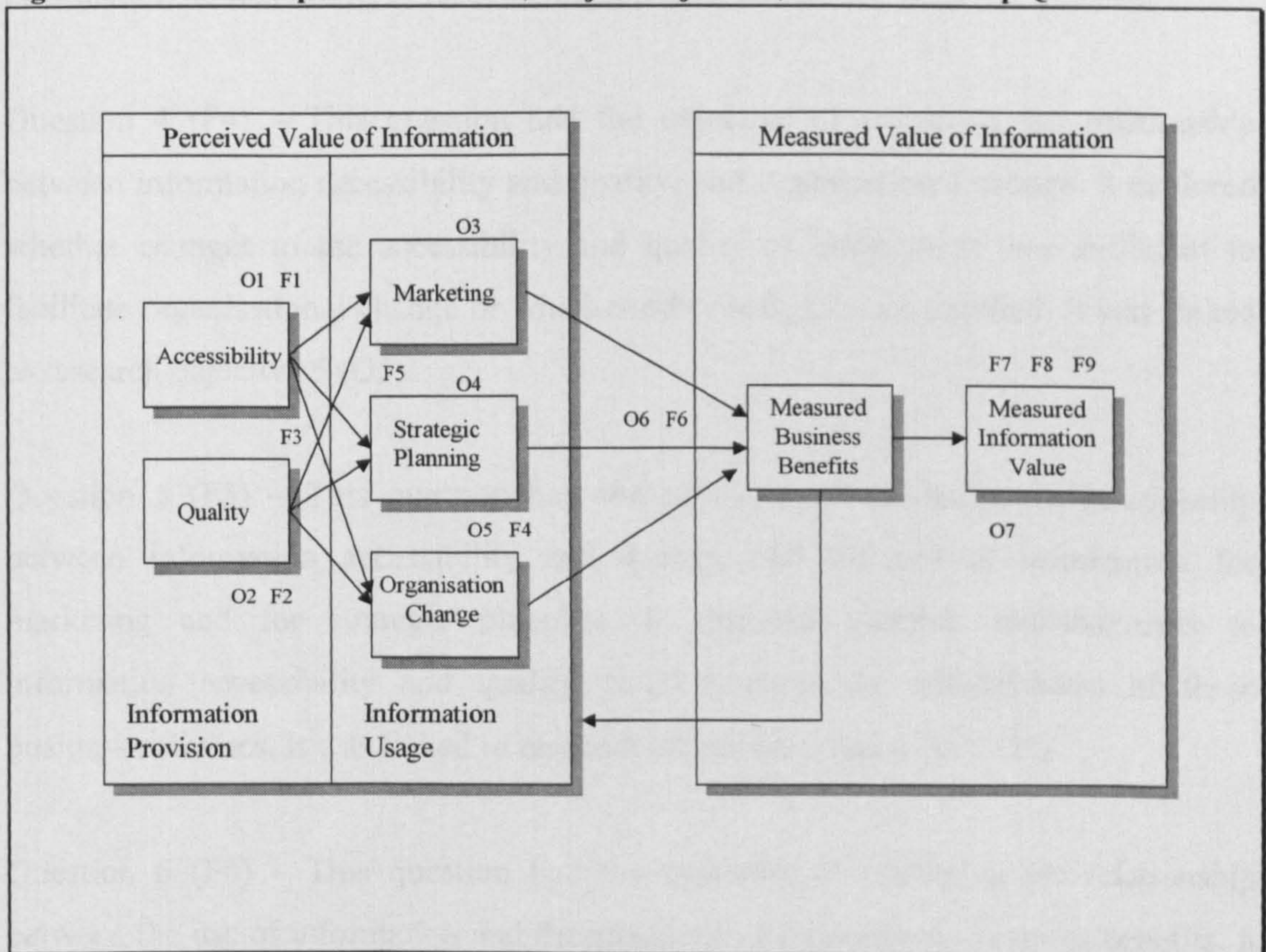
This chapter starts by reviewing the conceptual framework and the linkage between it, the research objectives, and the focus group questions. It then considers the preparation that was required before conducting the focus groups, giving particular attention to how the questions were formulated. It discusses how the focus groups were conducted identifying a number of the problems encountered. It also discusses the analysis that was conducted on the data gathered from the focus groups. The

interpretation of the focus group findings is considered and the conclusions reached for each focus group question is discussed.

8.2 Review of the Conceptual Framework, the Research Objectives, and the Focus Group Questions

This phase of the research was conducted using the conceptual framework developed to support the overall research objectives, which was revised in Chapter seven. The focus group questions were developed to validate different aspects of the conceptual framework and to confirm a number of findings from the case study research. Each question that was presented to the focus groups was linked to one of the overall project objectives and had the purpose of providing further insight into the objective being investigated. This is illustrated in Figure 8.1.

Figure 8.1 - The Conceptual Framework, Project Objectives, and Focus Group Questions



(O) – Research Objective; (F) – Focus Group Question

The components of the conceptual framework that were explored by the focus group questions were as follows:

Question 1 (F1) – This question had the objective of validating the critical dimensions of information accessibility and to explore in more detail the steps that organisations could take to make information more accessible. It was linked to research objective 1 (O1).

Question 2 (F2) – This question had the objective of validating the critical dimensions of information quality and to explore in more detail the steps that organisations could take to ensure that information resources are of an appropriate quality. It was linked to research objective 2 (O2).

Question 3 (F3) – This question investigated the relationship between information accessibility and quality, and the attainment of business benefits from the use of the information. It was linked to research objectives 1 and 2 (O1, O2).

Question 4 (F4) – This question had the objective of validating the relationship between information accessibility and quality, and organisational change. It explored whether changes to the accessibility and quality of information was sufficient to facilitate organisational change or whether other actions were required. It was linked to research objective 5 (O5).

Question 5 (F5) – This question had the objective of validating the relationship between information accessibility and quality, and the use of information for marketing and for strategic planning. It explored whether improvements to information accessibility and quality could improve the effectiveness of these business activities. It was linked to research objectives 3 and 4 (O3, O4).

Question 6 (F6) – This question had the objective of validating the relationship between the use of information and the attainment of measurable business benefits. It explored whether the value of the contribution made by information to attain these benefits could be measured. It was linked to research objective 6 (O6).

Question 7 (F7) – This question attempted to validate the findings related to the classification of information as an asset. It investigated the steps organisations could

take to make sure they made best use of their information assets. It was linked to research objective 7 (O7).

Question 8 (F8) – This question attempted to validate the findings related to the measurement of the value of information assets. It investigated whether the measurement of information value would become more widespread if methods and guidelines were available to assist with the process. It was linked to research objective 7 (O7).

Question 9 (F9) – This question attempted to explore attitudes to the measurement of information value. It also explored the steps that organisations should take to manage information in a manner that enables benefits to be realised. It was linked to research objective 7 (O7).

8.3 Focus Groups Preparation

As indicated in the introduction to this chapter, this phase of the research had the objectives of obtaining answers to new questions generated during the case study research, to validate and interpret the findings from the earlier phases of the study, and to provide additional insights. Chapter three provided a discussion on why focus groups were considered to be the most appropriate method for achieving these objectives. That chapter also identified that by validating and testing the findings from the case study research by the use of focus groups, with participants who were not connected to the case study organisations, a positivist approach was being adopted for this stage of the research. Before the focus groups could commence there were a number of activities that had to be undertaken in preparation. Four main activities were required, Planning, Developing the Questions, Identifying the Participants, and Pilot Testing the Focus Group (Morgan, 1997; Krueger and Casey, 2000). These activities are discussed in more detail in the following section.

8.3.1 Planning

Chapter three discussed how the focus groups were to be set-up and run. It identified that four main focus groups would be created and they would be preceded by a pilot focus group. The purpose of this pilot would be to test the questions and the mechanisms that would be used for conducting the main focus groups. Chapter three

had also identified that each main focus group would consist of six participants, and the pilot would have four. The actual number that participated in the pilot was five. Invitations were sent out to thirty candidates to participate in the main focus groups. From this twenty-two positive responses were received which resulted in two groups of six participants, and two groups of five participants being formed. Initially there were twenty-four positive responses, however, there were two last minute withdrawals. These numbers were deemed to be acceptable and they met the recommendation that there had to be at least four participants in each group (Jankowicz, 1991; Morgan, 1997; Krueger and Casey, 2000). In addition to forming the groups, work was also undertaken to create and prepare the Internet environment that was being used to host the focus groups. This required the creation of five separate Microsoft Network (MSN) communities. Each of these communities was set-up in an identical manner. They each had three documents created to assist the participants, a 'Who's Who' file providing a role title and description for each participant, a 'What's it all about' file providing background information on the research project, and a glossary of terms tailored to the questions being posed. All the participants were free to choose the level on anonymity they wished to have. One participant who wished to remain anonymous utilised the alias 'alcapone' throughout the study, whereas another who had no desire for anonymity not only provided full personal details but also posted a digital photograph of himself on the focus group community homepage.

8.3.2 Developing the Questions

The questions for the focus groups were developed directly from the overall research objectives and the key findings from the case study research. Eleven questions were presented to the focus groups. Nine of the questions related to the objectives of the research and there was one catch-all question at the end to provide the participants with the opportunity to express their opinions or identify any topic they believed had been missed. Question eleven related to the research method used and in particular the use of the Internet. Each of the main questions was directly linked to a key research finding and they all consisted of two parts. The first part attempted to validate the findings from the case study research, and the second part attempted to explore the issue in more detail and to gain better insights. The wording of the questions was intended to be direct, forthright, simple, and clear (Krueger and Casey,

2000). Efforts were also made to ensure that the wording was appropriate for the intended audience and was relatively jargon free. However, because all the participants were chosen for their subject knowledge some jargon was included. To reduce any problems that this jargon could have introduced the glossary of terms was provided. The development of the questions was an iterative process with a number of reviewers assisting. It was decided that two questions would be presented to the focus groups every two days. This provided the participants with forty-eight hours to review and respond to each pair of questions. This also dictated that the focus group exercise would run for at least twelve days. In reality the groups were initially given sixteen days to allow for weekends.

8.3.3 Identifying the Participants

It was decided that the participants would be chosen based on the knowledge and experience that they could contribute to the discussion. This was considered to be important as the questions being presented assumed a certain amount of knowledge of the topic being discussed. It was also important that the participants would be capable of making a strong contribution. It was decided that to achieve this participants would either have to be known personally to the researcher or be recommended by someone who knew them. The researcher personally knew most of the twenty-two focus group members; only six were introduced by third-party recommendation. The problems that can arise from having acquaintances in the same group were considered (Morgan, 1997, Krueger and Casey, 2000). Although there were a number of acquaintances participating in the study as a whole, in one instance a father and a daughter, no close acquaintances were allocated to the same group. This did not apply to the pilot group; it did have a number of participants who were acquaintances. Another important factor that was taken into account when identifying potential participants was geographical location. For traditional face-to-face focus groups it would be expected that the participants would all be within travelling distance of the focus group venue. However, as these focus groups were being conducted over the Internet this restriction did not apply. This is considered to be one of the most significant benefits from conducting the focus groups electronically. It enabled a highly knowledgeable and experienced group of specialists to be assembled from across the globe. It was originally hoped to have participants from Australia, New Zealand, the USA, and Europe participating in addition to those from the UK. This was not achieved but

there were a number of participants from the USA. One participant started participating in Korea, continued in England and Holland, and then completed it in Sunnyvale, California. The background of the participants was also considered in Chapter three. It was hoped to draw the participants from a number of categories that were of relevance to the research topic. These categories were to include marketing, corporate strategy, senior management, information exploitation, and academia. As Table 8.1 illustrates a good mix of participants was achieved.

Table 8.1 - Focus Group Participants

Participant	Role	Comments
GAP1	A consultant in the area of Business Intelligence, helps clients develop and use MIS systems. Focus starts with the business drivers or issues that cause a need for more or better information.	
GAP2	Works as a New Media Marketing Consultant. In this role specialises in the areas of European on and offline marketing for Internet companies and CRM for Internet business.	
GAP3	Works for a large software company as a Practice Manager for a delivery team of architectural and strategy consultants who work through industry teams.	
GAP4	Program Management Director for a large technology company. Responsible for planning, implementation monitoring and WW deployment of information exploitation solution.	
GAP5	A consultant with key expertise in programme management of systems implementation. Primarily uses knowledge (techniques, best practice, and the like) rather than pure information.	
GAP6	University lecturer and researcher.	
GBP1	A business intelligence consultant specialising in the design and implementation of data warehouse solutions in client/server environments.	
GBP2	Principal Consultant and subject matter expert in CRM /Strategic Marketing with a particular expertise in the retail financial services and private banking/asset management sectors.	
GBP3	IT Project Manager responsible for delivering the IT components of projects which bring about change to business processes.	
GBP4	Currently works in an IT product management role for the IT Division of a global retail enterprise. Provides project advocacy to business and IT stakeholders.	Did not participate
GBP5	Research Associate investigating the attractiveness of the NHS as an employer to potential nursing and allied health profession staff. Recent PhD in information management.	
GCP1	Marketing analyst and director of customer information database for large internet portal service.	Did not participate
GCP2	Principal Consultant focused on IT Strategy for a global services organisation. Help large organisations understand how to make most effective use of information technology to achieve their strategic business goals and tactical plans.	
GCP3	Architectural consultant for large software company. Provides strategic IT architecture consulting and develops complex IT solutions.	
GCP4	Senior Consultant for large software company. Architects, designs, reviews, and integrates solutions across the whole software product set.	Did not participate

GCP5	Senior Lecturer in Information Systems. Teaches subjects like strategic information systems management, strategic information systems planning, technology and innovation, and a general introduction to analysis, design and project management for business studies students.
GDP1	Business Development Manager for a global technology company. Directs various teams in achieving their business targets through improved teamwork, greater focus on specific business opportunities, analysis of new market opportunities, and greater exploitation of alternative channels to market.
GDP2	Project Manager with a global pharmaceutical company responsible for the management and successful co-ordination of the final stage of a global Supply Chain Project.
GDP3	Director of Technology and Solution Services for a major software company. Responsible for leading and managing the technology consulting, solution consulting, pre-sales specialist and post-sales specialist groups.
GDP4	Vice President for the Financial Services Industry at a software company. Sells a variety of software solutions to banks and insurance companies that help them maximise profits through price optimisation.
GDP5	Lecturer in Retailing and E-Commerce at a University Business School. Previous industrial career in retail management involved new product development, project management, and design and development of retail operations.
GPP1	Strategy Consultant for a major software company. The objective of the role is to help customers get business value from technology. A key aspect of that is understanding customer information needs
GPP2	Strategy Consultant for a major software company. Advises clients on aligning their business and IT strategies for business advantage.
GPP3	Teacher and researcher. For teaching, uses information to keep up to date and that can be used as teaching material.
GPP4	Lecturer in Information Systems. Just completed a Ph.D. on finding practical means of facilitating a Client-Led process of design and development.
GPP5	Lecturer in Information Systems with a focus on modules in computer literacy, information systems and decision making

8.3.4 Pilot Testing the Focus Group

An important step in the planning and preparation for the focus groups was undertaking a pilot test. There were a number of reasons why the pilot focus group was important. There was a need to test the questions that had been developed. The pilot identified that a number of minor changes were required to the questions. However, the major contribution was the identification of the need for a glossary of terms. This was produced and provided to the four main focus groups. The pilot also tested the invitation and access procedures; these can be found in Appendix 3.4. The joining procedures provided a step-by-step guide to joining the MSN community, and how the community should be accessed and used once membership was confirmed. The pilot group also tested the use of the MSN community and the ability of the

participants to access the questions that had been posted and their ability to post responses. The pilot focus group was conducted very successfully over a period of fourteen days. The pilot group participants were not given the luxury of responding within forty-eight hours, they had new questions posted every twenty-four hours. The pilot confirmed that the Internet environment was suitable and robust enough for the focus group research. It also confirmed that the MSN community facilities were easy to access, very suitable for raising and answering the questions, and for allowing asynchronous discussion to take place. As the quality of the responses was high, and as there were no major changes to the questions between the pilot and the main focus groups, the data gathered during the pilot was included in the analysis of the data that was captured. With the successful completion of the pilot, the main focus groups were initiated with confidence.

8.4 Conducting the Focus Groups

The pilot had identified that there was significant effort required to moderate an online focus group. This suggested that attempting to manage four in parallel would be a major challenge. To help alleviate this problem the start of the main groups was staggered, two starting on day one, the other two starting on day two. This required the moderator to participate every day but attending to two groups instead of four. Two new questions were posted to each group every two days. With every new pair of questions an individual e-mail was sent to each participant alerting them to the posting. These e-mails became one the most significant tools available to the moderator for managing the focus groups and reminding and cajoling participants to participate. The uptake of participation across the groups was mixed. Some groups started and maintained a high level of participation, while others got off to a slow start. The email reminders were used extensively to increase participation when required. However, this was not completely successful and as Table 8.1 illustrates three individuals who had agreed to participate failed to make any contribution. Unfortunately two of these non-participants had been assigned to one group, Group C, which reduced the participant level of this group to three. It also became apparent that the pace of the questioning, two questions every two days, was placing a burden on a number of participants. In acknowledgement of this situation the moderator provided a four-day time-out at the mid point of the questioning route to allow stragglers to catch up. This tactic was successful and by the end of the study all the

active participants had managed to provide input on most of the questions presented. A substantial amount of good quality data was gathered from all the groups and this provided the foundation for the analysis that was conducted.

8.5 Analysis of the Focus Group Results

There are a number of factors that should be considered when analysis data collected from focus groups. These factors include the frequency with which something was said within a group, the specificity of the comments, the enthusiasm or emotion shown when discussion a specific topic, and how many groups discussed the topic (Morgan, 1997, Krueger and Casey, 2000). All of these factors were taken into account in the analysis of the data collected from the five focus groups.

8.5.1 Capturing and Coding the Focus Group Data

The proceedings from all the focus groups were captured in the form of contemporaneous notes. These contemporaneous notes were held in the MSN communities and accessible from the Internet. All of this data was extracted from the MSN communities and stored in text documents. These text documents were then imported into a database in the *QSR NUD*IST Vivo* (NVivo) software package created specifically for the focus group data analysis. Once captured in the database the data from each focus group was coded. It is generally recognised that the unit of analysis for focus group analysis is the group, not the individual (Morgan, 1997; Krueger and Casey, 2000). The group was the unit of analysis adopted for this research. The coding was undertaken using a coding technique recommended by Miles and Huberman (1994), the coding table can be found in Appendix 8.1. This approach to the coding of the data entailed the creation of a provisional start list of codes based on the research questions. As the analysis of the data proceeded some codes were discarded and new codes were generated. As Miles and Huberman (1994) observed, *“the analyst should be ready to redefine or discard codes when they look inapplicable, overbuilt, empirically ill-fitting, or overtly abstract”*. On completion of the coding it was possible to commence with the detailed analysis of the data.

8.5.2 Analysing the Focus Group Data

As with the case study data analysis, the basic form of analysis that was conducted on the coded data was content analysis and pattern matching. The coded data was

initially grouped by each topic discussed, and by each participant that expressed a comment on the topic. From these groupings it was possible to develop a set of focus group thematic matrices, an example can be found in Appendix 8.2. This matrix provided an individual focus group view on each of the questions asked. From all of the individual focus group thematic matrices it was then possible to produce a cross focus group thematic matrix. An example of this matrix can also be found in Appendix 8.2. This matrix accumulated the opinions from all the focus groups for all the questions. This provided the opportunity to conduct cross case analysis and develop conclusions based on the opinions of all the focus groups. It was from this matrix that the following research findings were produced.

8.6 The Focus Group Findings

The data that was analysed had been captured by a series of questions that were linked to the overall research objectives and the case study key findings. The analysis of this data resulted in the following findings and conclusions.

8.6.1 The Impact of Information Accessibility and its Critical Dimensions

Table 8.2 - Information Accessibility and its Critical Dimensions

Objective	Key findings	Focus Group Question
To explore the relationship between information accessibility, and perceptions of information value	The existence of information, attitudes to sharing information, and successful delivery of information were found to be the most critical dimensions that impact upon the accessibility of information. Most of the case study organisations believed that the information they currently had available failed to meet accessibility requirements.	Would you agree that these are the key dimensions of information accessibility? What steps should organisations take to ensure that the information required by their information consumers is accessible?

The case study findings suggested that information accessibility was a major construct that impacted business activities and had an impact on the perceived value of information. The research produced a framework of what appeared to be the most critical information accessibility dimensions. This included existence of information, awareness that the information exists, and attitudes to sharing information. The first

question presented to the focus groups was designed to investigate this finding, *“Would you agree that these are the key dimensions of information accessibility?”* There was substantial agreement across all five focus groups that information accessibility is a critical construct. There was also general agreement that the dimensions presented were critical, *“I would say these key dimensions of information accessibility are correct”* [gap2]. However, a number of participants believed that there could be other dimensions that were just as critical, *“I’m sure that the dimensions quoted are critical although its hard to say whether they are the most critical”* [gap3]. Among the alternatives put forward the most significant included relevance, ease of access, trustworthiness, and understanding. One of the dimensions believed to be of particular importance was attitude to information sharing. This was highlighted by a number of participants with an experienced strategy consultant stating, *“willingness to share information is hugely important inside an organisation and between organisations and people with no commercial stakes”* [gcp2].

A supplementary question was also asked, *“What steps should organisations take to ensure that the information required by their information consumers is accessible?”* There were a number of suggestions made. Two of the focus groups identified the importance of developing a good awareness of the needs of the information consumer. Publicising the existence of information was recommended by another two focus groups, and establishing policies and rules for information access was also suggested. As one participant with many years of project management experience recommended, *“seek feedback from the consumers of the information”* [gbp3]; another participant recommended, *“establish an open access policy - data is available unless there is a good reason that it should not be (and not the other way round)”* [gpp1].

8.6.2 The Impact of Information Quality and its Critical Dimensions

The case study research investigated the impact that information quality can have on business activities and on perceptions of information value. The findings suggested that information quality could have a significant impact on both. The findings identified a number of key dimensions of information quality that were considered to be the most important. These were accuracy, consistency and timeliness. A question was presented to the focus groups with the intention of investigating this finding. The

question stated, “*Would you agree that these are the key dimensions of information quality?*” The response to this question resulted in unanimous agreement across all the focus groups that information quality is a critical construct.

Table 8.3 - Information Quality and its Critical Dimensions

Objective	Key findings	Focus Group Question
To explore the relationship between information quality, and perceptions of information value	Accuracy, consistency and timeliness were found to be among the most important dimensions of information quality. Most of the case study organisations believed that the information they currently had available failed to meet quality requirements.	Would you agree that these are the key dimensions of information quality? What steps should organisations take to ensure that all their information resources are of an appropriate quality?

There was also broad agreement that the three dimensions presented were key dimensions of information quality, however, a number of additional dimensions were suggested that the focus groups believed could be equally critical. As a number of participants argued, “*those are certainly three vital dimensions of quality but I would also add 'integrity'*” [gdp1], “*relevance is a key determinant of quality/'fitness for purpose'*” [gap5], and “*I suspect there is another dimension to information quality that I can only describe as context'*” [gdp4]. The major alternative dimensions that were suggested by the focus groups were meaningfulness, relevance, and context. However, whilst acknowledging that these are valid dimensions this study considers them to be dimensions of information use rather than information quality. It was also suggested that it is important for information to be fit for purpose and that good quality meta-data can enhance the quality of information. As an experienced management consultant argued, “*I suggest 'fitness for purpose'. The 'purpose' will determine the requirement for accuracy, consistency and timeliness or any other dimension of information quality*” [gap5]. This factor was also discussed in other groups.

The supplementary question that was asked on this occasion was, “*What steps should organisations take to ensure that all their information resources are of an appropriate quality?*” The responses to this question resulted in two focus groups

identifying the establishment of information ownership is important. Another two groups believed that the cleansing of information at its source was an important step that organisations should take. As the participants themselves commented, “*to maintain information quality I would suggest that developing user ownership is important*” [gbp5], “*clear ownership of data quality*” [gpp1], and “*the quality must be assured at source*” [gbp1].

8.6.3 The Ability of Organisations to Improve the Accessibility and Quality of Information

Table 8.4 - The Ability of Organisations to Improve Information Accessibility and Information Quality

Objective	Key findings	Focus Group Question
To explore the relationship between information accessibility, and perceptions of information value	All the organisations believed that the accessibility and quality of information would improve in the future and that substantial business benefits would be obtained from the use of the improved information.	Do you think the case study organisations were deluding themselves?
To explore the relationship between information quality, and perceptions of information value		Do you believe that information accessibility and quality can be improved in organisations to a level that can enable the attainment of substantial business benefits?

The findings from the case study research suggested that both information accessibility and information quality could have a significant impact on business activities and on the perceived value of information. The findings also identified that perceptions of the value of the information that was currently provided were unfavourable. However, when the information that was expected to be provided in the future was considered there was a much more positive perception. All the case study organisations believed that the accessibility and quality of information would improve to an extent where the use of information would make a substantial contribution to the attainment of business benefits. This appeared to be an optimistic view and to investigate it further the focus groups were asked a simple question, “*Do you think the case study organisations were deluding themselves?*” Overall there was a tendency to the opinion that the case study organisations were not deluding themselves, however, one forceful exception to this was the view, “*yes they are deluding themselves*” [gpp4]. Some of the alternative comments made by participants include, “*no, I don't think they were necessarily deluding themselves*” [gbp3], “*to a*

degree I do believe that they are deluding themselves!” [gdp3], “I believe that if there is sufficient determination and leadership, organisations can improve their information quality and accessibility” [gap5], and “I do believe that these organisations are likely to have the potential to increase the business benefits that they get from information” [gpp2]. Regardless of whether the case study organisations were deluding themselves or not the focus groups believed that it was still important that the organisations take action to improve the accessibility and quality of their information. As a senior lecturer in information systems observed, *“whether they were deluding themselves or not really depends on how serious they are about improving their information” [gcp5].*

This question was followed-up by a supplementary question which asked, *“Do you believe that information accessibility and quality can be improved in organisations to a level that can enable the attainment of substantial business benefits?”* Two of the focus groups produced quite strong arguments supporting the idea that improvements could be made to a level that can enable the attainment of substantial business benefits. The conclusions from the other three groups were more balanced with one group tending towards a rejection of the idea. The views of two participants were, *“I am sure business benefits can be generated from improving access to quality information” [gbp5]* and *“I do believe it's possible to gain a real edge through better information” [gcp2].*

8.6.4 The Role of Information in the Facilitation of Organisational Change

The findings from the case study research indicated that a number of the case study organisations were implementing, or were contemplating, major organisational changes. It was identified that a critical component of these changes was access to relevant information. There was a belief in these organisations that improvements to the flow and quality of information could facilitate changes related to customer service, performance orientation, and flexibility. Organisational changes can be quite complex and can impact, and be impacted by, the culture of the organisation. The importance of the role of information in these changes appeared to require further investigation. To this effect a question was presented to the focus groups that asked, *“Does the flow and quality of information have a role to play in the formation and*

modification of organisational culture?” The general opinion from all five focus groups was that information does have a significant role to play in the facilitation of organisational change but that it is only one of a number of factors.

Table 8.5 - The Role of Information in the Facilitation of Organisational Change

Objective	Key findings	Focus Group Question
To explore the relationship between the use of information to facilitate organisational change, and perceptions of information value	Many of the case study organisations envisage that changes/improvements to the flow of information will facilitate changes to their organisational cultures, especially with respect to the levels of customer service, performance focus, flexibility, and empowerment.	Does the flow and quality of information have a role to play in the formation and modification of organisational culture? Will modifications to the flow and quality of information be sufficient to facilitate cultural change or will other actions also be required?

The overall opinion of the focus groups can be represented by comments such as, *“the flow and quality of information quite definitely has a role to play in the formation and modification of organisational culture”* [gbp1], *“I’m not sure that information flow is the only pre-requisite to change in organisational culture however I do think it is a necessary to support a change in culture”* [gap3], and *“the modifications to the flow and quality of information will not be sufficient to facilitate cultural change by a long, long way ... they are essential ingredients but there are many more ingredients required”* [gdp3]. It was also identified by two of the focus groups that changes to organisational culture could well be a pre-requisite of improvements to the flow of information. This was summarised by the comment from a senior IT strategy consultant, *“I would expect the flow and quality of information to be a symptom of organisational culture rather than a way of changing it ... so when the organisational culture has changed (by other means) this will in part be evidenced by different ways of using information in the organisation”* [gpp2].

Comments made by the focus groups identified that they believed other factors would be required to implement organisational cultural change over and above information. This was the subject of a supplementary question that asked, *“Will modifications to the flow and quality of information be sufficient to facilitate cultural change or will other actions also be required?”* There was an overwhelming view across all the

focus groups that other actions would be required. *“getting everyone in the organisation to give up their current religious beliefs and adopting new ones, may involve the dissemination of information but will also require many other activities to take place”* [gpp2], *“if cultural change is really desired then these changes need to be supported from other factors such as senior management commitment, user involvement and user empowerment”* [gbp5]. These actions also include changes to reward mechanisms, training, and recognition processes. The importance of leadership was also recognised by a consultancy practice manager, *“other actions that may be more important are leadership, empowerment, vision etc”* [gap3].

8.6.5 The Impact of Information on Marketing Activities and Strategic Planning

Table 8.6 - Impact of Information on Marketing and Strategic Planning

Objective	Key findings	Focus Group Question
To explore the relationship between the use of information for marketing activities and the development of marketing strategy, and perceptions of information value.	Many of the case study organisations identified that information is a critical component of their marketing and strategic planning activities, especially in areas such as segmentation, competitive analysis, and strategy implementation.	Does having access to good quality information have a significant impact on the success of these activities?
To explore the relationship between the use of information for strategic planning, and perceptions of information value		If the accessibility and quality of information is improved would this improve the effectiveness of these activities?

The findings from the case study research suggested that information is used extensively to facilitate marketing activities and for strategic planning. A number of the activities that were investigated such as segmentation and performance measurement were found to be quite information intense. The findings suggested that having access to good quality information could have a significant impact on these activities. To investigate these findings further, a question was presented to the focus groups that asked, *“Does having access to good quality information have a significant impact on the success of these activities?”* All the focus groups agreed that information could have a significant impact on the success of these activities. However, there were a number of individual opinions that disagreed, *“people can*

create and collect information to try to explain and predict outcomes. In doing so they are attempting to find causal relationships and laws governing the social world. I believe such action is futile, but it can make you feel as if you are doing something” [gpp4], and *“it can be tempting to assume that more information automatically brings more understanding and this is not the case”* [gdp2]. There were equally strong arguments in support of the view that information could have a significant impact on these activities. One participant believed that, *“the quality of information is essential”* [gbp1], and another, *“I too agree that good quality information is a pre-requisite to effective segmentation, competitor analysis, and strategy implementation”* [gbp2]. It also has to be acknowledged that a significant number of participants across the focus groups believed that although information made a significant contribution other factors were also important. *“Information is a required contributor but not sufficient”* [gap4], was the opinion of a programme management director for a large technology company.

To investigate this topic further a supplementary question was posed which asked, *“If the accessibility and quality of information is improved would this improve the effectiveness of these activities?”* No particularly strong opinions emerged from the focus groups but three of them tended to support the idea that the effectiveness of these activities could be improved if the accessibility and quality of the information improved. One observation from a strategy consultant stated, *“it seems likely that marketing and strategic planning are more effective if they are sufficiently informed”* [gpp2], however an alternative opinion suggested that *“simply improving the accessibility and quality of information would not by itself improve the effectiveness of the activities the businesses described”* [gdp3].

8.6.6 The Use of Information for the Attainment of Measured Business Benefits

Being able to use information to assist with the attainment of measured business benefits was a finding clearly suggested by the case study research. It had been identified that a number of the case study organisations were adopting strategies that had the objective of attaining measured business benefits and that the success of these strategies was very dependent on relevant information being available. Without this information there was a likelihood that a number of the strategies being adopted

would fail. Specifically, many of the case study organisations perceived that the attainment of benefits such as increased market share, reduced costs, and increased profitability, could be facilitated through the appropriate use of information.

Table 8.7 - The Use of Information for the Attainment of Measured Business Benefits

Objective	Key findings	Focus Group Question
To explore the relationship between the use of information to attain measured business benefits, and perceptions of information value	Many of the case study organisations perceived that the attainment of tangible business benefits, such as increased market share, reduced costs, and increased profitability, could be facilitated through the appropriate use of information.	Would you agree that the use of information can lead to the attainment of tangible business benefits of this nature? If the contribution made by information in attaining these benefits could be identified do you think a value could be attached to this contribution?

This appeared to be a finding that should be investigated further and to achieve this the focus groups were asked the question, *“Would you agree that the use of information can lead to the attainment of tangible business benefits of this nature?”* Some strong individual opinions were expressed in support of the idea that information can lead to the attainment of measured business benefits, *“yes - I believe that tangible business benefits such as these are achievable ... and the companies that invest in information quality and usage must think so too, otherwise they wouldn't invest!”* [gcp2]. However, across all the focus groups there was only one group that strongly supported this suggestion, with the remaining four showing a tendency to support the idea. It was also observed by some of the focus groups that this would be difficult to achieve and other factors would be involved. Among the observations that were favourable to the idea that information can be used to attain measured business benefits was, *“certainly there are many business activities where tangible benefits would be increased by better information especially in marketing activities like pricing, customer acquisition and retention etc.”* [gdp4]. A less positive view argued, *“business value will always depend on how decisions are implemented ... just providing a load of information to an organisation, however good the quality and accessibility, and expecting business value to result will lead to failure”* [gdp1].

In an attempt to investigate whether value could be attributed to the benefits attained a supplementary question was posed. It asked, *“If the contribution made by information in attaining these benefits could be identified do you think a value could be attached to this contribution?”* There was no overwhelming support from any of the focus groups to the idea that value could be attached to the contribution made by information, however, none of the focus groups rejected the idea outright. Four of the groups tended towards supporting the idea and one tended to reject it. It was recognised that there would be many problems associated with implementing this idea and that it would be difficult. Some of the observations included, *“proving a direct relationship between a piece of information and say, increased profitability could be difficult, but information can be used to drive areas of the business such as Sales and Marketing”* [gdp2], *“I don't know of specific examples where \$ business benefits have been attributed to improved use of information”* [gcp2], and *“information has a place to play but placing value on it is hard in many cases ... this is because it is so closely linked to the calibre of the people using the information”* [gdp3].

8.6.7 Considering Information as a Formal Asset of an Organisation

Table 8.8 - Considering Information as a Formal Asset of the Organisation

Objective	Key findings	Focus Group Question
To explore the relationship between attitudes to measuring information value, and perceptions of information value.	Most of the case study organisations viewed information as a valuable organisational asset, however, none of them formally classified information as an asset.	Should we be worried about trying to classify information as a formal asset of an organisation, or should we concentrate on utilising information assets in the most effective manner regardless of their formal status? What steps should organisations be taking to ensure that they make best use of their information assets?

During the case studies it was identified that many of the case study organisations considered information to be a valuable resource. In many organisations it was referred to as being an asset. However, the study identified that none of the case study organisations formally classified information as an asset. This appeared to be a

situation that required further investigation. In an attempt to gain a more in-depth understanding of this situation the focus groups were asked the question, *“Should we be worried about trying to classify information as a formal asset of an organisation, or should we concentrate on utilising information assets in the most effective manner regardless of their formal status?”* “The focus groups had mixed opinions on this question. Two groups tended towards supporting the idea, and one group tended towards rejecting it. The other two groups were neutral on the topic. It was widely recognised that considerable difficulties would be encountered which would probably make it unrealistic. Some of the positive opinions that were aired on the idea that information could be classified as an asset included, *“I believe we should be trying to classify information as a formal asset of an organisation in addition to utilising information assets”* [gbp1], *“I have no problem with the concept of information being a valuable asset and I can see some sense in considering it as a formal asset”* [gbp5]. However, there were just as many pessimistic opinions such as, *“you mean an entry on a balance sheet - hardly likely”* [pgc3], *“while I agree that information is a valuable organisational asset and in theory could be valued in a balance sheet sense, I think in practice it is far too difficult to do”* [gdp1]. A theme that emerged from this discussion was again the importance of the use of information to generate value. As one participant observed, *“information only becomes an asset through the use that it is made of it in generating, maintaining or enhancing cash flow”* [gpp2].

The supplementary question that was asked attempted to identify what organisations should be doing to make the best use of their information assets regardless of whether it was formally regarded as an asset or not. The question asked was, *“What steps should organisations be taking to ensure that they make best use of their information assets?”* The focus groups generated a wide range of ideas to this question. These ideas included making proper investments in information provision, the development of information policies, the development of training programs to educate staff on the value of information, and *“just use it!”* One teacher and researcher summed this up, *“the simple answer is that if you want to maximise the use of information assets, you should use those assets”* [gpp3].

8.6.8 Considering the Measurement of Information Value

The case study research identified that although the case study organisations considered information to be a valuable asset they did not formally classify it as such. It was also identified that the case study organisations made no attempt to measure the value of their information assets in any explicit way.

Table 8.9 - Considering the Measurement of Information Value

Objective	Key findings	Focus Group Question
To explore the relationship between attitudes to measuring information value, and perceptions of information value.	None of the case study organisations attempted to measure the value of information in any explicit way.	<p>None of the case study organisations attempted to measure the value of information in any explicit way. Does this surprise you?</p> <p>Do you believe that organisations would measure the value of information assets if straightforward methods and guidelines were provided?</p> <p>Do you think that by linking these methods and guidelines to accounting standards there would be a much more widespread uptake of information asset valuation?</p>

If these organisations considered information to be valuable it was interesting that they did not attempt to measure the value. This appeared to be a topic that warranted further investigation. To do this a question was presented to the focus groups. It asked, *“None of the case study organisations attempted to measure the value of information in any explicit way. Does this surprise you?”* None of the focus groups were surprised! A few individual participants were surprised by this but generally the opinion was that organisations would not make the effort to value information assets. Some of the views expressed believed that *“it doesn't surprise me that none of the organisations attempted to measure the value of information as to me it sounds like an inherently difficult and time consuming task with questionable value”* [gcp5], and *“no, I'm not surprised! Organisations have too much to do already in an environment of radical technology change, increasing customer expectations, globalization, increasing regulation, rampant M&A etc etc...!”* [gcp2]. A more positive opinion

from a director of technology and solution services suggested that, *“if we can value Goodwill on a set of accounts why shouldn't we be able to value information”* [gdp3].

To investigate this topic in more detail a second question was posed, *“Do you believe that organisations would measure the value of information assets if straightforward methods and guidelines were provided?”* Three of the focus groups were favourable to the idea that if straightforward methods were provided organisations would measure the value of information assets. The other two were neutral to the idea. An experienced programme management consultant took the view, *“yes, I think that if there were straight forward, proven and accepted ways of measuring value then it would happen more often”* [gap5]. A more cynical participant raised the question, *“would companies do something if it were easy and it would boost their share price? of course they would”* [gap1].

A third question was asked in an attempt to obtain further insight on this topic. The focus groups were asked, *“Do you think that by linking these methods and guidelines to accounting standards there would be a much more widespread uptake of information asset valuation?”* The opinions of the focus groups on this question were rather undecided with only two of the groups showing a slight tendency towards supporting the idea that if information value measurement methods were linked to accounting standards there would be a greater uptake of the methods. Three of the focus groups were neutral to this suggestion. The opinions of the participants on this topic included, *“if accounting standards were developed that allowed companies to strengthen their balance sheets by assigning an asset value to information, companies would jump at the chance”* [gdp4], *“yes, I think that clear rules about valuing info would encourage companies with large info assets to do the valuation”* [gpp5], and *“practically speaking, industry wide acceptance of any accounting standard in this area is unlikely because it is likely to be too subjective and un-auditable”* [gdp1].

8.6.9 Considering the Effective Management of Information

The case study findings suggested that although information is viewed as an organisational asset its value was not measured in any explicit way, but did that really matter? Was this something that organisations should really worry about? Was it

possible that just managing information effectively to make sure it could make a valuable contribution was what really mattered? The case study findings suggested that although information is viewed as an organisational asset its value was not measured in any explicit way, but did that really matter? Was this something that organisations should really worry about? Was it possible that just managing information effectively to make sure it could make a valuable contribution was what really mattered?

Table 8.10 - Considering the Effective Management of Information

Objective	Key findings	Focus Group Question
To explore the relationship between attitudes to measuring information value, and perceptions of information value.	None of the case study organisations attempted to measure the value of information in any explicit way.	Should we be worried about trying to measure the value of information, or should we concentrate on managing information appropriately so that it makes an obvious, if not measurable, contribution? What steps should organisations be taking to ensure that their information is well managed, so that clear benefits are ultimately realised?

It seemed appropriate that this should form the basis of the last question to the focus groups. They were asked, *“Should we be worried about trying to measure the value of information, or should we concentrate on managing information appropriately so that it makes an obvious, if not measurable, contribution?”* In general the focus groups expressed no great worries about the need to measure the value of information. Only two of them showed a tendency towards worrying about this but the other three groups were neutral. As one participant stated, *“I’m not too worried”* [gap1]. Among the other comments expressed on this topic a business intelligence consultant believed, *“we should certainly be trying to measure the value of information. We should also be managing information appropriately so that it makes an obvious contribution. The two questions are not necessarily linked, but both are true”* [gbp1]. However, another participant took a different view, *“we should concentrate on the latter - i.e. managing information - there is really only any point valuing it if it helps us with this objective”* [gpp1].

A supplementary question was raised to investigate this topic further. *“What steps should organisations be taking to ensure that their information is well managed, so that clear benefits are ultimately realised?”* This resulted in a number of suggestions from the focus groups. One participant summed these ideas up by stating, *“every aspect of collecting, storing, delivering, using information, motivating and enabling users etc.”* [gap1]. The importance of effectively managing information was recognised by all the focus groups. A final observation by a lecturer in information systems added an interesting twist to the relationship between information value and information management. As he stated, *“effective information management encompasses a very broad spectrum of management activity, all of which has to be brought together. There is no magic wand - hard work on many fronts might do the trick. For organisations that get it right, such that information is a vital aspect of their competitiveness, you would think that they would be curious about the value being delivered. I'm sure they monitor cost - why not compare it against value?”* [gpp5].

8.7 Insights from the Focus Group Research

The focus groups confirmed and validated many of the findings from the case study research. Additionally, the focus groups provided a number of new insights that were of relevance to the study. One focus group identified that perceptions of information value in an organisation can be influenced by the industry it operates in. It is recognised that information intensity varies from industry to industry (Porter and Millar, 1985; Glazer, 1991, 1993) and that it is likely that information would be perceived as being more valuable in an industry with a high level of information intensity. A general assumption that exists is that information can only provide value to an organisation through its use (Repo, 1986; Glazer, 1993; Simpson and Prusak, 1995). Two of the focus groups discussed the possibility that information can have value in its own right. This would imply that ownership of the information alone could provide an organisation with a valuable asset. This possibility is closely linked to the debate in the accounting world related to the valuation of intangible assets. In recent years it has appeared that accounting standards have been moving slowly towards that valuation and capitalisation of certain intangible assets and there has been an argument that information assets could be included (Vincent, 1983, 1984; Willard, 1993). However, as one of the focus groups identified, recent events in the

business world could have set this process back by a number of years. As one participant in this group observed, *“the accounting standards question is interesting post the .com crash and Enron ... both of these are going to lead to moves to reduce apparently artificial assets - so no more pro-forma revenues”* [gap1]. Another interesting insight that a number of the focus groups generated was the temporal aspect of information value. The timeliness of information provision was investigated by this study but there was recognition across a number of the focus groups that the value of information can vary over time. The general conclusion was that value is time dependent. The view appeared to be that information value decreases over time, however, situations can exist where information value could increase with time (Vincent, 1983). This was recognised by one of the focus groups. This group identified that if an organisation makes the effort to manage and enhance its information assets over time, and if its competitors fail to do this, it is likely that the value of this organisation’s information assets will increase. As one participant argued, *“we will (continue to) see a decrease in the accessibility and quality of organisation's information in general ... this, however, provides enormous opportunity/competitive advantage for those companies that can over the long term 'stay the course”* [gap5]. A final insight that emerged from the focus groups was related to the maturity of thinking related to information value. It was suggested that experience and maturity might have an influence on thinking related to information value. The impact of the maturity of thinking related to information value was recognised by a number of the focus groups. These thoughts were well summed up by one participant, *“it is a question of the maturity of the organisation with regard to information use ... as the organisation's use becomes more mature, then attention should be turned to measure value so that its investment can be justified and maintained ... an organisation needs to recognise that it is a journey, that it needs to take a step at a time and demonstrate value along the way”* [gap5].

8.8 Summary

This chapter has considered the preparation that was undertaken for the focus group research. In particular it has considered the planning that was conducted, the development of questions, the identification of participants, and the running of a pilot focus group. It has discussed how the focus groups were conducted and how the data that was captured from the five focus groups was analysed. The findings from the

focus group data analysis have been discussed, as were the conclusions that were reached.

The analysis discussed in this chapter has provided validation for many of the findings from the case study research. It has confirmed that information accessibility and information quality are considered to be critical constructs that can impact the perceived value of information. There was wide agreement that the key dimensions of these constructs identified during the case study research are regarded as being important. The focus groups also recognised that information is a critical element of business activities such as marketing, strategic planning and organisational change. It was recognised that improvement in the accessibility and quality of information could improve the effectiveness of these types of business activity which could lead to the attainment of measurable business benefits. The findings from this analysis also confirmed that although most organisations consider information to be a valuable asset little consideration appears to be given to formally classifying information as an asset. The focus groups also confirmed that little effort is made to measure the value of information assets. The chapter concluded by discussing a number of the new insights that had been provided by the focus group research.

The next chapter discusses the finding from the research as a whole. It considers the methodological and theoretical contributions made by this research project. It also discusses the limitations of the study and identifies avenues for further research.

Chapter 9

Conclusions and Recommendations

9.1 Introduction

Information plays an increasingly important role in business and every day life. For organisations the ability to accumulate holdings of good quality and accessible strategic information is becoming critical to a range of business activities such as marketing, strategic planning, and facilitating organisational change. In many organisations strategic information is recognised as being a valuable asset that needs to be managed accordingly. For many organisations the effective exploitation of their information assets can be a significant factor in gaining advantage over competitors. The previous chapters discussed the results from the case study research that investigated a number of important constructs and dimensions that impact perceptions of information value. They also discussed the result of these findings being examined by a series of focus groups.

This chapter discusses the findings from the research as a whole in the context of the existing literature, and makes reference to the results from the earlier phases of the research project and the overall research objectives of the study. The chapter begins

with a general summary of the study's findings and their contribution to existing knowledge. These findings are discussed in terms of their implications for researchers and practitioners in the field of information management and exploitation paying particular attention to theoretical and empirical contributions. The chapter concludes by identifying possible limitations of the study and outlining avenues of future enquiry in this area.

9.2 Contribution of Research Findings

The research objectives discussed in Chapter two were developed from the initial literature review and were validated by exploratory research. All seven objectives were considered by each phase of the research project. The first stage of the research involved testing a number of the constructs identified in the initial conceptual framework and the relationships that existed between them. The second stage consisted of eight in-depth case studies that investigated each of the constructs in the conceptual framework. The third and final stage of the research involved five focus groups that discussed a number of the conclusions reached from the case study research and some of the questions these conclusions raised. In the sections that follow, each of the overall objectives outlined in Chapter two is discussed in terms of the existing knowledge and the contribution of this study's results in furthering understanding of information value. Many theoretical and empirical contributions have been made by this research that are discussed in the following sections. Additionally, as this appears to be one of the first major studies of perceptions of information value and information value measurement in large UK based organisations, it is believed that a significant contextual contribution (Tsang and Kwan, 1999) has also been made.

9.2.1 The relationship between information accessibility, and perceptions of information value

The case study results provide a useful starting point for considering the relationship between information accessibility and the perceived value of information. These results highlighted that all the case study organisations believed that information accessibility dimensions would have an impact on business activities. In all the case study organisations there was a belief that problems with information accessibility

DAMAGED

TEXT

IN

ORIGINAL

ing the effectiveness of many business activities. However, there was a
across all the organisations that this situation would improve in the
ults also suggested that three key dimensions of information
formation, awareness that the information exists, and
e focus groups confirmed this finding. The case
atic that existing information accessibility problems
ormation would start to make a major contribution to
ness. The focus groups were asked whether they thought
ons were deluding themselves believing this. A number of
s believed they were, however, the general view across all five
ree that the case study organisations were correct to assume that
ssibility would improve and that these improvements could lead to
of significant business benefits.

the dimensions of information accessibility discussed in the literature could
ntified in the case study organisations and were recognised by the focus groups.
ormation availability (Alter, 1999) and the problems that the lack of availability
an create during decision-making (Goodman, 1993) were identified in the case study
organisations and in the focus groups. Problems with information presentation
(Simpson and Prusak, 1995; Bocij et al, 1999; O'Brien, 2001) and how this can create
problems with understanding the information being presented (Lucey, 1992) were
also identified. Being able to understand the information being provided was an
important factor discussed by the focus groups, in particular the observation that often
managers are provided with information where the meaning and content is difficult to
understand (Davenport et al, 1992; Davenport, 1994). The advantages that
organisations can attain from sharing information (Bariff and Galbraith, 1978; Cole
1985; Eccles, 1991; Rayport and Sviokla, 1995) and the problems that can be
encountered when organisations attempt to achieve this (Davenport et al, 1992,
Davenport, 1994) were all identified. This was also discussed in some of the focus
groups, as was the impact that internal politics can have on information sharing
(Davenport et al, 1992).

Although many of the dimensions of information accessibility have been discussed in the literature, some of them have been associated with information quality, or have been discussed in isolation rather than as a set of related dimensions. Information accessibility as an important construct in its own right does not appear to have been recognised. Much of the material produced is fragmented and the interrelationships between dimensions has not been considered. This study has discussed a number of dimensions and the findings suggest that there are additional dimensions that could also be considered; the existing literature on information accessibility appears to be incomplete. A comprehensive framework that provides a consistent view of all the major dimensions related to information accessibility appears to be required. It also has to be noted that the majority of existing contributions are textbooks or in business journals. The major exception to this is the empirical studies by Wang and Strong (1996), and Strong et al (1997) but both of these contributions are related to data quality with information accessibility only being considered as a minor dimension. Another important omission from the existing literature is a link between information accessibility and information value. As the review of the literature in Chapters two and five highlighted, no literature could be identified that discussed the relationship between these two topics. This leads to the conclusion that much of the existing literature on information accessibility makes the assumption that information is valuable without this assumption being rigorously tested by academic study.

This study makes an attempt at addressing a number of these issues. It makes a number of major theoretical contributions as well as adding empirical evidence to a body of literature that has been mainly theoretical. It also provides a holistic view of information accessibility and its associated dimensions, and it explicitly links the topics of information accessibility and information value. This is considered to be a valuable theoretical contribution. Another theoretical contribution is provided in the form of the framework of information accessibility dimensions; this framework contains a number of dimensions that have not previously been considered in the literature. In terms of an empirical contribution, this study has provided confirmation that information accessibility dimensions do have a direct impact on perceptions of information value. It has provided a framework of information accessibility

dimensions built on evidence gathered from eight large multi-national organisations, and it provides the first empirical study of these dimensions as a whole. The evidence gathered from these organisations has identified the gulf between actual information accessibility and desired information accessibility, and that generally there is dissatisfaction with current information accessibility.

9.2.2 The relationship between information quality, and perceptions of information value

The findings from the case studies identified that information quality has a major impact on the perception of information value. These results highlighted that all the case study organisations believed that information quality dimensions would have an impact on key business activities. The information that was currently provided was believed to be having a detrimental effect on these business activities. The case study results suggested that the three key dimensions of information quality were, accuracy, consistency, and timeliness. The focus groups agreed with this conclusion but identified others that could be considered. The case study organisations also believed that the information quality problems that currently existed would be resolved and that information would start to make a major contribution to the development of the business. The focus groups tended to agree that this was possible and that information quality improvements could lead to the attainment of business benefits.

Information inconsistencies such as multiple sources of the same information with differing values, and inconsistent representation of information items (Goodman, 1993; Wang and Strong, 1996; Lingle and Schiemann, 1994; Davenport, 1994) were identified in the case study organisations and discussed during the focus groups. Likewise, the problems associated with the timeliness of information (Glazer, 1991; McKinnon and Bruns, 1992; Wang & Strong, 1996) were well highlighted in the focus group discussions. The importance of information accuracy (Wang and Strong, 1996) and the likelihood that inaccurate information will get a bad reputation and fall into disuse (Strong et al, 1997) was recognised in a number of case study organisations and focus groups. The problems that can arise from the use of inaccurate information, (Hawley, 1995) were highlighted by focus group participants

with one describing the embarrassment of letters being sent to deceased customers as a result of inaccurate customer information.

The information quality literature reviewed during the study was amongst the most developed and comprehensive of all the literature. Discussion on a wide range of information quality dimensions was found and many of these dimensions had already been integrated into comprehensive frameworks. It was recognised that two of the dimensions, information usability and information consistency, had not received as much attention in the literature as a number of others. Although not claiming to have filled a gap in the literature by focussing on these two dimensions, it is believed that the existing literature has been enhanced. There is breadth and depth to the information quality literature but it appears that much of this literature is theoretical. The major exceptions to this are the work of Wang and Strong (1996), and Strong et al (1997). It was also recognised that although information quality frameworks have been developed, many of them are in general textbooks and have lacked rigorous academic research in their development. Very little of the information quality literature reviewed explicitly linked information quality to information value. Again, there appeared to be an assumption in the literature that information is valuable enough to warrant organisations investing in its quality without this assumption on value ever being tested.

A number of theoretical contributions are made by this study. The research has established a link between information quality and information value, a link that has not received explicit attention in previous literature. This was supported by empirical evidence. By identifying the dimensions of information quality that were of importance in eight large organisations, empirical and contextual contributions have been made. Working with these organisations also identified that although they were all experiencing problems with the quality of the information they currently had available, they all had very positive expectations of future information quality. This has helped confirm that many of the dimensions identified in the theoretical framework do in fact impact the performance of organisations.

9.2.3 The relationship between the use of information for marketing activities, and perceptions of information value

The case study findings highlighted that most of the case study organisations believed the use of information would have an impact on marketing. The findings identified that information was a critical component of marketing activities such as segmentation and competitor analysis. The focus groups concluded that these are important dimensions of marketing and they tended to agree with the suggestion that improvements in information accessibility and quality could improve the effectiveness of these activities. The findings from the case studies suggested that improvement was necessary; the perception of the value of the information that was currently available for marketing was poor. Despite this, a positive outlook existed towards information expected to be provided in the future. There was an overwhelming belief that there would be significant information improvements resulting in substantial improvements to the performance of marketing activities.

The development of good marketing strategies depends on the provision of good information (Zabriskie and Huellmantel, 1994; Cravens, 1998) and this information needs to be gathered from a wide variety of internal and external sources (Dibb et al, 1991; Lovelock, 1991; Hooley and Saunders, 1993). The gathering and use of information in this manner was identified in many of the case study organisations. The segmentation of markets and the customer base are information intense activities (Foxman and Kilcoyne, 1993; Vavra, 1993; Clemons and Weber, 1994; Wyner, 1999). Segmentation enables an organisation to provide itself with the opportunity to target much more appropriate products at its chosen customers (Goodwin and Ball, 1999). There were clear examples of this occurring in the case study organisations and this was also identified in focus group discussions. From the understanding that the analysis of customer information can provide it is possible to develop new products that are designed to have a close match to the desires of the customer (Sethi, 2000). The development of these new products also requires significant amounts of information (Wind and Mahajan, 1997; Sheremata, 2000). Failure to obtain information of the necessary quality can jeopardise the success of the product being developed (Sethi, 2000). The need for this information, and the problems that can

arise when it is not available were clearly evident at the clearing bank in its attempt to develop new products.

A significant amount of marketing literature exists that provides in-depth descriptions of the major activities that are undertaken. Much of this literature identifies the type of information that is required and how it is used. However, a significant amount of this literature is in the form of standard textbooks or unproven theoretical frameworks. There are a few exceptions to this related to the use of information for competitive analysis (Beal, 2000), and product development (Sethi, 2000; Rindfleisch and Moorman, 2001). Much of the discussion identified the importance of information for the success of marketing activities, but an assumption appears to be made that all the information will be available when required, and be of the appropriate quality. Very little consideration is given to the realities, identified by this study, that the right information is often not available at the right time, nor of the necessary quality.

A valuable theoretical contribution made by this research is the development of a framework of information intense marketing activities. Although these activities have previously been discussed in the literature, this framework provides a holistic view and focuses on the importance of information to their success. An additional theoretical contribution made by this research is the linkage of information value to the use of information for these marketing activities, and the business benefits they can provide. None of the previous studies that were reviewed discussed this link. The findings of this study provide a useful empirical contribution by identifying how organisation really use information for marketing, and the impact this has on perceptions of information value. The study revealed that most of the case study organisations were unhappy with the information they had available, and that this was having a detrimental impact on the effectiveness of the marketing activities. However, it was also recognised that information was still expected to play an important role in the future, and significant measurable business benefits were expected to be attained. Identifying that none of the eight case study organisations

attempted to measure the value of the information that was used to attain measurable business benefits was another significant empirical contribution.

9.2.4 The relationship between the use of information for strategic planning, and perceptions of information value

The case study findings identified that information was a critical component of strategic planning in many of the case study organisations, particularly for strategy implementation and corporate performance measurement. The focus groups agreed that these were important dimensions of strategic planning, and they tended to support the suggestion that improvements to information accessibility and quality could improve the effectiveness of strategic planning. It was perceived in the case study organisations that the information currently available for strategic planning was failing to make a positive impact and its value was considered to be low. Despite this, a positive outlook existed towards information that was expected to be available in the future. There was an overwhelming belief that this information would be improved significantly and its effective use would result in improvements in strategic planning activities.

Successful strategic analysis requires a wide-range of good quality information (Porter and Millar, 1985; Thomas et al, 1993; Austin et al, 1995), as the quality of the strategy depends on the quality of the information (Montgomery and Weinberg; 1998). This information enables organisations to undertake very flexible strategic analysis that assists in the choice of the most suitable strategies that can be used to gain a competitive advantage (Broadbent, 1991; Bowonder and Miyake, 1992). A number of the case study organisations were very mindful of these arguments and were making strenuous efforts to obtain the necessary information. This was also identified during the focus group discussions. Implementing strategies also has a dependency on good information being available (Aaker, 1988; Stafford, 1993; Luffman et al, 1996). This was recognised in a number of case study organisations. Corporate performance measurement is an information intense activity (Neely et al, 2000; De Toni and Tonchia, 2001) that monitors the progress of the strategies being implemented. Failure to provide the relevant information in a timely fashion can render performance measurement useless (Lingle and Schiemann, 1994). Some of the

case study organisations had a focus on corporate performance measurement and specifically techniques such as the balanced scorecard (Kaplan and Norton, 1992). Most of these organisations were actively engaged in capturing the information required to undertake this activity successfully.

A wide range of literature was available on the use of information for strategic planning activities. This literature provided an extensive collection of material that enabled in-depth exploration of the four strategic planning dimensions. Again, it must be acknowledged that much of this literature was in the form of textbooks and theoretical papers; there were few examples of empirical research available. The major exception to this was in the area of corporate performance measurement where a rich stream of empirical research appears to have emerged in the last few years (Neely et al, 2000; De Toni and Tonchia, 2001). However, although the literature in general provides a complete picture of strategic planning it was only in the textbooks where the dimensions selected were considered as a whole, the academic papers appeared to be much more fragmented. Again, very little consideration was given to the use of information for strategic planning in conjunction with information value. There was also an assumption that information of the right quality would always be available when required. This assumption was not borne out by the empirical evidence gathered during the study. Another apparent assumption is that providing information to its consumers is all that is required. Very little consideration appeared to be given to the ability, or lack of ability, of consumers to understand and use the information being provided.

This study has provided a number of theoretical and empirical contributions related to the use of information for strategic planning. It has provided a framework of strategic planning dimensions that highlights those dimensions with a high level of information usage. No previous literature was identified where theoretical consideration was given to the importance of information for strategic planning in this way. Linking the value of information to these strategic planning dimensions made a further theoretical contribution. In terms of empirical contributions the investigation has revealed much about how large multi-national organisations use information for strategic planning. It

identified that there was great frustration in the case study organisations with the information that was available to undertake strategic planning activities. This appeared to have a damaging impact on perceptions of information value. In spite of this, however, the study identified that there were expectations of significant information improvements in all the case study organisations, and much of the strategy being developed and implemented was dependent on these improvements. In a number of cases the organisation was almost 'betting the business' on better information becoming available. Investigating whether the case study organisations attributed value to the information that was used for attaining business benefits from strategic planning activities provided another empirical contribution, particularly as no previous studies were found that had addressed this issue.

9.2.5 The relationship between the use of information to facilitate organisational change, and perceptions of information value

The research results highlighted that most of the case study organisations believed the use of information would have an impact on organisational change. In particular, the case study findings suggested that information had a role to play in the formation and modification of organisation culture particularly with respect to levels of customer service, performance orientation, and flexibility. The focus groups agreed that the flow and quality of information did have a significant role to play in the facilitation of organisational change but that other actions would also be required. The research identified that some of the case study organisations were frustrated by the information that was available for facilitating organisational change. Despite this, there were more positive perceptions towards information that was expected to be provided in the future. There was an expectation that this information, and its effective use, would enhance the ability of the organisations to implement organisational change.

The ability of organisations to become more integrated and to operate across functional boundaries in a seamless manner is an organisational change that many organisations have attempted to implement (Romm et al, 1991; Pliskin et al, 1993; Stafford, 1993). For this to be successful there must also be a free flow of relevant information across the various areas of the business that are integrated (Ostroff and Smith, 1992; Heracleous and Langham, 1996). A number of the case study

organisations were attempting to become more integrated in this way. As organisational change is implemented there is a need to measure the performance of both the organisation and the individual (Whipp et al, 1989). Re-orientating the organisation to become more customer-centric is another change that many organisations have attempted to implement (Peters and Waterman, 1982). Fundamental to this change is the accumulation of a substantial body of detailed information on customers (Vavra, 1993; Gutek, 1995). Without this information the likelihood of any change of this nature succeeding is remote (Bradshaw and Brash, 2001). The research findings identified a number of case study organisations where becoming more customer-centric was a high priority and where a lack of customer information was having a damaging effect on the strategy. The focus groups also identified the importance of information for the facilitation of organisational change.

Organisational change is another area of the study where a substantial amount of good quality literature was available. This provided a comprehensive body of literature on which to base the research. Within the body of literature that was available there were a number of valuable frameworks of organisational culture change dimensions (Romm et al, 1991; Wilmott, 1993) available. However, apart from the empirical study conducted by Pliskin et al (1993) the majority of the material relevant to this study was found in theoretical papers and textbooks. Additionally, none of this material explicitly considered the value of the information being used to facilitate organisational change. As previously recognised, there was a general assumption that organisations would always be able to access the information they required when they required it, and it would be of an appropriate quality. As already stated the evidence gathered from the case study organisations did not support this assumption.

As a number of frameworks related to organisational culture change previously existed this study cannot claim any significant theoretical contribution in terms of new organisational change dimensions. The significant theoretical contribution that this study can claim is the consideration of the value of the information that is used by each of the dimensions investigated. The importance of information for the

success of these organisational change dimensions has been recognised in a number of previous contributions, but no consideration appears to have been given to the value of this information. An important empirical contribution is also made, as apart from the work of Pliskin et al (1993), no other substantial empirical research appears to have been conducted into the relationship between information use and organisational change. No empirical research that explicitly investigated the value of the information used for facilitating organisational change could be found either. There was dissatisfaction in the case study organisations with how information could actually be used, compared with desired use. As previously identified, this had an adverse impact on perceptions of information value.

9.2.6 The relationship between the use of information to attain measured business benefits, and perceptions of information value

There was a view within almost all the case study organisations that information could be used to attain measured business benefits. Many of the case study organisations perceived that the attainment of measured benefits, such as increased market share, reduced costs, and increased profitability, could be facilitated through the appropriate use of information. Failure to obtain this information was likely to result in the failure of many of the strategies being adopted. The general opinion of the focus groups tended to agree that this was possible. The findings confirm that information does have a role to play in the attainment of measured business benefits. They also confirm that using information for the attainment of measured business benefits can have an impact on perceptions of information value. However, the perception of the value of the information that was currently available for attaining measured business benefits in the case study organisations was mediocre. Despite this, positive opinions existed towards information that would be provided in the future, and there was an expectation that the use of information would eventually result in the attainment of improved business benefits.

Increasing market share is a business benefit that many companies have been able to achieve by the effective use of information (Porter and Millar, 1985; Davenport and Cronin, 1988; Hopper, 1990). A greater challenge is maintaining the market share once it has been achieved (Robson, 1994). The findings identified that cost reduction

was another objective being pursued by some of the case study organisations. This is another business benefit that can be achieved by the effective use of information (Porter and Millar, 1985; Burk and Horton, 1988; Orna 1999). For most of the organisations increasing profitability was a major objective. The study identified that this was particularly important to the clearing bank. This is again an objective that can be achieved by the use of information (Roy, 2000), and the use of information as a strategic resource is one potential means of achieving this (Grant, 1991; Collis and Montgomery, 1995). The opinions expressed by the focus groups corroborated, albeit in a limited manner, much of the literature that discussed the use of information for the attainment of business benefits. The findings from the focus groups also provided limited support for the arguments in the literature that value could be attributed to information that facilitates the attainment of measurable business benefits.

A broad range of literature exists related to the use of information to assist with gaining measurable business benefits. Much of this literature is contained in popular business journals or books produced by management gurus. Of the academic literature many theoretical contributions were found that argue that information can be used to attain measurable business benefits. The only substantial empirical contributions identified were by Owens et al (1996), and Roy (2000). However, although they both discussed the value of the information being used to attain business benefits, neither contribution gave specific consideration to how this value could be measured. It has been recognised that the literature repeatedly makes the assumption that information of the right quality will be available when required. This assumption was again made in the literature related to the attainment of measurable business benefits, however, as the evidence collected by this study has clearly suggested, it is highly unlikely that business benefits would be attained if proper attention is not given to information accessibility and information quality. The omission of this consideration appears to be a major weakness in the existing literature.

An important empirical contribution made by this study is the observation that all the case study organisations were encountering problems with the information they had

available for facilitating the attainment of measurable business benefits. This was having a detrimental effect on the strategies that the organisations were attempting to implement, and resulting in unfavourable perceptions of information value. Identifying that all of these organisations still had an extremely positive outlook on the information improvements that were expected, and the impact this would have on business activities, is another valuable empirical contribution. This finding was enhanced by the focus group opinions that the case study organisations were not deluding themselves by expecting these improvements. Considering how the value of the information used to facilitate the attainment of measurable business benefits could be measured is an important theoretical contribution made by this study. This is particularly important, as although previous empirical studies have considered the value of information used to attain business benefits, these studies did not consider how this value could be measured.

9.2.7 The relationship between attitudes to measuring information value, and perceptions of information value

In many of the case study organisations information was considered to be an asset. However, the case study findings identified that none of the case study organisations considered classifying information as a formal asset, and none of them made any attempt to measure its value. The focus groups marginally supported the idea that information should be classified as an asset but acknowledged that there were considerable difficulties with this that would probably make it unrealistic. Neither were they surprised that the case study organisations did not attempt to measure the value of information in any explicit way. They were also of the opinion that there was no great need to worry if information value was not measured and that attention should be given to managing information effectively. The conclusion reached from the findings suggests that information is considered to be a valuable organisational resource even although this value is not formally acknowledged or measured.

Many commentators have argued that information has great value (Meltzer 1981; Trauth, 1989; Wormell; 1989; Horton, 1993; Hawley, 1995) and as such it should be considered to be an asset of the organisation (Glazer, 1991; Davenport et al, 1992; Horton, 1993; Glazer, 1993). The findings appear to support these arguments. It has

also been argued that information assets should be capitalized and incorporated on the balance sheet (Vincent, 1983, 1984; Willard, 1993). The findings provide little support for this argument. They suggest that although all the case study organisations agreed that information is valuable, they all stopped short of formally classifying information as an asset. The findings from the focus groups also supported this conclusion. There is also a view that the value of information assets can be measured (Carter 1985, Repo 1986, Glazer 1993, Mowshowitz 1992, McPherson 1994, 1996). Again, the findings provide very little support for these opinions. None of the case study organisations have considered measuring the value of information assets and the focus groups believed that there is no great need to worry about measuring the value of information assets.

Most of this literature related to the measurement of information value is academic, but of a theoretical nature; very little empirical evidence could be found to back up the theory. Hawley (1995) made a major contribution to this debate, which was based on empirical research. However, no information is available on the methods used for that research or the level of academic rigour that was applied. Valuable insights into information use and perceptions of information value were also provided by the empirical study produced by Owens et al (1996). Of the theoretical contribution a substantial body of literature has been created that discusses possible methods for measuring the value of information. However, no empirical studies appear to have been produced that discuss the use of these methods. Much of the information value measurement literature appears to assume that developing methods that are academically sound is more important than developing methods that are viable in business organisations. This appears to be one of the main reasons why none of these methods have been adopted on a widespread basis. There appears to be a need for additional literature that takes a balanced view between theoretical precision and commercial viability.

Among the theoretical contributions made by this study, one of the most relevant is the identification of the measurable value of information and its associated constructs and dimensions. This framework provides a foundation for future research into

information value measurement. In addition, the discussion on the interrelationships between the constructs and dimensions of the perceived value of information, and the measurable value of information, is another notable theoretical contribution. A number of empirical contributions have also been made. The key empirical contribution is the finding that organisations do consider information to be a valuable resource. Arguably of more relevance are the findings that even although information is considered to be valuable, none of the case study organisations considered classifying information as a formal asset, nor did they measure the value of information assets. Another major empirical contribution is believed to be the finding that none of the information value measurement methods discussed in the literature appear to have been adopted by large multi-national organisations. This is a phenomenon that invites additional in-depth empirical research. A final empirical contribution is the apparent information value paradox; the views expressed by organisations on information value do not appear to be matched by their actions.

9.3 Implications for Research

The implications of this research project for current and future research efforts studying factors related to information value can be divided into methodological issues and theoretical issues. Methodological issues are concerned with the implications of the research design on future empirical efforts. Theoretical issues are concerned with the specific implications of the study's findings for existing theory.

9.3.1 Methodological Issues

When commencing this study it was recognised that there were likely to be a number of constructs and a wide range of dimensions that could impact perceptions of strategic information value. The pre-PhD research and the initial literature review confirmed that this was the case. These two sources of information enabled the selection of a set of constructs for the development of the preliminary conceptual framework. The data that had been collected for the pre-PhD research was also available to conduct some exploratory research to gain insights into the relationships that might exist between the constructs selected. The exploration of these relationships during the exploratory research, using quantitative techniques, provided a reliable foundation on which to build the main body of research. This appears to

have been a very effective method for establishing a foundation for further research and as a result it is believed to have made a methodological contribution.

The main body of research was conducted primarily by the use of case studies. The follow-on research utilised focus groups as the main research method. The data gathered during these two phases of the research were analysed using qualitative techniques. Demonstrating how these qualitative techniques were used and combined effectively with the earlier quantitative techniques is another significant methodological contribution made by this study. It has been recognised that combining multiple data collection methods provides stronger substantiation of constructs and hypotheses (Eisenhardt, 1989). It has also been recognised that by utilising these multiple sources of evidence it is possible to achieve 'data triangulation' which helps to increase the validity of the results (Yin, 1994). Of clear importance to this research is the argument that qualitative data are useful for understanding the rationale or theory underlying relationships revealed in the quantitative data (Eisenhardt, 1989). This research has provided additional evidence to support these arguments by demonstrating that the combined use of quantitative and qualitative techniques can be sound and effective.

A final methodological contribution that this research has contributed is the insights it has provided into the use of the Internet as a medium for conducting qualitative research. The use of the Internet for this purpose had previously been discussed (Gaiser, 1997; Krueger and Casey, 2000; Mann and Stewart, 2000), however, this is still a very innovative method for gathering research data. The study was able to provide empirical insights into a number of the arguments that had been made for and against this method of research. It appeared to confirm the arguments that the lack of immediate interaction between participants could have a detrimental impact on the quality of the discussion (Gaiser, 1997). It also appeared to confirm concerns that running an off-line Internet focus group could result in a lack of commitment resulting in uneven participation by a number of participants (Mann and Stewart, 2000). On a more positive note these focus groups appeared to support the arguments that the participants would have more time to consider their answers to questions

resulting in the possibility of better quality answers (Gaiser, 1997). They also produced overwhelming evidence that the use of this medium can enable groups of subject matter experts to be assembled on a global basis enabling high quality discussion to take place producing excellent quality data. From a methodological perspective this contribution is arguably one of the most important made by this study. The insights provided could be of significant value to future empirical studies that consider using the Internet as a data-gathering medium.

It must be acknowledged that the generalisability of many of these methodological contributions must be investigated further. Additional studies are required to explore whether the conclusions reached can be corroborated in differing environments using different research techniques.

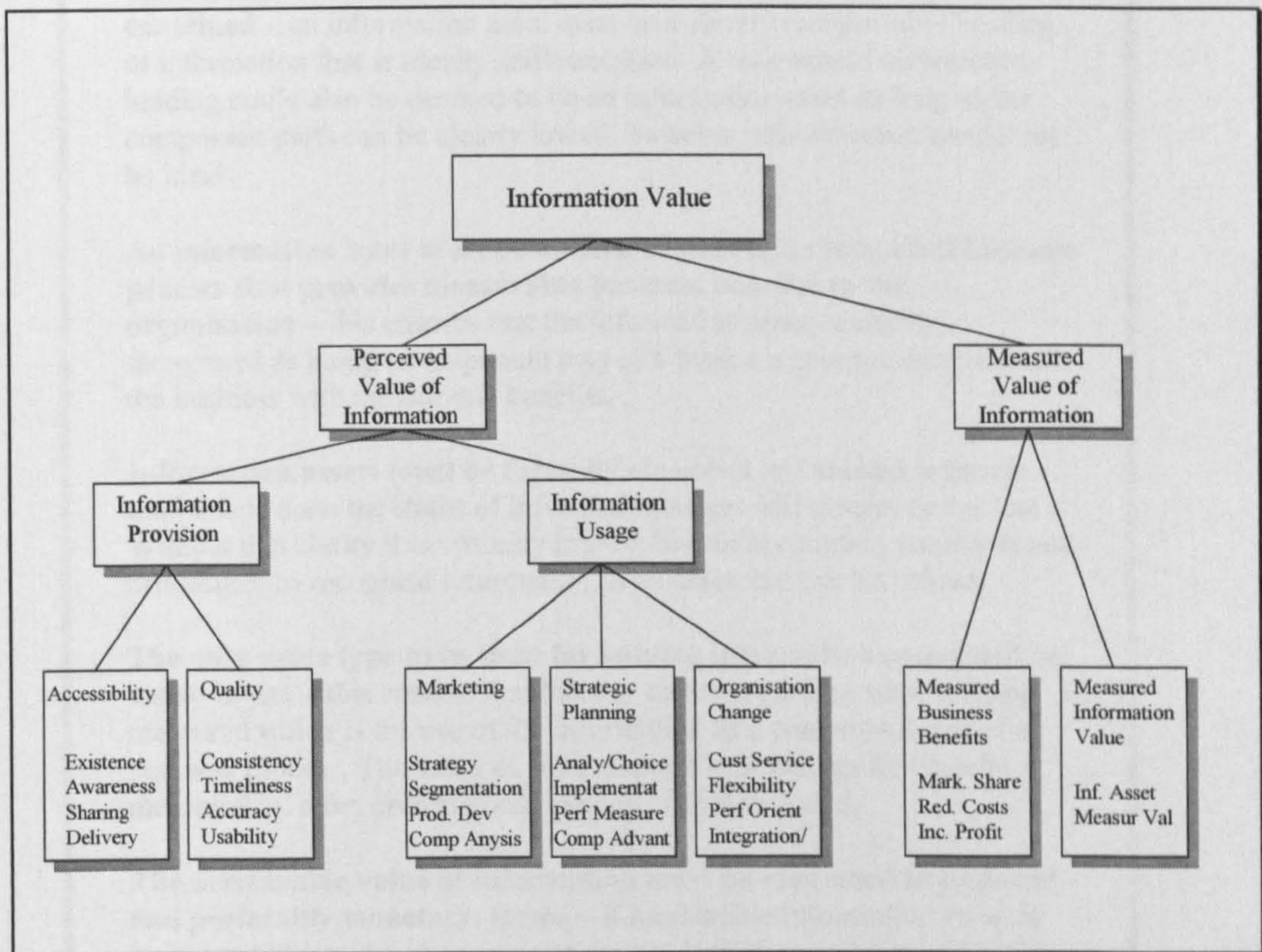
9.3.2 Theoretical Issues

As well as providing several methodological contributions this study has also provided a number of significant theoretical contributions. Whilst many of these have already been explicitly reviewed in the discussion of the research objectives a number of additional contributions have resulted from the findings of the study. The study uncovered many discussions in the academic literature related to the constructs and dimensions that were being investigated. In the main most of these dimensions were considered in isolation from each other and in most cases they were of a theoretical rather than an empirical nature. For example, it was rare to find a study that considered information quality and the use of information for marketing activities. It was virtually impossible to find any study that considered the use of information for business activities and the value of the information being used. Many of the discussions that considered the use of information for attaining measurable business benefits and for measuring information value were theoretical. Little evidence could be found of studies that validated the theory being expounded. A significant contribution made by this research has been the consideration of many of these constructs and dimensions as a whole. This holistic approach has provided insights and findings that can provide a starting point for many future empirical studies. An even more important contribution is the empirical evidence that this study has

provided. This combined holistic and empirical evidence appears to be a substantial contribution that enhances the literature that has been previously available.

A key objective of the project was to identify the dimensions that impacted perceptions of information value. The literature was searched throughout the life of the project to identify dimensions that had been discussed previously, and particular attention was given to finding frameworks of dimensions that were already in existence. The initial reviews failed to identify any existing frameworks although subsequently frameworks related to information quality (Wang and Strong, 1996; Strong et al, 1997; Alter, 1999; Bocij et al, 1999), and organisational change (Romm et al, 1991; Willmott, 1993), were identified. Although many of the constructs and dimensions have already been identified in the literature this study has brought them together in a manner that adds significant clarity to this research topic. This study has enhanced existing theory by providing a comprehensive framework of constructs and dimensions that encapsulates much of the information value theory. This framework of information value constructs and dimensions is illustrated in Figure 9.1. In particular, this framework has highlighted the differences between the perceived and the measured values of information. It has differentiated between the information provision constructs and the information usage constructs that can impact perceptions of information value. It has provided a new framework of dimensions for information accessibility identifying the significance of dimensions such as existence and awareness. All of these new or enhanced insights make an important theoretical contribution. The study has also provided evidence that contradicts much of the existing theory regarding information value. The literature has produced many arguments that information should be considered to be an asset of the organisation (Glazer, 1991; Davenport et al, 1992; Horton, 1993; Glazer, 1993) and even formally classified as such (Vincent, 1983, 1984; Willard, 1993). The study has confirmed that strategic information is considered to be valuable, but has also produced results that suggest that few organisations consider classifying information as an asset and that no organisation appears to measure the value of its information assets.

Figure 9.1 - A Framework of Information Value Constructs and Dimensions



These findings are a serious challenge to existing theory and by identifying this challenge this study has made a useful theoretical contribution to existing information value research. The set of principles in Figure 9.2 attempts to provide the clarity that appears to be required for the development of information value measurement methods that are acceptable to accounting practitioners and usable by commercial organisations. They also provide an indication of where further research to bridge the gap between the academic and commercial views could be valuable. This set of principles has been developed from the findings of this research. The observation made earlier that there appears to be a need for information value measurement literature that takes a balanced view between theoretical precision and commercial viability is one of the main influences behind the creation of these principles. Across all the focus groups there was a belief that the measurement of information value would be too difficult and costly. An important objective of these principles is to reduce this difficulty and add clarity to the challenge.

Figure 9.2 - Principles for an Information Value Measurement Method

Information assets must be uniquely identifiable and ideally self-contained – an information asset must be a clearly recognisable holding of information that is ideally self-contained. A fragmented information holding could also be deemed to be an information asset as long as the component parts can be clearly linked, however, this situation would not be ideal.

An information asset must be utilised as part of a recognised business process that provides measurable business benefits to the organisation – this ensures that the information asset is clearly recognised as being a component part of a business process that provides the business with measurable benefits.

Information assets must be formally classified as intangible assets – until this is done the status of information assets will always be unclear. Without this clarity it is virtually impossible for accounting standards and procedures to recognise information as an asset that can be valued.

The only value type to be used for valuing information assets will be value-in-use – this ensures that there is clarity regarding what is being measured which is the use of the information as a component part of a business process. The value of Information Commodities that can be measured by more conventional methods is not included.

The measurable value of information must be expressed in financial, and preferably monetary, terms – if measurable information value is incorporated into standard accounting standards it must be expressed in financial terms.

The measurable value of information must be clearly linked to established accounting standards – without this link any method that is developed is likely to follow all the other methods that have been proposed; it will fail to be widely adopted.

The creation of these principles is an attempt to provide a relatively simple framework that can help bridge the gap between the academic view and the business view of information value measurement. Further research should explicitly address these issues in an attempt to understand this gap.

9.4 Implications for Practitioners

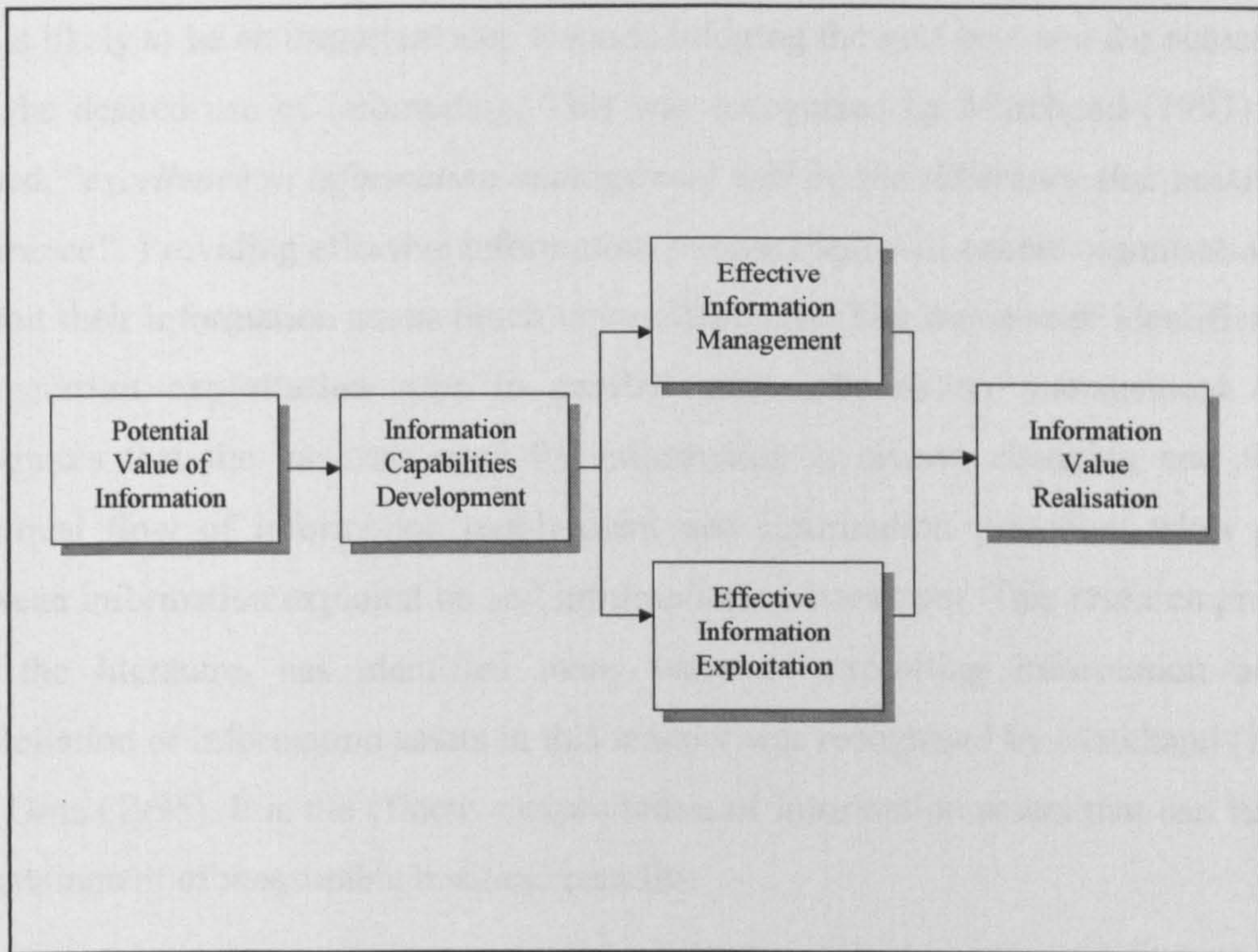
In addition to having important implications for research related to strategic information value, the findings produced by this study have a number of important implications for business and information managers. The findings identified that most organisations consider strategic information to be a valuable asset. Although no significant support could be found for the argument that information value should be

measured, there was agreement that as a valuable asset it should be managed as such. This conclusion is very similar to the conclusion reached by Hawley (1995). The findings also identified that most organisations expect to use strategic information to gain significant business benefits, but a wide-range of problems were inhibiting this. One of the most significant findings of the research was the mismatch between the current use and the desired use of information. The information consumers in every case study organisation were disappointed with the information that was currently available. This was the result of problems across the complete range of information accessibility and information quality dimensions. This resulted in a disenchanting perception of the value of the information. This finding presents a challenge to all information management practitioners. It suggests that steps need to be taken to ensure that the information consumer is provided with the information that they believe is required to improve business performance. The empirical evidence provided by this research confirms concerns that have been expressed for many years related to the impact that under-funded and ineffective information management can have on business activities. Among the lessons learnt from the research, a number were related to the quality of source data, the importance of not tampering with this source data, and the problems that can arise if data sources are not cleansed when information quality problems arise. The findings suggested that improvements to information analysis and business performance could be achieved if access to information can be improved. An underlying theme of many of the findings was that if more attention was given to effectively managing information many of the problems that organisations encounter with information use could be alleviated. Consequently, it is important that business managers appreciate the importance of information management to the overall success of business strategies. If the findings of this study are correct many business strategies struggle to succeed, or completely fail, because organisations have not made the necessary investment in the management of their information assets.

Providing evidence to support the need for better investment in the management and exploitation of information assets presents another challenge to information practitioners. Part of the problem appears to be the lack of a comprehensive

framework that guides information practitioners through the steps that need to be taken from identifying the potential value of information through to realising its value. The combination of a number of research strands, including this study, may help to provide this framework. Such a framework is illustrated in Figure 9.3.

Figure 9.3 - A Framework for Information Value Realisation



This framework for information value realisation suggests that there are five basic components required to address this challenge. Three of the components in the framework already exist, or are emerging; they are information capability development, effective information management, and effective information exploitation.

The concept of **information capabilities**, or competencies, is a recent development. They represent the knowledge, skill, and activities that an organisation must develop to be able to use information to improve business performance. Peppard et al (2000) identified a range of micro-competencies that should be developed. A similar set of capabilities was identified by Marchand et al (2001). By developing these capabilities the organisation positions itself to effectively manage and exploit its information

assets. The development of information capabilities enables an organisation to develop effective **information management** processes. A number of capabilities must be developed to achieve this (Marchand et al, 2001). These information management processes must also provide value for money and cover the complete range of information management activities (Cook, 1996; Collins, 1996). Achieving this is likely to be an important step towards bridging the gulf between the actual use, and the desired use of information. This was recognised by Marchand (1997) who argued, "*excellence in information management will be the difference that makes the difference*". Providing effective information management will enable organisations to exploit their information assets much more effectively. The framework identifies that **information exploitation** runs in parallel with information management. This recognises that the business need for information is always changing and that a continual flow of information requirement and information provision takes place between information exploitation and information management. This research project, and the literature, has identified many ways of exploiting information assets. Exploitation of information assets in this manner was recognised by Marchand (1997) and Orna (1996). It is the effective exploitation of information assets that can lead to the attainment of measurable business benefits.

This research project adds two additional components to the information value realisation framework, potential value of information and information value realisation. Information capability development is an essential step in the process, but it is also likely to be an expensive activity. Before being able to persuade business managers that investment should be made in information capability development, it appears necessary that the value of information must be clearly established. Establishing the value of the benefits that can be attained by the use of information is also important. This appears to be essential if the correct level of investment is to be justified. The framework of information value constructs and dimensions developed by this study, illustrated in Figure 9.1, provides practitioners with a tool that can assist with this process. By using the constructs and dimension in that framework a practitioner can quickly focus on the uses of information that have the potential to generate value for the business. Establishing this understanding of the **potential**

value of information is an important first step. The potential value of information is the value that can be unlocked if the information is used effectively (McPherson, 1996). By using the framework of constructs and dimensions, the potential value of information can be identified in a number of ways. That framework can help to identify whether the information is being used to support key business processes that provide measurable benefits to the organisation. It can start to pinpoint information that is used in critical information flows in the value chain. It helps identify if information assets are likely to be unique to the organisation and are something that competitors are unlikely to have. This type of focused investigation starts to identify the key information assets that the business depends on, and those that are likely to generate value for the business. Using the construct and dimension framework in this way helps to establish the recognition that information is a valuable corporate resource that can be used to improve business performance. It also provides practitioners with a tool that they can use to identify, understand, and discuss the potential value of information.

The second component this research adds to the information value realisation framework is **information value realisation**. The effective management and exploitation of information can lead to the attainment of measurable business benefits. The challenge at that point is to realise the value of the information that was used to attain these benefits. Again, the information value constructs and dimensions framework, illustrated in Figure 9.1, can provide the practitioner with great assistance in meeting this challenge. That framework identifies a number of dimensions related to the use of information for the attainment of business benefits. This provides information practitioners and business managers alike with insights into the likely benefits that can be attained from the use of their information assets, and how the value of these benefits can be realised. By exploiting information more effectively an organisation creates an opportunity to produce the improved business outcomes that the case study organisations and the focus groups believed were attainable. These improved business outcomes would be expected to result in increased business benefits (Ward et al, 1996; Ward and Murray, 1997; Ward and Elvin, 1999), a proportion of which could be attributed to the information that was utilised. By

measuring this proportion of business benefit using standard accounting techniques, such as discounted cash flows and net present values, the value of the information could be realised (McPherson, 1994, 1996). The realisation of information value in this manner could lead to the important breakthrough that information management practitioners have sought for many years. Business managers may finally realise and acknowledge that information is a valuable asset of the organisation and as such should receive appropriate management and investment.

9.5 Limitations and Avenues for Future Research

This research has attempted to study the factors that can influence the perceived value of strategic information, which is an area of investigation that has been addressed by almost no prior empirical research. The research design has employed both quantitative and qualitative research methods in a three-phase approach involving questionnaire analysis, case studies, and focus groups. This use of combined methods is a powerful technique for corroborating and validating research findings, however, it also contains some inherent limitations. In particular, although the breadth of the research is regarded as being a strength, as it has enabled a holistic view of the perceived information value to be developed, it has also been a weakness in that it has precluded the exploration of many interesting avenues of research in a much more detail. In appraising the overall findings of this study, it is important to interpret the results in the light of the following limitations.

Firstly, the questionnaire data that was utilised had been gathered for purposes that were similar, but not identical, to those of this study. The techniques that were used to gather the data, the methods that had been used to identify the sample, and the make-up of the sample itself all had limitations. Among these limitations the quality and appropriateness of the questions that had been asked also result in a certain amount of caution being applied when considering the analysis results. The quantitative analysis that was conducted on this data is considered to have been robust and reliable bearing in mind the limitations discussed, however, no suggestion is made that the results are generalisable. These results achieved the purpose that was intended; they established a foundation for the main research to be built upon, and no more.

A second significant limitation of this study is the relatively small number of informants that could be interviewed during the case study research. Interviews were used during the case studies to corroborate evidence that was being gathered from the other two main sources, documentation and observation. Wherever possible this was achieved by formal semi-structured interviews. However, the pressures that existed within some of the case study organisations resulted in a situation where the desired number of formal interviews could not be conducted. To a certain extent this problem was alleviated by the informal interviews that were conducted. Consequently, it is possible that the formal interviews conducted may not have provided representative views of the organisation as a whole, and as a result the findings are limited in this respect. It is suggested that future case study research needs to gauge the views of more informants in each organisation studied in order to build up a more detailed and robust understanding of the complex issues that influence perceptions of information value.

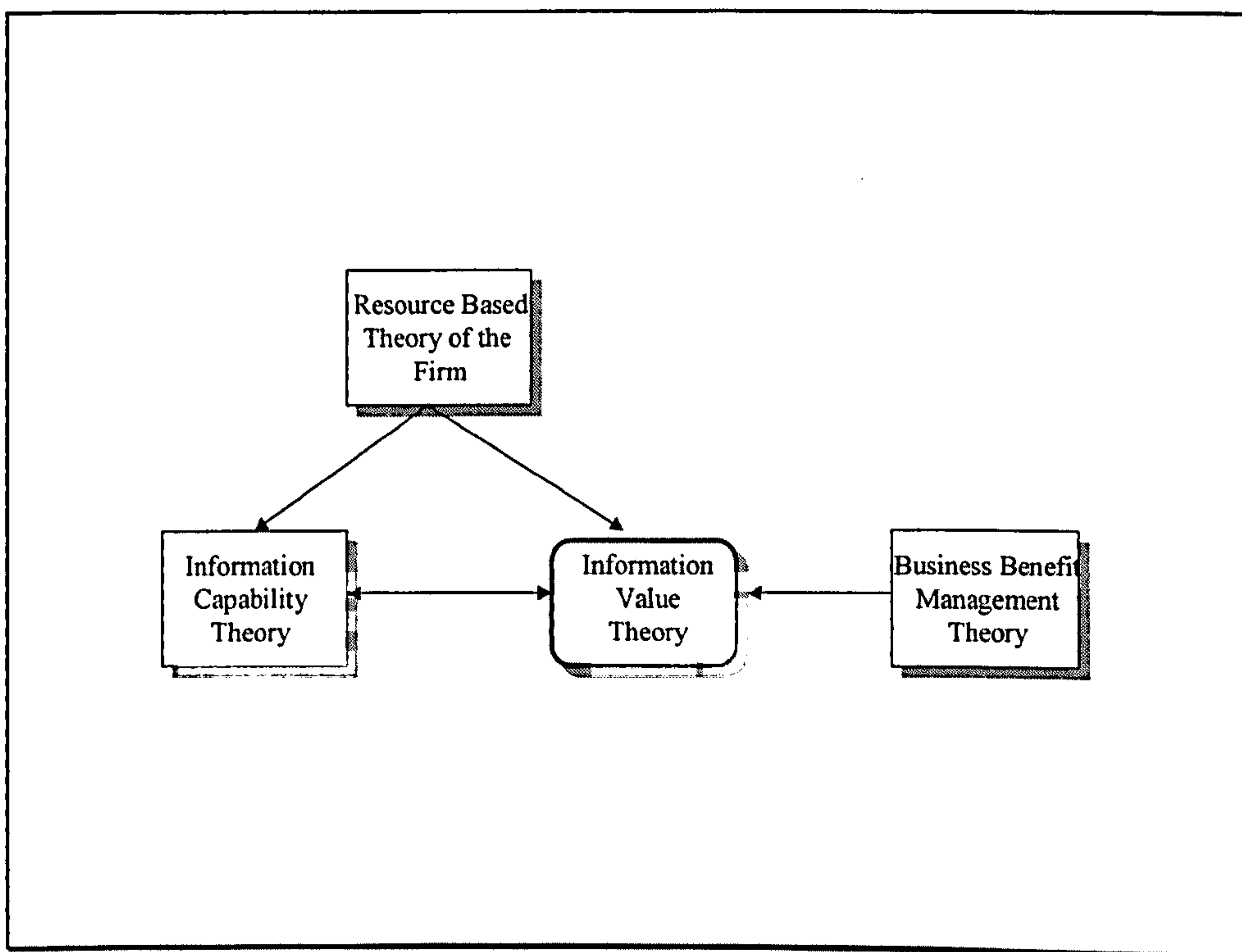
Another potential limitation of the research was the involvement of a participant observer during the case study research. There are many arguments that support the use of this research technique (Becker & Greer, 1982; Yin, 1991; Huczynski & Buchanan, 1991; Gill and Johnson, 1997; Remenyi et al; 1998) that can result in exceptionally valuable insights being gained on the organisation being studied. However, there are other arguments that highlight the potential problems with this technique, and in particular the possibility that the participant observer can manipulate the situation to meet the objectives of the research (Burgess, 1982; Yin, 1991; Gill and Johnson, 1997; Remenyi et al; 1998). In this study there was a connection between the activities the researcher was actively involved in as a consultant, and the research subject. Even although there was no direct attempt by the researcher to manipulate situations in the organisations being studied, it is likely that indirectly the researcher had an influence that may have shaped situations and opinions that impacted the research results. It therefore has to be recognised that some bias may have inadvertently crept into the case study data and the findings that have been produced from it.

The focus groups were conducted using the Internet, which provided a means of assembling a group of knowledgeable participants. One of the concerns with this data gathering technique is the lack of discussion that can take place in a non-realtime Internet focus group (Mann and Stewart, 2000). This problem was identified in all the focus groups that were conducted during this research. Although all the focus groups provided valid responses to the questions being posed, in some instances the behaviour of the participants was closer to questionnaire completion rather than focus group discussion. This appeared to reduce the idea generation that is usually associated with the discussion that takes place during a focus group, and this is regarded as being a limitation to the findings of this study. This research method is still considered to be useful and appropriate, however, future research conducted using Internet focus groups should give greater attention to stimulating and maintaining discussion. The findings from this research suggest that the skills of a focus group moderator need to be enhanced to deal with the new challenges that this research method presents. Another limitation of the focus group research was the non-participation of a number of expected participants. This resulted in the number of participants for one group being reduced to three. This is below the number that is normally recommended for a successful focus group. Consequently, when it comes to the implications of this study beyond the focus groups, any generalisations have to be qualified in the light of these limitations.

This research has also highlighted the need for further research into the measurement of information value. A number of methods for measuring the value of information have been devised (Carter 1985, Repo 1986, Knight and Silk, 1990; Glazer 1991, 1993, Mowshowitz 1992, McPherson 1994, 1996). However, none of these methods appear to have gained widespread acceptance. A possible reason for this is that although these methods have been theoretically and technically sound they have failed to meet the requirements of commercial organisations. One of the problems behind this appears to be the lack of established theory on which to build information value measurement methods.

A number of strands of theory exist, or are emerging, that appear to provide the opportunity to develop integrated theory that will provide a solid foundation for future research. This study focused on Information Value Theory and the constructs and dimensions that it consists of. During this study a substantial amount of literature related to the Resource Based Theory of the Firm was reviewed, with particular attention being given to the relationships that existed between this and Information Value. However, the relationship between the Resource Based Theory and Information Value was not empirically explored by this research. An additional two strands of theory emerged during this study, identified in Figure 9.4 as Information Capability Theory and Business Benefit Management Theory. Literature on both of these theories was reviewed during the study with consideration being given to the interrelationships that could exist between them and Information Value. It was from this review of the literature that it was identified that further research into these theories and the potential relationships between them could be valuable. This is illustrated in Figure 9.4.

Figure 9.4 - Theories Underpinning the Measurement of Information Value



The theory related to information value, developed by this research, has identified that information is regarded by many organisations as being a valuable asset, and that there are arguments that the value of these assets should be measured. It has also been

identified that there are a number of difficulties associated with measuring the value of information. One difficulty is related to the lack of formal recognition of information as a corporate asset. The review of the literature has suggested that the Resource Based Theory of the Firm could provide the theoretical foundation for addressing the issues related to formally establishing information as an asset. This theory argues that business performance and competitiveness can be influenced by the use of internal resources such as physical resources, human resources, reputation, and know-how (Grant, 1991; Collis and Montgomery, 1995). Many of these resources are formal assets of the organisation. The Resource-Based Theory provides a framework that describes the characteristics of these valuable resources. If information assets can be shown to meet the characteristics identified in the Resource Based Theory then it can be argued much more strongly that information assets should be considered to be formal corporate assets. This is a strand of research that requires further investigation.

This study has also recognised that before information value can be realised the potential value of the information must be recognised and steps need to be taken to develop information capabilities for managing and exploiting information. A body of literature has started to emerge that defines Information Capabilities theory (Peppard et al, 2000; Marchand et al, 2001). This theory, discussed earlier, also appears to be using the Resource Based Theory of the Firm as its theoretical foundation. There appears to be a significant amount of synergy between the emerging information capability theory and the theory that this study has developed related to information value. This suggests that there is an opportunity for further investigation that combines these two strands of research. This would enable the development of theory related to the need to develop information capabilities as a step towards measuring information value. It would also provide an opportunity to develop theory to support the processes required to establish information value as a precursor to investing in the development of information capabilities.

Another outcome from this study is the identification of a lack of widely adopted techniques that can be utilised to realise information value. Another strand of

literature that has started to emerge recently is Business Benefit Management theory. This theory provides a framework that defines how business activities result in business outcomes that can be translated into business benefits (Ward et al, 1996; Ward and Murray, 1997; Ward and Elvin, 1999). It appears feasible that this theory could be used as a foundation for developing further insights into how the value of information used to attain measurable business benefits can be realised. This would require a substantial amount of additional research.

A final element of information value theory that could benefit from further research is the need to develop information value measurement methods that meet the needs of commercial organisations. As stated earlier, a number of methods have been proposed but never fully adopted possibly because they were over complicated and failed to meet the need of commercial organisations. To overcome these problems, and to add clarity to the challenge, a set of principles is proposed that set out the basic requirements that any information value measurement method should meet. These principles were discussed in the Theoretical Issues section of this chapter and are illustrated in Figure 9.2. Much more detailed consideration needs to be given to these principles, and further research is required to establish the fundamental requirements of business managers and accounting practitioners related to the measurement of information value.

9.6 Concluding Remarks and Recommendations

The information revolution continues to impact all aspect of business and social life. However, some doubts have already started to be raised on how long this revolution will continue to have a significant impact. One esteemed thinker has already concluded that it is well past its peak, and as we enter the twenty-first century the new economic revolution will be fish farming (Drucker, 2002). Regardless of this prognostication, information is becoming an increasingly important component of business, and there will be growing pressure for information to be acknowledged as a valuable asset, and for this value to be measured. Understanding the factors that can impact the perceptions of strategic information value, the factors that impact decisions on information assets, and opinions on the measurement of information

value, will all be crucial for these pressures to be satisfied properly. Numerous studies have addressed many of the individual factors that affect perceptions of strategic information value. However, there have been few studies that have attempted to address the issue as a whole and in an empirical manner. This study has helped to fill this gap.

In conclusion, this study has provided input to both theory and methodological practice. It has provided empirically grounded evidence on the factors that impact perceptions of information value, and the factors that impact attitudes towards the measurement of information value. It has identified that information accessibility and information quality are two critical factors that shape perceptions of information value. The important role of strategic information in enabling the success of major business activities such as marketing, strategic planning, and the facilitation of organisational change has been confirmed. It has also demonstrated the value of combining qualitative and quantitative research methods, which has led to the development of valid and robust findings.

Among the contributions of the study is a framework of information value constructs and dimensions. These constructs and dimensions combine the latest thinking from the literature with empirical evidence from case studies and focus groups. This framework provides a solid basis from which any future research into information value can commence. Another contribution is a framework for information value realisation that provides information management practitioners with insights into how they can tackle the challenges associated with the lack of commitment and under-investment in the management and exploitation of information assets. A third contribution is a set of principles for helping to establish commercially viable information value measurement methods. If information value measurement is ever to be adopted on a widespread basis, methods must be developed that satisfy the needs of business managers and accounting practitioners. This set of principles attempts to establish the basic foundations for methods on this nature. However, the findings have also revealed that at present there is little consideration given to formally classifying information as an asset or to measuring the value of information. This was

identified during the case studies, and was confirmed by the opinion of knowledgeable participants during the focus groups. This suggests that there is a considerable amount of activity required before most organisations take this topic seriously. The acceptance of formal standards for measuring the value of intangible assets, and the development of information value measurement methods based on principles such as those identified in this study, are two of the most critical activities. In the meantime, organisations must focus on managing and exploiting their strategic information assets effectively so that clear, but not necessarily measurable, benefits are ultimately realised.

References

- Aaker, D. A. (1988), Developing Business Strategies, New York NY, John Wiley
- Ackoff, R. L. (1967), 'Management Misinformation Systems', Management Science, Dec: pp147-156
- Alter, S., (1999), Information Systems – A Management Perspective, Reading MA, Addison-Wesley
- Amit, R. and Schoemaker, P.J.H. (1993), 'Strategic Assets and Organisational Rents', Strategic Management Journal, No 14; pp33-46
- Anderson, C. R. (1984), Management: Skills Functions and Organisation Performance, Dubugre IA, William C Brown Co
- Angell, I. O. and Smithson, S.(1991), Information Systems Management: Opportunities and Risks, Basingstoke, McMillan
- Armistead, C. and Clark, G. (1992), Customer Service and Support, London, Pitman
- Arnold, J., Hope, T., Southworth, A., Kirkham, L. (1994), Financial Accounting, Hemel Hempstead, Prentice Hall
- Arrow, K. J. (1962), 'Economic Welfare and the Allocation of Resources for Invention' in Lamberton, D. M. (1971), Economics of Information and Knowledge, Harmondsworth, Penguin Books Ltd
- Austin, C. J., Trimm, J. M., Sobczak, P. M. (1995), 'Information systems and strategic management', Health Care Management Review, Vol 20 No 3: p26
- Bariff, M. L. & Galbraith, J.R. (1978), 'Intraorganisational Power Considerations for Designing Information Systems', Accounting, Organisations and Society, Vol 3 No 1: pp15-27
- Barney, J. (1991), 'Firm Resources and Sustained Competitive Advantage', Journal of Management, Vol 17 No 1: pp99-120
- Beal, R. M. (2000), 'Competing effectively Environmental scanning competitive strategy, and organizational performance in small manufacturing firms', Journal of Small Business Management, Vol 38 No 1: pp27-47
- Becker, H. S. (1958), 'Problems of inference and proof in participant observation', American Sociological Review, Vol 23, No 6
- Becker, H. S. & Greer, B. (1982), 'Participant Observation: The Analysis of Qualitative Field Data', in Burgess, R. G. (Ed), Field Research: A Sourcebook and Field Manual, London, George Allen & Unwin

Bell, D. (1973), The Coming of the Post Industrial Society, New York NY, Basic Books

Bocij, P., Chaffey, D., Greasley, A., Hickie, S., (1999), Business Information Systems – Technology, Development and Management, London, Financial Times/Pitman

Bond, T. C. (1999), 'The role of performance measurement in continuous improvement', International Journal of Operations and Production Management, Vol 19, No 12: pp1318-1334

Borg, E. A. (2001), 'Knowledge, information and intellectual property: implications for marketing relationships', Technovation, 21: pp515-524

Bowonder, B. and Miyake, T. (1992), 'Creating and Sustaining Competitiveness : Information Management Strategies of Nippon Steel Corporation', International Journal of Information Management, Vol 12: 39-56

Boynton, A.C. and Zmud, R.W. (1984), 'An Assessment of CSF's', Sloan Management Review, Summer : pp17-27

Beaumont, J. R. and Walters, D. (1991), 'Information Management in Service Industries : Towards a Strategic Framework', Journal of Information Systems, Vol 1 No 3: pp155-172

Bradshaw, D. and Brash, C. (2001), 'Managing customer relationships in the e-business world: how to personalize computer relationships for increased profitability', International Journal of Retail and Distribution Management, Vol 29 No 12: pp520-529

Braganza, A. (2001), Radical Process Change, Chichester, John Wiley

Broadbent, M. (1991), 'Information Management : Strategies and Alliances', Aslib Proceedings, Vol 43, No 1: pp1-11

Brockington, R. (1996), Accounting for Intangible Assets, Wokingham, Addison-Wesley

Brown, A., (1995), Organisational Culture, London, Pitman

Brush, C. G. (1992), 'Marketplace information scanning activities of new manufacturing ventures', Journal of Small Business Management, Vol 30 No 4:p41

Burk, C.F. and Horton, F.W. (1988), InfoMap : A Complete Guide to Discovering Corporate Information Resources, Eaglewood Cliffs NJ, Prentice Hall

Burgess, R. G. (1982), Field Research: a Sourcebook and Field Manual, London, George Allan & Unwin

- Carter, M.P. (1985), 'The Valuing of Management Information, Parts 1 - 4', Journal of Information Science, No 10: pp1-9; 51-58: 95-98; 143-147
- Cashmore, V. and Lyall, R. (1991), Business Information -Systems and Strategies, Hemel Hempstead, Prentice Hall
- Central Computer and Telecommunications Agency (CCTA) (1990), Managing Information as a Resource, London, HMSO
- Champy, J. (1995), Reengineering Management, London, Harper Collins
- Child, J. (1984), Organisation: A guide to problems and practice, London, Paul Chapman
- Clemons, E. K. and Weber, B. W. (1994), 'Segmentation differentiation and flexible pricing - Experiences with information technology and segment-tailored strategies', Journal of Management Information Systems, Vol 11 No 2:p9
- Clifton, H. D. (1986), Business Data Systems, Hemel Hempstead, Prentice-Hall
- Clutterbuck, D., Clark, G., Armistead, C. (1993), Inspired customer service, London, Kogan Page
- Cole, R.E. (1985), 'Target Information for Competitive Performance', Harvard Business Review, May-Jun : pp100-109
- Collins, B. (1996), 'Practicalities of information management', in Best, D. P. (Ed), The Fourth Resource – Information and its Management, Aldershot, Aslib/Gower
- Collis, D. J. and Montgomery, C. A. (1995), 'Competing on Resources in the 1990's', Harvard Business Review, Jul-Aug: pp118-128
- Confederation of British Industry (CBI), (1992), IT The Catalyst for Change, London, CBI
- Conner, K. R. (1991), 'A historical comparison of resource-based theory and five schools of thought within industrial organization economics: Do we have a new theory of the firm?', Journal of Management, Vol 17 No 1: pp121-154
- Cook, B. (1996), 'Selling information management as value for money', in Best, D. P. (Ed), The Fourth Resource – Information and its Management, Aldershot, Aslib/Gower
- Cooper, R. B. (1994), The inertial impact of culture on IT implementation, Information and Management, Vol 27: pp17-31
- Cravens, D. W. (1998), 'Implementation strategies in the market-driven strategy era', Academy of Marketing Science Journal, Vol 26 No 3: pp237-241

- Crockett, F. (1992), 'Revitalising Executive Information Systems', Sloan Management Review, Summer: pp39-47
- Cronin B. & Davenport E. (1991), Elements of Information Management, Metuchen NJ, The Scarecrow Press
- Daniel, D. R. (1961), 'Management Information Crisis', Harvard Business Review, Sep-Oct
- Davenport, T.H. (1994), 'Saving IT's Soul : Human Centered Information Management', Harvard Business Review, March-April: pp121-131
- Davenport, T.H., Eccles, R.G., Prusak, L. (1992), 'Information Politics', Sloan Management Review, Fall: pp53-65
- Davenport, L. & Cronin B. (1988), 'Strategic Information Management - Forging the Value Chain', International Journal of Information Management, Vol 8 No 1: pp25-34
- David, F. R. (1995), Strategic Management, Englewood Cliffs NJ, Prentice Hall
- Davis, S. and Botkin, J. (1994), 'The Coming of Knowledge Based Business', Harvard Business Review, Sept-Oct: pp165-170
- Demsetz, H. (1969), 'Information and Efficiency : Another Viewpoint' in Lamberton, D. M. (Ed) (1971), Economics of Information and Knowledge, Harmondsworth, Penguin Books Ltd
- De Toni, A. and Tonchia, S. (2001), 'Performance measurement systems – Models, characteristics and measures', International Journal of Operations and Production Management, Vol 21 No 1/2: pp46-70
- Diamantopoulos, A. & Schlegelmilch, B.B. (1997), Taking the Fear out of Data Analysis, London, The Dryden Press
- Dibb, S., Simkin, L., Pride, W. M., Ferrell, O. C. (1991), Marketing – Concepts and Strategies, Boston MA, Houghton Mifflin
- Dizard, Jr, W.P. (1989), The Coming Information Age, White Plains NY, Longman
- Doherty, N. F. and Perry, I. (2001), 'The cultural impact of workflow management systems in the financial services sector', The Services Industry Journal, Vol 21 No 4: pp147-166
- Doig, G., (1995), Managing the Corporate Information Cycle, Unpublished MBA research project report, Loughborough
- Donaldson, T.H. (1992), The Treatment of Intangibles : A Bankers View, Basingstoke, The MacMillan Press

- Drucker, P.F. (1988), 'The Coming of the New Organisation', Harvard Business Review, Jan-Feb
- Drucker, P.F. (2002), 'Managing in Turbulent Times – 2002 and Beyond', Proceedings of the Microsoft Business Value Conference, May 7th 2002, Pasadena CA, unpublished
- Earl, M.J. (1989), Management Strategies for Information Technologies, Hemel Hempstead, Prentice-Hall
- Earl, M. J. (1999), 'Every Business is Information Based', Financial Times Supplement, 1st February
- Easton, G. (1982), Learning From Case Studies, Hemel Hempstead, Prentice Hall
- Eccles, R. G. (1991), 'The Performance Measurement Manifesto', Harvard Business Review, Jan-Feb: pp131-137
- Egginton, D. A. (1990), 'Towards some principles for Intangible Asset Accounting', Accounting and Business Research, Vol 20 No 79: pp193-205
- Eisenhardt, K. M. (1989), 'Building Theories from Case Study Research', Academy of Management Review, Vol 14, No 4; 532-550
- Ferguson, C. R. and Dickinson, R. (1982), 'Critical Success Factors for Directors in the Eighties', Business Horizons, May-Jun
- Finlay, P, (2000), Strategic Management, Harlow, Pearson
- Flowerdew, A.D.J. and Whitehead, C.M.E. (1975), 'Problems in Measuring the Benefits of Scientific and Technical Information', in King, D.W, Roderer, N.K., Olsen, H.A, (1983), Key Papers in the Economics of Information, White Plains NY, Knowledge Industry Publications
- Foxman, E. R. and Kilcoyne, P, (1993), 'Information technology marketing practice and consumer privacy: Ethical issues', Journal of Public Policy & Marketing, Vol 12 No 1: p106
- Framel, J. E. (1993), 'Information value management', Journal of Systems Management, Vol 44 No 12: p16
- Frost, B. (1999), 'Performance metrics: the new strategic discipline', Strategy and Leadership, Vol 27 No 3: p34-35
- Furnham, A. and Gunter, B. (1993), 'Corporate Culture', in Cooper C. L. and Robertson, I. T. (eds.) International Review of Industrial and Organisational Psychology, Chichester, Wiley
- Gaiser, T. J. (1997), 'Conducting on-line focus groups', Social Science Computer Review, Vol 15 No 2: pp135-144

- Gale, B. T. (1972), 'Market share and the rate of return', Review of Economics and Statistics, Vol 54: pp412-423
- Geanuracos, J. and Meiklejohn, I. (1993), Performance Measurement : The New Agenda, London, Business Intelligence
- Gerwin, D. (1993), 'Integrating manufacturing into the strategic phases of new product development', California Management Review, Vol 35 No4:p123
- Gill, J. and Johnson, P. (1997), Research Methods for Managers, London, Sage
- Glaser, B., and Strauss, A., (1967), The Discovery of Grounded Theory: Strategies for Qualitative Research, New York NY, Aldine
- Glazer, R. (1991), 'Marketing in an Information Intensive Environment : Strategic Implications of Knowledge as an Asset', Journal of Marketing, Oct: pp1-19
- Glazer, R. (1993), 'Measuring the Value of Information : The Information Intensive Organisation', IBM Systems Journal, Vol 32 No 1: pp99-110
- Glazer, R. and Weiss, A. M. (1993), 'Marketing in Turbulent Environments : Decision Processes and the Time-Sensitivity of Information', Journal of Marketing Research, Nov: pp509-521
- Gold, R. (1958), 'Roles in sociological field observation', Social Forces, Vol 36, No 3
- Goodman, S.K. (1993), 'Information Needs for Management Decision Making', Records Management Quarterly, October: pp12-23
- Goodwin, D. & Hodgett, A. (1993), 'MIS in Medium Sized Corporations', Corporate Management, Mar – Apr: pp53-56
- Goodwin, R and Ball, B. (1999), 'Closing the loop on loyalty', Marketing Management, Vol 8 No 1: pp24-34
- Gould, R. M. (1996), 'Getting from Strategy to Action: Processes for Continuous Change', Long Range Planning, Vol 29 No 3: pp278-289
- Grant, R. M. (1991), 'The Resource Based Theory of Competitive Advantage : Implications for Strategy Formulation', California Management Review, Spring: pp114-135
- Gutek, B. A. (1995), The Dynamics of Service, San Francisco CA, Jossey-bass
- Hagen, A. F. and Amin, S. G. (1995), 'Corporate executives and environmental scanning activities: An empirical investigation', S.A.M. Advanced Management Journal, Vol 60 No 2: p41

- Hamel, G and Prahalad, C. K. (1990), Strategic Intent, The McKinsey Quarterly, Spring: pp36-61
- Hamel, G. and Prahalad, C.K. (1994), Competing for the Future, Boston MA, Harvard Business School Press
- Hawley Report (1995), Information as an Asset : The Board Agenda, London, KPMG Impact Group
- Henderson, R. (1994), Managing Innovation in the Information Age, Harvard Business Review, Jan-Feb: pp100-105
- Heracleous, L. and Langham, B. (1996), 'Strategic change and organizational culture at Hay Management Consultants', Long Range Planning, Vol 29, No 4: pp485-494
- Herriott, R.E. & Firestone, W. A. (1983), 'Multisite qualitative policy research: Optimising description and generalisability', Educational Researcher, 12: pp14-19
- Hitt, M. A., Keats, B. W., DeMarie, S. M. (1998), 'Navigating in the new competitive landscape Building strategic flexibility and competitive advantage in the 21st century', The Academy of Management Executive, Vol 12 No 4: pp22-42
- Hofstede, G. (1997), Cultures and Organisations, New York NY, McGraw-Hill
- Holsti, O. R. (1968), 'Content Analysis' in Lindzey, G. & Aronson, E. (Ed's), The Handbook of Social Psychology, Reading Mass., Addison Wesley
- Hooley, G. J. and Saunders, J. (1993), Competitive Positioning, Hemel Hempstead, Prentice Hall
- Hopper, M. D. (1990), Rattling SABRE - New Ways to Compete on Information', Harvard Business Review, May-Jun: 118-125
- Horton, F. W. (1979), Information Resource Management : Concepts and Cases, Cleveland OH, Association for Systems management
- Horton, F.W. (1993), 'The Strategic Role of Information Management', Library Science, Vol 30 No 1, Mar: pp1-5
- Huczynski, A. & Buchanan, D. (1991), Organisational Behaviour, Hemel Hempstead, Prentice Hall
- Itami, H. and Roehl, T. W. (1987), Mobilizing Invisible Assets, Cambridge MA, Harvard University Press
- Jacobson, R. (1988), 'Distinguishing among competing theories of the market share effect', Journal of Marketing, Vol 52: pp68-80
- Jankowicz, A. D. (1991), Business Research Projects for Students, London, Chapman & Hall

- Jenster, P.V. (1987), 'Using Critical Success Factors in Planning', Long Range Planning, Vol 20 No 4
- Johnson, R. M. (1995), 'Market segmentation a strategic management tool', Marketing Management, Vol 3 No 4;p49
- Johnson, J. & Scholes, K. (1988), Exploring Corporate Strategy, Hemel Hempstead, Prentice Hall
- Kanter, R. M. (1983), The Change Masters, London, Routledge
- Kanter, R. M. (1988), 'When a thousand flowers bloom: Structured, collective, and social conditions for innovation in organisations', in Staw, B. M. and Cummings, L. L. (Eds), Research in organizational, Vol 10, Greenwich CT, JAI
- Kanter, R. M. (1989), When Giants Learn to Dance, London, Routledge
- Kanter, R. M., Stein, B. A., Jick, T. D. (1992), The Challenge of Organisational Change, New York NY, The Free Press
- Kaplan, R.S. and Norton, D.P. (1992), 'The Balanced Scorecard - Measures that Drive Performance', Harvard Business Review, Jan-Feb: pp71-79
- Kaplan, R. S. and Norton, D. P. (1996), 'Using the Balanced Scorecard as a Strategic Management System', Harvard Business Review, Jan-Feb: 75-85
- Kast, F. E. & Rosenzweig, J. E. (1979), Organisation and Management, New York NY, McGraw-Hill
- Kilmann, R. H., Slevin, D. P., Thomas, K. W., (1994), 'The problem of producing useful knowledge', in Kilmann, R. H., Thomas, K. W., Slevin, D. P., Nath, R., Jerrell, S. L.,(Eds), Producing Useful Knowledge for Organisations, San Francisco, Jossey-Bass
- Kinnear, P. R., and Gray, C. D., (1999), SPSS for Windows Made Simple, Hove, Psychology Press
- Klobas, J. E., (1995), 'Beyond information quality: Fitness for purpose and electronic information resource use', Journal of Information Science, 21 (2): pp95-114
- Kluckhohn, F. R. (1940), 'The participant observer technique in small communities', American Journal of Sociology, Vol 46 No 3: pp331-343
- Knight, A.V. & Silk, D.J. (1990), Managing Information, London, McGraw Hill
- Krueger, R. A. and Casey, M. A., (2000), Focus Groups – A Practical Guide for Applied Research, Thousand Oaks, Sage
- Kuhn, J. A. and Figgins, T. C. (1994), 'You need a strategic plan to win', The Journal for Quality and Participation, Vol 17 No 4: p44

- LaLonde, B. J. and Zinszer, P. H. (1976), Customer Service: Meaning and Measurement, Chicago IL, National Council for Physical Distribution Management
- Laverty, K. J. (2001), 'Market share, profits, and business strategy', Management Decision, Vol 38 No 8: pp607-617
- Lawrence, P. R. and Lorsch, J. W. (1967), Organisation and Environment, Boston MA, Harvard University Press
- Lee, A. S. (1991), 'Integrating positivist and interpretive approaches to organisational research', Organization Science, Vol 2 No 4: pp342-365
- Light, D. A. (1998), 'Performance Measurement', Harvard Business Review, Nov-Dec, p17
- Lingle, J.H. and Schiemann, W.A. (1994), 'Is Data Scatter Subverting Your Strategy', Management Review, May: pp53-58
- Long, P. (1986), Performance Appraisal Revisited, London, Institute of Personnel Management
- Louis, M. R., (1994) 'Useful Knowledge and Knowledge Use: Toward Explicit Meanings', in Kilmann, R. H., Thomas, K. W., Slevin, D. P., Nath, R., Jerrell, S. L.,(Eds), Producing Useful Knowledge for Organisations, San Francisco, Jossey-Bass
- Lovelock, H. C. (1991), Services Marketing, Englewood Cliffs NJ, Prentice Hall
- Lucey, T., (1992), Management Accounting, London, DP Publications
- Luffmann, G., Lea, E., Sanderson, S., Kenny, B., (1996), Strategic Management – An Analytical Introduction, Oxford, Blackwell
- Mackenzie-Owen J.S. and van Halm J. (1989), Innovation in the Information Chain, London, Routledge
- McKinnon, S. M. and Bruns, J. (1992), The Information Mosaic, Boston MA, Harvard Business School Press
- McPherson, P. K. (1994), 'Accounting for the value of information', Aslib Proceedings, Vol 46 No 9: pp203-215
- McPherson, P. K. (1996), 'The Inclusive value of Information', International Federation for Information and Documentation – 48th Congress, Graz: pp41-60
- Machlup, F. (1979), 'Uses, Value, and Benefits of Knowledge', in King, D.W, Roderer, N.K., Olsen, H.A, (1983), Key Papers in the Economics of Information, White Plains NY, Knowledge Industry Publications

- Maltz, E., (2000), 'Is all communication created equal?: An investigation into the effects of communication mode on perceived information quality', Journal of Product Innovation Management, 17 (2): pp110-127
- Mann, C., and Stewart, F. (2000), Internet Communication and Qualitative Research, London, Sage
- Mansfield, R. (1986), Company strategy and organizational design, London, Croom Helm
- Marchand, D. A. (1997), 'Competing with information: Know what you want', FT Mastering Management Reader, Jul/Aug: pp7-12
- Marchand, D. A., Kettinger, W. J., Rollins, J. D. (2001), Making the Invisible Visible, Chichester, John Wiley
- Marschak, J. (1968), 'Economics of Inquiring, Communicating, Deciding', in King, D.W., Roderer, N.K. and Olsen, H.A., (1983), Key Papers in the Economics of Information, White Plains NY, Knowledge Industry Publications
- Meltzer, M. F. (1981), Information : The Ultimate Management Resource, New York, Amacom
- Menon, A. and Varadarajan, P. R. (1992), 'A model of Marketing Knowledge Use within Firms', Journal of Marketing, Vol 56, Oct: pp53-71
- Miles, M. B. & Huberman, A. M. (1994), Qualitative Data Analysis, Beverly Hills CA, Sage
- Montgomery, C. A. and Wernerfelt, B. (1991), 'Sources of superior performance: market share versus industry effects in the United States brewing industry', Management Science, Vol 37, No 8: pp954-959
- Montgomery, D. B. and Wienberg, C. B. (1998), 'Toward strategic intelligence systems', Marketing Management, Vol 6 No 4: pp44-52
- Moore, N. (1988), 'Information Intensive management and the Expanding market for Information Professionals', Aslib Proceedings, Vol 40, No 9: pp255-259
- Morgan, D. L., (1997), Focus Groups as Qualitative Research, Thousand Oaks, Sage
- Morris, C. (1993), Quantitative Approaches in Business Studies, London, Pitman
- Morton-Williams, J. (1985), 'Making Qualitative Research Work - Aspects of Administration' in Walker, R. (Ed), Applied Qualitative Research, Aldershot, Gower
- Mowshowitz, A. (1992), 'On the market Value of Information Commodities', Parts I - III, Journal of the American Society for Information Science, Vol 43 No 3: pp225-248

- Nandhakumar, J. and Jones, M. (1997), 'Too close for comfort? Distance and engagement in interpretive information systems research', Information Systems Journal, 7: pp109-131
- Nath, R. (1992), 'A framework to identify applications of information technology to improve service quality', Behaviour and Information Technology, Vol 11 No 1: pp24-31
- Neely, A. (1999), 'The performance measurement revolution: why now and what next?', International Journal of Operations and Production Management, Vol 19, No 2: p205-228
- Neely, A., Mills, J., Platts, K., Richards, H., Gregory, M., Bourne, M., Kennerley, M. (2000), 'Performance measurement system design: developing and testing a process-based approach', International Journal of Operations and Production Management, Vol 20 No 10: pp1119-1145
- Newman, G. (1976), 'An Institutional Perspective on Information', in King, D.W., Roderer, N.K. and Olsen, H.A., (1983), Key Papers in the Economics of Information, White Plains NY, Knowledge Industry Publications
- O'Brien, J. A., (2001), Introduction to Information Systems – Essentials for the Internetworked E-Business Enterprise, Singapore, McGraw-Hill
- Orlikowski, W. J. and Baroudi, J.J. (1991), 'Studying Information Technology in Organisations: Research Approaches and Assumptions', Information Systems Research, Vol 2 No 1: pp1-28
- Orna, E. (1993), 'Why You Need an Information Policy - and How to Sell It', Aslib Information, Vol 2 No 5: pp196-200
- Orna, E. (1996), 'Valuing information: Problems and opportunities', in Best, D. P. (Ed), The Fourth Resource – Information and its Management, Aldershot, Aslib/Gower
- Orna, E., (1999), Practical Information Policies, Aldershot, Gower
- Ostroff, F. and Smith, D. (1992), The horizontal organisation, The McKinsey Quarterly, No 1
- Owens, I., Wilson, T., Abell, A. (1996), Information and Business Performance, East Grinstead, Bowker Saur
- Palmer, R. P. and Varnet, H. (1990), How to Manage Information – A Systems Approach, Phoenix AZ, Oryx Press
- Payne, R. L. (2000), 'Climate and culture: How close can they get?', in Ashkanasy, N. M., Wilderom, C. P. M., Peterson, M. F. (Eds), Handbook of Organisational Culture and Climate, Thousand Oaks CA, Sage

- Peppard, J., Lambert, R. Edwards, C. (2000), 'Whose job is it anyway?: organisational information competencies for value creation', Information Systems Journal, Vol 10 No 4: pp291-322
- Peskin, M. I. and Adis, W. (1993), 'Concurrency - the new method for quickly bringing new products to market', Review of Business, Vol 15 No 1:p22
- Peters, T. J. (1987), Thriving on Chaos, London, Pan Books
- Peters, T. J. and Austin, N. (1985), A Passion for Excellence, Collins, London
- Peters, T. J. and Waterman, R. H. (1982), In Search of Excellence, New York, Harper Collins
- Picot, A. (1990), 'Information Management : The Science of Solving Problems', International Journal of Technology Management, Vol 5 No 3
- Pliskin, N., Romm, T., Lee, A. S., Weber, Y. (1993), Presumed verses actual organisational culture: managerial implications for implementation of information systems, The Computer Journal, Vol 36 No 2: pp143-152
- Porat, M. U. (1977), The Information Economy, Washington DC, Government Printing Office
- Porter, M. E. (1980), Competitive Strategy, New York NY, The Free Press
- Porter, M. E. (1985), Competitive Advantage, New York NY, The Free Press
- Porter, M.E. and Millar, V.E. (1985), 'How Information Gives You Competitive Advantage', Harvard Business Review, Jul-Aug: pp149-160
- Potter, P. W. (1996), An analysis of thinking and research about qualitative study, Mahwan NJ, Erlbaum Associates
- Raghunathan, S., (1999), 'Impact of information quality and decision-maker quality on decision quality: a theoretical model and simulation analysis', Decision Support Systems, 26: pp275-286
- Raimond, P. (1993), Management Projects - Design, Research & Presentation, London, Chapman Hall
- Rayport, J. F. and Sviokla, J.J. (1995), 'Exploiting the virtual value chain', Harvard Business Review, Nov-Dec: pp75-85
- Remenyi, D., Williams, B., Money, A., Swartz, E., (1998), Doing Research in Business and Management, London, Sage
- Repo, A. J. (1986), 'The Dual Approach to the Value of Information : An Appraisal of Use and Exchange Value', Information Processing and Management, Vol 22 No 5: pp373-383

- Richards, L., (1999), Using Nvivo in Qualitative Research, Bundoora Victoria, Qualitative Solutions and Research
- Rindfleisch, A. and Moorman, C. (2001), 'The acquisition and utilization of information in new product alliances: A strength-of-ties perspective', Journal of Marketing, Vol 65 No 2: pp1-18
- Robson, W. (1994), Strategic Management and Information Systems, London, Pitman
- Rockart, J.F. (1979), 'Chief Executives Define Their Own Data Needs', Harvard Business Review, Mar-Apr: pp81-93
- Rockart, J.F. and DeLong, D.W. (1988), Executive Support Systems, Illinois, Dow Jones - Irwin
- Romm, T., Pliskin, N., Weber, Y., Lee, A. S. (1991), 'Identifying organizational culture clash in MIS implementation: When is it worth it?', Information and Management, (21): pp99-109
- Rostick, P. (1994), 'An Information Manifesto', CIO, Sept: pp24-26
- Roy, A. (2000), 'Market information and channel price structure', International Journal of Research and Marketing, Vol 17: pp331-351
- Rumelt, R. P. and Wensley, R. (1981), 'In search of the market share effect', Proceedings of the Academy of Management: pp2-6
- Sathe, V. (1985), Culture and Related Corporate Realities, Homewood, Richmond and Irwin
- Sathe, V. and Davidson, E. J. (2000), 'Toward a new conceptualization of culture change', in Ashkanasy, N. M., Wilderom, C. P. M., Peterson, M. F. (Eds), Handbook of Organisational Culture and Climate, Thousand Oaks CA, Sage
- Sekaran, U. (1992), Research Methods for Business: A Skill Building Approach, New York, John Wiley
- Sethi, R. (2000), 'New product quality and product development teams', Journal of Marketing, Vol 64 No 2: pp1-14
- Shepherd, W. G. (1972), 'The elements of market structure', Review of Economics and Statistics, Vol 54: pp25-37
- Sheremata, W. (2000), 'Centrifugal and centripetal forces in radical new product development under time pressure', The Academy of Management Review, Vol 25 No 2: pp389-408
- Sibbert, D. (1993), 'Managing the Information Asset', Administrator, Feb

- Silk, D. J. (1989), 'Current Issues in Information Management', International Journal of Information Management, Vol 9 No 2
- Silk, D. J. (1990), 'Current Issues in Information Management - Update', International Journal of Information Management, Vol 10 No 3
- Silk, D.J. (1991), Planning IT : Creating an Information Management Strategy, Oxford, Butterworth-Heinemann
- Silverman, P. (2000), Doing Qualitative Research, London, Sage
- Simpson, C. W. and Prusak, L, (1995), 'Troubles with Information Overload – Moving from Quantity to Quality in Information Provision', International Journal of Information Management, Vol 15, No 6: 413-425
- Sinkula, J. M. (1994), 'Marketing Information Processing and Organisational Learning', Journal of Marketing, Vol 58 No 1
- Skyrme, D. J. (1998), 'Valuing Knowledge: Is it worth it?', Managing Information, Vol 5 No 2: pp24-26
- Smircich, L., (1983), 'Concepts of Culture and Organisational Analysis', Administrative Science Quarterly, Vol. 28: pp. 339-35.
- Souchon, A. L. and Diamantopoulos, A. (1996), 'A Conceptual Framework of Export marketing Information Use : Key Issues and Research Propositions', Journal of International Marketing, Vol 4, No 3: pp49-71
- Stacey, R. D. (1993), Strategic Management and Operational Dynamics, London, Pitman
- Stafford, M. (1993), 'From vertical to horizontal in three (not so) easy steps', Business Change and Re-engineering, Vol 1 No 2: pp20-30
- Stone, P. J. (1964), An introduction to the General Inquirer: a computer system for the study of spoken or written material, Harvard Univ. and Simulmatics Corp. (Mimeo)
- Strong, D. M., Lee, Y. W., Wang, R. Y., (1997), 'Data Quality in Context', Communications of the ACM, May Vol 40 No 5: pp103-110
- Sutherland, K. (2001a), 'Making customer profitability', Bank Marketing, Vol 33 No 6: p81
- Sutherland, K. (2001b), 'Using profitability data – profitably', Bank Marketing, Vol 33 No 7: p23
- Teece, D. J. (1980), 'Economies of Scope and the Scope of the Enterprise', Journal of Economic Behaviour and Organisation, Vol 1

- Thomas, J. B., Clark, S. M., Gioia, D. A. (1993), 'Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes', Academy of Management Journal, Vol 36 No 2:p239
- Threat, H. (1999), 'Measurement is free', Strategy and Leadership, Vol 27 No 3: p16
- Toffler, A. (1980), The Third Wave, London, Collins
- Townley, B. (1989), 'Selection and appraisal: Reconstituting 'social relations'?', in Storey, J. (Ed), New Perspectives on Human Resource Management, London, Routledge
- Trauth, E.M. (1989), 'The Evolution of Information Resource Management', Information and Management, Vol 16: pp257-268
- Tremblay, M. A. (1982), 'The Key Informant Technique: A Non-Ethnographic Application', in Burgess, R. G. (Ed), Field Research: A Sourcebook and Field Manual, London, George Allen & Unwin
- Tsang, E. W. C. and Kwan, K-M. (1999), 'Replication and theory development in organizational science: A critical realist perspective', Academy of Management review, Vol 24 No 4: pp759-780
- Vavra, T. G. (1993), 'The database marketing imperative', Marketing Management, Vol 2 No 1: p46
- Vincent, D. R. (1983), 'Information as corporate asset', Computerworld, Sept 26: pp1-12
- Vincent, D. R. (1984), 'Information on the bottom line', Computerworld, Aug 13: pp25-32
- Von Gilnow, M. A. and Sethia, N., (1994), 'The role of feedback in the creation of useful knowledge', in Kilmann, R. H., Thomas, K. W., Slevin, D. P., Nath, R., Jerrell, S. L., (Eds), Producing Useful Knowledge for Organisations, San Francisco, Jossey-Bass
- Wang, R. E. and Strong, D. M., (1996), 'Beyond Accuracy: What Data Quality Means to Data Consumers', Journal of Management Information Systems, Spring Vol 12 No 4: pp5-34
- Warburton, D (1992), 'An Organisational Policy for Information', Work Study, Vol 41 No 5: pp16-18
- Ward, J. M. (1988), 'Integrating Information Systems into Business Strategies', Long Range Planning, Vol 20 No 3
- Ward, J. M. and Elvin, R. (1999), 'A new framework for managing IT-enabled business change', Information Systems Journal, Vol 9 No 3: pp197-221

Ward, J. M., Taylor, P., Bond, P. (1996), 'Evaluation and realization of IS/IT benefits: an empirical study of current practice', European Journal of Information Systems, Vol 4 No 1: pp214-225

Ward, J. M. and Murray, P (1997), Benefits Management: Best Practice Guidelines, ISRC-BM97016, Information Systems Research Centre, Cranfield School of Management, Cranfield

Weisberg, H. F. and Bowen, B. D. (1977), An Introduction to Survey Research and Data Analysis, San Francisco CA, W.H. Freeman

Whipp, R., Rosenfeld, R., Pettigrew, A. (1989), 'Managing strategic change in a mature business', Long Range Planning, Vol 22 No 6: pp92-99

Whyte, W. F. (1982), 'Interviewing in Field Research', in Burgess, R. G. (Ed), Field Research: A Sourcebook and Field Manual, London, George Allen & Unwin

Wilderom, C. P. M., Glunk, U., Maslowski, R. (2000), 'Organisational culture as a predictor of organisational performance', , in Ashkanasy, N. M., Wilderom, C. P. M., Peterson, M. F. (Eds), Handbook of Organisational Culture and Climate, Thousand Oaks CA, Sage

Willard, N. (1993), 'Information Resource Management', Aslib Information, May: pp201-205

Williams, A., Dobson, P. Walters, M. (1990), Changing Culture, 2nd edition. London, IPM

Willmott, H. (1993), 'Strength is Ignorance; Slavery is Freedom: Managing Culture in Modern Organisations', Journal of Management Studies, Vol. 30, No. 4, pp512-552.

Wind, J. and Mahajan, V. (1997), 'Issues and opportunities in new product development: An introduction to the special issue JMR', Journal of Marketing Research, Vol 34 No 1: pp1-12

Winter, S. G. (1995), 'Four R's of Profitability : Rents, Resources, Routines, and Replication', in Montgomery, C. (Ed), Resource Based and Evolutionary Theories of the Firm, Boston MA, Kluwer

Wormell, I. (1989), 'Strategic Information Management to Improve Competitiveness', Information Services and Use, Vol 9 No 4: pp197-204

Wyner, G. A. (1992), 'Segmentation Design', Marketing Research. Vol 4 No 4: p38

Wyner, G. A. (1999), 'Customer classification', Marketing Research, Vol 11 No 4: pp38-39

Yin, R. K. (1994), Case Study Research - Design and Methods, Newbury Park CA, Sage

Zabriskie, N. B. and Huellmantel, A. B. (1994), Marketing Research as a Strategic Tool, Long Range Planning, Vol 27 No 1:pp107-118

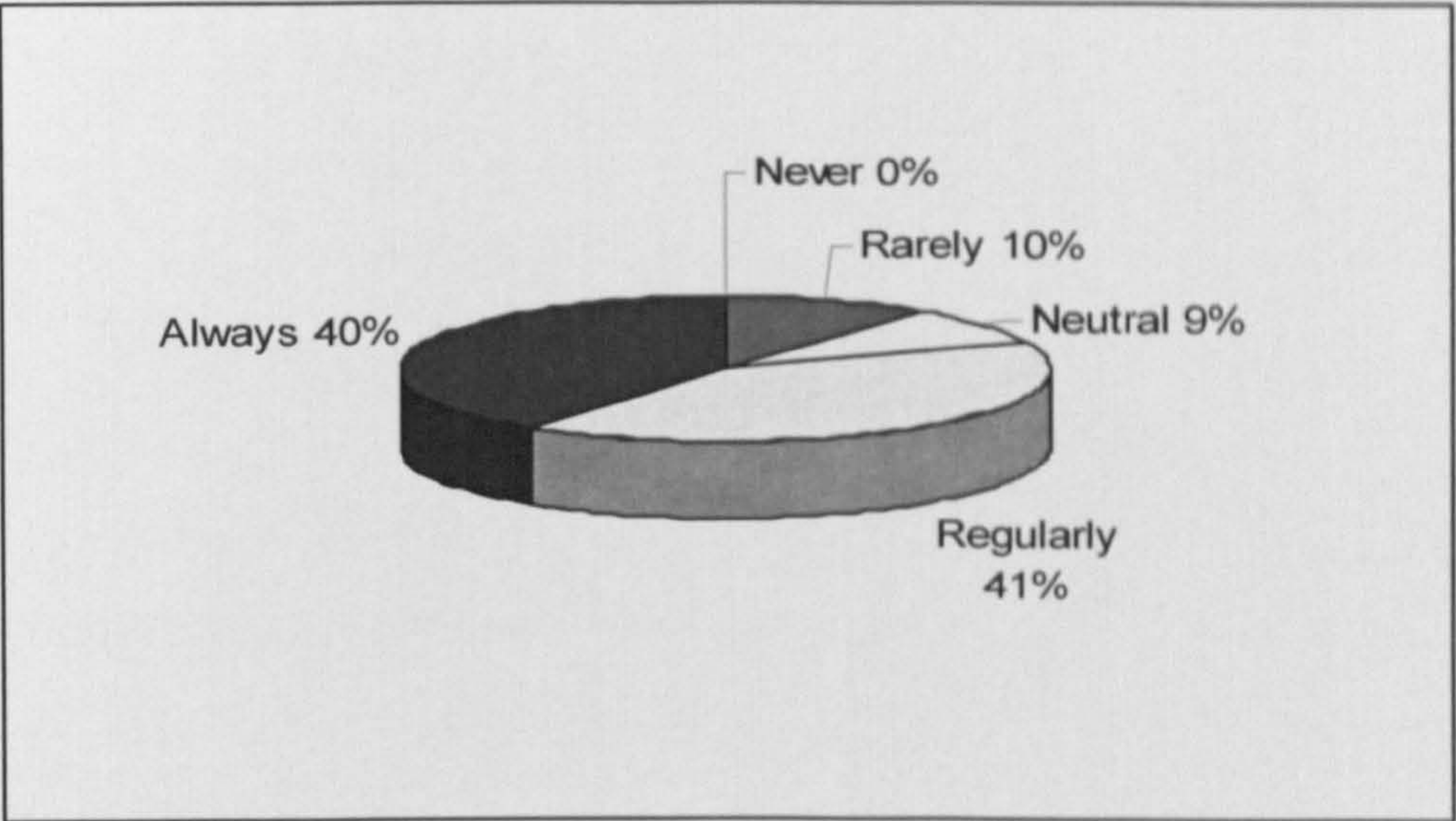
Zammuto, R. F., Gifford, B., Goodman, E. A. (2000), 'Managerial ideologies, organization culture, and the outcomes of innovation: A competing values perspective', in Ashkanasy, N. M., Wilderom, C. P. M., Peterson, M. F. (Eds), Handbook of Organisational Culture and Climate, Thousand Oaks CA, Sage

Zammuto, R. F. and Krakower, J. Y. (1991), 'Quantitative and qualitative studies of organizational cultures', Research in Organisational Change and Development, Vol 5: pp84-114

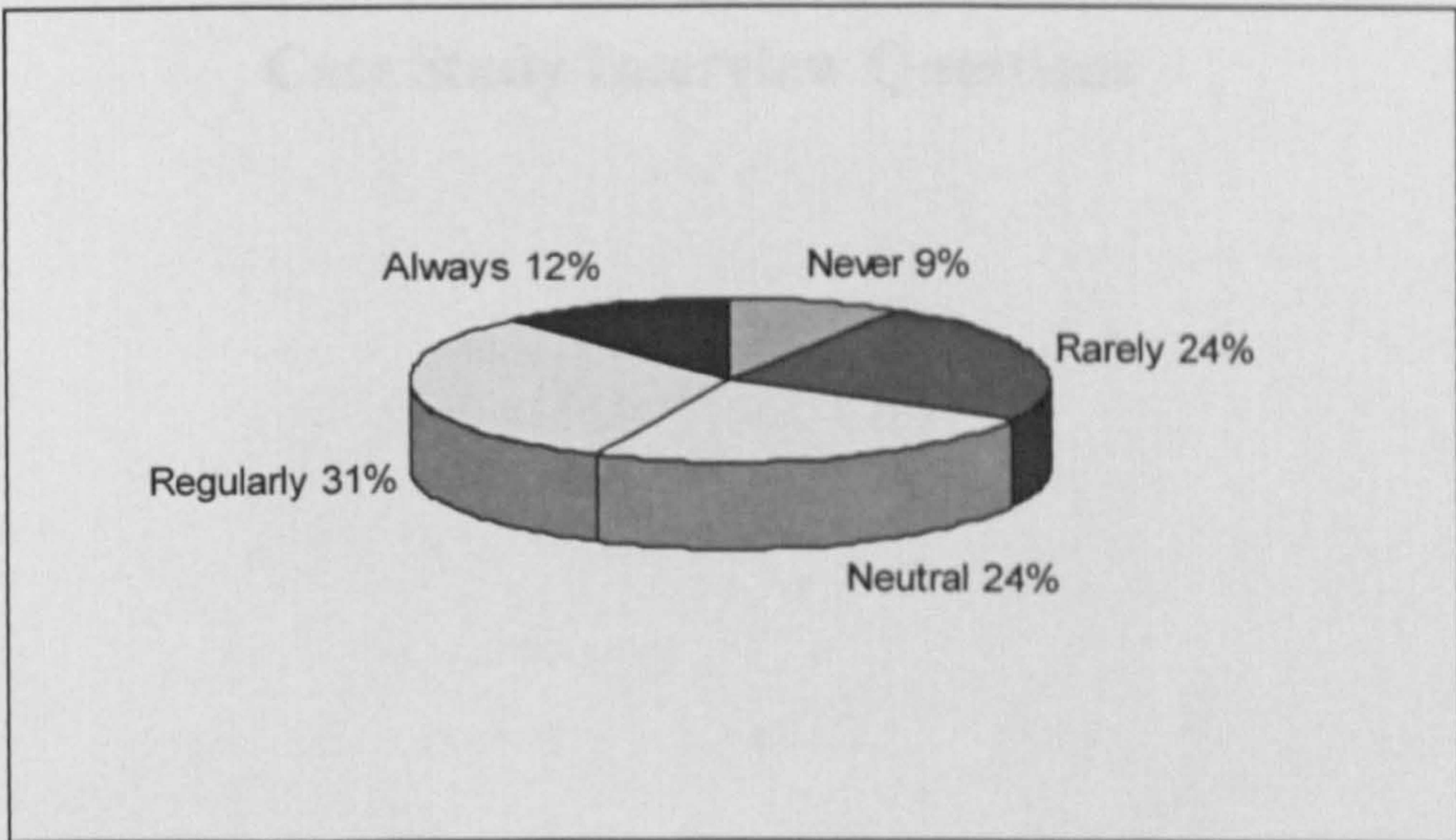
Appendix 3.1

Pre-PhD Research Data Analysis Examples

Information is regarded as a valuable asset within your organisation



Senior management are aware of the information available within your organisation



Appendix 3.2

Case Study Interview Questions

Case Study Interview Questions

Business Need for Information

What business problems led to the need for quality strategic information?

How will information help resolve these problems?

What benefits can be obtained by providing this information?

Are these benefits tangible or intangible?

Is the business requirement linked to corporate strategy?

Has information traditionally been regarded as an important asset (within the organisation)?

If not, is this view of information changing?

Information Requirements

What information is required to solve the business problem?

How is it intended to use this information?

Is this information a component of an overall information strategy?

If so, is this information strategy linked to the corporate strategy?

What additional information is required to measure the capture of the business benefits?

Does the organisation have a formal method for valuing information?

Information Gathering

From what sources is the information being gathered?

Does this include external sources?

What methods have been utilised to define the data requirements?

What steps have been taken to ensure the quality of the data being gathered?

Does the organisation have specific policies on information strategy and information gathering?

Technical Solution

What are the components of the technical solution?

What methods/techniques have been utilised to develop the technical solution?

What methods have been adopted for information presentation?

What selection criteria were used for the selection of presentation tools?

What processes and organisation is/will be in place to manage the complete solution?

Appendix 3.3

Case Study Data Coding Table Example

- 5 .Case 1.BI
Description: BUSINESS ISSUES
- 6 .Case 1.BI.BI-BUSINFREQ
Description: Business information requirements
- 7 .Case 1.BI.BI-BUSINFREQ~DEFN
Description: Definition of business information requirements
- 8 .Case 1.BI.BI-BUSOBJ
Description: Business objectives
- 9 .Case 1.BI.BI-BUSPROB
Description: Business problems
- 10 .Case 1.BI.BI-BUSPROC
Description: Business processes
- 11 .Case 1.BI.BI-BUSSUC
Description: Business Success
- 12 .Case 1.BI.BI-CORSTRAT
Description: Corporate Strategy
- 13 .Case 1.BI:BI-ACCESS
Description: Accessibility factors which affect the perceived value of information
- 14 .Case 1.BI:BI-CULT
Description: Cultural factors within organisations which affect the perceived value of information
- 15 .Case 1.BI:BI-ORGSTR
Description: Organisation structure factors which can affect the perceived value of information
- 16 .Case 1.BI:BI-POWPOL
Description: Power and political factors which can affect the perceived value of information
- 17 .Case 1.BI:BI-QUANT
Description: Information quantity factors that can affect the perceived value of information
- 18 .Case 1.BI:BI-TIMELY
Description: Timeliness factors which affect the perceived value of information
- 19 .Case 1.BI:BI-TYPSIZE
Description: Factors related to the type and size of a organisation
- 20 .Case 1.BI:BI-UNDER
Description: Information understanding factors which can affect the perceived value of information
- 36 .Case 1.IM
Description: INFORMATION MANAGEMENT
- 37 .Case 1.IM.IM-INFHOLD
Description: Information holdings

Appendix 3.4

Internet Focus Group Access and Usage Instructions

Joining the Focus Group Community

It should be possible to connect to the Focus Group Community from any e-mail account. If you encounter problems please let me know and I will send instruction on how to create a Hotmail id, which should resolve the problem.

The steps required to join the focus group are as follows:

1. Send me your e-mail address as requested in my introductory note.
2. An e-mail invitation to join the focus group community will arrive in your inbox.
3. Open the e-mail invitation.
4. Select the 'Join Now' option
5. When the Focus Group Community screen appears enlarge it to full screen.
6. If you already have a Hotmail id select 'Sign-in with your Passport' option and follow the instructions from step 13
7. If you do not have a Hotmail id select the 'Get a Passport' option.
8. Complete the registration details (If you want to stay anonymous tell as many fibs as you want to).
9. Agree to the terms and conditions
10. On the registration complete screen select 'Continue'.
11. When prompted for date-of-birth please complete (Fib if you want to)
12. You have now completed the Passport registration, you now need to complete the Community registration
13. On the Community registration screen enter a Nickname
14. Enter your e-mail address. There is no need for other members of the community to know your e-mail address – uncheck the box if you wish to stay anonymous.
15. For option 3, Messages, please select 'On the Web'
16. Read and accept the code of conduct.
17. Select 'Join Now'
18. You have now joined the Focus Group Community and you are on the Focus Group home page. Have a look around and familiarise yourself with the layout. Open the Message Board to see if the questions are there. If they are you can provide answers straight away, if not, you can disconnect and return later.
19. To disconnect from the Focus Group Community close the browser window by clicking the small x at the top right of your screen.
20. This should return you to your e-mail session.
21. You should receive an e-mail that confirms you have joined the community and contains a link to the community. Please save this for future use.

Re-Visiting the Focus Group Community

1. Connect to MSN (www.msn.co.uk)
2. Select the 'Sign-In .net' box
3. Sign-in as prompted.
4. On the MSN Home Page Menu Bar select 'People and Chat'.
5. Select Information Value under My Communities.
6. When you enter the Message Board please make sure that the 'Discussions and Replies' option is selected at the top of the page.
7. On the question page select the 'View all Messages' option.
8. When you have finished in the Focus Group Community select the 'Sign-Out .net' option.
9. Disconnect from MSN.

Appendix 4.1

Pre-PhD Research Questionnaire



LOUGHBOROUGH UNIVERSITY BUSINESS SCHOOL
MANAGING THE CORPORATE INFORMATION CYCLE

Please read the Guidance Notes before completing this questionnaire

This questionnaire has been sent to you as an individual member of the BCS Data Management Specialist Group. The questionnaire is designed to obtain information from organisations not individuals, therefore, to avoid duplication of responses from organisations, please state which organisation you are responding on behalf of. This information is only required to ensure the accuracy of the survey and will be used for no other purpose.

Organisation : _____

ALL RESPONSES WILL BE TREATED IN THE STRICTEST CONFIDENCE

Background Information

The following questions relate to the size and activities of your organisation. Please tick the relevant boxes.

- 1 Which of the following categories best describes the number of employees in your organisation :
(1-99) (100 - 499) (500 - 999) (1000 - 1999) (2000+)

- 2 In which of the following sectors does your organisation primarily operate :
Manufacturing Retailing Services Government Other _____

- 3 Which of the following types of computer equipment are primarily used to support Information Management in your organisation (please tick as many as appropriate) :
Mainframe Minicomputer PC/Workstation Other _____

Corporate Performance Measurement

This section contains statements and questions regarding the methods your organisation uses for Corporate Performance Measurement. Where appropriate please indicate your level of agreement with each statement.

- | | | Never | | | | Always |
|----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 4 | The measurement of corporate performance is regarded as being a critical activity in your organisation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | Corporate performance is measured primarily by the use of Critical Success Factors (CSF's) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | Key Performance Indicators (KPI's) are used to measure progress towards CSF objectives | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 | KPI's are used at Organisational Unit level as well as the corporate level of management | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 | Organisational Unit KPI's are linked to corporate KPI's | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 | Senior managers are limited to high level summaries of information that they can personally access | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 | A Balanced Scorecard is a key component of corporate performance measurement in your organisation | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11 | If CSF's are not used for measuring corporate performance within your organisation what methods are used ? | | | | | |
-

- 12 Which of the following methods are utilised to provide senior management with corporate performance information (please tick as many as appropriate)

Paper based reports - EIS Executive Briefings

Other _____

Before answering the following sections please consider the definition of Information Management given in the guidance notes.

Information Management - Organisation and Culture

This section contains statements and questions related to how important information is regarded in your organisation and how accessible information is to senior management. Where appropriate please indicate your level of agreement with each statement.

		Never			Always
13	Information is regarded as a valuable asset within your organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Information is actively managed within your organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Your corporate strategy includes an Information Management strategy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Information is freely available to management when required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Senior management are aware of the information available within your organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	The information used for corporate performance measurement is regarded as being of good quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19	Information is presented to senior management for corporate performance measurement on computer terminals/PC's	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20	Information is presented to senior management for corporate performance measurement on paper reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21	Information audit is an integral component of your information management strategy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	- Information Management provides your organisation with clear and tangible benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23 At which of the following levels of management is your organisation's Information Management strategy actively managed

Board Executive Senior Middle None

24 Which of the following 8 factors are currently the greatest inhibitors to good Information Management in your organisation (Please rank those that apply in order of importance : 1 - for the most important, 2 - for the second most important and so on)

Quality	<input type="radio"/>	Ownership	<input type="radio"/>	Understanding	<input type="radio"/>
Consistency	<input type="radio"/>	Cost	<input type="radio"/>	Politics	<input type="radio"/>
Accessibility	<input type="radio"/>	Completeness	<input type="radio"/>	Other	<input type="radio"/> _____

Information Management - Process

This section contains statements and questions regarding the processes your organisation utilises to provide information for corporate performance measurement and corporate decision making. Where appropriate please indicate your level of agreement with each statement.

		Never			Always
25	Information Management standards exist within your organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26	Information Management standards are adhered to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27	Corporate performance measurement information is duplicated at different levels of decision making	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28	Information is graded in terms of its value to the organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29	Clear ownership is established within the organisation for corporate performance measurement information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30	Your organisation is satisfied with its processes for Information Management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31	From which of the following levels of decision making is information gathered for corporate performance measurement (please tick as many as appropriate)					
	Strategic <input type="checkbox"/>	Tactical <input type="checkbox"/>	Operational <input type="checkbox"/>	Business Operations <input type="checkbox"/>		
32	From which of the following levels of decision making would an executive normally be able to access information directly (please tick as many as appropriate)					
	Strategic <input type="checkbox"/>	Tactical <input type="checkbox"/>	Operational <input type="checkbox"/>	Business Operations <input type="checkbox"/>		
33	From which of the following external sources would information be gathered to assist corporate performance measurement (please tick as many as appropriate)					
	News Service <input type="checkbox"/>	Competitor Analysis <input type="checkbox"/>	Market Analysis <input type="checkbox"/>			
	Stock Market <input type="checkbox"/>	Government Statistics <input type="checkbox"/>	Other _____			
34	Which of the following best describes how corporate performance measurement information is maintained electronically in your organisation					
	One central non-operational store <input type="checkbox"/>	Multiple Distributed non-operational stores <input type="checkbox"/>	Operational Stores <input type="checkbox"/>			
	Other _____					

Information Management - Methods and Tools

This section contains statements and questions regarding the methods used for identifying senior management information requirements, the tools used to present this information, and the degree to which information flows through the organisation. Where appropriate please indicate your level of agreement with each statement.

- | | | Never | | Always | | |
|----|--|---|--|------------------------------------|--------------------------|--------------------------|
| 35 | Senior management in your organisation can clearly identify their information requirements | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 36 | The information requirements of your senior managers change frequently | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 37 | Which of the following methods, if any, do you adopt to identify senior management information requirements (please tick as many as appropriate) | | | | | |
| | JAD <input type="checkbox"/> | BSP <input type="checkbox"/> | E/M Analysis <input type="checkbox"/> | CSF <input type="checkbox"/> | | |
| | Other _____ | | | | | |
| 38 | Who of the following provides senior management with primary support in the use of corporate performance measurement information | | | | | |
| | Information Analyst <input type="checkbox"/> | Systems Analyst <input type="checkbox"/> | Financial Analyst <input type="checkbox"/> | Secretary <input type="checkbox"/> | | |
| | Other _____ | | | | | |
| 39 | Which of the following tools are utilised in your organisation to support Information Management (please tick as many as appropriate) | | | | | |
| | MIS <input type="checkbox"/> | Data Dictionary <input type="checkbox"/> | Data Warehouse <input type="checkbox"/> | | | |
| | EIS <input type="checkbox"/> | Data Propagation <input type="checkbox"/> | Information Directory <input type="checkbox"/> | | | |
| | Other _____ | | | | | |
| 40 | Which of the following levels of decision making can information automatically flow between (Please tick as many as appropriate) | | | | | |
| | Business Operations - Operational <input type="checkbox"/> | Operational - Tactical <input type="checkbox"/> | | | | |
| | Tactical - Strategic <input type="checkbox"/> | None <input type="checkbox"/> | | | | |

41

Which of the following tools facilitate the automatic flow of information between these levels of decision making (Please rank in order of importance : 1 - the most important tool, 2 - the second most important tool, and so on)

MIS

Data Dictionary

Data Warehouse

EIS

Data Propagator

Information Directory

Other

Information Management - Feedback and Control

This section contains statements and asks questions regarding the methods used for passing strategic decisions down through the organisation and for providing feedback to the organisation on corporate performance. Where appropriate please indicate your level of agreement with each statement.

- | | | Never | | | | Always |
|----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 42 | Corporate performance measurement routinely feeds the strategic planning cycle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 43 | The medium to long term (3 - 5 year) planning process is directly linked to corporate performance measurement | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 44 | Adjustments to corporate performance objectives are routinely cascaded down to Organisational Unit performance objectives | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 45 | Adjustments to corporate performance objectives generate the need for new/updated information to be gathered for corporate performance measurement | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- 46 Which of the following mediã are used for directing your organisation from the strategic management level. (Please tick as many as appropriate)

Management Objectives	<input type="checkbox"/>	Budget Control	<input type="checkbox"/>	KPI's	<input type="checkbox"/>
Medium Term Plans	<input type="checkbox"/>	Annual Plans	<input type="checkbox"/>	CSF's	<input type="checkbox"/>

Other _____

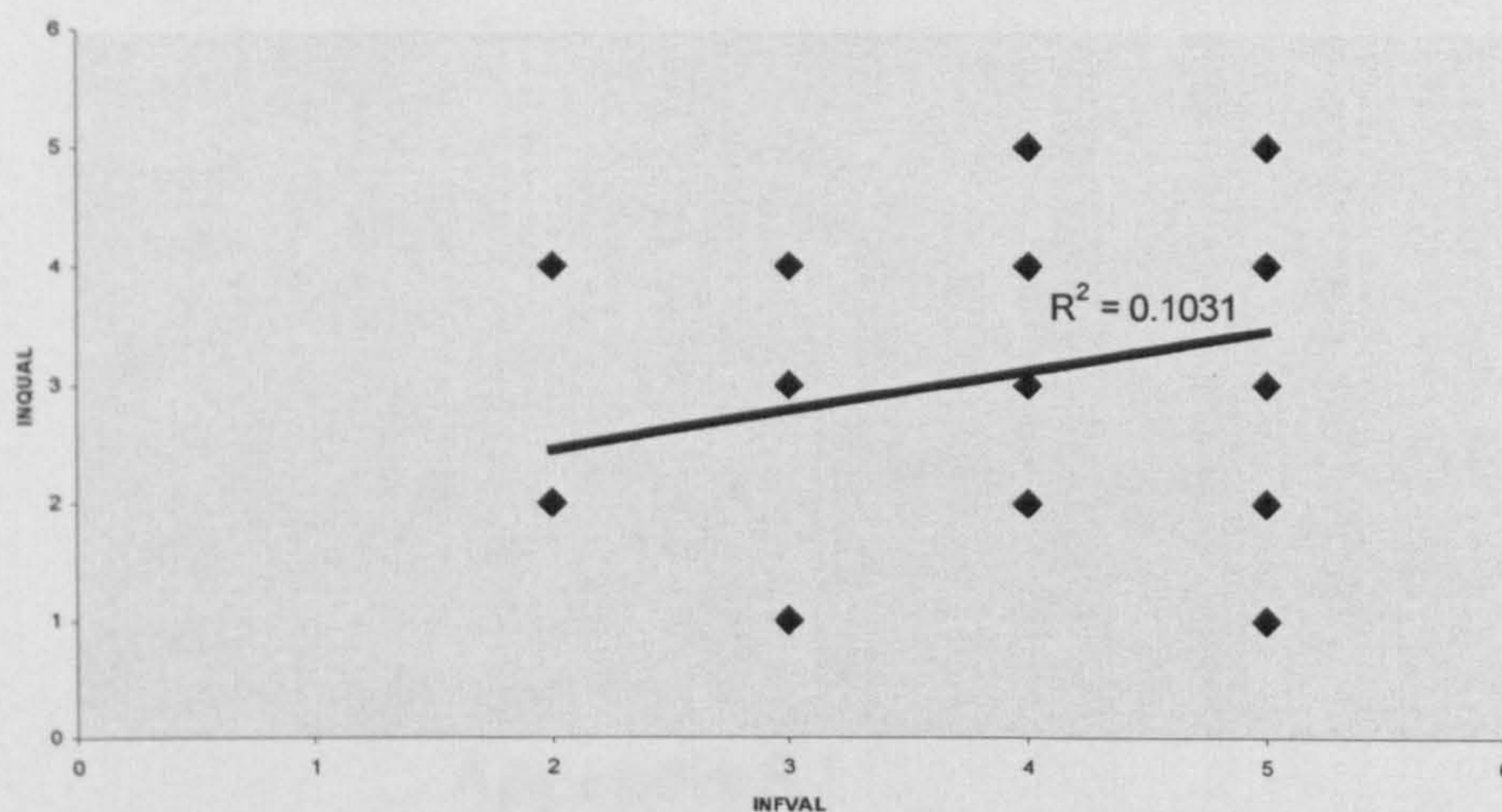
- 47 Which of the following media are used to cascade feedback on corporate performance down through the organisation. (Please tick as many as appropriate)

Circulars	<input type="checkbox"/>	Memorandum	<input type="checkbox"/>	In-house Publications	<input type="checkbox"/>
Videos	<input type="checkbox"/>	Team Briefings	<input type="checkbox"/>	Conferences	<input type="checkbox"/>
E_Mail	<input type="checkbox"/>	Other	_____		

Appendix 4.2

**Quantitative Research – Statistical Test Output and
Scattergram Examples**

Information is regarded as being a valuable asset in organisations where the quality of information is considered to be good.



INFVAL/INFQUAL Scattergram

		INFVAL	INFQUAL
INFVAL	Pearson Correlation	1.000	.321(*)
	Sig. (2-tailed)	.	.024
	N	49	49

INFVAL/INFQUAL –Pearson Correlation Results

Appendix 5.1

Case Study Data Analysis Matrices

Thematic Conceptual Matrix #2 : Information Accessibility Dimensions Impacting the Perceived Value of Information

Case #4 - Insurance Company 'B'

Dimension	Positive Impact	Neutral Impact	Negative Impact
Existence	<p>The strategy identified that 'a comprehensive source of consistent data would be available to all users without internal constraints as to how the data elements can be accessed or viewed together'</p> <p>That providing the right information at the right levels within the organisation would be vital to empower staff in operational process roles such that cycle times and the need for management and supervisory intervention could be minimised</p> <p>benefits could be identified by : - improving the flow of information across business function and computer system boundaries - improvement in the quality of information through improved consistency and understanding - more rapid development of management information applications, through better information availability and the provision of the appropriate tools.</p> <p>It was felt important that all information should be easily available to all business areas,</p> <p>provide a comprehensive source of consistent data available to all users without internal constraints as to how the data could be accessed or viewed</p> <p>the first challenge was the need for a common understanding of the information we have available to us, as well as an understanding of the information which is desired</p>		
Awareness	<p>It was felt important that all information should be easily available to all business areas, that information should be in common formats allowing easy consolidation and comprehension,</p> <p>"data is a critical, shared asset of the business and will be exploited and protected accordingly"</p> <p>Among the projects under strategic alignment was one which had the objective of providing the organisation with the strategic information that would be required to assist with the corporate transformation.[]</p>	<p>A number of barriers were recognised and had to be overcome to improve access to information. These barriers included not knowing what information is available, and a lack of simplified views of the data.</p> <p>A need was identified for 'improved understanding and access to all information'.</p>	
Sharing	<p>It was recognised that making consistent information widely available to support quality business decision making would be key to achieving flexibility and maintaining alignment.</p> <p>Providing the right information at the right levels within the organisation would be vital to empower staff in operational process roles such that cycle times and the need for management and supervisory intervention could be minimised</p>		

Thematic per Case Matrix (The impacts identified are based upon the researchers' interpretations of the respondents perceptions of the relationship between Information Accessibility and Information Value)

Cross-Case Thematic Conceptual Matrix #2 : Accessibility Dimensions Impacting the Perceived Value of Information

Case	Existence of Information	Awareness of Information	Sharing of Information	Delivery of Information
Clearing Bank	<p>NEUTRAL - A critical factor for the success of the corporate strategy will be the availability of (accessibility to) good quality information.</p> <p>NEGATIVE -The business lacks good quality information; the raw data exists, but it is not readily available.</p> <p>NEGATIVE - ' the ability of product managers to access information about customers and products is severely limited at present ... such information as is available is difficult to get at or provides only a snap-shot of the data'. NEGATIVE - "some of the information required to gain in-depth knowledge is not available". Some of the information was held but was 'often difficult to extract'.</p> <p>POSITIVE - utilising information effectively ... better productivity; shifting effort to high value tasks is the most important priority. This will require information that is appropriate, not raw data</p>	<p>NEUTRAL - A need was identified for providing managers 'with interpretation and understanding of information'.</p> <p>NEGATIVE - problem of data inconsistency and duplication across the organisation ... difficult to gain an understanding of the information that is available, 'it is difficult to help users with queries regarding the data ... it is also not possible to advise the business on the information currently available'.</p> <p>NEGATIVE - the Retailer did have a clear idea of the broad information requirements[] ... many problems to be faced in identifying this information at a detailed level.</p> <p>POSITIVE - the first challenge was the need for a common understanding of the information we have available to us, as well as an understanding of the information which is desired</p> <p>NEUTRAL - A need was identified for 'improved understanding and access to all information'.</p> <p>POSITIVE - It was felt important that all information should be easily available to all business areas and should be in common formats allowing easy consolidation and comprehension,</p>	<p>NEGATIVE - No methods for identifying the key stores of information ... no 'champion' appeared to exist who would be able to argue the case for this change in attitude to take place.</p> <p>NEGATIVE -The creation of such a team in the Bank would have cut across many political boundaries and would have encountered considerable resistance.</p> <p>POSITIVE - There is now a trend to move applications and data out of the centre, in particular to integrate with suppliers.'</p> <p>NEGATIVE - "access to a limited amount of data to meet a specific business requirement ... new requirements cannot be satisfied ... data cannot be obtained from more than one application due to the stand alone nature of the infrastructure"</p> <p>NEGATIVE - The business need for good quality information was being continually hampered by these diverse systems with inconsistent and inaccessible data</p> <p>POSITIVE - Among the projects under strategic alignment was one which had the objective of providing the organisation with the strategic information that would be required to assist with the corporate transformation.[]</p> <p>POSITIVE - It was recognised that making consistent information widely available to support quality business decision making would be key to achieving flexibility and maintaining alignment.</p>	<p>POSITIVE - technology solutions present the Bank with the opportunity to access the quality information it requires</p> <p>NEGATIVE - Much of the information required for analysis purposes was extracted from operational computer systems, however, "it often has to be manually adjusted to provide users with the required information"</p> <p>POSITIVE - "a facility that provides group/corporate views of company performance ... this will be directly accessible by senior management and facilitate strategic decision making" (c2userreq)</p> <p>NEGATIVE - "access to a limited amount of data to meet a specific business requirement ... new requirements cannot be satisfied ... data cannot be obtained from more than one application due to the stand alone nature of the infrastructure"</p> <p>NEGATIVE - The business need for good quality information was being continually hampered by these diverse systems with inconsistent and inaccessible data</p> <p>POSITIVE - benefits could be identified by improvement in the quality of information through improved consistency and understanding</p> <p>POSITIVE - to deliver in a flexible and convenient fashion high quality business - information to all the insurers staff, agents and managers who need it, - regardless of their level of computer literacy</p>
Retailer	<p>POSITIVE - strategy identified that 'a comprehensive source of consistent data would be available to all users without internal constraints as to how the data elements can be accessed or viewed together'</p> <p>POSITIVE - providing the right information at the right levels within the organisation vital to empower staff in operational process roles ... cycle times and management and supervisory intervention could be minimised</p> <p>POSITIVE - benefits could be identified through better information availability</p>	<p>NEGATIVE - the Retailer did have a clear idea of the broad information requirements[] ... many problems to be faced in identifying this information at a detailed level.</p> <p>POSITIVE - the first challenge was the need for a common understanding of the information we have available to us, as well as an understanding of the information which is desired</p> <p>NEUTRAL - A need was identified for 'improved understanding and access to all information'.</p> <p>POSITIVE - It was felt important that all information should be easily available to all business areas and should be in common formats allowing easy consolidation and comprehension,</p>	<p>POSITIVE - More information would be shared directly with suppliers with some development of merchandising detail</p> <p>POSITIVE - "data is a critical, shared asset of the business and will be exploited and protected accordingly"</p> <p>POSITIVE - Among the projects under strategic alignment was one which had the objective of providing the organisation with the strategic information that would be required to assist with the corporate transformation.[]</p> <p>POSITIVE - It was recognised that making consistent information widely available to support quality business decision making would be key to achieving flexibility and maintaining alignment.</p>	<p>NEGATIVE - "access to a limited amount of data to meet a specific business requirement ... new requirements cannot be satisfied ... data cannot be obtained from more than one application due to the stand alone nature of the infrastructure"</p> <p>NEGATIVE - The business need for good quality information was being continually hampered by these diverse systems with inconsistent and inaccessible data</p> <p>POSITIVE - benefits could be identified by improvement in the quality of information through improved consistency and understanding</p> <p>POSITIVE - to deliver in a flexible and convenient fashion high quality business - information to all the insurers staff, agents and managers who need it, - regardless of their level of computer literacy</p>
Insurance Company 'B'	<p>POSITIVE - strategy identified that 'a comprehensive source of consistent data would be available to all users without internal constraints as to how the data elements can be accessed or viewed together'</p> <p>POSITIVE - providing the right information at the right levels within the organisation vital to empower staff in operational process roles ... cycle times and management and supervisory intervention could be minimised</p> <p>POSITIVE - benefits could be identified through better information availability</p>	<p>NEGATIVE - the Retailer did have a clear idea of the broad information requirements[] ... many problems to be faced in identifying this information at a detailed level.</p> <p>POSITIVE - the first challenge was the need for a common understanding of the information we have available to us, as well as an understanding of the information which is desired</p> <p>NEUTRAL - A need was identified for 'improved understanding and access to all information'.</p> <p>POSITIVE - It was felt important that all information should be easily available to all business areas and should be in common formats allowing easy consolidation and comprehension,</p>	<p>POSITIVE - More information would be shared directly with suppliers with some development of merchandising detail</p> <p>POSITIVE - "data is a critical, shared asset of the business and will be exploited and protected accordingly"</p> <p>POSITIVE - Among the projects under strategic alignment was one which had the objective of providing the organisation with the strategic information that would be required to assist with the corporate transformation.[]</p> <p>POSITIVE - It was recognised that making consistent information widely available to support quality business decision making would be key to achieving flexibility and maintaining alignment.</p>	<p>NEGATIVE - "access to a limited amount of data to meet a specific business requirement ... new requirements cannot be satisfied ... data cannot be obtained from more than one application due to the stand alone nature of the infrastructure"</p> <p>NEGATIVE - The business need for good quality information was being continually hampered by these diverse systems with inconsistent and inaccessible data</p> <p>POSITIVE - benefits could be identified by improvement in the quality of information through improved consistency and understanding</p> <p>POSITIVE - to deliver in a flexible and convenient fashion high quality business - information to all the insurers staff, agents and managers who need it, - regardless of their level of computer literacy</p>

Dimensions of Information Accessibility Impacting the Perceived Value of Information				
Case	Existence of Information	Awareness of Information	Sharing of Information	Delivery of Information
Clearing Bank	***	*	*	***
Retailer	***	**	***	***
Insurance Company 'A'	**	-	-	*
Insurance Company 'B'	***	***	***	**
Commercial Bank	***	-	*	**
Insurance Company 'C'	***	-	***	*
Car Manufacturer	**	-	-	-
Insurance Company 'D'	***	-	-	*

Construct/Dimension Focus Matrix (The impacts identified are based upon the researchers' interpretations of the respondents' perceptions of the relationship between Information Accessibility and Information Value)

Business Activities Impacted by Information Accessibility Dimensions

Dimension	Business Activity	Organisation	Impact of Dimension
1 Existence of Information	Development of a strategic analysis unit within the marketing department to support product managers. This unit was having severe problems delivering the service it was created to provide due to information being unavailable.	Clearing Bank	<p>'the ability of product managers to access information about customers and products is severely limited at present ... such information as is available is difficult to get at or provides only a snapshot of the data'.</p> <p>A critical factor for the success of the corporate strategy will be the availability of (accessibility to) good quality information</p> <p>The business lacks good quality information; the raw data exists, but it is not readily available.</p> <p>"some of the information required to gain in-depth knowledge is not available". Some of the information was held but was 'often difficult to extract'.</p> <p>"some of the information required to gain in-depth knowledge is not available". Some of the information was held but was 'often difficult to extract'.</p> <p>Much of the information required for analysis purposes was extracted from operational computer systems, however, "it often has to be manually adjusted to provide users with the required information"</p> <p>technology solutions present the Bank with the opportunity to access the quality information it requires</p>
2 Delivery of Information	The clearing bank was implementing a number of strategies that were dependent of the delivery of improved information. Problems had been encountered with information delivery that were jeopardising the success of these strategies. The bank was taking active steps to rectify this situation.	Clearing Bank	<p>utilising information effectively ... better productivity, shifting effort to high value tasks is the most important priority. This will require information that is appropriate, not raw data</p> <p>Data is available on a departmental basis but a corporate view is unavailable (c2propre)</p> <p>gathering good quality data in a timely provides Group/Corporate views of company performance ... direct access to this information ... improvements in strategic decision making.</p> <p>recognised that tactical approach created many problems in attempt to obtain good quality information efficiently and effectively.</p>
3 Existence of Information	Provide the business with consistent and accurate company-wide information. The retailer was failing to meet this objective because critical information was unavailable due to organisational constraints.	Retailer	<p>strategy identified that 'a comprehensive source of consistent data would be available to all users without internal constraints as to how the data elements can be accessed or viewed together</p> <p>providing the right information at the right levels within the organisation vital to empower staff in operational process roles ... cycle times and management and supervisory intervention could be minimised</p> <p>benefits could be identified through better information availability</p> <p>It was felt important that all information should be easily available to all business areas,</p>
6 Existence of Information	Transform the company from operating within line of business silos to end-to-end business processes. The success of this objective would be very dependant on information being available to support each of the business processes. It was currently not available but active steps were being taken to make it happen.	Insurance Company 'B'	

Information Focus Matrix (Based upon the researchers' interpretations of the respondents perceptions of the relationship between Business Activities and Information Accessibility)

Value of Information Perceptions Impacted by Information Accessibility Dimensions

Dimension	Business Activity	Organisation	Perception (Current)	Perception (Future)
Existence of Information Delivery of Information	Development of a strategic analysis unit within the marketing department to support product managers. This unit was having severe problems delivering the service it was created to provide due to information being unavailable. The clearing bank was implementing a number of strategies that were dependent of the delivery of improved information. Problems had been encountered with information delivery that were jeopardising the success of these strategies. The bank was taking active steps to rectify this situation.	Clearing Bank Clearing Bank	NEGATIVE NEGATIVE	NEUTRAL POSITIVE
Existence of Information	Provide the business with consistent and accurate company-wide information. The retailer was failing to meet this objective because critical information was unavailable due to organisational constraints.	Retailer	NEGATIVE	NEUTRAL
Sharing of Information	Break down supply chain barriers and integrate suppliers more tightly. This was a long-term aim that was dependent on the sharing of information with suppliers. It was not currently possible but the retailer was relatively optimistic that it could be achieved in the future.	Retailer	NEGATIVE	POSITIVE
Delivery of Information	Information provision had traditionally be tackled on a tactical basis with little thought being given to longer term strategic requirements. This was compounded by a similar approach to the selection of the technologies used to deliver the information. This was starting to create serious problems when trying to meet the ever increasing information demands of the business.	Retailer	NEGATIVE	POSITIVE
Existence of Information	Transform the company from operating within line of business silos to end-to-end business processes. The success of this objective would be very dependant on information being available to support each of the business processes. It was currently not available but active steps were being taken to make it happen.	Insurance Company 'B'	POSITIVE	POSITIVE
Awareness of Information	Provide the business with facilities for interrogating and understanding the corporate-wide information that would be provided. Active steps were being taken to develop these facilities.	Insurance Company 'B'	NEUTRAL	POSITIVE
Sharing of Information	Transform the company from operating within line of business silos to end-to-end business processes. Making information for the business processes required information to be shared across internal organisational boundaries. Vigorous actions were being taken to ensure that this would happen.	Insurance Company 'B'	POSITIVE	POSITIVE
Existence of Information	Provide the management of the tele-sales department with consistent and accurate information to improve the productivity of the department. Very little information was currently available. Steps were being taken to improve this situation.	Commercial Bank	NEGATIVE	NEUTRAL
Existence of Information	Provide the executive management of the firm with a broad range of information to manage the firm on a global basis. Very little regular information was available to manage the firm globally. Steps were being taken to provide global management information	Insurance Company 'C'	NEUTRAL	POSITIVE
Sharing of Information	Implement a flow of information between business units and group executive management, between business units, and with intermediaries. It was recognised that in addition to information being provided to the executive to manage the firm globally there was also a need to disseminate information throughout the group and to enable the flow of information from business unit to business unit. Steps were being taken to develop these facilities.	Insurance Company 'C'	NEUTRAL	POSITIVE
Existence of Information	Provide reliable information to support execution of new corporate strategies. The insurer was implementing a number of major new strategies. Development and implementation of these strategies was being hampered by a lack of information. Although steps were being taken to rectify these they were bogged down by internal politics and cost constraints.	Insurance Company 'D'	NEGATIVE	NEGATIVE

Dimension Impact Perception Matrix (The impacts identified are based upon the researchers' interpretations of the respondents perceptions of the relationship between Information Accessibility and Information Value)

Appendix 8.1

Focus Group Data Coding Table Example

- 27 (1) /GPA
Description: Focus Group A
- 28 (1 1) /GPA/ACC
Description: Accessibility
- 29 (1 1 1) /GPA/ACC/STEPS
Description: Steps to improve accessibility
- 30 (1 1 1 1) /GPA/ACC/STEPS/TARGET
Description: Know who the target of the information is
- 31 (1 1 1 2) /GPA/ACC/STEPS/VALUE
Description: Make sure is of value to the consumer
- 32 (1 1 1 3) /GPA/ACC/STEPS/SUPPORT
Description: Provide suitable support
- 33 (1 1 1 4) /GPA/ACC/STEPS/PUSH
Description: Use push/pull techniques for providing information
- 34 (1 1 1 5) /GPA/ACC/STEPS/NEED
Description: Understand the need for the information
- 35 (1 1 1 6) /GPA/ACC/STEPS/RULES
Description: Define rule of access
- 36 (1 1 1 7) /GPA/ACC/STEPS/PUBLICISE
Description: Publicise availability of information
- 37 (1 1 1 8) /GPA/ACC/STEPS/TIME
Description: Publicise information availability in a timely fashion
- 38 (1 1 1 9) /GPA/ACC/STEPS/CHAMPS
Description: Information champions
- 39 (1 1 1 10) /GPA/ACC/STEPS/FEEDBACK
Description: Gain feedback from consumers
- 40 (1 1 2) /GPA/ACC/DISS
Description: Dissemination
- 41 (1 1 3) /GPA/ACC/AVAIL
Description: Availability
- 42 (1 1 4) /GPA/ACC/TRUST
Description: Trustworthiness
- 43 (1 1 5) /GPA/ACC/EASE
Description: Ease of access
- 44 (1 1 6) /GPA/ACC/REL
Description: Relevance
- 45 (1 1 7) /GPA/ACC/LOC
Description: Location

Appendix 8.2

Focus Group Data Analysis Matrices

Focus Group

	Q1a	Q1b	Q2a	Q2b	Q3a	Q3b
A	<p>There was overwhelming agreement that information accessibility is an important factor. In the main there was agreement that these were the key dimensions of information accessibility. Among the alternatives that were proposed included trustworthiness of information, ease of access, and relevance of information.</p>	<p>Knowing the consumers of the information and understanding their needs, understanding the value of information to the consumer.</p>	<p>General agreement of importance of information quality and that the three dimensions are key. Additional dimensions include meaningfulness, trustworthiness, and relevancy. The importance of being fit-for-purpose was also recognised.</p>	<p>Understanding the purpose of the information and provide knowledgeable resources to utilise it.</p>	<p>Mixed response, no overall opinion one way or the other.</p>	<p>Weak agreement, no strong arguments to support.</p>
B	<p>Overall opinion of the group was that information accessibility is a critical factor. The three dimensions discussed do appear to be key dimensions</p>	<p>It was suggested that steps should be taken to ensure the consumers have a need for the information and that it will provide them with value. Publicising the existence of information was also recommended.</p>	<p>General agreement that information quality is important and that these three dimensions are key. Additional dimensions included integrity of information.</p>	<p>Establishing clear ownership of the information, understand the needs of this information consumers, and attempt to ensure clean information is available at source.</p>	<p>No strong view that they were deluding themselves. A number of views believed no. A number of mixed views.</p>	<p>Stronger views supporting argument that benefits can be attained.</p>
C	<p>No clear-cut supportive opinion although no negative opinions expressed. A number of alternative dimensions suggested including ease of access and understanding.</p>	<p>It was suggested that information needs to be provided in the most appropriate form.</p>	<p>General agreement that information quality is important. Mixed agreement on the three dimensions being key. Metadata identified as being important.</p>	<p>No significant suggestions</p>	<p>No clear cut opinions on whether they were deluding themselves.</p>	<p>Stronger opinions expressed that substantial business benefits can be attained.</p>
D	<p>Overwhelming agreement that information accessibility is important. General agreement that the three dimensions are key. Other dimensions identified include availability and ease of access.</p>	<p>To assist with awareness it was suggested that availability of information should be publicised</p>	<p>General agreement on the importance of information quality and that the three dimensions are key. Additional dimension suggested included relevancy and pitch. Context was also identified as being important.</p>	<p>It was identified that information should be cleansed at source.</p>	<p>No strong opinions but there was a tendency towards the belief that they were deluding themselves</p>	<p>No strong opinions. Tendency towards disagreeing that benefits can be attained.</p>
P	<p>General agreement that accessibility is important. Agreement that the three dimensions are key but others were suggested. These include ease of access, presentation, relevance and understanding.</p>	<p>Establishing rules and policies for information access</p>	<p>General agreement on the importance of information quality and the importance of the three dimensions. It was also recognised that purpose, context and being fit-for-purpose are important.</p>	<p>Establishment of information quality ownership</p>	<p>Strong mixed opinions with the majority believing that the organisations were not deluding themselves.</p>	<p>No significant opinions</p>

Cross Focus Group Thematic Matrix

Group B

Question Number

Question

Group Response

Quotes (with id)

1 The existence of information, awareness that the information exists, and attitudes to sharing information were found to be the most critical dimensions that impact upon the accessibility of information.

Would you agree that these are the key dimensions of information accessibility?

Overall opinion of the group was that information accessibility is a critical factor. The three dimensions discussed do appear to be key dimensions

I would agree that these three dimensions do form the foundation for information accessibility. Having the information, knowing that you have the information and having a willingness to share the information all strike me as important pre-requisites for reliable information accessibility [gbp2], the three things do seem to me to be fundamental to the accessibility of information [gbp3], the only other point I would make is that accessibility implies ease of use [gbp3], attitudes to sharing information may be an early potential obstacle but this will diminish as benefits from accessing the information are seen [gbp1], making potential consumers aware of the existence of the information is a pre-cursor to actually sharing the information with them [gbp3]

What steps should organisations take to ensure that the information required by their information consumers is accessible?

It was suggested that steps should be taken to ensure the consumers have a need for the information and that it will provide them with value. Publicising the existence of information was also recommended.

Make sure the information is actually of value to the consumer [gbp5], I would have thought the first step for any organisation wishing to get their users to make best use of the information held is to first tell them about it [gbp5], seek feedback from the consumers of the information [gbp3].

Focus Group Thematic Matrix