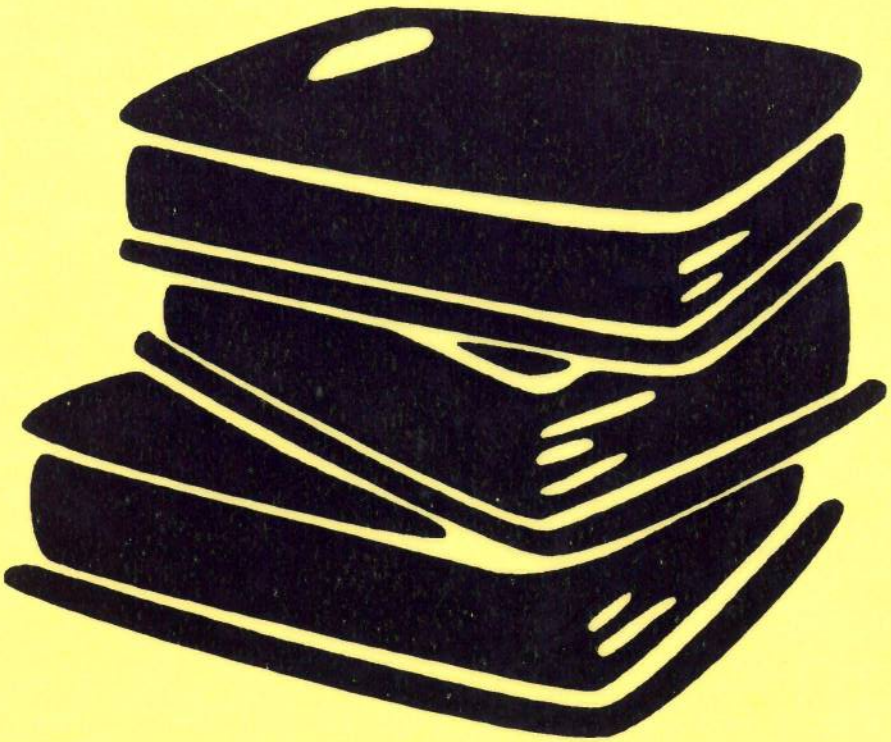

MSc Thesis Preparation

Dr. Chris Morgan

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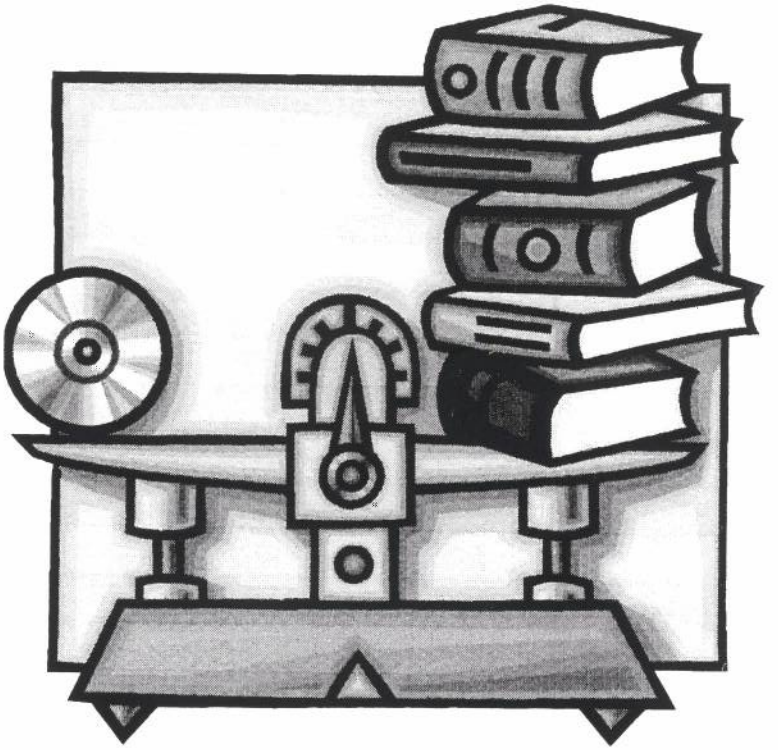
LIBRARY

Part 1

Structured Literature Review Methodology

Part 2

Industrial Project Methodology



Structured Literature Review Methodology

Dr. Chris Morgan

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Acknowledgements:

This document has drawn on many sources. In particular I would like to thank Dr. David Denyer for allowing access to his teaching material on Systematic Literature Reviews used for the M.Phil/PhD. Programmes at Cranfield SoM. In addition I would like to thank the students who have undertaken Structured Literature Reviews (SLR) for their own MSc. Their feedback during teaching sessions has been invaluable and their theses useful reference sources for refining my own ideas as to how best approach the Structured Literature Review process. I also need to thank my colleagues who have added many insights as a result of supervising SLRs. Any remaining faults are entirely my own, but in the spirit of continuous improvement I am always grateful for ideas and suggestions.

1. Introduction

The structured literature review is a research methodology that was originally developed in the medical field as a way of ensuring that due diligence was observed by researchers. It has been adapted at Cranfield University for students studying on MSc courses in Cranfield School of Management. The structured literature review (SLR) methodology is designed to meet the thesis requirements of the MSc courses. It is an acceptable alternative to theses based on an investigation of a problem in an organisation, and the work content is roughly equivalent to the company based thesis. The SLR is a 'desk' based thesis in which:

- A research question is posed either by the student or their supervisor;
- a structured review of the literature associated with the question is undertaken by the student; and,
- the literature is synthesised and analysed in order to draw conclusions and identify gaps that should be investigated in the future.

To ensure academic quality, the approach to this process is fairly highly instrumented. This process will be described in this document.

From a students point of view this is not a 'soft' option. The process itself is rigorous and demands the ability to think broadly, to write clearly, to be familiar with and have access to on-line library citation databases, to be able to manage citations, to be able to develop ideas and to cope with some of the subtleties of the English language. This said the SLR is excellent preparation for students who are contemplating an academic career, or a career in which systematic analysis is an integral part of a job (e.g. market analysis, supply chain analysis).

N.B. The Structured Literature Review should not be confused with the Systematic Literature Review that is undertaken as a part of the M. Phil at Cranfield SoM, and this is a much more comprehensive exercise undertaken as preparation for a Ph.D. It is true that there are similarities in approach but the rigor of the Systematic Literature Review is much higher.

2. What has to be done?

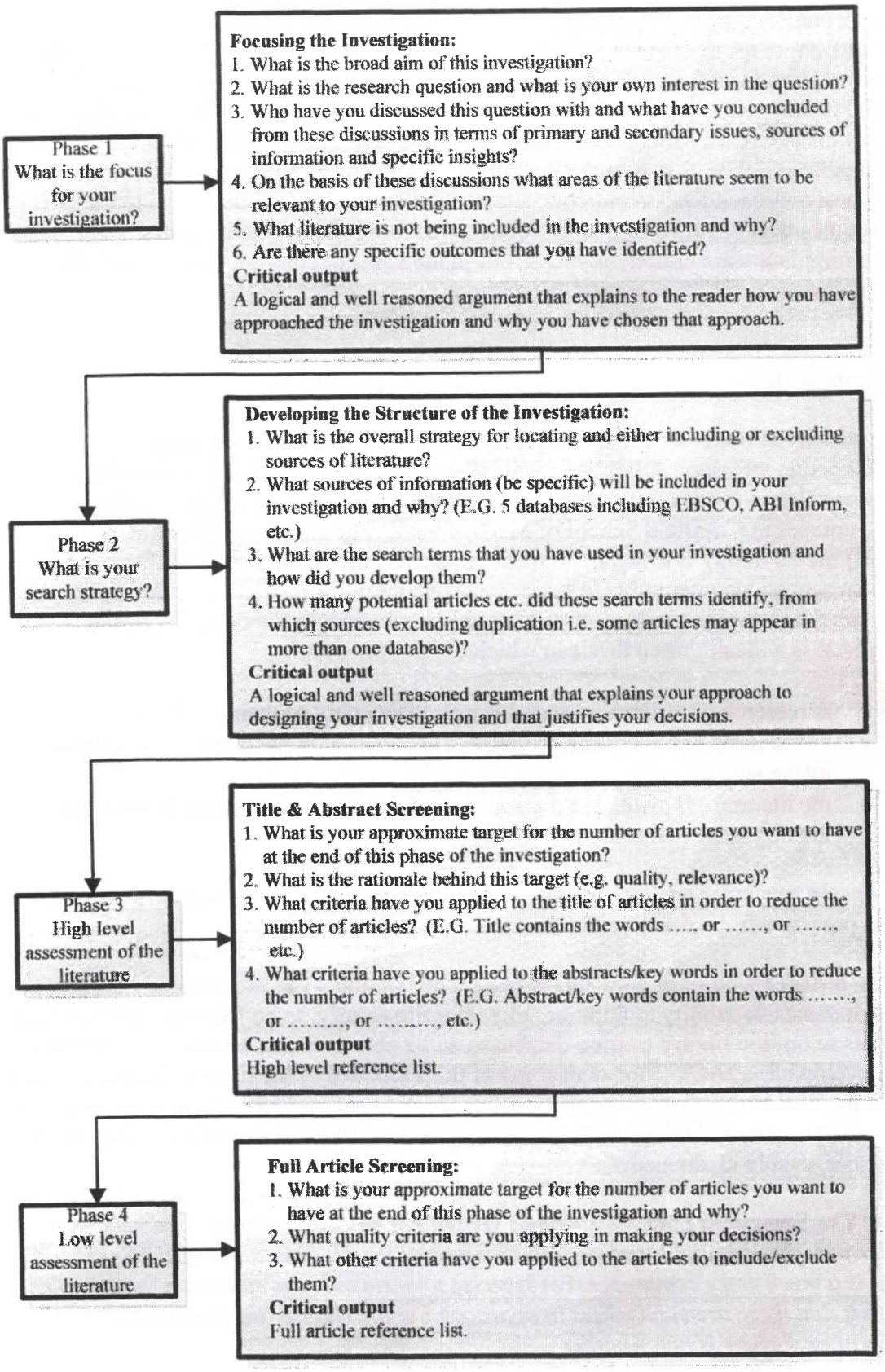

Figure 1: The first four phases of the SLR methodology

These first four phases of the SLR are designed to build a firm foundation for subsequent analysis. These phases follow a logical sequence of:

- focusing the investigation on the question to be investigated;
- designing a logical approach that identifies relevant literature;
- screens a large volume of literature at a 'high' level to make the investigation manageable; and,
- takes a detailed look at a smaller number of articles/documents that will be subsequently analysed to provide insights and to answer the basic investigation question.

Why do it this way? The reasons are straightforward:

- If you don't focus the investigation then you are planning to fail at the first hurdle. Without this focus your investigation will meander in a fairly aimless way and you will be unable to do any convincing analysis in any of the subsequent phases of the investigation.
- Identifying the relevant literature enables you to scope the size of the problem and to determine the best way to make the investigation manageable. For example initial searches of the citation databases may throw up hundreds or even thousands of potential articles/documents that could be relevant to your investigation. Unfortunately there is only a limited amount of time to complete the investigation and so the search must be truncated. In general this is accomplished by becoming more and more precise in the search terms that you use. For example you might start with 'Marketing' as a search term that identifies 2500 articles, modify it to 'Marketing AND Consumer' that identifies 500 articles, and modify it to 'Marketing AND Consumer AND White Goods' that identifies 50 articles. 2500 articles is not manageable, 50 articles may be!
- Even with only 50 articles in one database you may have interrogated between 5 and 10 databases, which means that the next phase could mean reading 500 articles/documents in total and in detail! As a way of improving the focus phase 3 includes a high level scan of titles, abstracts and possibly key words. This should enable the overall list to be shortened. How long should it be? A difficult question, but experience shows that the list should be between 60 and 80 articles/documents at the end of phase 3 depending on the nature of the subject(s) being investigated.
- The final phase of this sequence is to read the remaining articles/documents thoroughly. Once again the target is to reduce the final list to those articles/documents that will give a good all round perspective for the detailed analysis that is to follow. The quality of the documents is of critical importance in this phase. The higher the quality the more credible the subsequent analysis. In general academic articles that have been peer reviewed should form the backbone of your selection. Your choice of journal should be guided by the SoM guide on current star ratings. 4* and 3* journals are the best, 2* and 1* journals would be acceptable. Again experience shows that the final document count should be between 40 and 60 to permit an adequate analysis to be done.

As a guideline these processes should take between 4 and 8 weeks to complete.

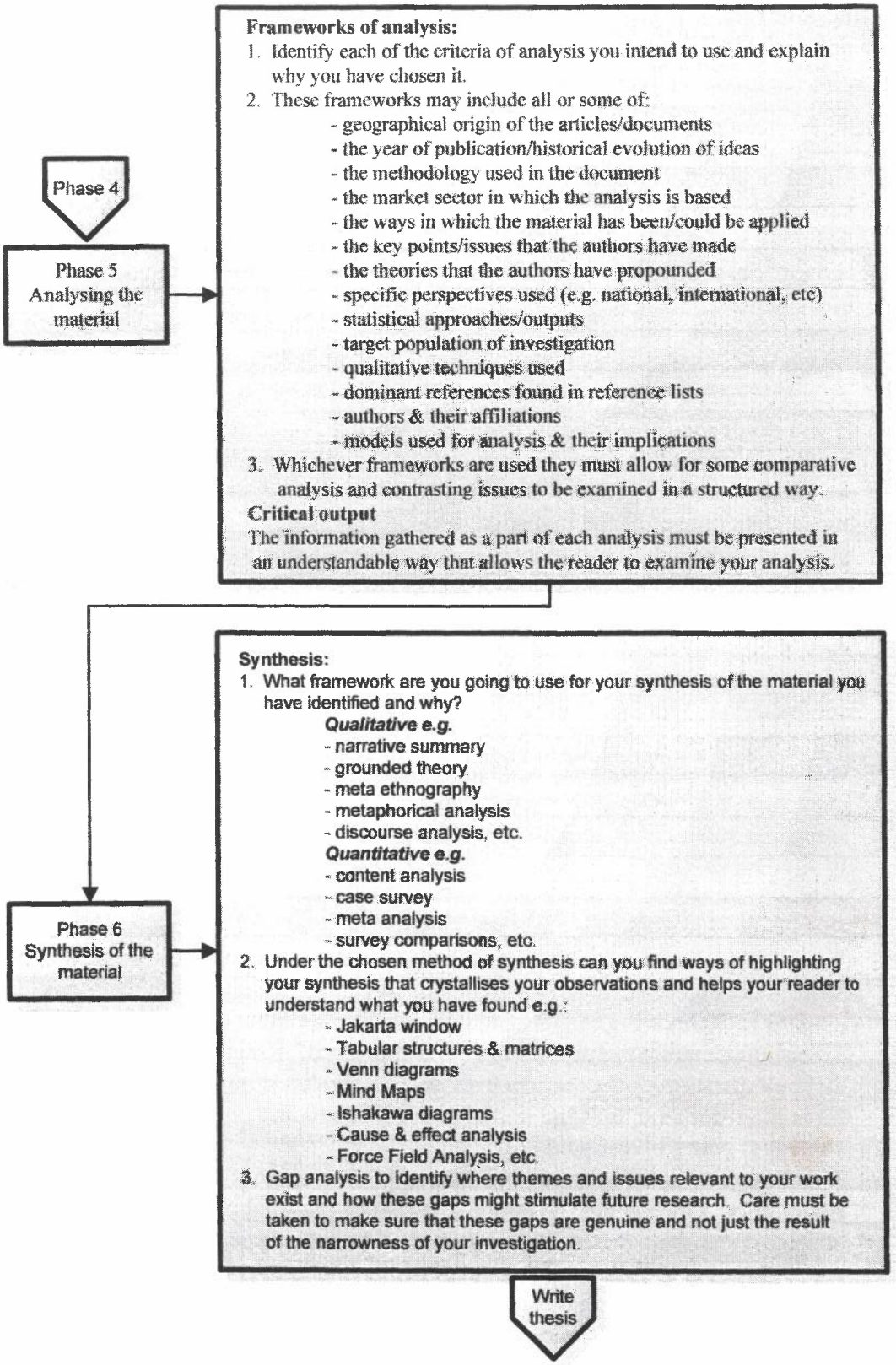

Figure 2: Phases 5 and 6 of the SLR

The analysis and synthesis phases of the SLR are summarised in Figure 2. These two phases concentrate on extracting information from the selected articles and documents in a structured way (hence Structured Literature Review), examining it, and subsequently grouping and presenting it in a cohesive intellectual framework.

The choice of analytical criteria should be driven by the nature of the question being asked and perhaps by some of the criteria that have already been used to reduce the articles/documents to a manageable number. If the SLR is based on one particular aspect of the supply chain, say 'transport management measures', then it could be relevant to examine:

- The geographical origin of the literature examined to identify geographical variations.
- The market segment variations in measurement to identify if special requirements have an influence.
- The range of measures identified in the literature to give the measures some form of qualitative or quantitative rankings.
- Dominant authors in the literature to trace how their thinking has evolved.
- Etc.

Each criteria chosen adds to the dimension and potential quality of the subsequent synthesis. But, as has been shown, each criterion must have relevance to the investigation and must be justified to the reader. There are 14 example criteria in figure 2, how many will you need for your investigation and what will they be? Too many and you will have problems pulling a cohesive discussion together. Too few and you will not have enough material to perform an acceptable synthesis!

From a synthesis point of view it is important to have a cohesive intellectual framework within which to develop your arguments. This framework establishes an expectation in the informed reader and will be the basis on which this aspect of your work is judged.

It is not acceptable to use several frameworks for your synthesis. Although several are available (see figure 2) the most commonly used are the 'Narrative Summary' and 'Grounded Theory' frameworks. Narrative Summary is fairly flexible in nature and one that can be found in many published papers. It can embrace both quantitative and qualitative information although care must be taken to ensure a balance is maintained. Its main advantage is that it encourages the investigator to think laterally and develop insights. Its main disadvantage is that it can be very sensitive to the skills and prejudices of the investigator. Grounded Theory is more structured in nature and lends itself to inductive research and outcomes. It is often used in investigations as a way of imposing a structure on an investigation and of subsequently channelling thinking towards higher order theories. Its main advantage is that it is a widely accepted framework that will encompass a range of analytical methods, especially qualitative approaches. Its main disadvantage is that it is primarily focused on theory building and may not always produce outcomes of help to practitioners or decision makers.

Synthesis can become very 'wordy' as you try to explain how information fits together, why and how it can be interpreted. It is always worthwhile finding graphical or tabular ways of showing how information is related and where the gaps are. Some methods of grouping and presenting information and conclusions are listed under Phase 6 item 2 of figure 2. Your responsibility is to communicate to your reader clearly.

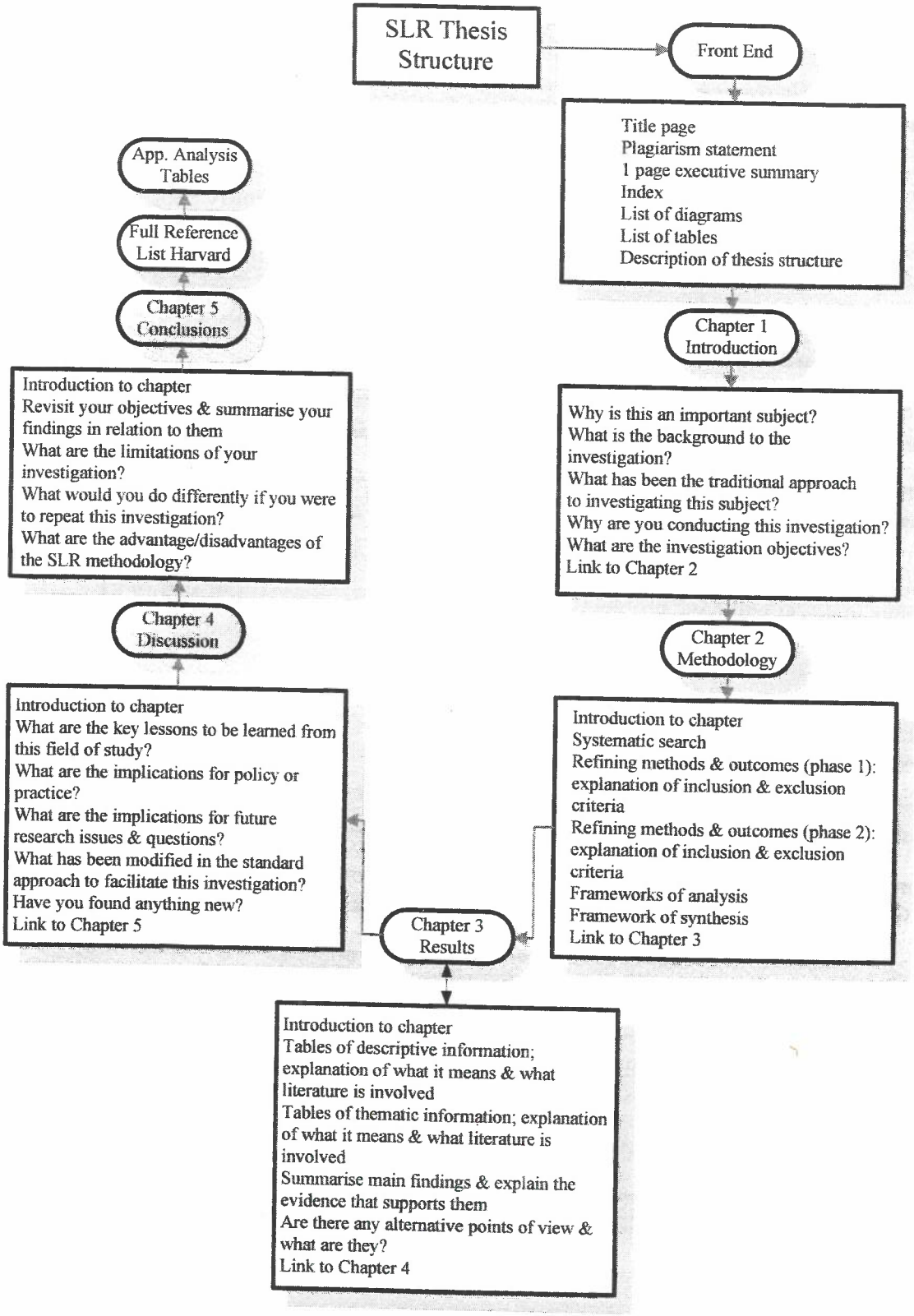

Figure 3: The thesis structure

The final phase of the SLR is writing the thesis. Once this has been completed and submitted it will be judged by you examiners and be a part of the overall assessment for your degree. In addition, of course, your thesis will be seen by many who are interested in the work you have undertaken including internal students and others who

may access the library from outside the university. These are all good reasons to make a good job of the write up.

Overall your thesis should be between 15,000 and 20,000 words in length. It must comply with the University regulations for binding and submission. In general it is recommended that you use a Times New Roman type face and use the Harvard referencing style. Your Course Director will give you details at the beginning of the thesis process. Pay particular attention to the way in which your work will be marked (the percentage of the marks awarded to each part of the thesis). This information gives you some idea of how long each chapter should be – and remember that words in diagrams, tables and appendices are not included in the overall word count.

From an examiners point of view the quality of your work is important – correct spelling, correct grammar, correct referencing, correct titling, correct sourcing, correct structure and correct layout are all important. Of course what you write has to make sense and be of a masterly standard. These issues are all your responsibility.

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Structured Literature Review
An Introduction

Dr. Chris Morgan

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Agenda

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- What is a structured literature review?
- Structured literature review – who uses it?
- Structured literature review – Is it for you?
- What's in a structured literature review?
- What's expected of you?

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What is a structured literature review?

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(Structured) literature reviews are a method of making sense of a large body of information, and a … method of mapping out areas of uncertainty … and a way to tell the difference between real and assumed knowledge. They are methodologically sound (and lead to) … results (that give) … a good representation of the "truth"…

Petticrew, M., Roberts, H., 2006. *Systematic Literature Reviews in the Social Sciences: A Practical Guide*, Blackwell, Oxford, p2/3

The Scope of a Structured Literature Review

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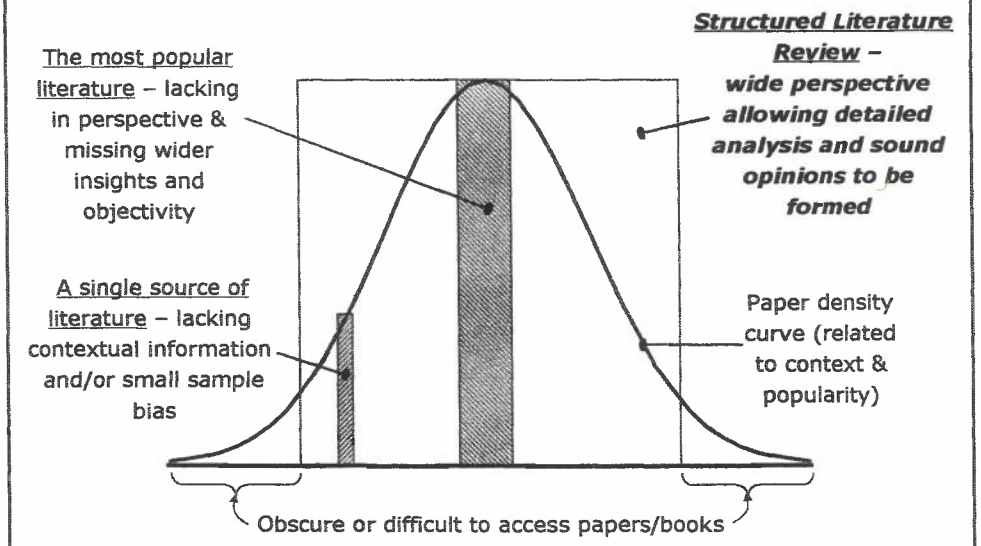

Meta Analysis

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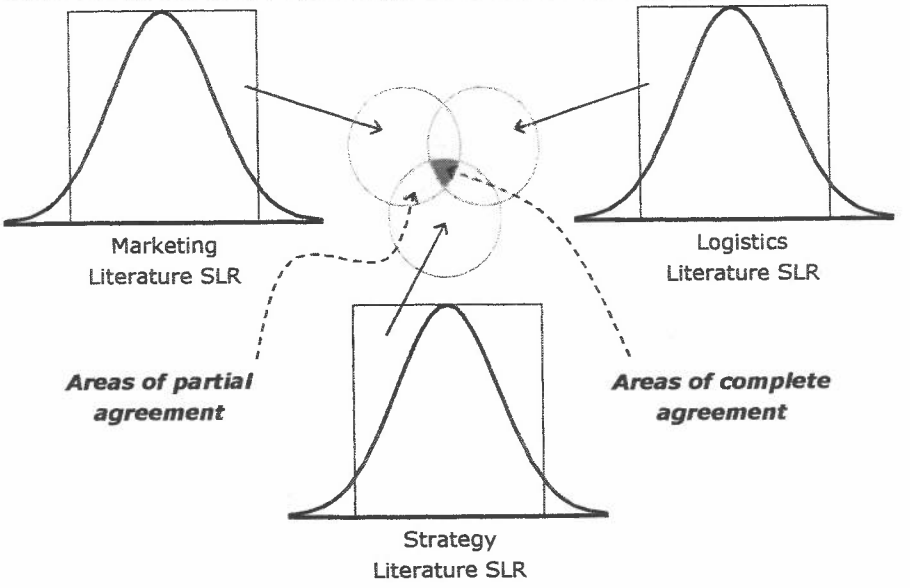

What Do We Know?

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"Little do you know that the little that you know is the same as the little that I know – little do you know!"

The Goons – BBC Radio

Scot Adams (1999) Dilbert Gives You The Business, Boxtree

"As we know, there are known unknowns. There are things we know we know. We also know there are known unknowns. That is to say we know there are some things we do not know. But there are also unknown unknowns, the ones we don't know we don't know."

Donald Rumsfeld, US Secretary of Defense, 2002

Structured Literature Review – Who Uses It?

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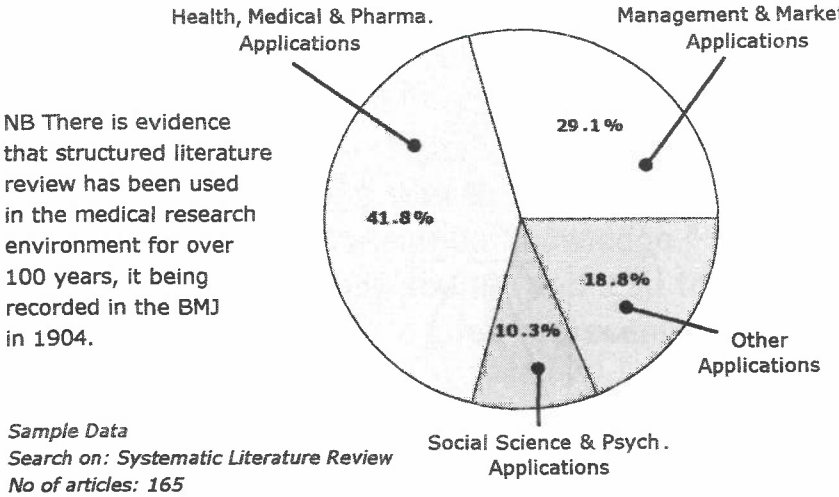

NB There is evidence that structured literature review has been used in the medical research environment for over 100 years, it being recorded in the BMJ in 1904.

Sample Data
Search on: Systematic Literature Review
No of articles: 165
Source: Ebsco Business Premier Database

SLR Flowchart

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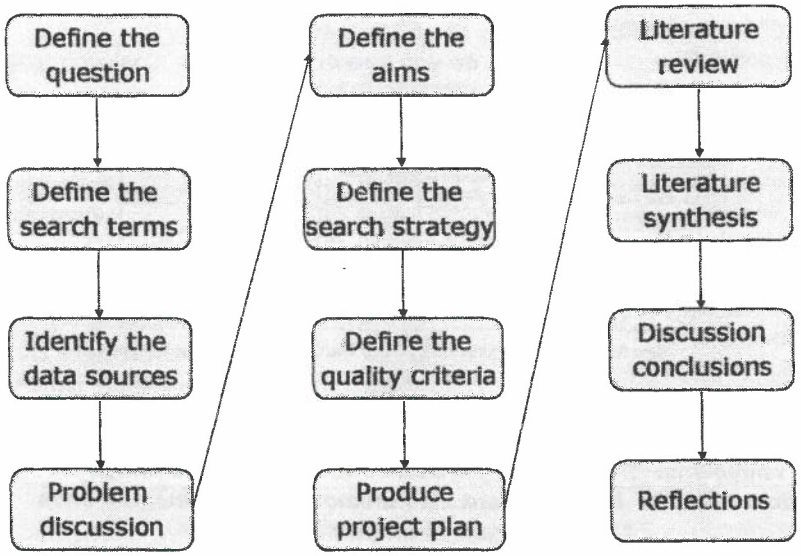

What's Expected of You

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- You will design a structured approach to exploring the literature associated with a specific problem
- You will demonstrate that you can conduct a structured literature review with due diligence and present the results in an understandable way
- You will use the data gathered to produce a balanced answer to the question you have posed and to identify gaps in the literature that could be the focus of future research
- Your work will be of a Masters standard and demonstrate the ability to achieve quality standards that are acceptable for a Cranfield University thesis

Conclusions

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- Structured literature review is a powerful, analytical approach that is capable of addressing complex academic questions related to areas where bodies of literature are available and accessible
- SLR is more suited to people who enjoy solving academic problems and who can accept the challenge of following a prescribed and rigorous approach to investigations
- SLR is suited to people who are thinking of pursuing a career in academia or as an manager/analyst in a marketing or logistics environment

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Structured Literature Review
Phase 1 & 2
The Focus & Strategy of the Investigation

Dr. Chris Morgan

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Agenda

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- Finding reference materials
- Developing keyword searches
- Developing search strings
- Reporting search activities
- Recognising search limitations
- Some sources

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Sources of Searches

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- Citation (journal) databases (Cranfield Library)
- Discussions with supervisor & experts
- Reference lists from existing journals
- Books (Library/British Library/www/Specialist bookshops)
- Unpublished material* (www/Company Reports /Past Theses)
- Other sources (Management Libraries/Hand searches/Specialist Libraries (IGD Library))

**The problem with un-indexed material is that access to it may be limited, may be subject to an access fee, and its existence may only be known to experts in the field. The problem with www sources is that the quality of the material is incredibly variable.*

Building a Picture to Achieve Focus

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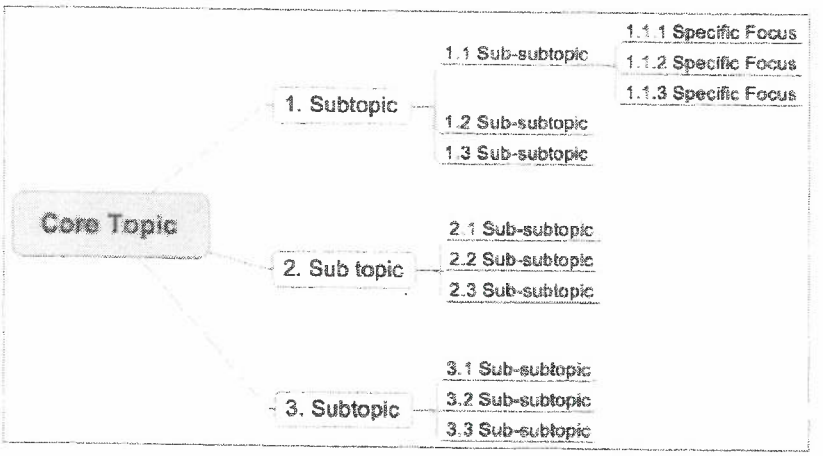

A good start is to try to build a broad picture of related topics – this can be changed later

Example

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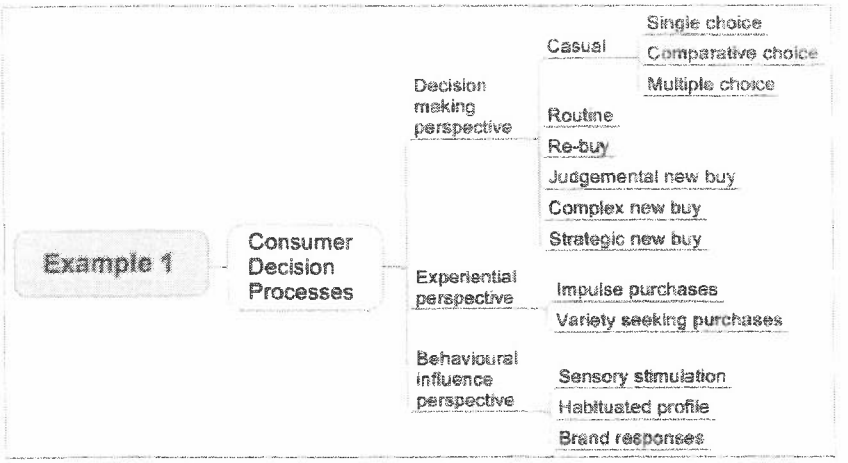

Mowen, J.C., Minor, M., (1995). Consumer Behaviour (5th ed), Prentice-Hall, New Jersey, pp 351-357

Example

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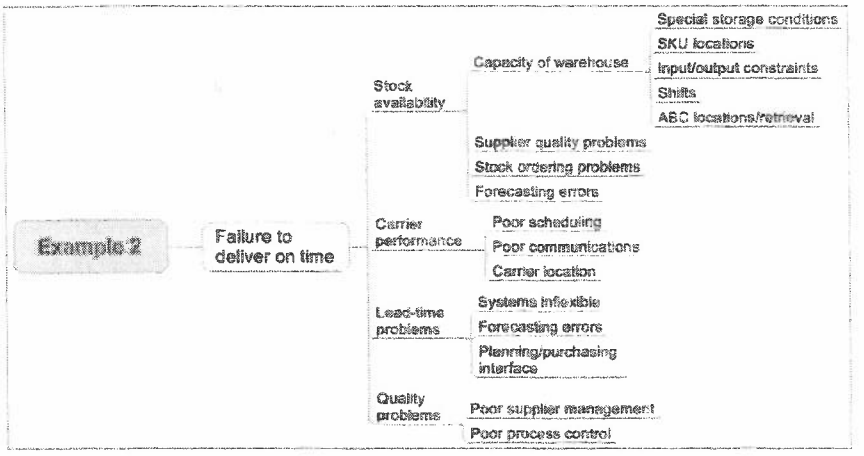

Stock, J.R., Lambert, D.M., (2001). Strategic Logistics Management (4th ed), McGraw-Hill, Singapore, pp 131

Identifying Keywords for Searches

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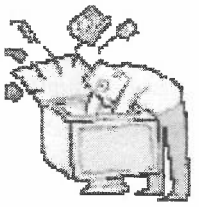

Where did I put that keyword?!?

- Keywords are the way we access citation (journal) databases and library indices
- Keywords come from:
  - your own knowledge
  - your notes & books
  - discussions with your supervisor
  - existing citations
  - general pre-reading around the subject
  - key words in journal abstracts
  - thesaurus

Example

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Bitici, Carrie & McDevitt, (1997). Integrated performance measurement systems: a development guide, IJOPM, 17, 5, pp 522-534

Subjects: Integration, Performance management, Management audits

These are the subjects that the authors identified as germane to the article. However, a careful reading of the article identifies other keywords that you might wish to add to your keyword list for this article:

e.g. manufacturing, viable systems model, deployment, European model for business excellence, etc.

N.B Many journals limit the number of key words to 5 and this means that authors can only identify major issues and sometimes miss useful but minor issues

Keyword/Key Phrase Generation

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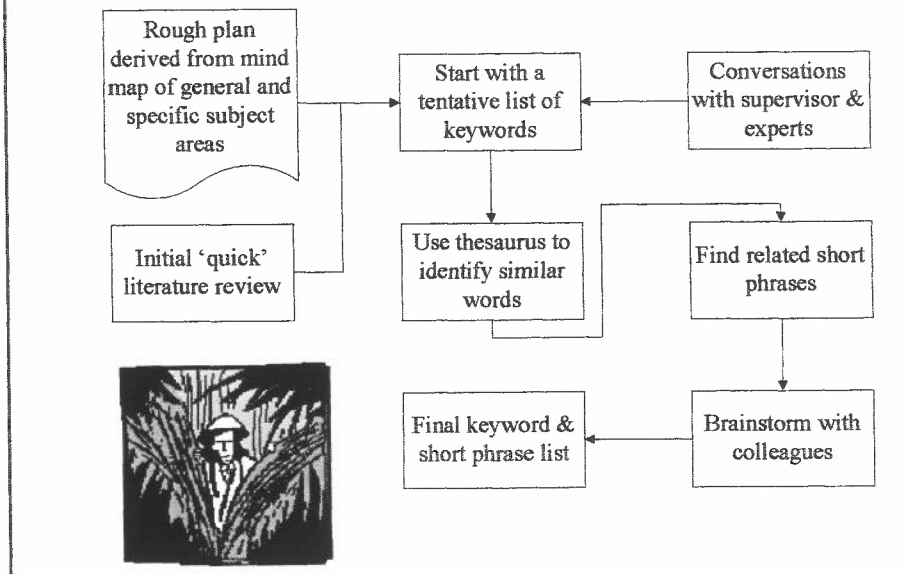

Search Operators

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- Boolean Operators
  - AND
  - OR
  - NOT
  - AND NOT
- Examples
  organisation AND (structure OR development) AND NOT culture
- Wild cards
  - asterisk (*)
  - question mark (?)
  - (w) or (near)
- Examples
  urban(w)renewal
  urb*(near)renew*
  super? AND merch?

In general, unless there is genuinely little or no literature available on a subject, not being able to find articles is most likely to be due to poor search terms. Sometimes you have to think laterally!!

Building Search Terms

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- Use logical operators to links search keywords:
  - customer AND satisfaction OR service OR feedback will return searches on:
    - customer satisfaction
    - customer service
    - customer feedback
- To avoid unnecessary duplication of search terms use the operator * or ?:
  - organis* AND dev? will return searches on:
    - organisation development
    - organisation developer
    - organisational development
    - organisational developer
    - etc.

Which Databases Yield the Most Output?

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Database name	Search Term	In	Time Frame	Number entries	Number relevant	Total
ABI Trade & Industry	Logistics AND Marketing	Full text & Schol. Journ.	All dates	532	47	60
	Demand Chain			56	13	
EBSCO Business S'rce Premier	Marketing AND Logistics	Full text & Peer rev. & Ref's Avail.	All dates	226	32	35
	Demand Chain			15	3	

Summarising Your Keyword Search

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Database: ABI Inform Trade & Industry

Years searched: All years

Maximum acceptable number of references: 100

Search terms

	Supply Chain		Warehousing		Retail*		Electronics	
Supply Chain	1766	Refine						
Warehousing	298	Refine	94	57				
Retail*	66	45	56	33	48	40		
Electronics	555	Refine	123	Refine	67	52	2231	Refine

Key

= Total search returns
= Relevant for this study

This summary of your search activities helps you demonstrate the structure and approach to the keyword search that you have taken

Limitations

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- The journal databases may not contain all references so be prepared to broaden your search in line with the time you have available
- You may use references from other countries (i.e. not written in English), but be prepared to translate relevant passages
- Not all journals are indexed in literature databases, especially specialist journal or journals from emergent areas of research
- Talk to experts to make sure that you have not missed any significant publications

Useful Databases in Marketing & Logistics

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- ABI Inform
- Accountancy Research Net.
- Business Source Premier
- Company Analysis
- Conference Papers Index
- Electronic Journals Service
- Elsevier Science Journals
- Google Scholar
- Index to theses
- Keynote
- Marketing Research Net.
- Management Research Net.
- Mintel
- NASA
- Net Library
- OECD Electronic Surveys
- Social Sciences Research Net.
- Transportation Research Information Service
- Wiley Interscience Journals

Quality Journals in Marketing & Supply Chain

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- Int. Journ. of Logistics Management
- Journal of Business Logistics
- Transportation Research – Part E
- Int. Journ. of Logistics: Research & App's
- Journ. of Purchasing & Supply Management
- Supply Chain Management: An International Journal
- Journ. of Academy of Marketing Science
- Journ. of Consumer Research
- Journal of Marketing
- Journal of Marketing Research
- European Journal of Marketing
- Int. Journ. of Research in Marketing
- Journ. of Marketing Management

Conclusions

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- A logical approach to locating articles and information is most likely to give a reasonable result
- For Master's theses it is not expected that this search is exhaustive – but it is expected that the search is thorough
- Keywords and composite searches are the best approach to identifying the literature, but don't discount a physical search of specialist information that may not be included in the standard databases
- Librarians can be very helpful in identifying alternative possibilities for your search

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Structured Literature Review
Phases 3 & 4
Literature Assessment

Dr. Chris Morgan

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Agenda

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- Paper selection criteria
- Paper quality criteria
- Presenting your analysis

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Focusing & Filtering Criteria

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- *How will you delimit the subject area or topic? Initial broad selection criteria are for use with titles and abstracts of papers retrieved from searches. Criteria might include:*
  - sector (primary, manufacturing, services, hi-technology etc),
  - country (UK, US, Europe, Asia etc),
  - year of publication (after 1980, 1990, etc),
  - populations (practitioners, middle managers, CEOs, policy makers etc),
  - focus (high reliability organisation design, public private partnerships etc)
- *Two stage filtering process:*
  - Titles and abstracts of articles located
  - Full paper

Criteria of Choice: Example - Resilient Supply Chains

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Criteria for including papers, based on titles:

- Located within the supply chain (or net or web) field consisting of supply chain dynamics, complexity, behaviour structure, design, resilience, vulnerability strategies, uncertainty, flexibility and agility.
- Refers to complex systems concepts, socio-economic vulnerability, risk aversion, evolutionary stable strategy, chaos, uncertainty, adaptability and responsiveness.
- Refers to different modelling tools and techniques as agent based approaches, system dynamics, hard & soft systems methodologies, complex systems & mainly in the context of supply chains or networks.

Criteria of Choice: Example - Customer Care

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Criteria for including papers, based on titles:

- Located within the customer relations field consisting of service dynamics, complexity, behaviour structure & strategies, gap analysis, risk management, resilience, uncertainty, flexibility and agility.
- Refers to complex systems concepts as co-evolution, emergence, self-organisation, evolutionary stable strategy, chaos, uncertainty, adaptability and responsiveness.
- Refers to difference modelling tools and techniques as agent based approaches, relational dynamics, customer information systems, communications channels, systems complexity in the context of customer relations
- Refers to different models of customer care and complex systems within inter-organizational contexts.

Empirical Papers

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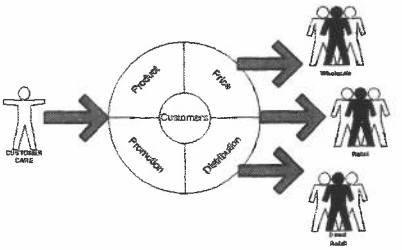
Criteria for including papers, based on full paper:

Empirical Papers must contain:

- **experiments or cases or interventions designed to enhance the understanding of the impact of different complexity concepts on the supply chains (marketing systems), dynamics of supply chain (customer) behaviour, impact of structure on strategy and vice versa.**
- **what impacts the evolution or emergence of (marketing) supply chain structures, risk or vulnerability of the supply network etc., reviews of above**
- **what are the factors behind complexity of supply chains (marketing systems), their dynamics, the need for long term strategies, need for resilience; what are the inhibitors of resilience**



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Methodological Papers

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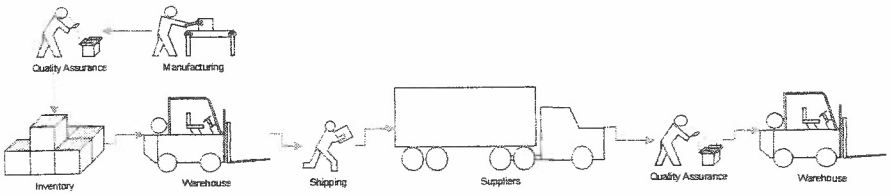
Criteria for including papers, based on full paper:

Methodological Papers must contain:

- **clear and consistent in their initial assumptions, field of study, sample etc and also in their limitations.**
- **can be conceptual or empirical or independent paper**
- **research design is sound and concepts are well grounded from theories.**
- **the results obtained make sense with respect to assumptions and conceptual backgrounds, if not, then explanation of deviance.**
- **review of methodologies earlier adopted in addressing same question**



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Quality

The Quality Principle

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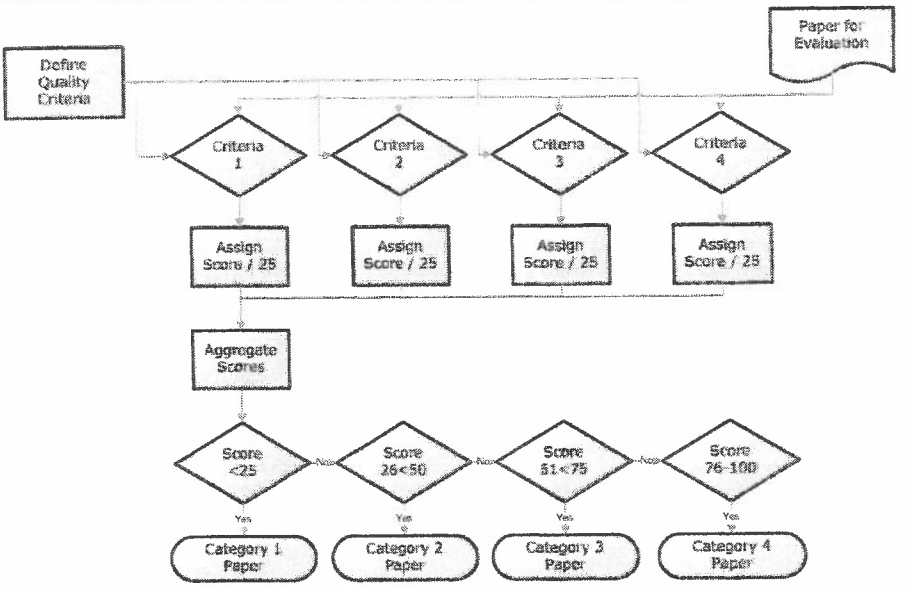

Example of a Quality Hierarchy

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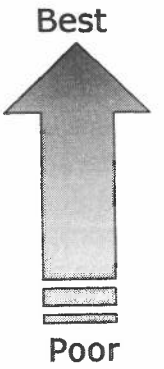
The hierarchy of medical evidence

- Systematic reviews and meta-analyses
- Randomised controlled trials
- Cohort studies
- Case-control studies
- Cross sectional surveys
- Case reports.
- Expert opinion
- Anecdotal



Analysis of Management Paper Problems

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"Why your papers were rejected and what you can do about it." (Daft, 1985)

Problems found in 111 manuscripts reviewed for AMJ and ASQ

	N	% of probs	% of manuscipts
1. No theory	56	21.7	50.5
2. Concepts & operationalisation not aligned	35	13.6	31.5
3. Insufficient definition of theory	27	10.5	24.3
4. Insufficient rationale for design	27	10.5	24.3
5. Macro-structure - organisation & flow	26	10.1	23.4
6. Amateur style and tone	23	8.9	20.7
7. Inadequate research design	22	8.5	19.8
8. Not relevant to field	20	7.7	18.0
9. Over-engineering of work	11	4.3	9.9
10. Conclusions not in alignment	6	2.3	4.5
11. Cutting up the data	5	1.9	4.5

(n = 258 major problems identified in the 111 manuscripts)

Journal Quality Check List

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- Was an explicit account of the theoretical framework given?
- Is there a succinct statement of objectives or research questions
- Is there a clear description of the context?
- How was the sample chosen, is it adequate?
- Was there a clear description of data collection methods, were they appropriate?
- Was a there clear description of data analysis methods, were they appropriate?
- How does the research move from the raw data (numbers, quotations or examples), to an analysis and interpretation of the meaning and significance of it?
- Are the findings relevant to policy/practice, do they provide guidance for future research?

Exercise - 1

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Using the journal paper you have been given –

- Read the paper carefully
- Using the criteria on the previous 2 pages work in pairs and identify the paper's strengths and weaknesses
- Prepare a short letter for the author identifying what they have done well and recommending what they should do to make the paper more acceptable for publication

Judging a Paper's Quality Level

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Elements to Consider	Level				
	0-Absence	1-Low	2-Medium	3-High	Not Applicable
Contribution	The article does not provide enough information to assess this criteria	The paper adds little to the body of knowledge in this area	Contribution to knowledge is trivial in importance and significance	Significant addition to current knowledge; fill an important theory gap	This element is not applicable to this paper
Theory	The article does not provide enough information to assess this criteria	Literature review is inadequate; Failure to motivate study with practical implications; No underlying economic story	Theoretical base is acceptable; Having practical rationales for study in some extent	Excellent review of prior literature; Strong theoretical basis; Study has important implications for practitioners	This element is not applicable to this paper
Methodology	The article does not provide enough information to assess this criteria	The idea of study is poorly executed; Inappropriate quantitative methods; Failure to justify proxies for economic variables	Justified research design; Acceptable proxies for economic variables; The idea of study is not fully executed	Research design adequately examine the theoretical argument; Proxies are adequately defined	This element is not applicable to this paper
Data Analysis	The article does not provide enough information to assess this criteria	Data sample insufficiency; Weak connection between statistical results and economic story; Inconclusive statistics	Appropriate data sample; Statistical results relates to economic story; Adequate statistics but inadequate explanation	Adequate data sample; Statistical results support theoretical arguments; Well explained statistics; Include limitation analysis	This element is not applicable to this paper

Exercise - 2

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Using the same paper, work in pairs to –

- Score the paper against each of the criteria on the previous page
- Using a scale of 1 to 4, where:
  - 1 would be a practitioner journal
  - 2 would be a national journal
  - 3 would be an international journal
  - 4 would be a top grade international journal,

  identify which kind of journal you would suggest the author submits the paper to

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Descriptive Data

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1. Extract data
2. Tabulate descriptive information
3. Produce descriptive analysis report

- Citation information (e.g title, author, publication details)
- Detailed descriptive information (e.g country, context, population characteristics, location etc)
- Methodological information (sample and methods used)
- Raw numerical data on which to conduct further statistical analysis
- Key findings, theories, emerging themes, perspectives, concepts etc.

Example of Descriptive Data

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Thematic Analysis of the Papers Reviewed

Coding	Theme	Description	No. of Papers	% of Themes
1.	Network Formation	Studies that focus on how networks form and what factors affect or assist their formation.	6	4.9%
2.	Diversity of Partners	These papers focus on the importance of diverse partners in networks.	5	3.1%
2.2.	Suppliers	Articles which focus on the importance of supply networks within the innovation process	12	7.4%
2.3.	Institutional Factors	Research which explores the value and contribution of institutional mechanisms for promoting networking.	8	2.7%
2.4.	Customers	Studies which explore the importance of customer business-to-business networks in the innovation process	4	2.5%
2.5.	Third Parties	These papers focus on the role of third party networks e.g professional and trade associations and consultants	11	6.8%
2.6.	Science Partners	Research papers focusing on science partners as network orchestration, supplier networks	14	8.6%
2.7.	Finance Partners	Focusing on studies which explain the importance of equity finance networks in the innovation process	9	5.5%
3.1.	Network Behaviour	How different behaviours within networks lead to different forms of benefits.	27	16.6%
3.2	Network Governance	Papers that explore the role of governance within networks	13	8.0%
3.3.	Network Management	Studies which look at the effective management of networks by firms.	37	22.7%
3.4.	Network Configuration	Research examining the makeup of networks and how these can be formed to benefit strategic goals	17	10.4%

Source: Dr. D. Denyer

Presenting the Findings

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Author	Data used in Study	Date	Location of Study	Summary of empirical Findings
Ahire & Ravichandran	407 questionnaires – automobile parts' suppliers industry.	2001	USA	Use a Likert scale to test the importance of several factors contributing to quality improvements, product quality, and process quality. The technical training of employees scored 5.10 out of 7 on Likert scale and is the second most important factor.
Dixon, Arnold, Heineke, Kim, Mulligan	Review of 23 BPR projects (15 primary data + 8 secondary data).	1994	USA	Reports that extensive employee training efforts were observed in 2/3 of the cases. Training took place prior to and during implementation. In one case, 5% of the total operating budget was spent on training.
Guimaraes	Postal survey of an association member involved with BPR – 135 questionnaires.	1999	USA	The item "Re-educate and retrain workers on BPR actually is" score 3.21 on a 5 point importance scale. The item is correlated significantly at the 0.1 level with the fact that project objectives were attained (Pearson correlation coefficient: 0.29) but shows no statistically significant correlation with organisational performance.
Kassicieh & Yourstone	Postal survey of 111 manufacturing and service organisations.	1998	USA (New Mexico)	Use regression analysis to test at the 0.1 level the significance of "extent of training" on three dependent variables, in a quality adoption context. Conclusion is that extent of training is a variable significant correlated with cost reduction and increases in profits, but not with employee morale.
Mc Laughlin	Case base research	1997	Canada	Finds through pattern matching that 3

Example of a Data Extraction Form

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This data extraction tool was developed for a literature review on the attitudes and aspirations of older people (Booz, Hayden and Barnard, 1999).

Basic data extraction tool						
Details of publication Author Title Source (journal, conference etc.) Year/volume/page/country of origin Institutional affiliation Research question	Aim Study design	When was the fieldwork conducted?	Participation in the study Target population Exclusion criteria Recruitment procedures Characteristics of participants (age, sex, social class, ethnicity, geographical location, health status, insurance status, other information)	Research tools What were the research tools used? Where were they piloted? Was a specific attitude scale used? Which?	Theory Was any theory referred to in the research? Give details	Was ethics committee approval obtained?	Analyses Statistical techniques used Qualitative analysis techniques used Computer analysis tools used Reviewers decision Is the study methodologically sound (see decision rule)? Is it relevant to the review topic? Is it to be included?

A Systematic Approach to Extracting Data

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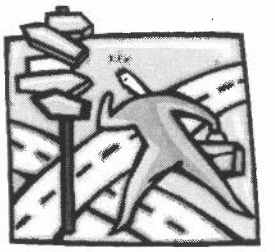
- A consistent structure for extracting the data avoids missing key information
- Try to follow the data structures that are used by the citation databases
- Make sure the structure contains the important information for your own research



Conclusions

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- The descriptive analysis enables you to gather and source your references into manageable structures
- These structures enable the synthesis process and help to communicate your findings in the SLR structure

It is important to recognise that all of the sorting you do familiarises you with the data and improves your skills at searching the databases

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Structured Literature Review
Phase 5 & 6
Synthesis & Discussion

Dr. Chris Morgan

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Synthesis Methodology

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The method of synthesis must:

- be appropriate to the research being synthesised
- be consistent in approach
- cope with a wide variety of data
- go beyond basic descriptions (narratives)
- provide enough detail to convince the reader of the results
- provide an audit trail linking the key findings to the conclusions

Common Methods of Establishing Relationships

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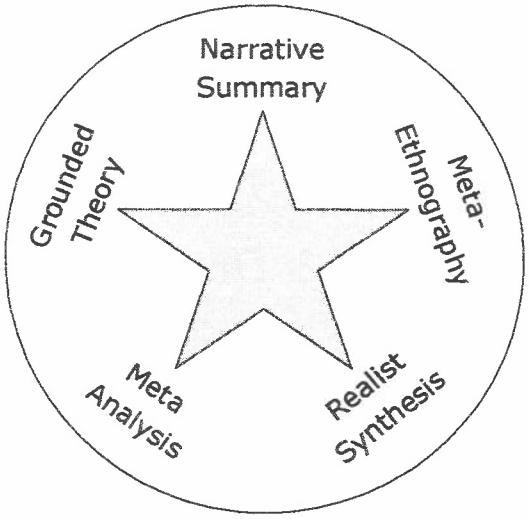

Grounded Theory

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Grounded Theory as a method for synthesis (Kearney, 2001)

- Grounded Theory is suitable to synthesise literature in order to build higher order theoretical constructs
- Extracted data includes: concepts, relationships, stages, substantiation, author conclusions & formal theory critique
- Uses constant comparison method (Strauss & Corbin, 1998) in which concepts across studies are identified and re-clustered into new categories

Advantages

- Widely accepted approach
- Deals with sampling as well as analysis issues
- Good for theory building

Disadvantages

- Does not cope well with quantitative data
- Tension between theory building and practitioner applications
- Problems with transparency and subjectivity
- Vague about what should and should not be included in the analysis
- Is often used to describe any form of inductive research

(Dixon-Woods, 2002)

Narrative Summary

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Narrative Summary as a method for synthesis
- Traditional form of synthesis
- Often used with structured techniques for searching data
- Copes well with either qualitative or quantitative data

Advantages
- Widely accepted approach
- Flexible
- Allows reviewer to be reflexive & critical
- Can generate interesting & innovative insights

Disadvantages
- Not a formal method
- Lack of transparency due to subjective elements
- Very dependent on the skills & biases of the reviewer
- Tendency to concentrate on either qualitative or quantitative data

(Dixon-Woods, 2002)

Meta-Ethnography

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Meta-Ethnography as a method for synthesis (Noblit & Hare, 1998)
- Techniques are analogous to constant comparative methods
- Requires identification of metaphors (key concepts) of each study
- Reciprocal translation synthesis – attempts to translate concepts into one another
- Refutational synthesis – attempts to resolve contradictory findings
- Lines of argument synthesis – attempts to identify a general interpretation that is is grounded in the findings of the primary studies

Advantages
- Preserves interpretive properties of underlying data
- Systematic in approach
- Deals with quantitative and qualitative data

Disadvantages
- Is developing as a methodology
- No guidance on sampling
- Translation issues rotating about integration structures
- Combination issues rotating about translating mixed methodologies

(Dixon-Woods, 2002)

Meta Analysis

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Meta Analysis as a method of synthesis

- Structured review to assess relevant studies addressing a specific question
- Quantitative combination of results of primary studies
- Calculation of the mean effect for a group intervention

Advantages

- Well established methodology in natural sciences
- Produces a more accurate estimate of the effect of a particular intervention or group of interventions, than possible using only a single study

Disadvantages

- Studies must be homogeneous to be combined
- Only suitable for quantitative data
- Stringent requirements if qualitative research is to be appraised
- Outcome is either right or wrong – no intermediate state allowed

(Dixon-Woods, 2002)

Realist Synthesis

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Realist Synthesis as a method for synthesis

- Not just the review of evidence but requires the testing of submerged theories
- Captures the vital ingredients (material, social, cognitive) to generate change
- The researcher build theory based on a wide range of inputs

Advantages

- Pragmatic orientation towards real world situations
- Takes the nature of the operational environment into account
- Can produce useful guidelines for different circumstances

Disadvantages

- Requires a lot of detail about context and processes
- Lack of transparency & subjectivity
- No guidance on sampling

Mindmapping to Identify Relationships

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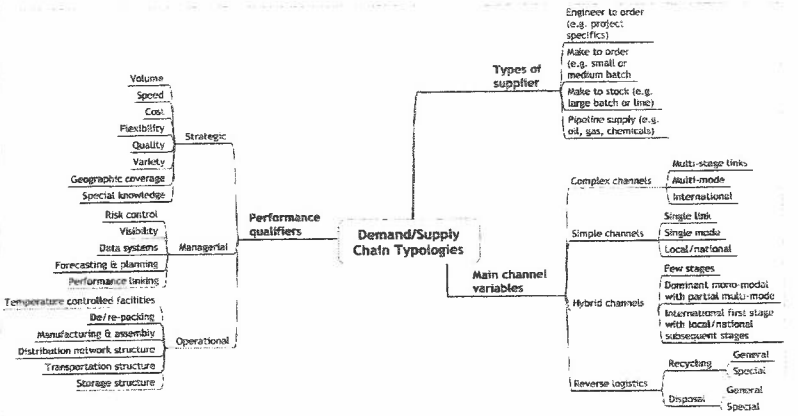

Ishikawa Diagrams

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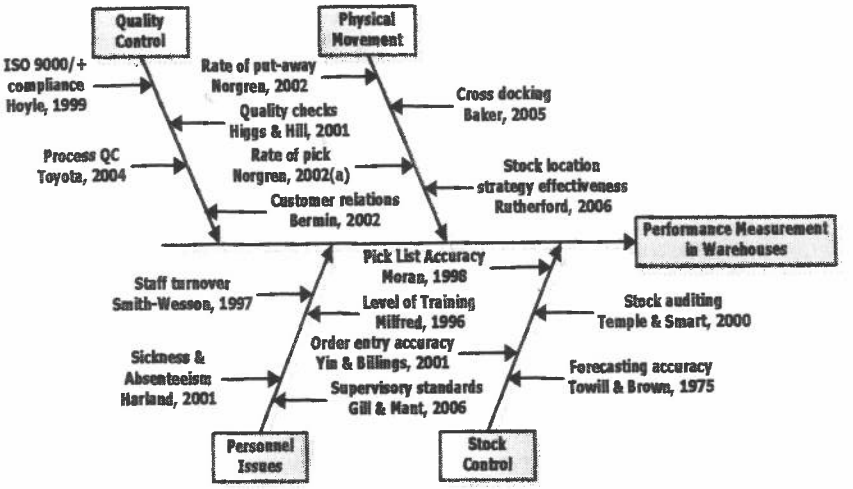

Force Field Analysis

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Moving to Customer Relations Management	
Status quo:	Desired outcome:
Traditional Marketing Strategy	Integrated CRM Strategy
Driving forces	**Restraining forces**
Changes in customer profiles (Giles & Brandreth, 2000)	Conservative distribution system (Bill, 2004(a))
Long term view of customer (Martin & Christopher, 2006)	Sales structures (George & Michael, 2005)
Reducing dependence on advertising (Jaques, 2001, 212)	Customer record system (Huck, 1999)
	etc

Writing - Up

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Details about how the thesis should be structured and presented will be found at the beginning in the written introductory section of this work book

Industrial Project Methodology

Dr. Chris Morgan

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Acknowledgements:

This document had drawn on many sources. Not least upon the many past students who I have supervised, my colleagues for their valuable insights and for the feedback given during teaching session. Also I must thanks the many organisations who have shared their experience when mentoring students undertaking their thesis research. Any remaining faults are entirely my own, but in the spirit of continuous improvement I am always grateful for ideas and suggestions.

1. Introduction

In many ways the thesis based on an organisational investigation of a real world problem has been the main stay for business schools around the world. At Cranfield we are no different and the majority of the School of Management theses to be found in the library are of this kind. These theses follow a fairly consistent pattern of presentation but his often hides a very wide variation of problem and approach taken to the research itself.

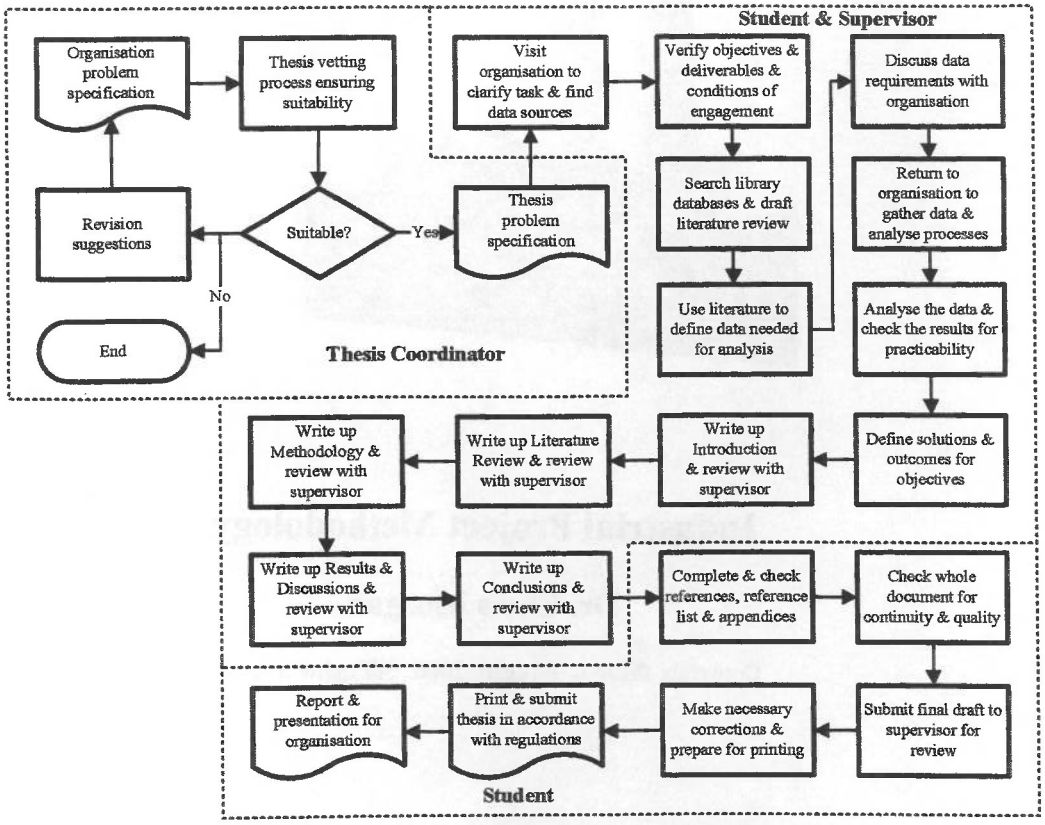


Figure 1: The basic thesis preparation process

As will be seen in Figure 1 the thesis process begins with the Thesis Coordinator either obtaining and vetting suitable problems, or vetting proposals that students get for themselves. *This is an important process which ensures that the problem or proposal will actually deliver an acceptable thesis. Many interesting and potentially useful proposals from organisations are too big, too small, too complex or too simple.*

Although the next 13 activities are identified as involving the student and the supervisor, the supervisory role is one of advising, of suggesting or of pointing out likely pitfalls or problems. *At no point is it the role of the supervisor to tell students what to do as in doing so it could be argued that the work ceases to be that of the student.* During these activities the main focus is to establish a framework for the analysis, gather data to be analysed within the framework and then analyse and present the resulting outcomes. In the final run up to presenting the thesis the supervisor will probably want to see a full final draft. The main reason for this is that seeing parts (or chapters) of a thesis individually is not the same as seeing the whole document. Some issues only emerge when the complete document is viewed.

In the end your thesis is your own work and will be judged as such. Your supervisor will give advice on the thesis structure, logic and presentation. Of course you may ask any of the specialist lecturers in the department for specific advice. Please try to maintain a sensible relationship with your supervisor, or anyone else you may wish to consult. It is not reasonable to suddenly turn up and expect them to drop everything because you have a problem. Either ring or e-mail for an appointment. When you talk to them don't waste time and have your question(s) prepared – if possible let them have sight of the problems before the meeting. Remember, while you are doing your research they may be doing their research.

The following guidelines and questions will provide you with a basic structure – which if followed should form the bare bones of an acceptable thesis.

Thesis Plan & Introduction (2000 words approx.)

Title, Indices & Structure
- Standard front page
- Plagiarism statement
- Index of chapters & main sections
- Indices of diagrams & tables
- Acknowledgements

Brief introduction to the organization
- Products & services
- Market place information
- Organization statistics

Introduction to the problem
- Background leading to problem(s)
- Consequence(s) of the problem(s)
- General issues arising from the problems and TOR

Statement of objectives
- Link between objectives & TOR
- Clear statement of objective (keep to 3 if possible

Outline diagram of thesis structure
- Flowchart
- Special issues

Link to literature review

Signposting paragraph

Literature Review (3000 words approx.)

Introduction to the literature themes & link
- What academic themes might be relevant
- How the themes have been selected for this research

Theme 1
- Introduction to the theme
- Development of the theme
- Mini conclusions & link

Theme 2
- Introduction to the theme
- Development of the theme
- Mini conclusions & link

Theme 3
- Introduction to the theme
- Development of the theme
- Mini conclusions & link

General observations based on all 3 themes
- Key issues that arise
- Focus for Methodology

Link to Methodology
Signposting paragraph

Methodology (3000 words approx)

Introduction to the Methodology
- Purpose of Methodology
- Prompts from previous research
- Basic approach adopted

High level outline of possible approaches
Reasons for choosing the approach taken
Reasons for not adopting other approaches
Triangulation strategy
Discussion of design of data collection method(s)
Discussion of type and range of data readily available
Discussion of data gaps
Discussion about the design and testing of the data gathering tools
Discussion about the limitations of the data gathering tools
Discussion of analysis tool used
Qualitative analysis tools
Quantitative analysis tools
Link to Results
Signposting paragraph

Cont..

Results & Discussion (6000 words approx.)

Introduction to the structure of the Analysis
Signpost to the sequence in which data is presented
Issues arising from the methodology
Data description
- Quantitative Data
- Qualitative Data
- Statistical implications

Data processing output
Critical discussion of data processing outcomes
- Compare & contrast data
- Validity of data

Discussion about triangulation issues
Comparison of what has been found to expectations derived from literature
- Where do the outcomes agree with the literature?
- Where do the outcomes disagree with the literature?
- What can be deduced from this?

Link to Conclusions
Signposting paragraph

Conclusions (4000 words approx.)

Introduction to the Conclusions
Re-statement of thesis objectives
A critical examination of the relationship(s) that exist between the results and the objectives
Broader implications of the conclusions in the context of the academic literature
Reflections on the limitations of the research and changes that would be made with hindsight

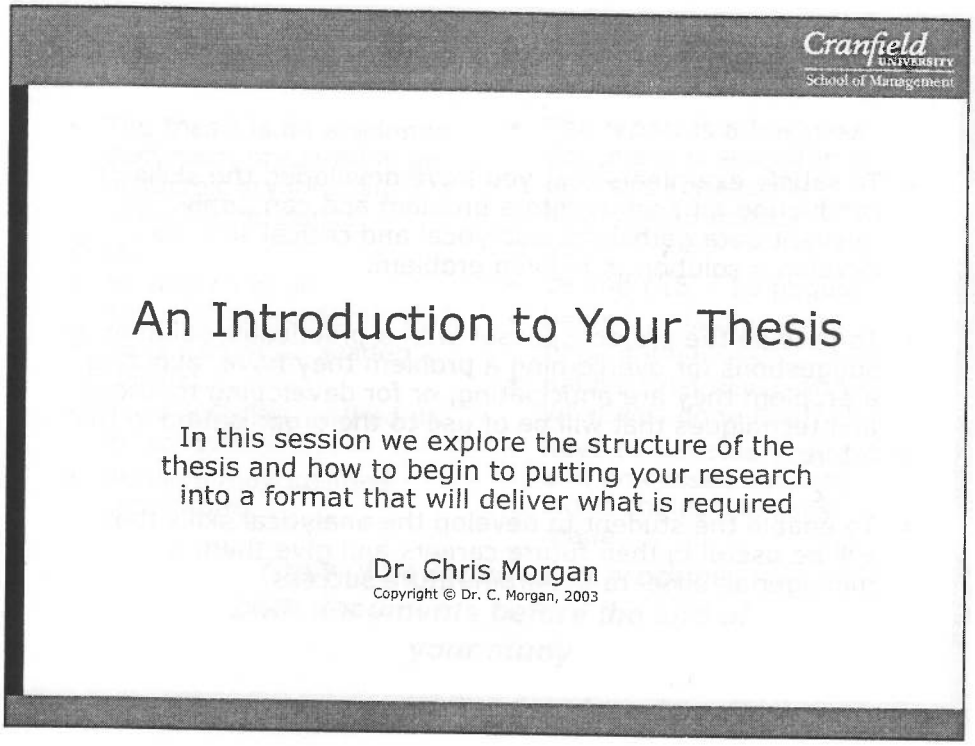
References, Bibliography & Appendices (usually not included in word count)

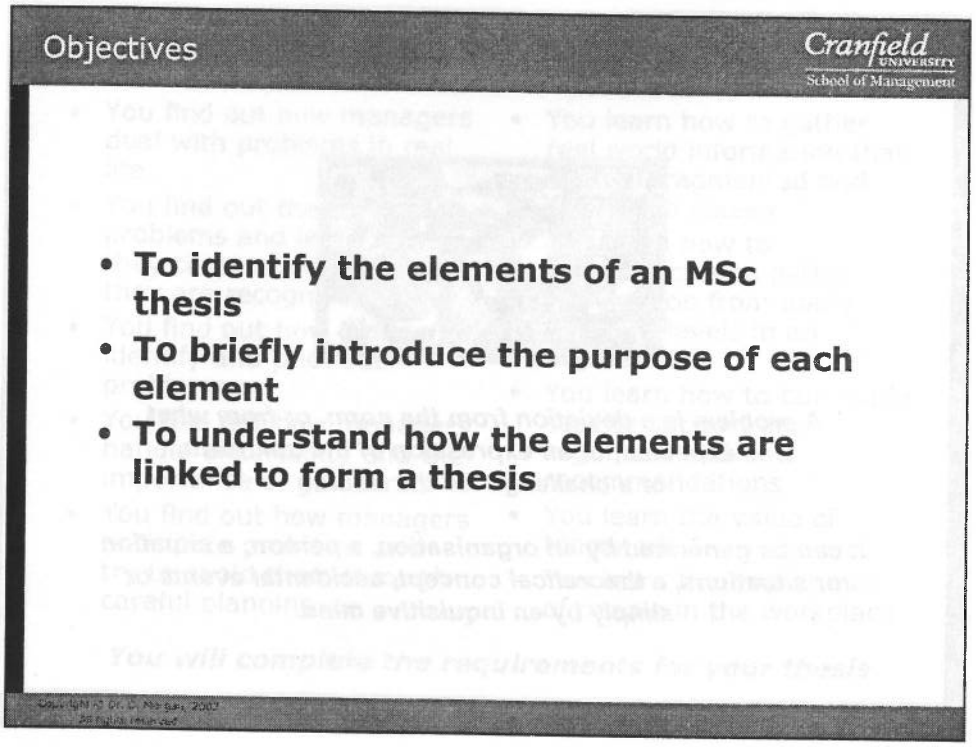
Specific reference list for material quoted in the thesis
Inclusive list of any material used in the preparation of the thesis
Appendices
- Questionnaire(s)
- Details of interviews (Date, Time, Location)
- Transcript(s) of interviews
- Minutes & company documents
- Extracts from longer documents
- Data sets (usually a sample of the data sets is sufficient)
- Diagrams not in main text - flow charts etc.

Word counts may vary from 15,000 to 20,000 in total. The example above would be for a thesis of about 18,000 words.

Double Ends

Introduction to the thesis





Introduction to the thesis

Over-arching MSc Thesis Objectives

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- To satisfy examiners that you have developed the skills of conducting an enquiry into a problem and can apply relevant data gathering, analytical and critical skills to develop a solution to a given problem.
- To provide the project sponsor with a practicable solution or suggestions for overcoming a problem they have, avoiding a problem they are anticipating, or for developing methods and techniques that will be of use to the organisation in the future.
- To enable the student to develop the analytical skills that will be useful in their future careers and give them a managerial 'edge' to underpin future success.

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What is a Problem?

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A problem is a deviation from the norm, or from what was expected, or an expression of the unknown, or a challenge for the future.

It can be generated by an organisation, a person, a situation or situations, a theoretical concept, accidental events or simply by an inquisitive mind.

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Introduction to the thesis

Thesis or Report?

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- The *thesis* is an academic document prepared in an academic style for an academic audience.

It will:

- be written in an appropriate academic style
- be placed in an academic context
- use a justified method of investigation
- produce fully justified conclusions

- The *report* is a business document prepared in a business style for a business audience.

It will:

- be short (5 – 10 pages)
- begin by making clear recommendations
- have a brief discussion of what was done & why
- have (if necessary) the raw and processed data that led to the conclusions made.

You will be required to produce both documents before the end of your study

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What Do You Get Out of the Exercise?

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- You find out how managers deal with problems in real life
- You find out the context of problems and learn how they come about and how they are recognised
- You find out how managers identify and prioritise problems
- You find out how managers handle uncertainty and the importance of guidelines
- You find out how managers anticipate problems and try to avoid them through careful planning

- You learn how to gather real world information that is often fragmented and difficult to access
- You learn how to communicate to gather information from many different levels in an organization
- You learn how to build up a case to support an argument and recommendations
- You learn the value of teamwork
- You learn the importance of people in the workplace

You will complete the requirements for your thesis

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Introduction to the thesis

Your Personal Learning Will Include:

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- time management
- academic writing skills
- report writing skills
- using libraries & databases
- getting access to people
- interviewing skills
- speaking to an audience
- learning to feel comfortable with senior managers
- persuading people to cooperate with you
- making people trust you
- learning to overcome problems
- learning to be politically sensitive
- challenging what you have been taught or the existing theory
- coping with crises
- learning to work alone
- rescheduling tasks to maintain steady progress
- active listening
- developing your critical faculties

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The Elements of a Thesis

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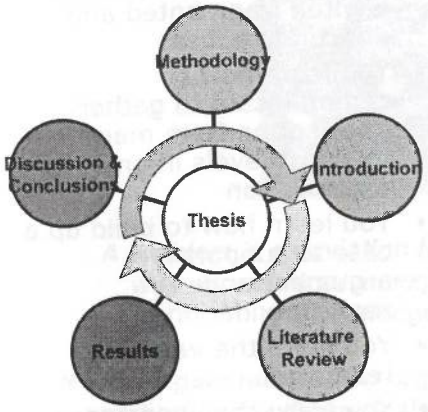

- An MSc thesis is an academic document designed to demonstrate that a student has the ability to undertake a critical analysis of a problem and is able make sensible deduction from what they find
- Theses tend to follow a pattern that has been developed over a long time and which is widely accepted in all academic environments
- This pattern delivers a consistent outcome and helps students to avoid mistakes

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Introduction to the thesis

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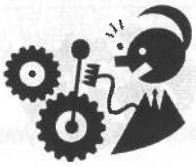

'If at first you don't succeed – you don't succeed'

(Anon)

Introduction

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What Should an Introduction Do?

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- It should briefly introduce the reader to the organisation
- It should briefly give the reader the background to the problem to be investigated
- It should identify the aim(s) of the thesis
- It should clearly state the objectives of the thesis – the deliverables
- It should define any limitations of the thesis
- It should signpost the overall approach to be taken by the author
- It should signpost the next steps

NB Most introductions only attract a small percentage of marks within a thesis – so don't go overboard!

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Introduction to the thesis

What is the Focus for your Thesis?

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- Are you investigating or reviewing a past or current problem?
- Are you investigating a current or past situation or relationships?
- Are you comparing different problems or situations?
- Is your thesis focused on one organisation or many?
- Is your thesis starting with some kind of hypothesis?
- Are you investigating the impact of legislation on an organisation?
- Are you given specific objectives by your sponsor (and are they realistic)?

Most theses that go wrong do so because they start with unrealistic objectives and/or cannot be done in the time allocated.

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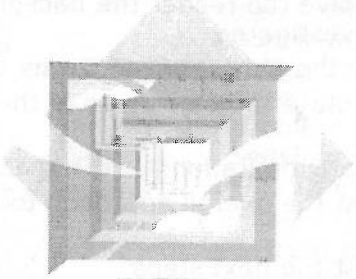

The Literature Review

Introduction to the thesis

What is a Literature Review?

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- Within an MSc thesis a literature review is an essential part of the academic underpinning of the work
- A literature review is undertaken to identify other academic work that has been undertaken that is relevant to the objectives of your thesis
- It allows you to examine the development of ideas
- It allows you to get an insight into how other academics have approached similar problems in similar circumstances
- It gives you something to compare your own findings with – perhaps you may even add to the body of knowledge!!

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Where Do You Get Information From?

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- Academic Journals
- Practitioner Journals
- Trade Magazines
- Library Databases
- Learned Bodies
- Government Publications
- Consultants
- Professional Bodies
- Books
- Television & Films
- The Internet
- Archives
- Conference Papers
- Company Reports & Accounts
- Bibliographies
- Past Theses
- Newspapers
- etc. etc.

The usual problem encountered is that once you begin to seriously start looking is the vast volume of potentially useful information – you must find ways of focusing your effort!

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Introduction to the thesis

Does All Information Have the Same Value?

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No!

- *In general the more popular the source of information is the more suspect the information tends to be*
- *Newspapers and trade journals tend to present information in a stereotypical, over-typical or atypical way*
- *Books are often out of date and may present one point of view – beware of experts*
- *Government information may be politically biased*
- *Academic journals, even if refereed, may be biased by the editorial point of view*
- *Internet information is often of poor quality as there is often no editorial check on quality*

Develop a healthy scepticism about information and seek out inconsistencies – be critical!!

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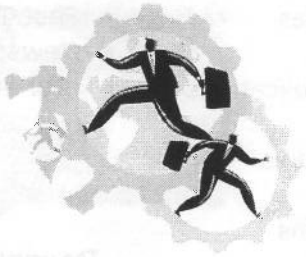

Methodology

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Introduction to the thesis

What is a 'Methodology'?

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- Strictly speaking 'Methodology' is the wrong word to use, it would be more correct to call this section of your thesis 'Methods Used in the analysis, or Methods used to collect data' – however, 'Methodology' is the common parlance.
- This section of your thesis has the important task of informing your reader (the examiners) of what approach to data gathering you have taken and why. Implied in this is the need to explain why you have discarded other approaches to gathering data. As we shall see, there are many ways of gathering data and the choice of which is chosen is dependent upon the nature of the problem being investigated.

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Basic Methods

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Quantitative

- Used when events can be measured numerically or when data is available from existing management systems or data bases

Useful for:

- Operational analysis
- Financial analysis
- Statistical analysis
- Systems analysis
- Modelling systems or events
- Factual comparisons

Qualitative

- Used when events cannot be measured using numeric methods or when complex interactions, including behaviour have to be measured

Useful for:

- Relationship analysis
- Holistic analysis
- Real time or participant analysis
- Historical analysis

Most theses have a mixture of both methods

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Introduction to the thesis

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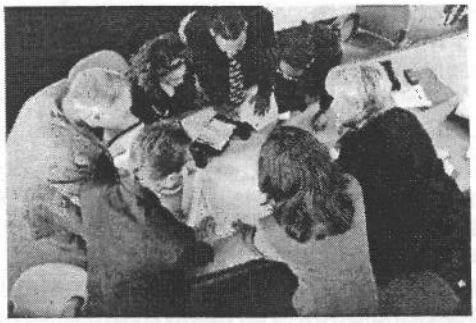

Data Gathering & Analysis

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The Truth and Nothing but the Truth?

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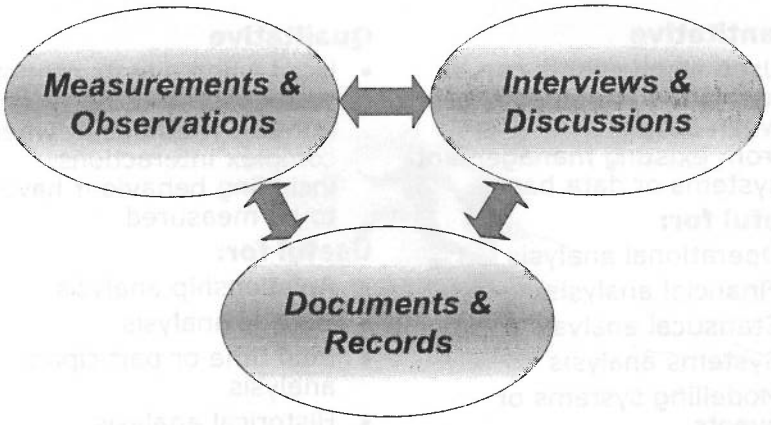

The triangulation of data reduces the possibility of errors and validates the approach taken to the investigation

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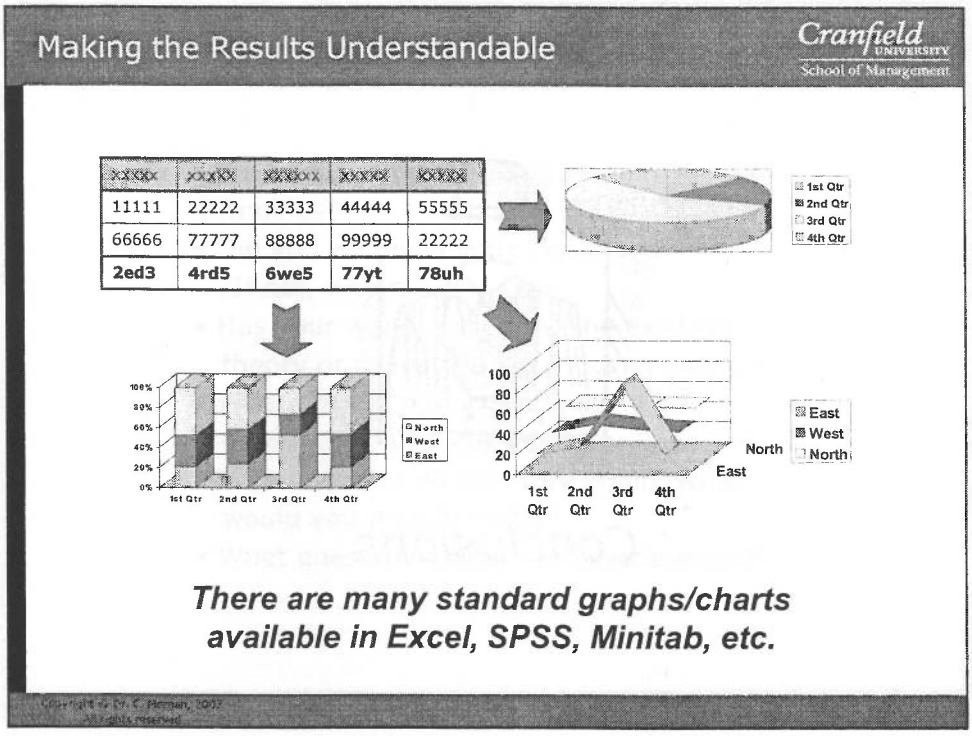
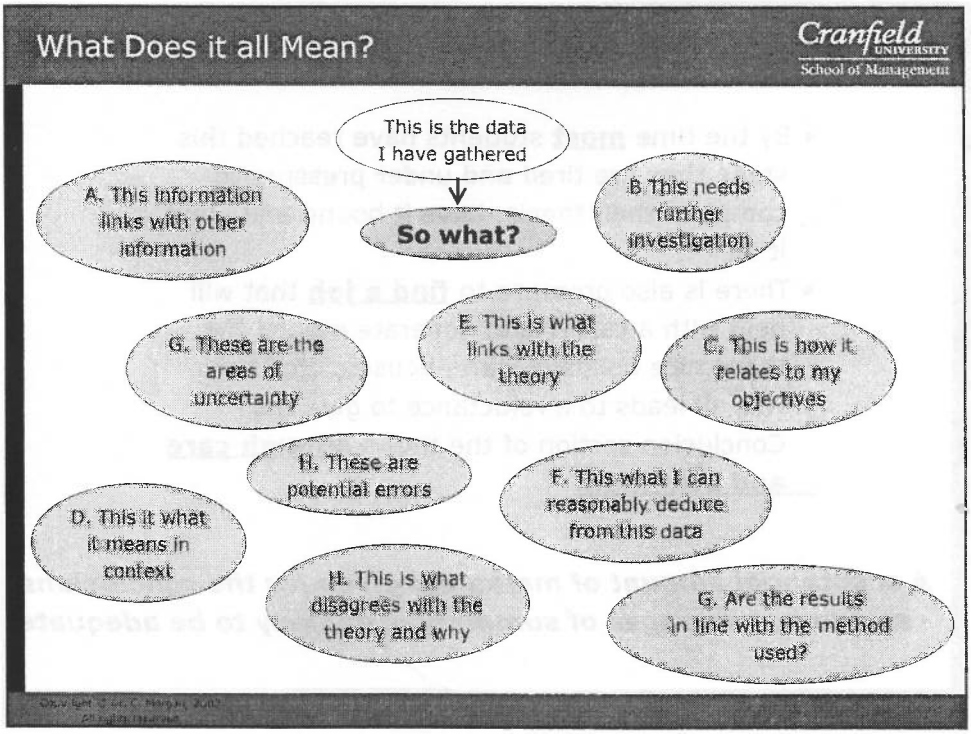
Introduction to the thesis





Introduction to the thesis

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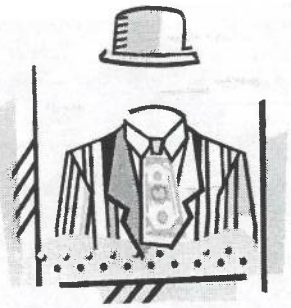

Conclusions

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Research Fatigue

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- By the time **most** students have reached this stage they are tired and under pressure to complete their thesis, have it bound and hand it in.
- There is also pressure to **find a job** that will help with a career and generate money (for those nice holidays, cars, houses, etc.)
- This all leads to a reluctance to give the Conclusion section of the thesis **enough care and attention.**

A substantial amount of marks are given for the conclusions - so one or two pages of summary is unlikely to be adequate

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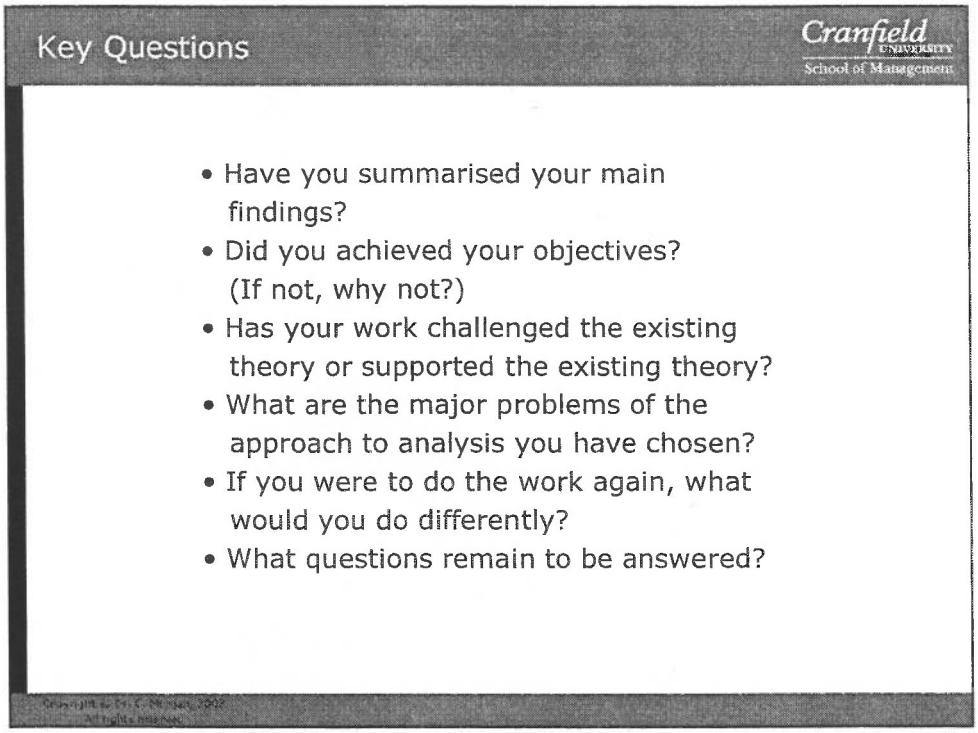
Introduction to the thesis



Literature Review

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The Literature Review

In this session we will identify the basic requirements for preparing & writing a review of the literature for your thesis

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Objectives

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- To identify the objectives of conducting a literature review
- To explore the different sources of literature that can used for your literature review
- To develop an approach that will deliver an acceptable level of academic underpinning for your thesis
- To identify the problems that are encountered during the writing process

Literature Review

What is Academic Underpinning?

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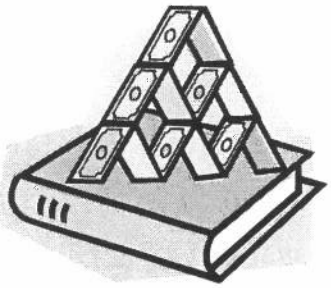

Academic underpinning is the 'theoretical' rock on which your thesis is built – it links your thesis with other academic work and creates a framework in which your own work can be judged and validated

Choice of Approach

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Formal

- Approach based on a main literature review chapter supported with relevant literature quotes in other parts of the thesis e.g. Methodology & Discussions
- Advantage – literature is easy to identify and make a judgement on (good for examiner!), also easier to develop thematic approach
- Disadvantage – relevance can be lost in complex argument

Diffuse

- Approach based on spreading the literature throughout the thesis perhaps with a short - formal literature review chapter that concentrates on identifying the main literature sources
- Advantage – good when problem investigated is diffuse
- Disadvantage – can be a challenge for examiner to judge the quality of the overall literature content

On balance the formal approach is less risky

Literature Review

Qualities of a Literature Review - 1

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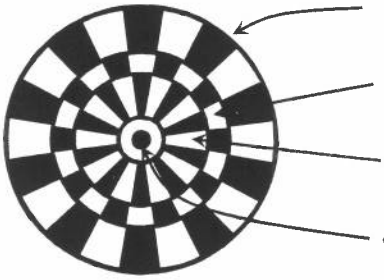
It should begin with an indication of what literature is to examined and why. Also it may be necessary to indicate what literature has been excluded and why.



- The whole possible literature
- The key themes of interest
- The most relevant issues
- The specific literature central to the investigation

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Literature Landscape - 2

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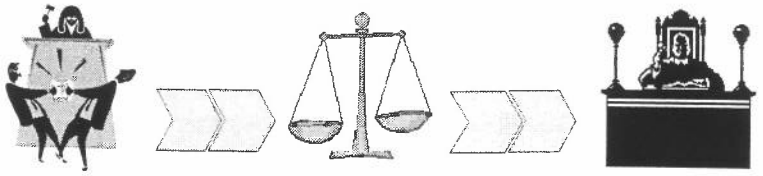
Reviews should be critical. They should provide the reader with a focused overview of the state of knowledge and of major questions in the subject area being investigated. It should read as a synthesis, written by someone who has examined the literature carefully and is able to look across it, select the highlights and synthesize these into a totally integrated section.



Examine the arguments without bias

Develop a balanced view

Explain the relevance/importance for the examiner

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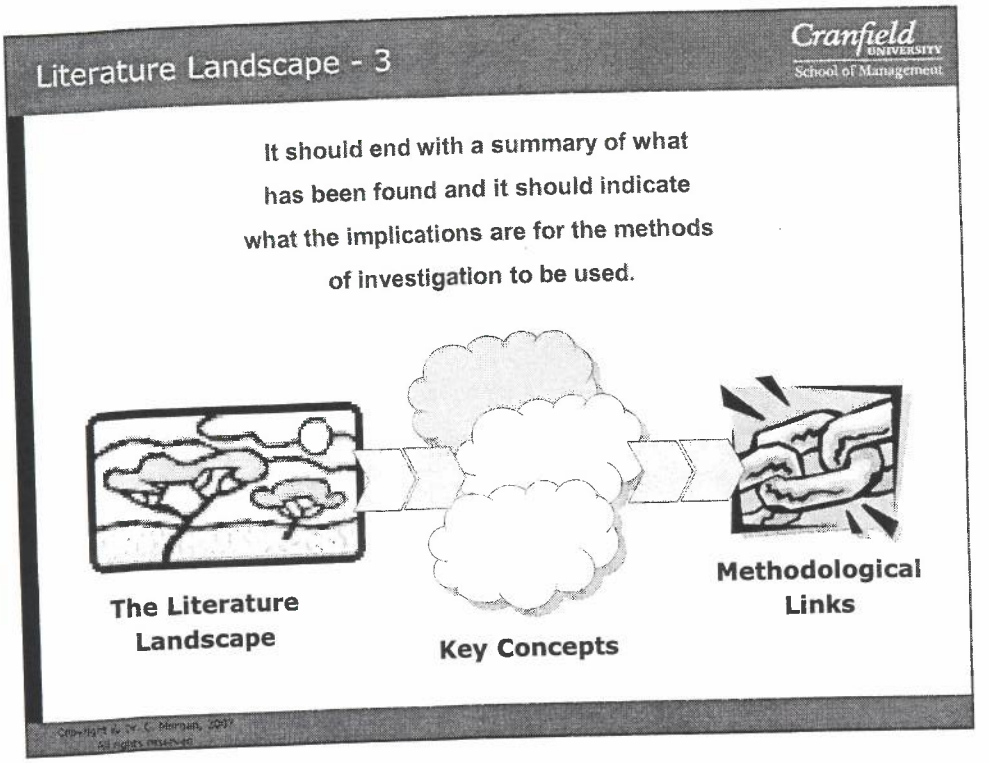
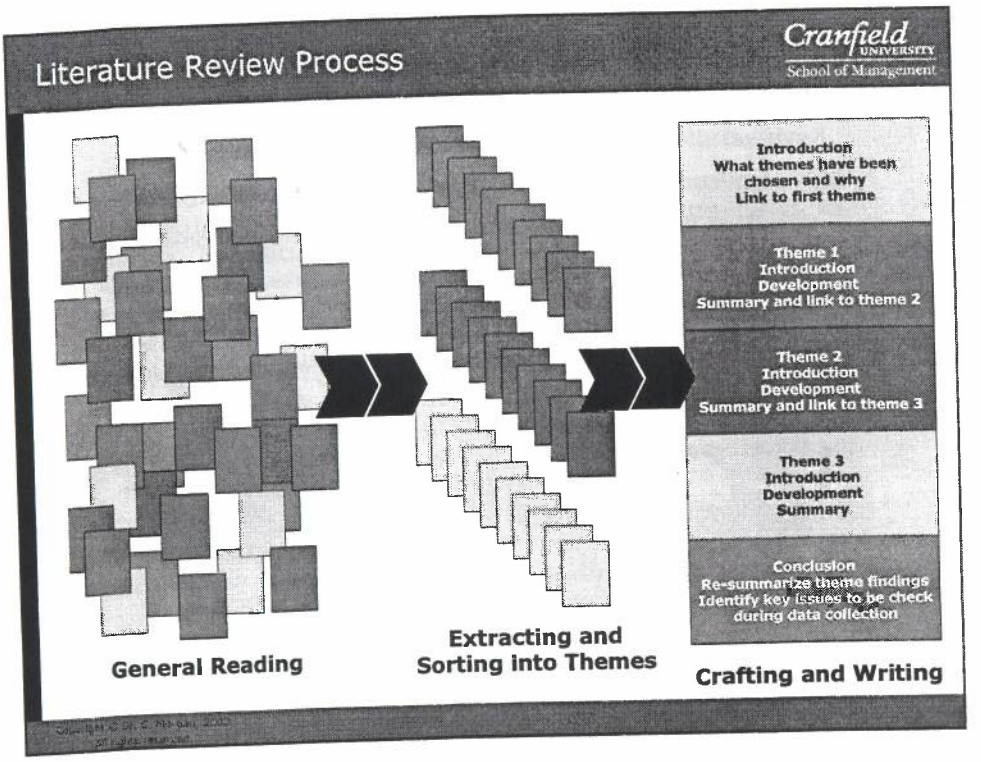
Literature Review





Literature Review

General Reading

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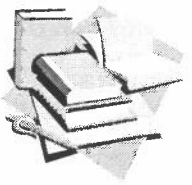
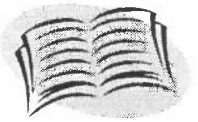


Books

- **Advantages – consolidated information, references, established themes, historical context, wide view**
- **Disadvantages – quickly out of date, authors bias, 'me-too' perspective**

==========



Journals

- **Advantages – up to date, highly focused, peer reviewed authority, up to date references**
- **Disadvantages – narrow view, journal bias, incremental perspective**

==========

Magazines

- **Advantages – up to date, good sources of case studies**
- **Disadvantages – rosy outlook, biased, commercial roots**

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Scanning Process

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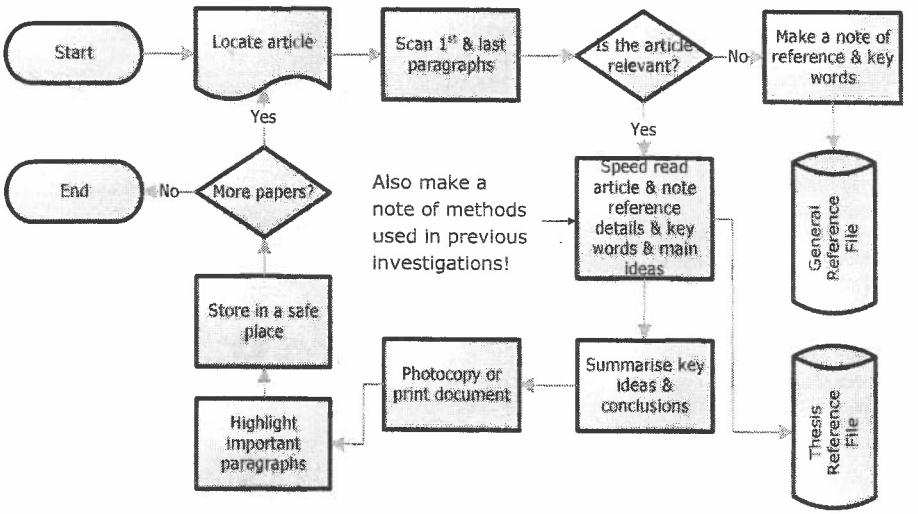

You may have to scan 150 articles to find 30 or 40 relevant ones!

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Literature Review

Tertiary Sources: Specialized Indexes and Services

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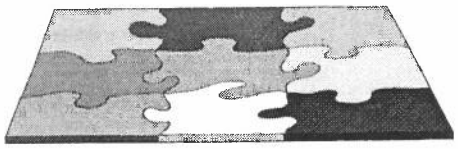
- HMSO Guides
- Chadwick-Healey Catalogue of Official British Publications
- EEC Documentation Bulletin
- Lexus/Nexus
- Index to McCarthy Industry Files
- Index to Mintel Reports
- Kelly's Business Directory
- Companies Registration Office
- The Information Bureau (Pay for Information)
- Institute of Management Library
- European Document Center
- Economist Intelligence Unit (Pay for information)
- IGD/SCKC



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Sources of Data

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Data generated by individuals and organizations

- Government publications
- Employers reports
- Trade Union reports
- Research organisation reports
- Consumer organisation reports
- Trade association reports
- Professional body reports
- Patent Office reports

Data organised and collated in secondary sources

- Books of readings
- Textbooks
- Bibliographies
- Academic journal reviews
- Academic journal index pages
- Annual review of books
- Abstracts
- Current contents

These are summarised in Tertiary Sources

- Subject grades
- Library catalogues
- On-Line databases
- Off-line databases
- Information services
- Librarians
- Tutor notes
- Past student dissertations

Data recorded in primary sources

- Books
- Academic journals
- Conference papers
- Unpublished research
- Newspapers and Magazines
- Company annual reports
- Company documentation
- Price lists and promotional material

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Literature Review

Internal Documents

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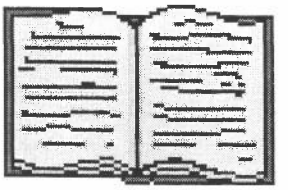

- Memo's
- Letters
- Management reports
- Technical reports
- Computer generated reports
- Strategy documents
- Accounting reports
- Marketing documents & reports
- Quality reports / monitoring information
- Sales reports
- Company archives/ official histories

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References

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Use the Harvard System of Referencing!

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Literature Review

Structuring the Approach

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Targets:

- 3,000 to 4,000 words (12-16 pages)
- Introduction – 1 to 2 pages
- Main analysis – 12 to 14 pages
- Concluding pages & links to methodology – 1 to 2 pages
- 3 key themes (where appropriate)
- Identify areas of theoretical weakness or contradictions
- Normally a minimum of 30 to 40 references
- Try to make sure references used are high quality
- Balance references in favour of books & journals
- Allow about 20 working days to complete work & write

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Conclusions

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- **Take a disciplined approach with a clear strategy and a well signposted route**
- **Allow adequate time to do this work, students always underestimate how long it takes**
- **A good literature review may help to compensate for a weak analysis**
- **Be critical, simply listing what has been written is not adequate, it shows no insight and does not demonstrate 'Masterly' qualities**
- **The skills you develop for the literature review are skills that will be of great use in all managerial jobs**

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Preparing for Data Gathering

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Preparing for Data Gathering & Data Processing

In this session we will begin to examine the preparation for gathering data for your thesis.

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Objectives

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- To clarify some of the research basics
- To identify the data gathering options that are commonly used in MSc theses
- To match the approach to the problem being investigated
- To explore data integration issues

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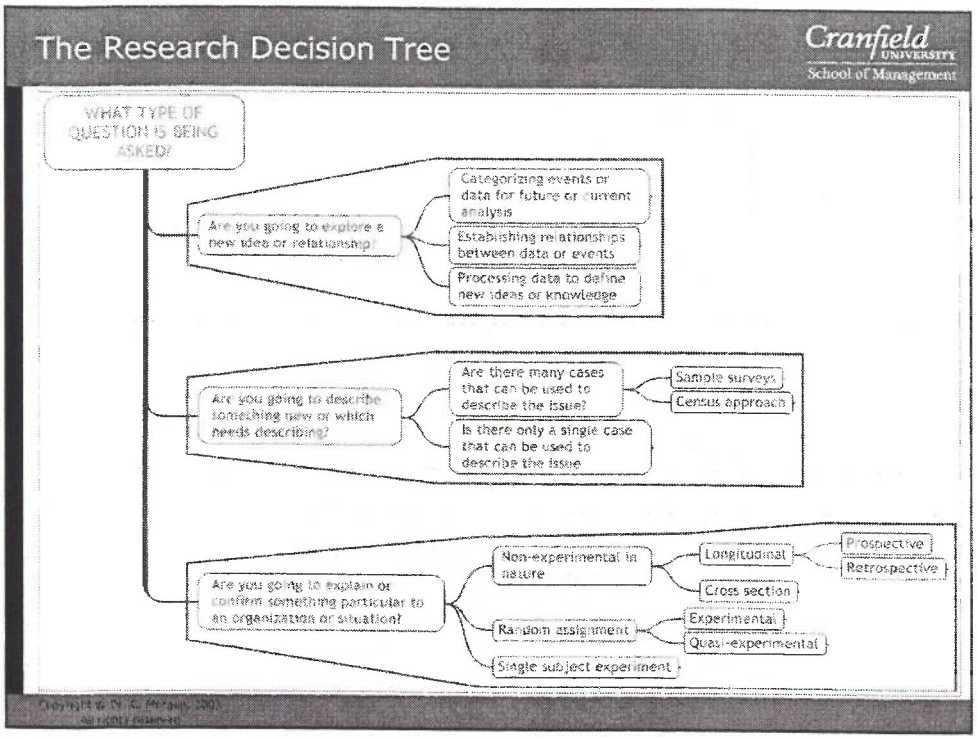
Preparing for Data Gathering



Applied Research vs Theoretical Research

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Applied Research

- Is focused on a real problem in a real company
- Is seeking either a solution or an indication of what must be done to get a solution
- Must be practicable in the circumstances the prevail
- Must be accomplished in a reasonable time
- May have a comparability element (benchmark)
- Must fit in with current culture

Theoretical Research

- Is focused on a research question (blue sky?)
- Must provide some original insights/knowledge
- Must follow a ritualised approach
- May take years to complete
- Must have a rigorous theoretical approach
- Will be exhaustive in nature
- May or may not provide practicable ideas/solutions

Preparing for Data Gathering

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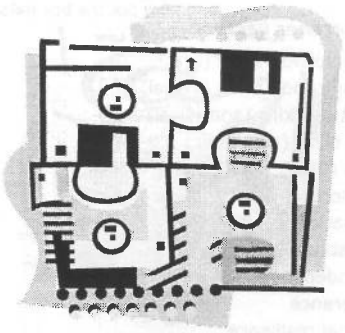

Research & You

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You!

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Hello! I'm
.....
and a student
from Cranfield –
can you help me?

However much you try, you will not be neutral in a research situation– you will have an effect because:

- of peoples perceptions of students
- of your own attitudes to people
- of your own social background
- of your sex
- of your age
- of your appearance
- of your own education
- of your ethnic origin
- of your own social skills

One of the keys to unlocking these problems is to know yourself and how you appear to others – ASK A FRIEND!

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Preparing for Data Gathering

Personal Research Prerequisites

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Rank the factors on the **right** in the order **you** think is most important (high = 1, low = 15)

Against the list of factors on the **left** tick the box **below** that best describes **you**

15 Researcher Factors	Low				High
• Communication skills (oral)	☐	☐	☐	☐	☐
• Communication skills (visual)	☐	☐	☐	☐	☐
• Intellectual skills (analytical)	☐	☐	☐	☐	☐
• Writing skills (academic)	☐	☐	☐	☐	☐
• IT skills (SPSS, Excel, etc.)	☐	☐	☐	☐	☐
• Motivation	☐	☐	☐	☐	☐
• Organisational skills	☐	☐	☐	☐	☐
• Observational skills	☐	☐	☐	☐	☐
• Independence	☐	☐	☐	☐	☐
• Perseverance	☐	☐	☐	☐	☐
• Emotional resilience	☐	☐	☐	☐	☐
• Originality	☐	☐	☐	☐	☐
• Teams skills	☐	☐	☐	☐	☐
• Empathic skills	☐	☐	☐	☐	☐
• Listening skills	☐	☐	☐	☐	☐

Please note: There are no right or wrong answers in this questionnaire, what really matters is that you your answer reflects your own opinion – and that you are honest with yourself.

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Researcher Competence

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Knowledge	***Skills***	***Personal Qualities***
Awareness of different assumptions about the world	Ability to plan, organise and manage own time	Awareness of own strengths, weaknesses and values
Awareness of different methods of data collection	Ability to search libraries and different sources	Clarity of thought
Awareness of different methodologies	Ability to gain support and cooperation from others	Sensitivity to events and feelings
Knowledge of immediate subject of study	Ability to structure and argue a case in writing	Emotional resilience
Knowledge of related subjects and disciplines	Ability to defend and argue views orally	Flexibility
Knowledge of key networks and contacts in chosen field	Ability to learn from experience	Creativity

Researcher competence is multi-faceted. It is important to recognise your weaknesses and either work on improving them, or avoid investigations where the weakness would have a bad effect on your performance

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Easterby-Smith, Thorpe, Lowe (1991) Management Research, Sage, London

Preparing for Data Gathering

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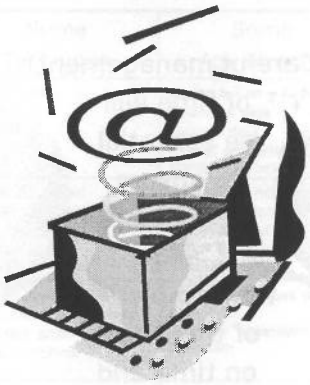

Managing the Process

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Project Planning – Main Events

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Literature review & writing up= 4 weeks

- Setting up the project = 2 weeks
- Designing the data gathering method = 2 weeks
- Testing data gathering method = 1 week
- Gathering data = 2 weeks
- Processing data & writing up = 2 weeks
- Preparing intermediate report for company = 1 week
- Writing up the thesis & coordination = 4 weeks
- Submit final draft for comment & wait = 2 weeks
- Correct final draft, bind & submit = 1 week
- Liasing with supervisor = 1 week
- Supervisor on holiday = 3 weeks
- **Total time to be accounted for = 27 weeks**
- **Total time available = 23 weeks!!!!**

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Preparing for Data Gathering

Managing the Thesis

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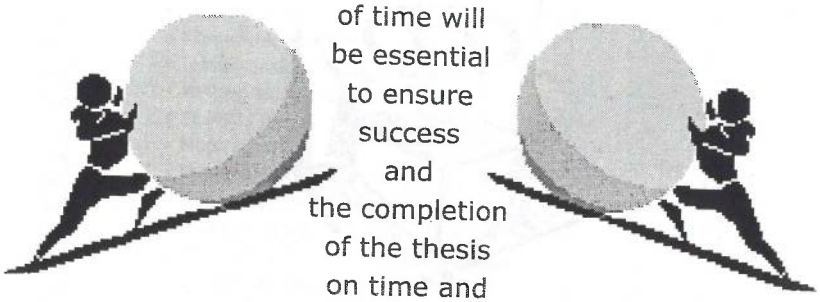

Careful management
of time will
be essential
to ensure
success
and
the completion
of the thesis
on time and
without error.
Make the whole
exercise 'Right First Time'
Plan! Plan! Plan! Plan! Plan!

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Most Likely Thesis Themes

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An analysis of recent theses shows some recurrent themes:

- *Analysis of processes to reduce cost/improve performance/reduce time*
- *Analysis of existing data (computer database) to extract relationships & achieve improvement*
- *Analysis of literature to identify themes/trends/ issues for a research programme*
- *Investigate current activities in order to explain what is happening/plan for the future/review forecasting methods & accuracy*
- *Investigate current activities in order to develop better management control systems/performance measurement/simplify control*
- *Model a current situation to allow better planning/ forecasting*
- *Examine management systems to improve and achieve corporate targets/reduce costs*

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Preparing for Data Gathering

Basic Data Gathering Techniques

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Data collection method	Some Technique	Some Advantages	Some Disadvantages
Surveys & Questionnaires	Face to Face Postal Internet E-mail	Design & Test – Apply Relational data Focused data Ease of processing using standard software	Survey fatigue Response rates low (3-7%) Take a lot of energy Not good in short time slots
Interviews	Formal structured Informal unstructured Semi-formal (mixture) Panel/Group Expert	Information rich answers Flexibile & probing aproach Observation of non-verbal's Referral to others	Interviewer bias Hidden agendas Interviewer intervention Time consuming both doing & translating
Tests & Scales	Attitude measurement Personality measurement Repertory grids Likert/Thurstone	Allow softer issues to be quantified Good for 'population' definition	Intrusive Testee sensitivity Population bias/ethnicity Scale size & generalisability
Observation	Mapping activities Indirect (cause & effect) Direct observations Participant	Fairly natural responses from subject In situ observation allows relationships to be understood	Hawthorne effect Time consuming & may require several repetitions Missing unusual routines
Other	Document analysis Reaction analysis Database analysis Simulation	Data available Spontaneous responses Volume of data Near approximations	One dimensional Observer distortion Accessing data Correct assumptions

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(Example) Problem – Objectives - Approach

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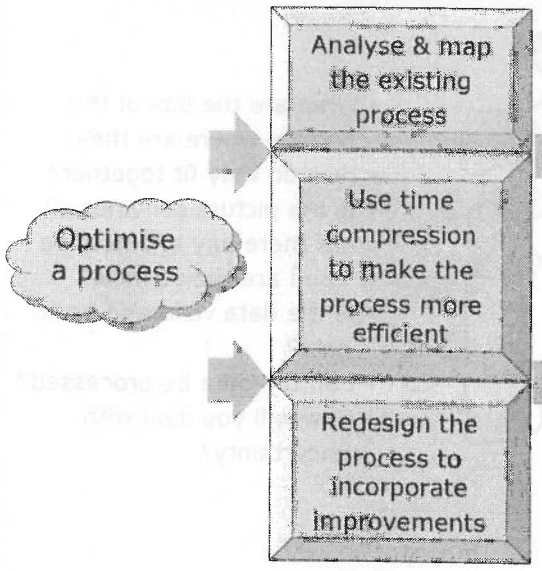

- observe the current process and produce a process flow chart
- take sample times for each element of the current process
- examine the process to eliminate activities that are unproductive, inefficient, etc.
- optimise the process
- re-analyse the process using time compression
- re-engineer the whole /part process
- prepare plan for change
- estimate times/costs

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Preparing for Data Gathering

Using Data to Build Up Your Case

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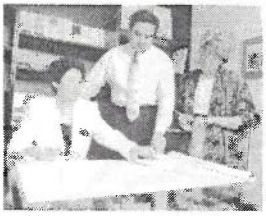

- have you lined up data gathering with your thesis objectives?
- what can be got quickly & how good is it?
- what is missing & how can it be obtained?
- how is the data to be processed?
- how much data is needed & are there any issues about sample size?
- are you gathering a –
  - statistically significant sample?
  - representative sample?
- will your data stand up to examination -
  - are there any quality issues?
  - are there any volume issues?
  - can you triangulate the data?
- have you processed and assembled the data in line with your objectives?

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Key Questions

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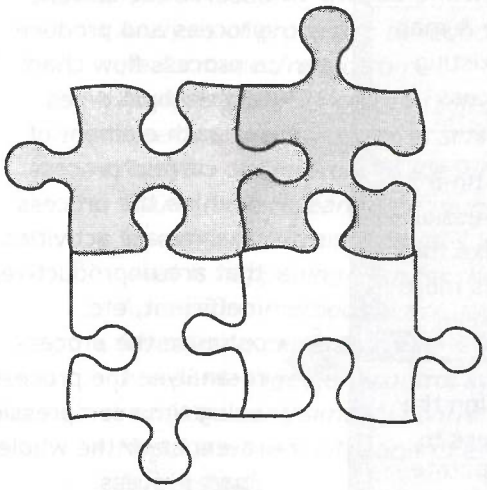

- What are the bits of the jig saw-where are they?
- How do they fit together?
- Is the picture convincing?
- Are there any bits missing - and are they critical?
- Is the data valid and up to date?
- Can the data be processed?
- How will you deal with uncertainty?

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Preparing for Data Gathering

Conclusions

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- They real key to success in a thesis is preparation
- Immersion in the company and its culture will enable a more balanced view to be obtained
- Great care must be taken to understand how your own presence affects events and people
- Work on the basis of 'no surprises' and be prepared to explain what you are doing and why many times
- Discuss your findings with managers and workpeople to make sure that you have understood what you have seen
- Always ask to see if you have missed anything that is important
- Always give people credit for the help you receive

If things are not going well it's probably your own fault!

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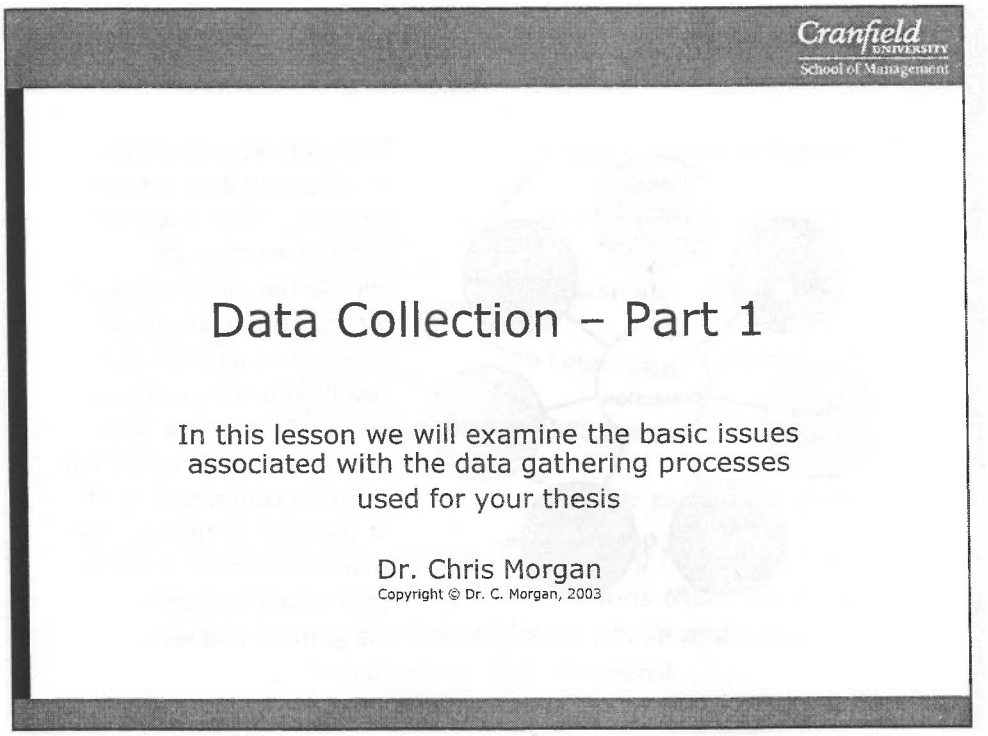
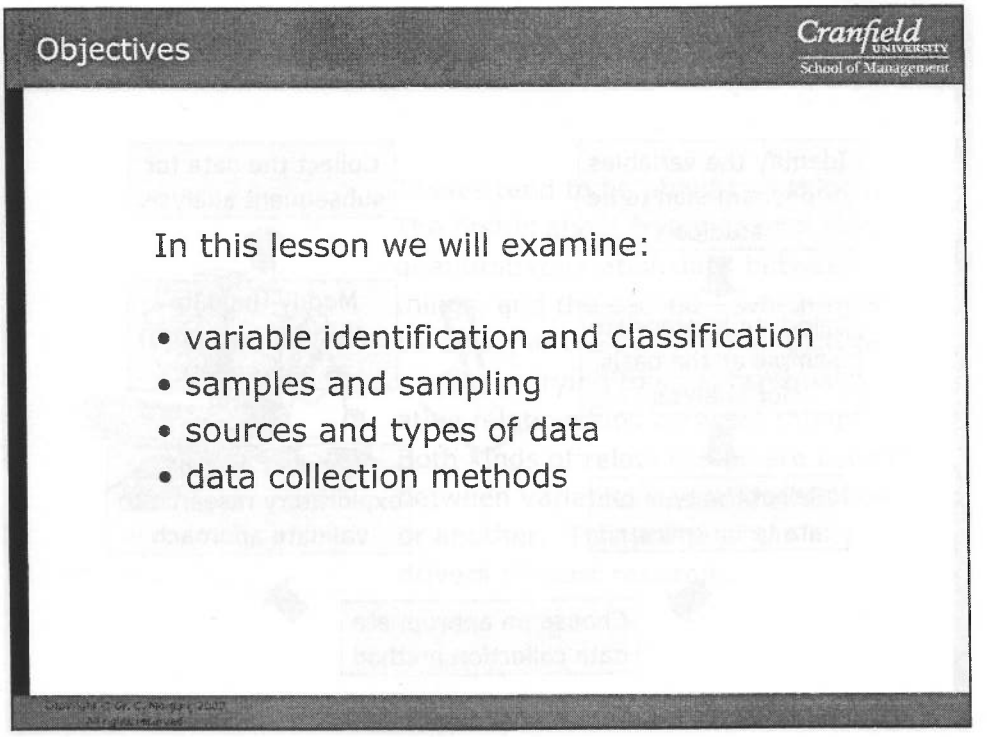
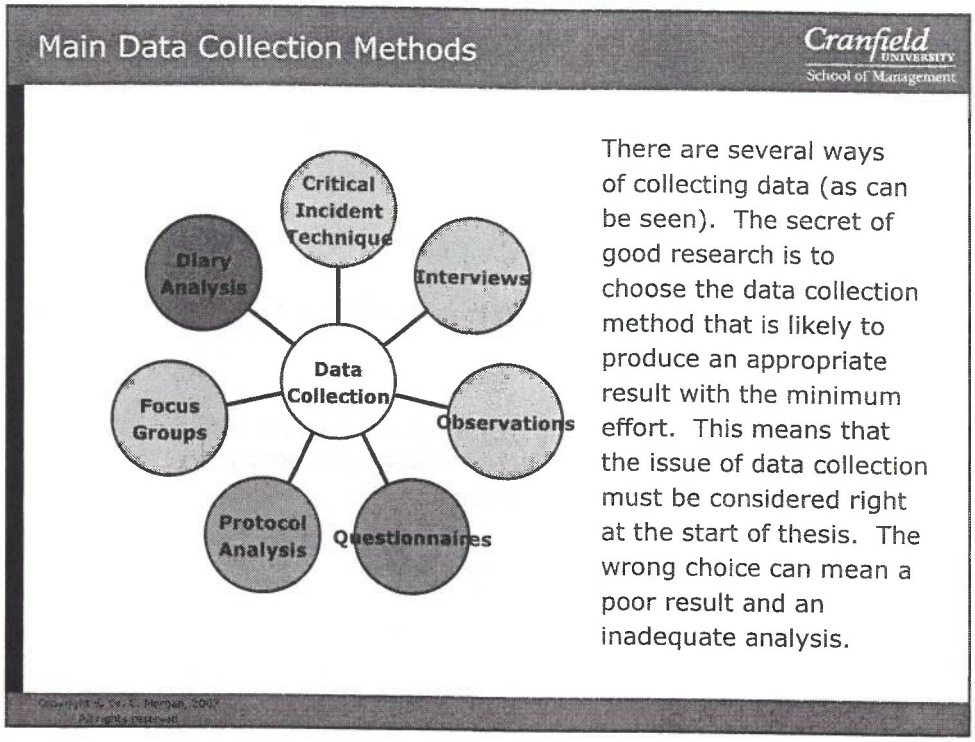
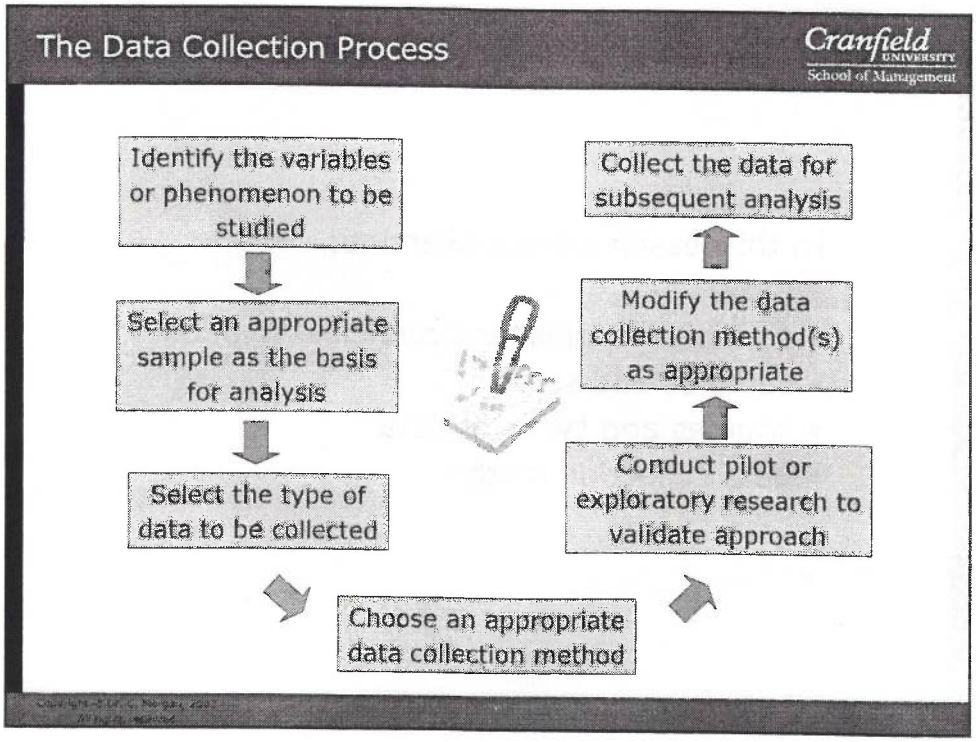
Data Collection – Part 1





Data Collection – Part 1





Data Collection – Part 1

Unit of Analysis

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What is your unit of analysis?

- Process
- Individual
- Organisation
- Divisions
- Industry
- Events

→ Stock placing & retrieval

→ Fork-lift driver activities

→ Warehouse operations

→ Logistics in manufacturing

→ 3PL overall activities

→ Historic evolution or case study

The unit of analysis is critical to achieving focus in a thesis. Losing focus is one of the main reasons that theses go wrong during the investigation phase and work 'mushrooms' out of control

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Variables – Why Are They Important?

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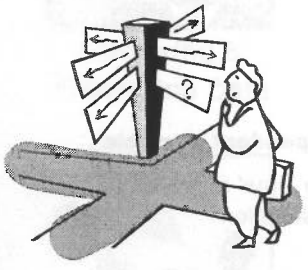

Theses tend to be about two things. The first is about trying to establish quantitative relationships between things, and the second – which may be a part of the quantitative picture - is about trying to establish qualitative relationships between things. Both kinds of relationships are usually between variables of one description or another. This is one of the key drivers of most research.

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Data Collection – Part 1

Choice of Variables for Analysis

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Quantitative Variables
Variables where little or no judgement is required in interpreting them, they may also possibly be independent of the context of the investigation

Qualitative Variables
Variables where meaning is contextual, interpretation is judgemental and based on a phenomenological framework

Examples

Qualitative Variables
e.g. Name, Job Title, Place of birth
Colour of hair/eyes, ethnicity
Ordered Qualitative Variables
e.g. Social class, Qualifications, Job Grade, Sex

Discrete Quantitative Variables
e.g. Number of dependants, Number of subordinates, Number of cars owned
Continuous Quantitative Variables
e.g. Income, Height, Weight

Dependent and Independent Variables

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An independent variable is the variable that can be manipulated to determine the value of the dependent variable.

Examples:

Independent Variable		Dependent Variable
Number of miles travelled on motorway	⇨	'On Time' arrival at destination
Average speed of fork-lift truck in warehouse during shift	⇨	Number of warehouse accidents involving fork-lift trucks

Data Collection – Part 1

Masking (or Exogenous) Variable

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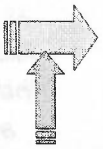
A masking variable is an additional variable to the independent variable that has an impact on the dependent variable. The impact of the masking variable is usually to distort the effect of the primary independent variable. This distortion is usually transient.

Example:

Independent Variable
Average speed of fork-lift truck in warehouse during shift



Dependent Variable

Masking Variable
Time since last maintenance

Sampling & its Importance

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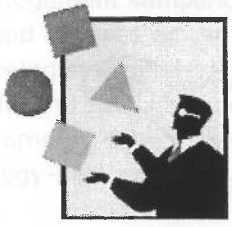
Gathering & Processing Data



Synthesising & Making Conclusions

Choosing the appropriate variables is obviously important, but often continuous observations and recording of data is neither necessary or desirable to obtain a satisfactory outcome to the thesis.

Taking an appropriate set of sample observations/measurements is usually critical to achieving a satisfactory outcome to your thesis

Data Collection – Part 1

Choosing a Sample

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Process

Target Population?
↓
Sampling Framework?
↓
Sample Selection?
↓
Sample to Population Conversion?

Criteria

- Chosen at random?
  or
- Entire population?
- Large enough to be significant to the investigation?
- Unbiased?

Process and criteria are not independent of one another and need to be carefully thought through.

Random Sampling – Systematic Sampling

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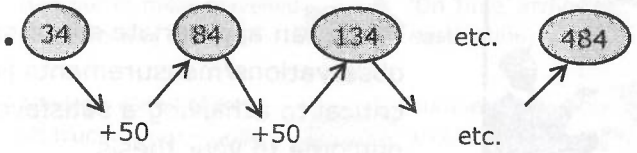
- Define population sample (say 500)
- Define sample size (say 10)
- Allocate each of the population a discrete number
- Divide the population by the required sample size (500/10 = 50)
- Select a random number between 1 and 50 (say 34)
- Starting at 34 select the 50th sample after that etc until 10 samples have been chosen



- Collect data from the chosen samples

Data Collection – Part 1

Random Sampling – Stratified Sampling

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- Population = 376 (male 256:female 120)
- Sample size = 50
- Samples required, male = (256/376)x 50 = 34
  female = (120/376)x50 = 16

or

Age band	Percent required	Sample size
15-20	36	135
21-40	48	180
41-60	14	53

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Other Sampling Systems

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- Quota sampling: interviewing a number of people who belong to a group (e.g. 25 people, male, under 23)
- Multi-stage sampling: move from macro to micro (e.g. start with sample from company, then from division, then from factory, etc.)
- Snowball sampling: begin with a small number of interviews and then ask for recommendation for further interviews from interviewees
- Judgement sampling: the sample is selected by the researcher and is based on the researchers prior knowledge of the variable being studied
- Natural sampling: department specific samples, specialist group samples, time dependent samples
- Piggy-back sampling: using a sample from an existing survey*

* Care must be taken to ensure that you produce original work

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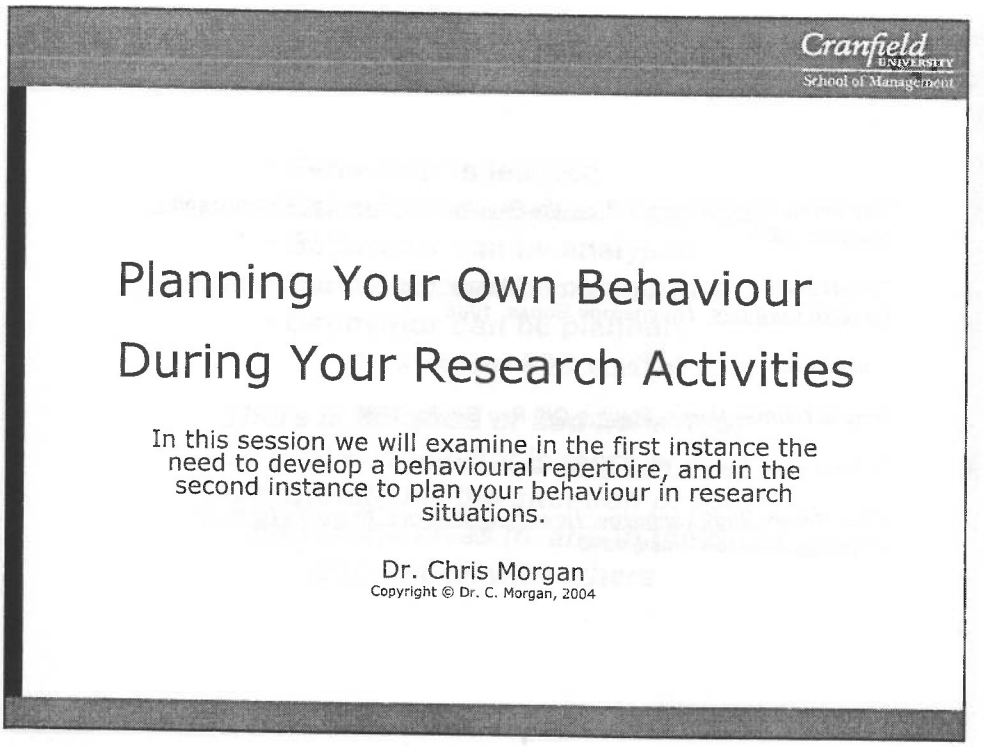

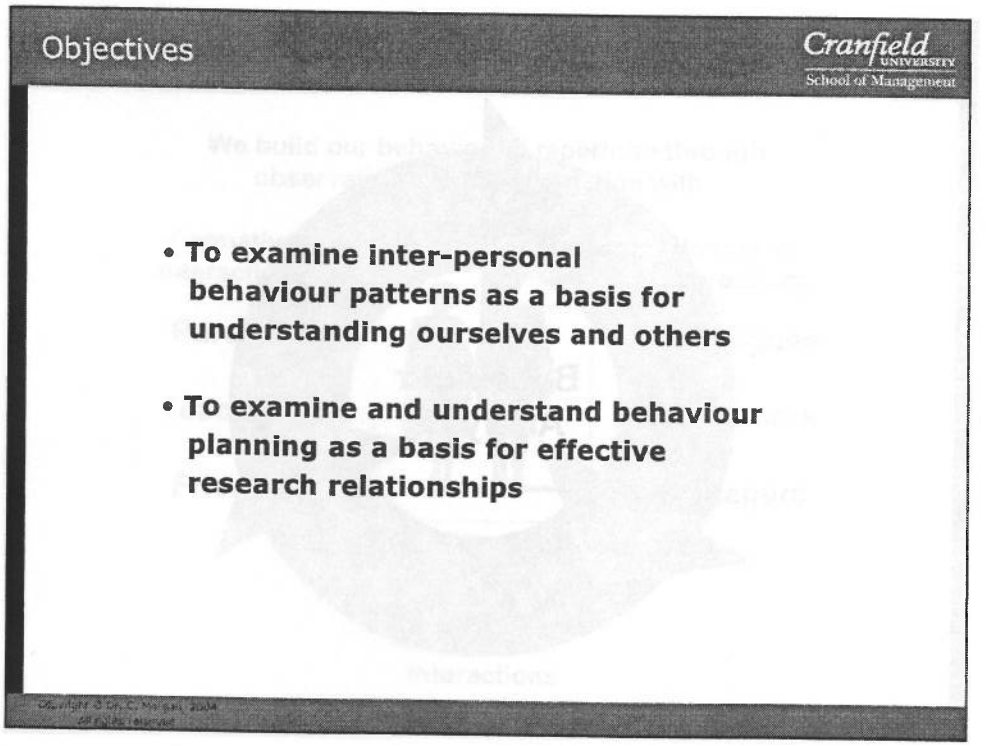

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Recommended Reading

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Eric Berne, Games People Play: the Psychology of Human Relationships, Penguin, 1977

Robert Bolton, People Skills: How to Assert Yourself, Listen to Others and Resolve Conflicts, Touchstone Books, 1986

Thomas Harris, I'm OK You're OK, Arrow Books, 1995

Amy & Thomas Harris, Staying OK, Pan Books, 1985

Peter Honey, Face to Face Skills, Gower, 1990

Allan Pease, Body Language: How to read others' thoughts by their gestures, Sheldon Press, 1993

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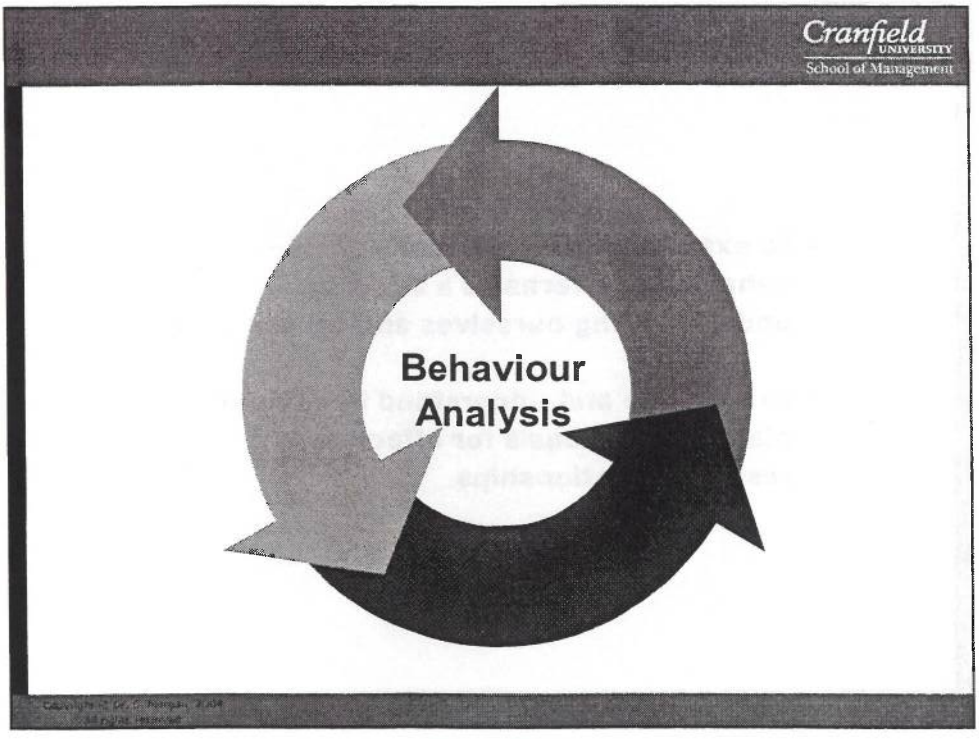

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Planning Your Own Behaviour

5 Behavioural Rules

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- Behaviour is learned
- Behaviour is reactive
- Behaviour can be analysed
- Behaviour can be changed
- Behaviour can be planned

There is no good or bad behaviour only behaviour that is more or less appropriate for the situation people find themselves in, and in their interaction with others

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Behaviour is Learned

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We build our behavioural repertoire through observation of, and interaction with -

Formative Interactions

Parents

Teachers

Friends

Normative Interactions

Colleagues

Customers

Managers

Role Models

Reference Interactions

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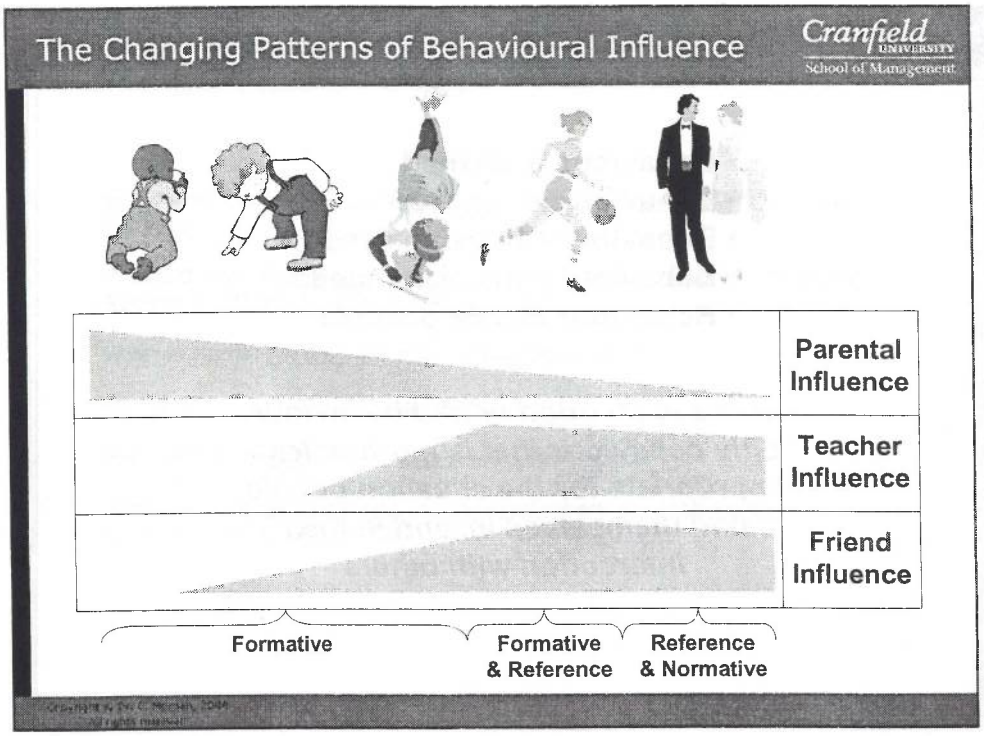

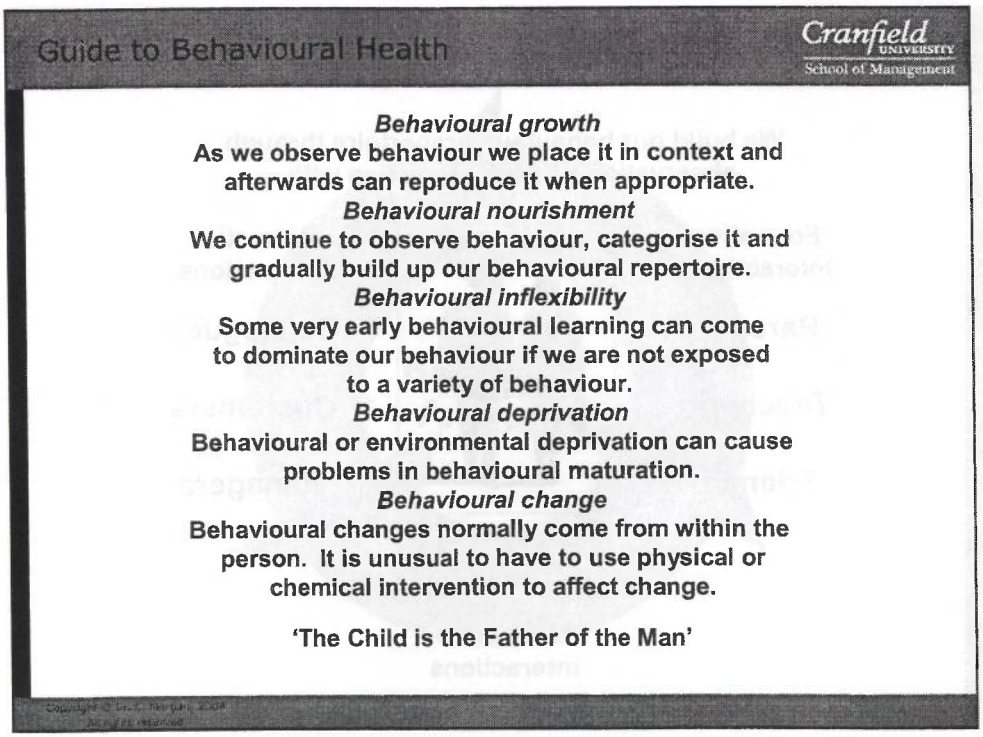

Planning Your Own Behaviour

Behaviour is Reactive

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We cannot see into other people's heads!

We can observe their physical activities.

We can listen to what they say.

We can respond to what they do.

We can reply to what they say.

It is no coincidence that we acquire 70% of our data by sight and 20% of our data by hearing.

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What Drives Behaviour?

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Our ego is what drives our behaviour. The ego is not a singular thing but it has three dominant facets or 'states'.

The PARENT ego is influenced by the social rules and behaviour regulations that parents impose on to their children in the first five or six years of life and which are uncritically accepted.

The ADULT ego is influenced by experiential data gathering and/or giving. While it is in evidence quite early in life when children experiment with their environment, it continues to evolve and becomes the main evaluative behavioural state.

The CHILD ego is influenced by the learnt emotional responses to the parents and parental situations, again largely developed during the first five or six years of life.

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Planning Your Own Behaviour

Parent Behaviour Patterns

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Gestures

- Pointing
- Hands on hips
- Folded arms
- Foot tapping
- Tongue clicking
- Sighing
- etc.

Words

- I'm putting a stop to this
- Now, remember ...
- How many times have I told you?
- I can't trust you at all!
- Can't you cope?
- etc.

In general parent behaviour can be categorised in one of two ways -

1. **Supportive or nourishing parent**
2. **Critical parent**

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Adult Behaviour Patterns

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Gestures

- Head tilted
- Hands steepling
- Careful watching
- Careful listening
- Note taking
- Face to face
- etc.

Words

- Who?
- What?
- Why?
- When?
- Where?
- On balance
- etc.

In general adult behaviour can be typified in one of three ways -

1. **Information gathering**
2. **Information processing**
3. **Information giving**

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Child Behaviour Patterns

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Gestures

- Laughing
- Crying
- Stamping foot
- Nail biting
- Shrugging shoulders
- Giggling
- Squirming
- etc.

Words

- Shan't
- Can't
- Won't
- I want
- I wish
- I don't know
- I'm best
- etc.

In general child behaviour can be categorised in two ways -

1. **The adaptive child (responding to parental influences).**
2. **The natural or free child (carefree).**

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Complimentary Transactions

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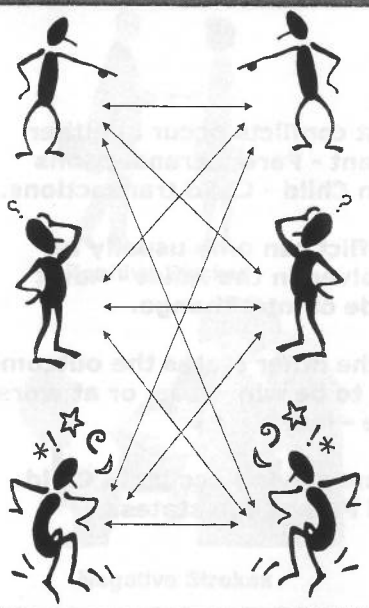

These occur when the sender of the message get the response they expect.

In any exchange the message sending ego state may change as the transaction proceeds. As long as the reply comes from the appropriate ego state of the replier then there are no problems.

Most of these transitions are made automatically and naturally. If they are forced then we sense it very quickly.

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Planning Your Own Behaviour

Crossed Transactions

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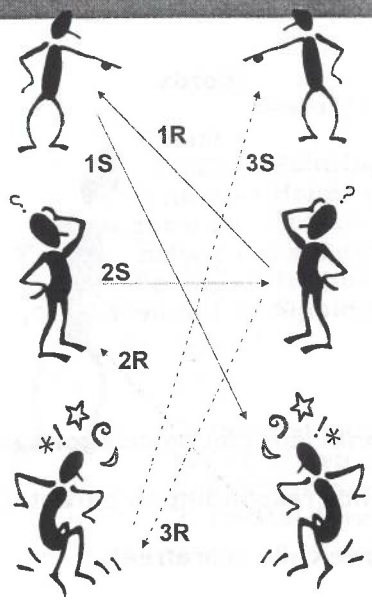

Crossed transactions occur when the message is sent to one ego state but the reply comes back from another.

These can cause problems for sender and receiver alike. They can be the result of a behavioural block, a deliberate ploy or alternatively may be the result of a poorly developed behavioural repertoire.

Conflicts

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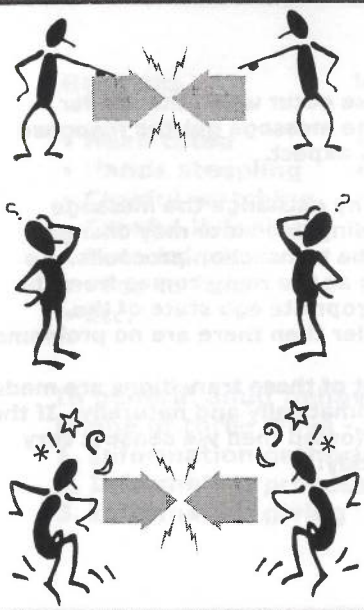

Most conflicts occur in either Parent - Parent transactions or in Child - Child transactions.

Conflict can only usually be resolved in the Adult - Adult mode of interchange.

In the other states the outcome has to be win - lose, or at worst lose - lose.

Game playing occurs in Child and Parent ego states.

Planning Your Own Behaviour

Problem Behaviour

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Much problem behaviour stems from either an undeveloped ego state, or an ego state that is blocked off because of a physical or emotional problem.

Criminals, who apparently commit awful crimes without any conscience or remorse, are often found to be unable or unwilling to access their Parent ego. It is this ego that tells us right from wrong, good from bad.

Corrective treatment often requires the repair or rebuilding of an ego state or the removal of a barrier.

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Psychological Strokes

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Positive Strokes

Negative Strokes

People who have a dominant role (e.g. managers) often find that they have to encourage people as well as correct problems. When encouragement is given we administer positive strokes, when correction is given we often give negative strokes or discounts.

We all need positive strokes and they help us to feel valued and appreciated. Negative strokes, if given too often can lead to problem behaviour.

Try to correct problems using positive strokes!

Planning Your Own Behaviour

Stamp Collecting

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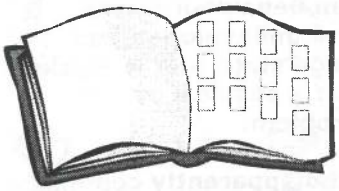
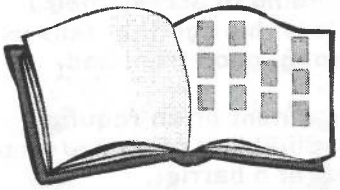


Gold Stamps



Brown Stamps

Unacceptable behaviour can be triggered through collecting a book of 'behavioural' stamps - and then cashing in the book for some 'free' behaviour, that is behaviour that can done without feeling guilty.

GOLD STAMP collectors collect strokes and usually award themselves a treat e.g. a free meal at the expense of the company

BROWN STAMP collectors collect discounts and usually award themselves some bad behaviour e.g. failing to do something important.

WHAT KIND OF STAMP COLLECTOR ARE YOU?

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Game Playing

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Playing behavioural games is natural to most people. We learn the games we play early in life and often from our relationships with our parents and close friends. In the right context and within normal limits games are OK. However, in the wrong context and outside normal limits game playing can be a problem.

In the business environment game playing is usually non-productive and results in time wasting. A small amount of game playing is needed to provide some psychological relief. However, when game playing takes over it can lead to serious inefficiencies and to great unhappiness for 'game losers'.

Keep your eyes open for game playing (your own and others) and try to keep it under control.

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Planning Your Own Behaviour

Games in the Business Environment

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- **Blemish - It is quite good overall, but it's a pity about ....**
- **Now I've got you - I knew if I waited long enough this would happen**
- **See what you made me do - I was doing OK 'til you came**
- **Kick me - It's my fault, I deserve to be punished for what happened**
- **Alcoholic - I am useless, I can't help myself, will you rescue me?**
- **Cornered - I give up, whatever I do for you is wrong**
- **Ain't it awful - This place gets me down, there are always problems**
- **Schlemiel - I can do things wrong and still get forgiven**
- **Why don't you : Yes but ...**
- **Uproar - (At end of argument) We'll see who wins! (leaves & slams door)**
- **Deprivation - Don't let Watson know about what's going on**
- **I'm only trying to help you**
- **Wooden leg - I had a breakdown so I can't be put under pressure**
- **Cavalier - See how good I make you feel! My you make me feel good!**

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OK-ness

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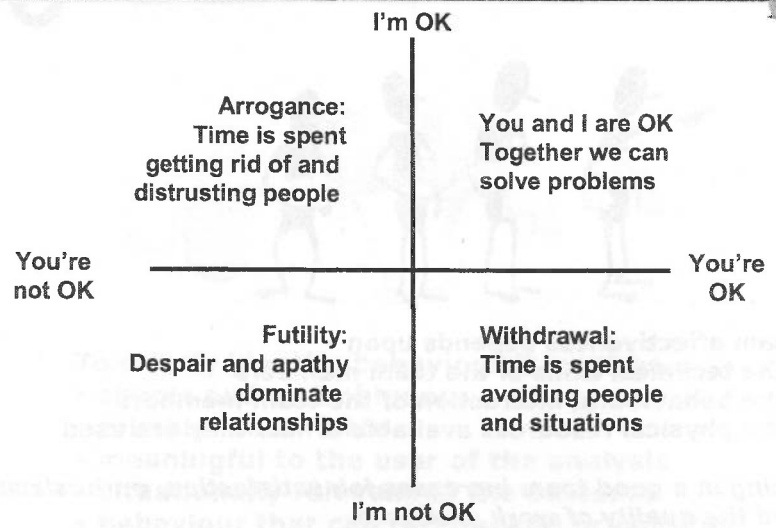

Behavioural strategies should be aimed at promoting the I'm OK - You're OK situation

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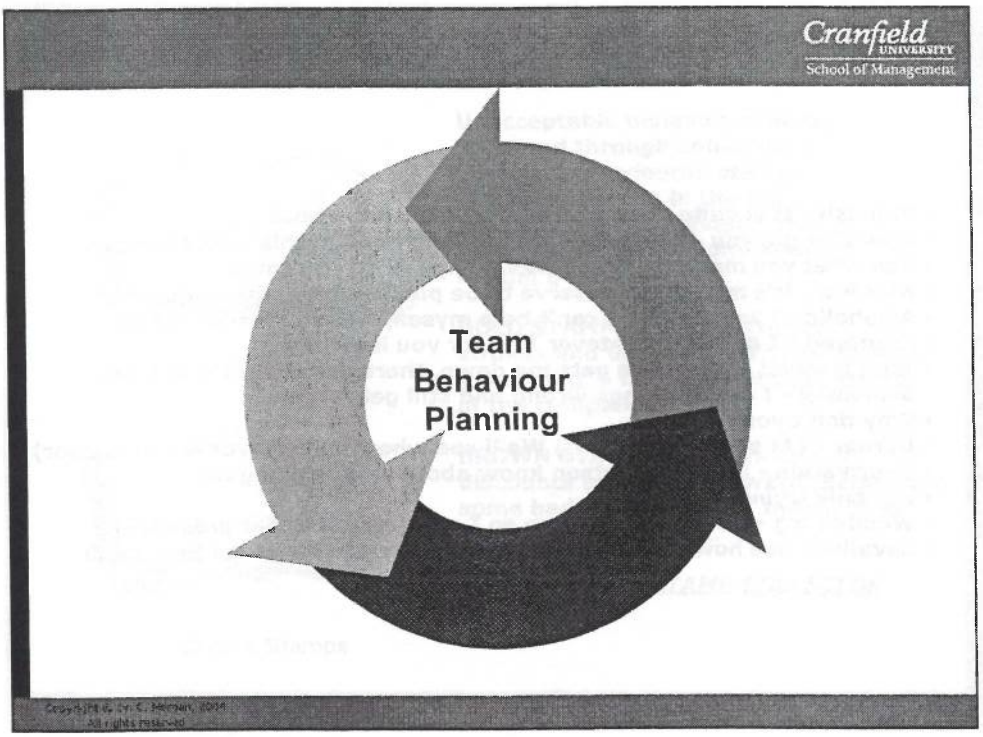

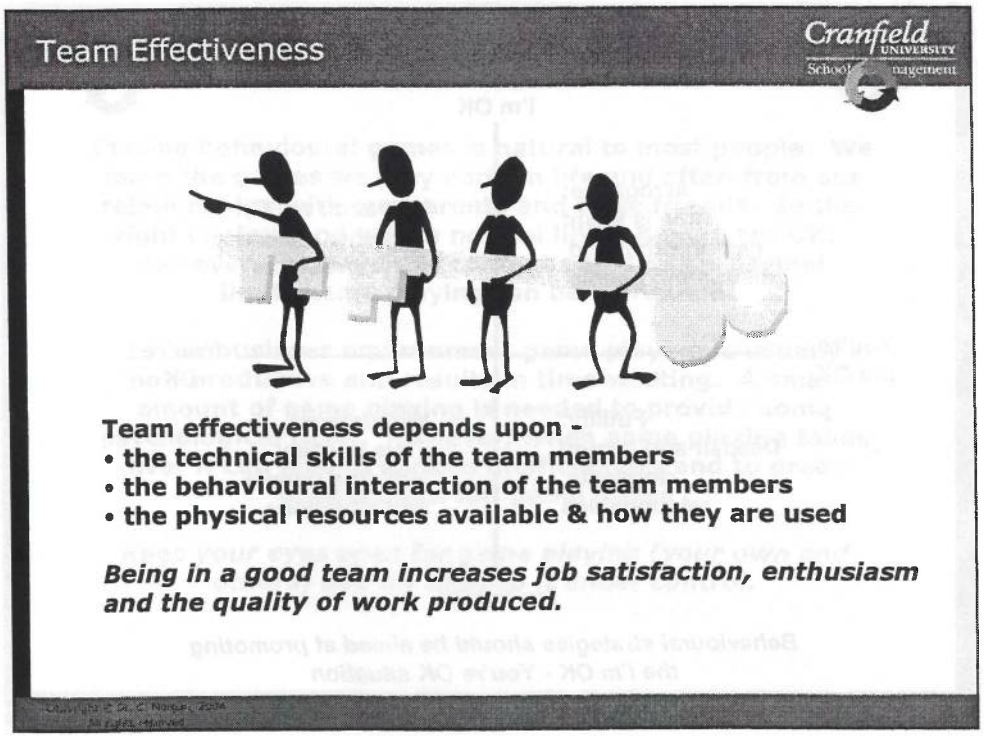

Planning Your Own Behaviour

Team Objectives

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When agreeing objectives for a team to achieve they should include -
- **what has to achieved in terms of quantity**
- **the quality standards to be used**
- **the time and cost targets**

and
- **behavioural targets**

Behaviour between team members affects the team efficiency; needs to vary from situation to situation; should be in step with achieving objectives; and, needs to be organised and controlled.

Continuous team improvement will come from achieving all objectives, consolidating, learning and listening to the customer - who should also be considered as a part of the team!

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Analysing Team Behaviour

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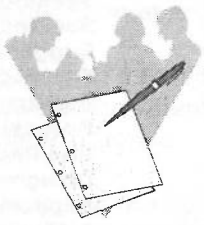

To clearly identify behaviour it must be -
- **simple and unambiguous**
- **reliably identifiable**
- **meaningful to the user of the analysis**
- **situationally relevant to the outcome**
- **behaviour that can be changed or modified**

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Planning Your Own Behaviour

Types of Team Behaviour

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Type	Reaction
Seeking proposals	*- generates proposals or suggestion*
Proposing	*- generate supporting or difficulty stating reaction*
Suggesting	*- better than 'proposing' & can induce building or clarification behaviour*
Building	*- encourages more building and/or supportive behaviour*
Disagreeing	*- encourages aggressive reaction to disagree back*
Supporting	*- can encourage more suggestions or possibly verbosity if not careful*
Difficulty stating	*- the response to this is unpredictable*
Seeking clarification	*- the response is to get clarification*
Other behaviour	*- summarising, checking on agreement, seeking/giving information etc.*

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The Relative Power of Behaviours in Teams

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HIGH POWER

Seeking proposals / suggestions
Seeking clarification
Suggesting
Seeking information
Seeking agreement
Proposing
Building
Disagreeing
Supporting
Difficulty stating
Giving clarification
Explaining

LOW POWER

Effective teams and team members consistently use the high power behaviours in their interactions with colleagues and their customers.

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Planning Your Own Behaviour

Towards More Effective Behaviour

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- **Don't get into disagreement spirals - ask for alternative suggestions**
- **Coping with 'wet blankets' - ask for suggestions**
- **Avoid disagreeing or difficulty stating yourself - look for ways of building**
- **If you feel that you are losing control in a situation try to to build up suggestion seeking activity**
- **If you want people to agree with you use suggestions rather than proposals - build on others ideas**
- **Use behavioural flags to separate on behaviour from another**
- **Plan your behaviour before important events**
- **Avoid manipulating other's behaviour other than to achieve an organisational or team goal - otherwise you will be perceived as a schemer and no one will trust you!!**

THINK ABOUT YOUR BEHAVIOUR

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Conclusions

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- With practice it is possible to identify what kind of behaviour is going on at any point in time.
- By carefully observing a person's behaviour it is possible to determine where they are coming from in a behavioural sense.
- By carefully observing the behaviour of a group of people it is possible to understand the dynamics of the group and who is influencing what is going on.
- In both cases we can adjust our own behaviour and keep it in line with our objectives during our interactions.

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Quantitative Research - 1

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Qualitative Research - 1

In this lesson we will examine the approaches that can be taken towards designing and planning qualitative research

Dr. Chris Morgan

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Objectives

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- **To explore the issues that qualitative research raises in terms of the research design**
- **To identify some of the basic strategies that are used in qualitative research**
- **To examine the issues that surround recording data in qualitative invetigation**

Quantitative Research - 1

Comment

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Because much of the data gathered during qualitative investigations is subjective in nature, researchers engaged in this form of research pay a great deal of attention to the methodologies used to gather and interpret the data used.

Whereas there is common agreement as to the approaches and methodologies used in quantitative investigations, the same is not true of qualitative investigations. This can lead to acrimonious debates among academics that often have no reasonable outcome.

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Words & Phrases Commonly Used

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- Phenomenology – an analysis based on subjective assumptions
- Ethnography – the use of 'common' knowledge to understand behaviour
- Hermeneutics – the use of historic/social context to understand relationships
- Cognitive (mapping) – group interviewing with people who share a view
- Grounded Theory – procedure based methodology used to derive theory
- Epistemology – the study of knowledge and its validity
- Semiotics – the study of signs or symbols
- Ontological – people's view about reality
- Axiological (assumption) – people's assumption about the role of values
- Action Research – a methodology focused on change situations
- Triangulation – the use of different research techniques in the same study
- Positivism – an assumption that social reality is independent of us
- Paradigm – an view derived from commonly held collective opinions
- Empirical (evidence) – data based on observation or experience
- Repertory Grid – the constructs individuals use to understand their world

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Quantitative Research - 1

Ethical Considerations - General

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- Define the terms of engagement with the organisation - what happens if you see something illegal?
- Define what you mean by confidentiality & anonymity - also explain the publication constraints
- Informed consent from the participants – you must explain the purpose of the research to people who participate and seek positive engagement
- Honesty of the researcher – some researchers are prepared to falsify or manufacture data to get their ideas/thesis accepted

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Ethical Considerations – Key Questions

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- Will your research harm the participants in any way?
- Are people not involved in the research likely to be harmed?
- Are you violating accepted research practice?
- Are you violating broader community standards?
- Do you feel that you are being manipulated for unethical/illegal reasons?
- Will your presence compromise someone else?
- Does the research compromise your own religious or social convictions?
- If you promise to give people feedback do you do so?

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Adapted from Hussey & Hussey, 1997

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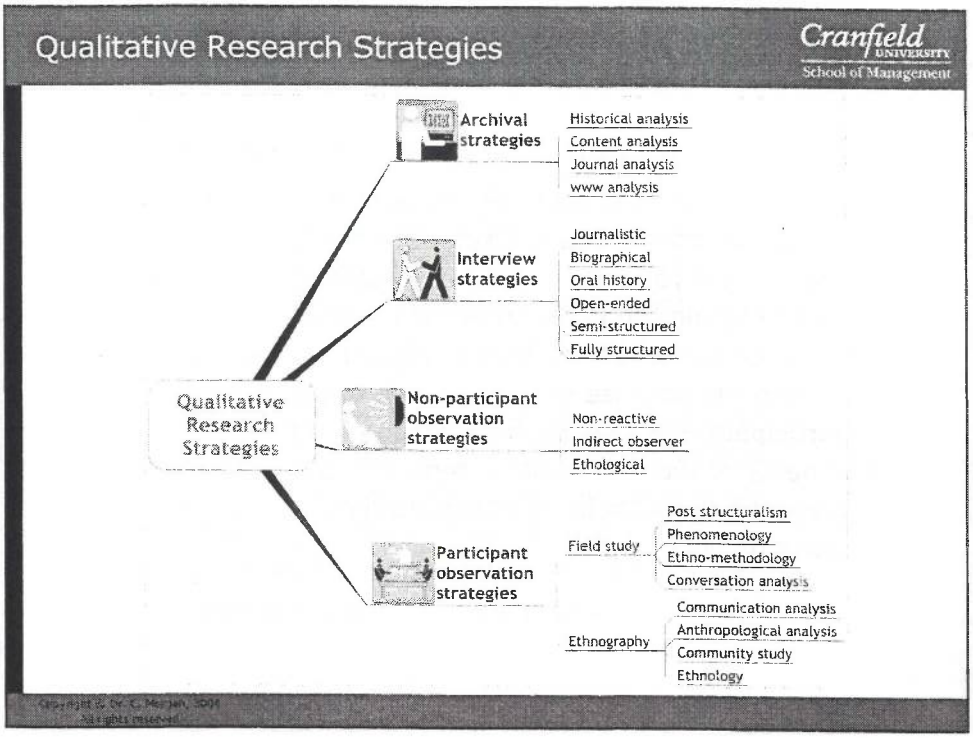

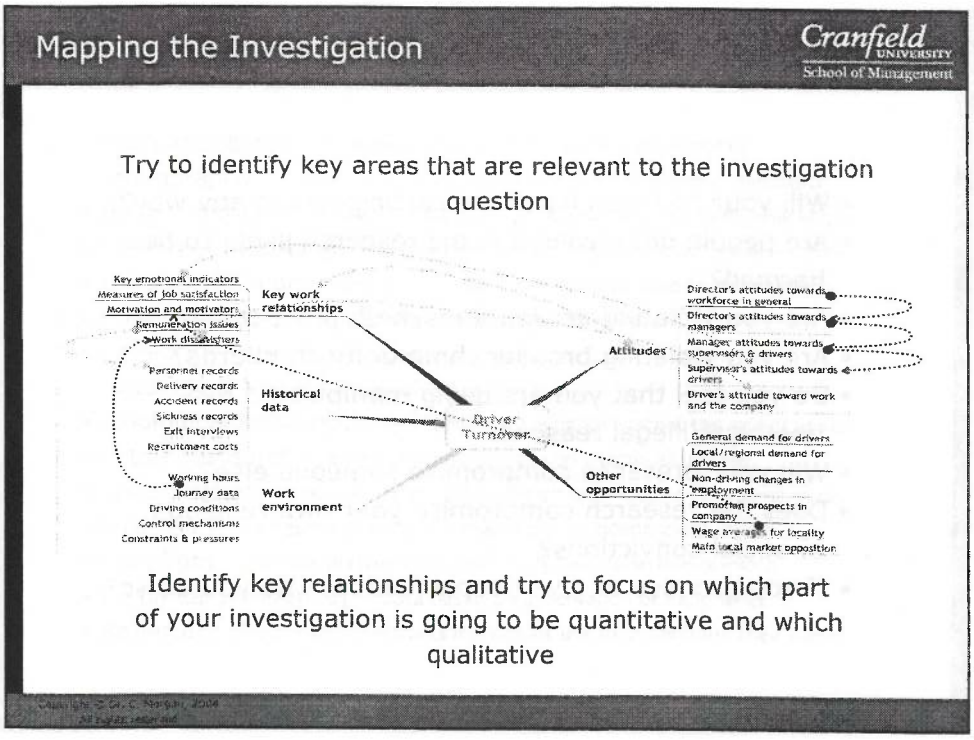

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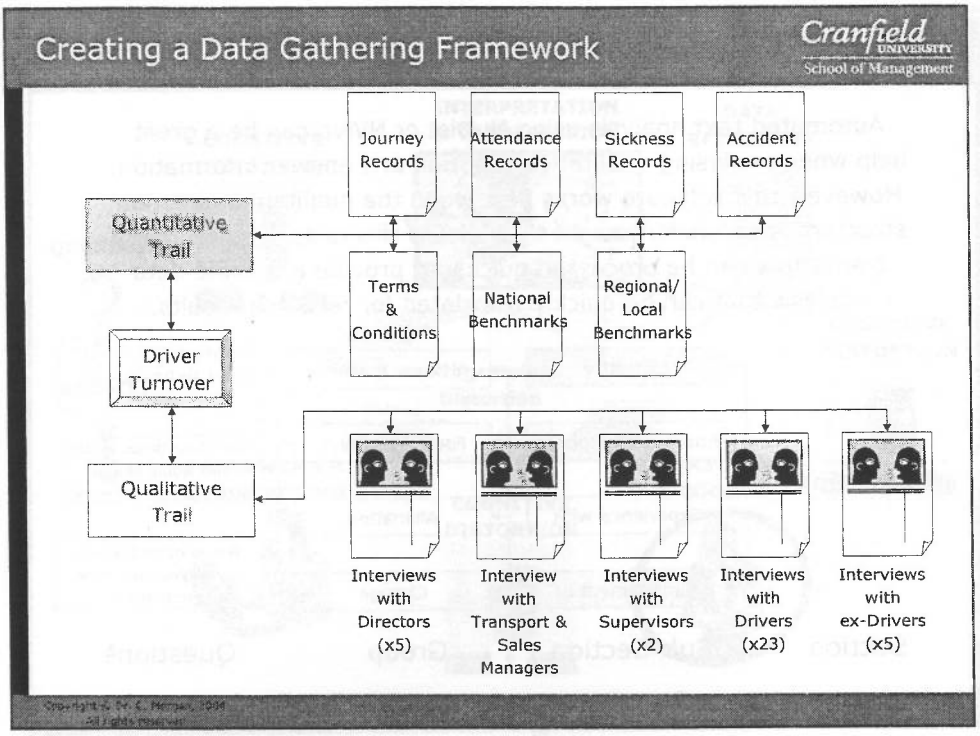

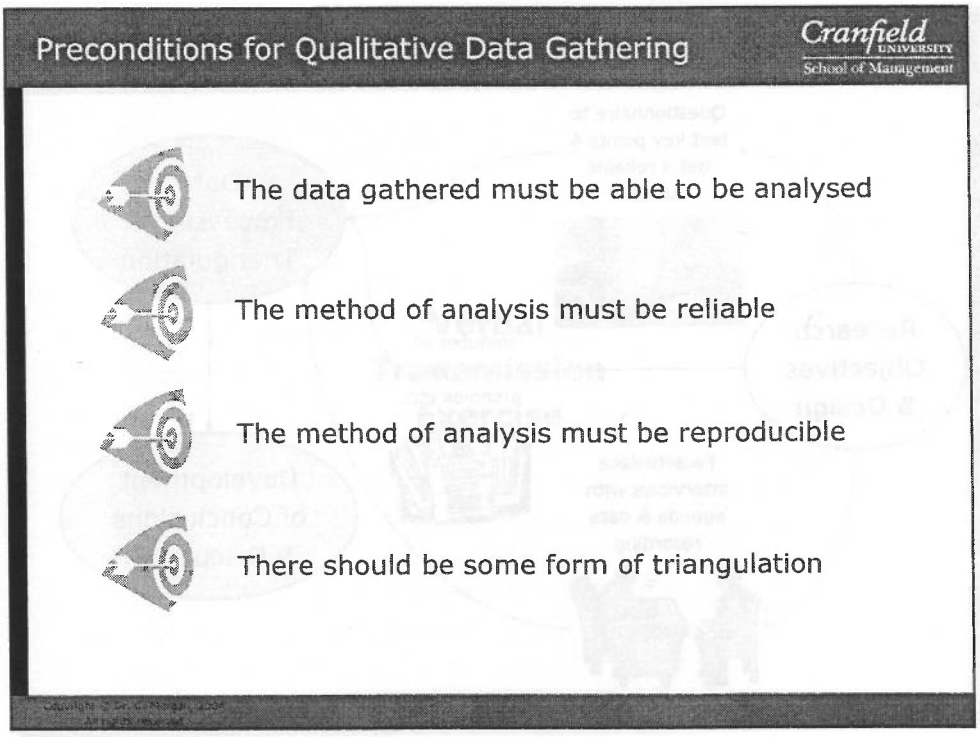

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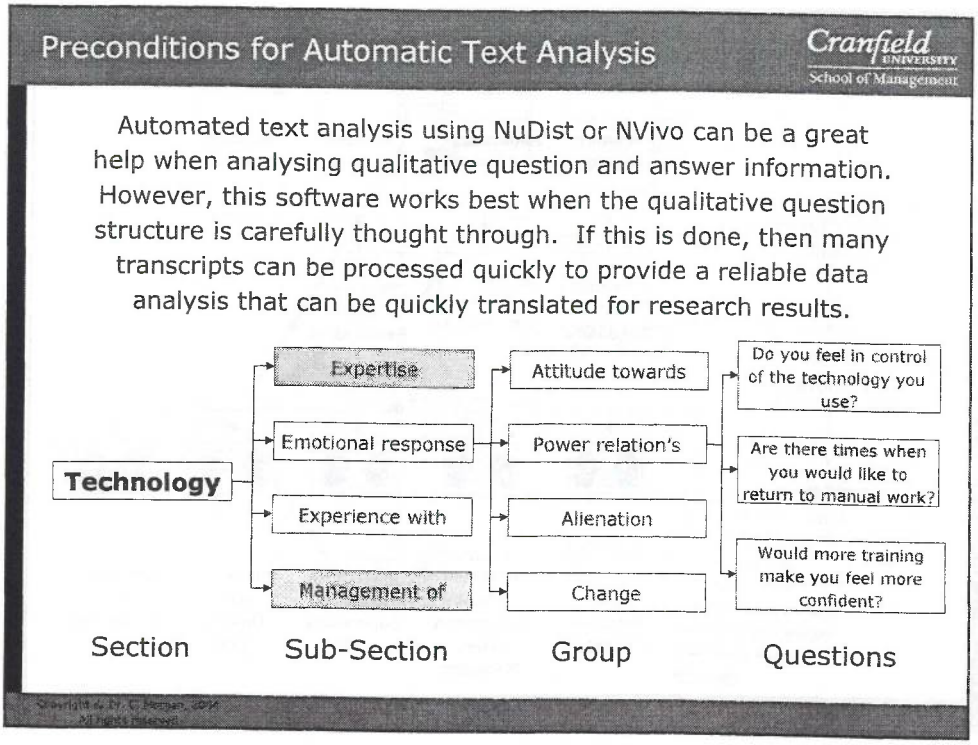

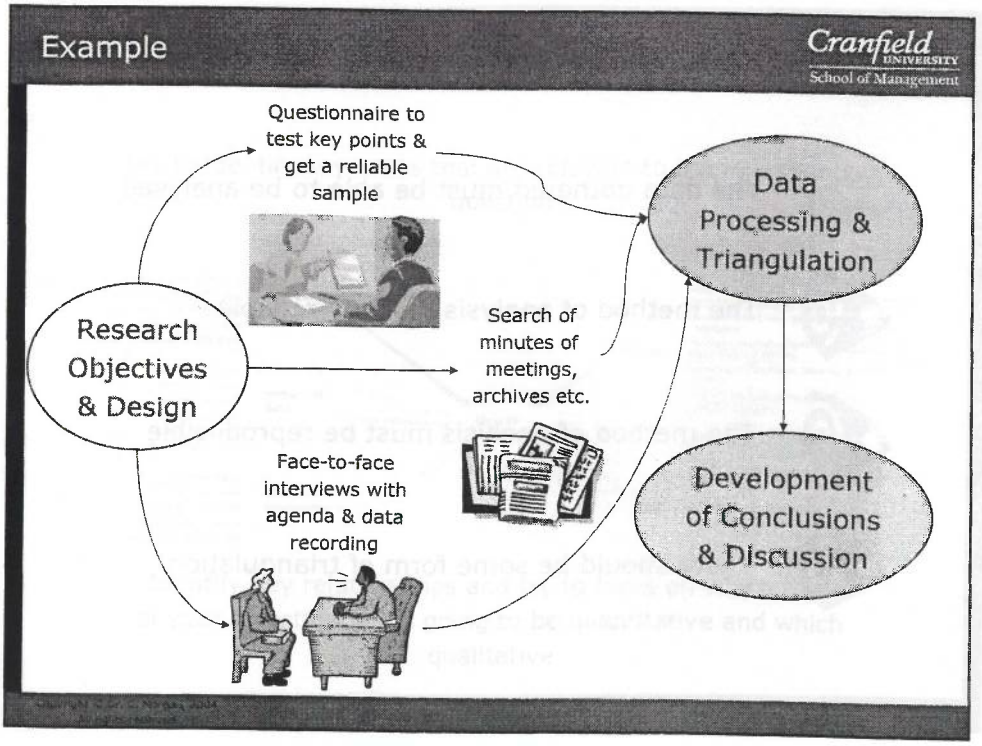

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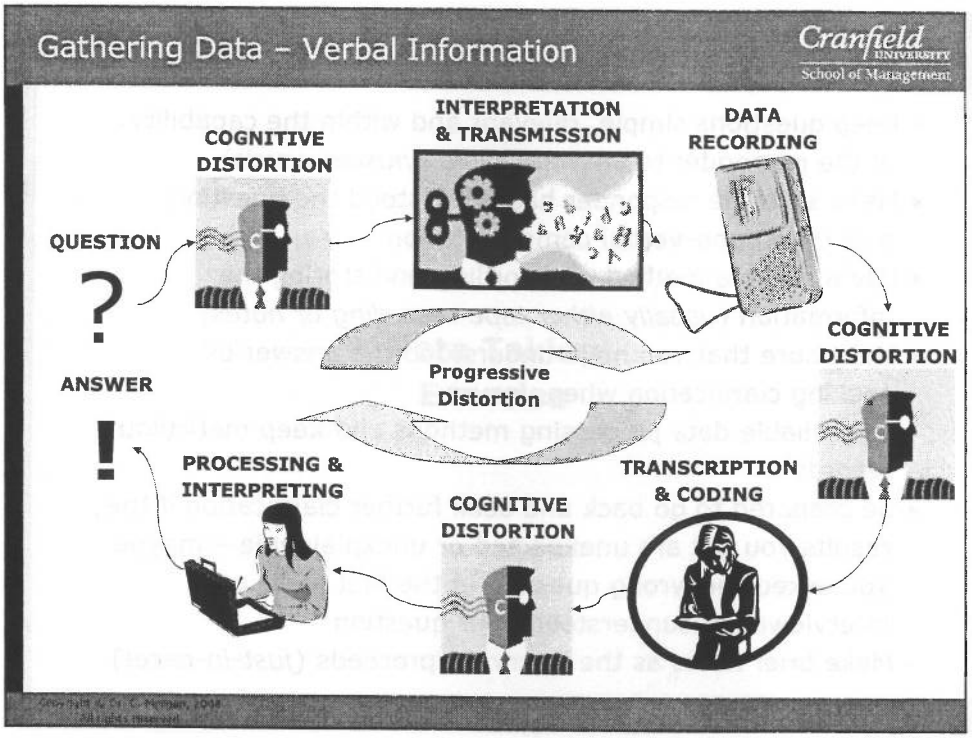

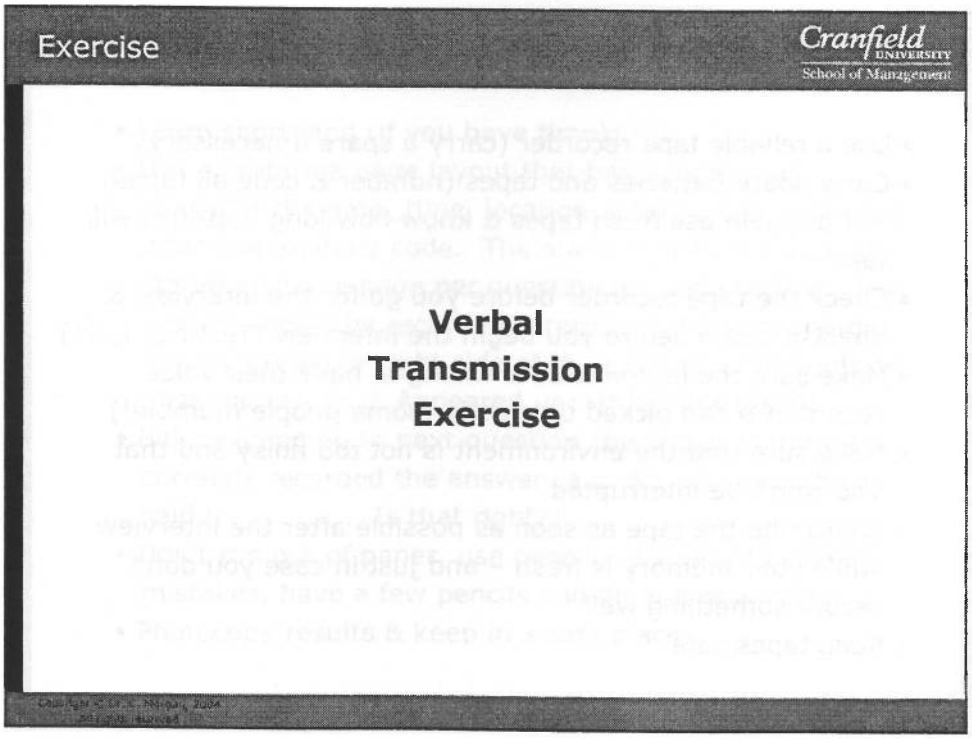

Quantitative Research - 1

Reducing Verbal Transmission Problems

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- Keep questions simple, relevant and within the capability of the responder to answer (*avoid unusual words*)
- Make sure the responder has understood the question – pick up on non-verbal communication
- Use a reliable method of recording and storing the information (*usually either tape recording or notes*)
- Make sure that you have understood the answer by seeking clarification when unsure
- Use reliable data processing methods and keep meticulous records
- Be prepared to go back and seek further clarification if the results you get are unexpected or unexplainable – maybe you asked the wrong question in the first place or interviewee misunderstood your question
- Make brief notes as the interview proceeds (*just-in-case*!)

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Reducing Data Recording Problems

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- Use a reliable tape recorder (carry a spare if necessary)
- Carry spare batteries and tapes (number & code all tapes) – if possible use fresh tapes & know how long batteries will last
- Check the tape recorder before you go for the interview & check it again before you begin the interview (Testing, 1, 2!)
- Make sure the interviewee is willing to have their voice recorded & can picked up clearly (some people mumble!)
- Make sure that the environment is not too noisy and that you won't be interrupted
- Transcribe the tape as soon as possible after the interview while your memory is fresh – and just in case you don't record something well
- Keep tapes safe

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Quantitative Research - 1

Exercise

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Note Taking Exercise

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Reducing Note Taking Problems

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- Learn shorthand (if you have time)!
- Use a proforma page layout that has a dedicated space for the date, time, location, interviewee name and interview analysis code. The question should be clearly stated – so one page per question is good practice. The answer should be recorded carefully and a wide margin left on the left or right side of the page for comments or observations (e.g. Appeared uncomfortable here!)
- Before going on to next question check that you have correctly recorded the answer (e.g. So, what you have said is ..... Is that right?)
- Don't run out of paper, use pencil – it's easy to correct mistakes, have a few pencils and an eraser in reserve
- Photocopy results & keep in a safe place.

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Quantitative Research - 1

Sample Interview Sheet

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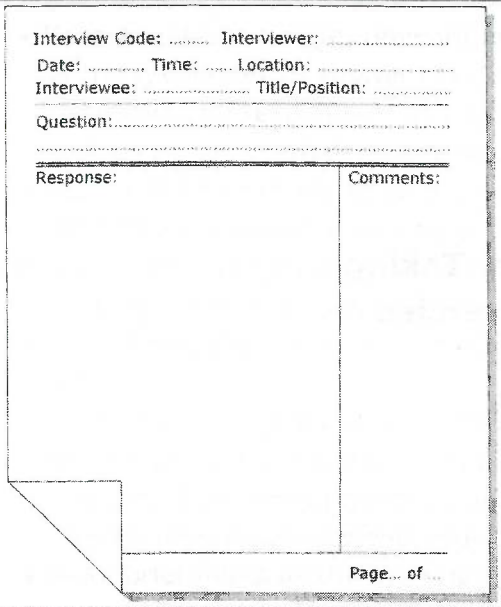

NB These sheets should be *prepared in advance* of the interview/discussion and spare sheets should be carried in case of problems (e.g. the most common problem is coffee spillage!). As soon as possible *place the sheet(s) in a safe place* & where there are several sheets be sure to staple them together in sequence - so that if they are dropped they don't get shuffled. A photocopy of the sheet(s) can be used for subsequent coding & analysis – *try to avoid using the originals*.

Other Commonly Used Data Recording Techniques

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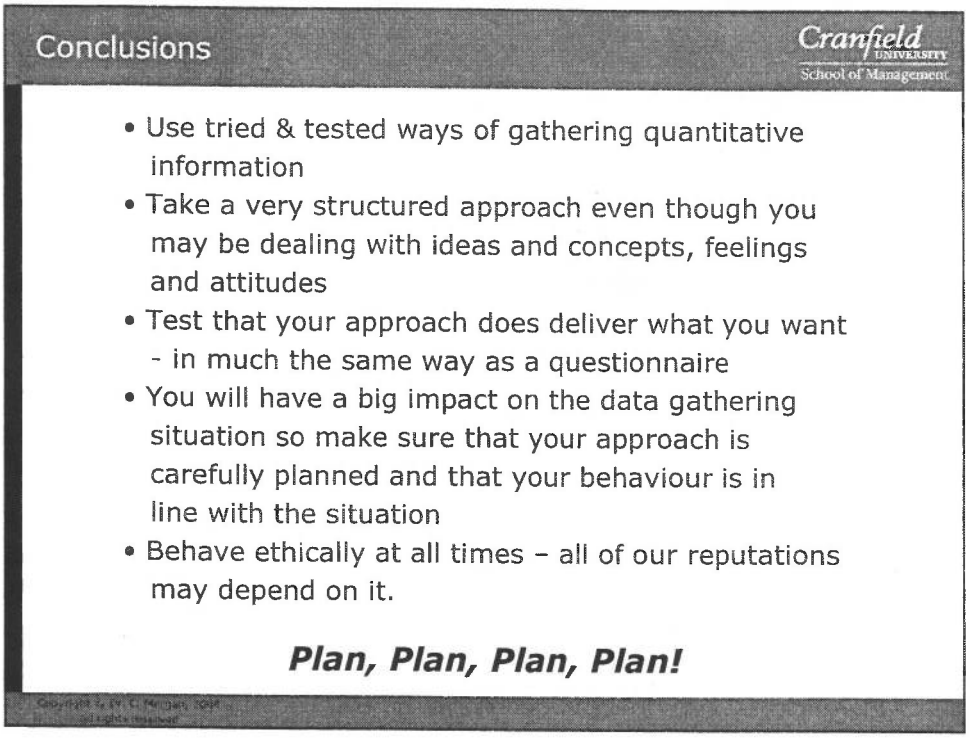
	Main Preconditions	Main Advantage	Main Disadvantages
Videoing Situations	Participant agreement	Ability to review	Acting for camera
Participant Observation	Ethical agreement	Empathic interaction	Bias of opinion
Film Archive Analysis	Equipment & access	Ability to review	Special equipment
Focus Groups	Reliable data capture	Range of responses	Distortion of opinion

Quantitative Research - 1



Data Collection Part 2

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Data Collection – Part 2
Questionnaire Design & Application

In this session we will examine the issues associated with the design of questionnaires – one of the most commonly used methods of collecting data

Dr. Chris Morgan
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Objectives

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School of Management

- **To explore the techniques of questionnaire design**
- **To critically analyse existing questionnaires**
- **To experiment with the design of your own questionnaire**

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Data Collection Part 2

What is a Questionnaire?

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"A questionnaire is a list of carefully structured questions, chosen after considerable testing, with a view to eliciting a reliable response from a chosen sample. The aim is to find out what a selected group do, think or feel."

Hussey & Hussey, 1997, p161

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Focus for Design

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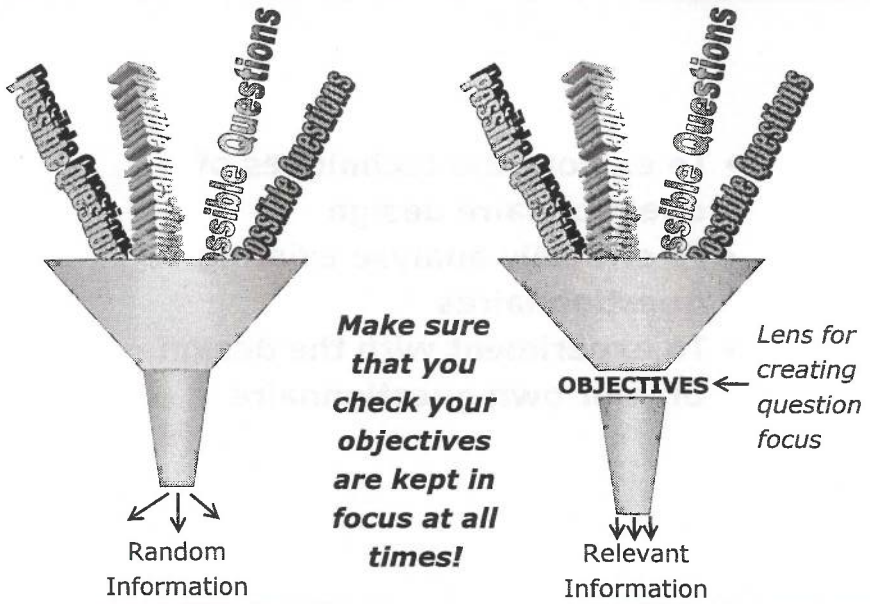

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Data Collection Part 2

Broad Questionnaire Issues - 1

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Confidentiality & Anonymity

Probably one of the most critical issues in designing and applying a questionnaire. If the target population have the least suspicion that the information given is not being treated in confidence the response rate will plummet, or alternatively the responders will give untrue or distorted information.

Action

Include a clear statement at the beginning of the questionnaire to the effect that the information supplied by the responder will be treated in confidence; that the raw data will not be divulged to a third party, and that it will not be traceable to them as an individual.

Question Design & Testing

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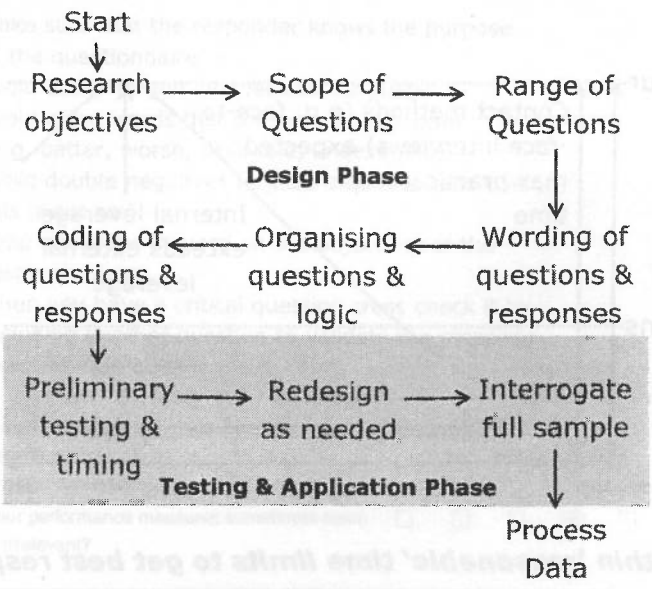

Data Collection Part 2

Distribution & Collection of Data

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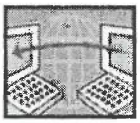
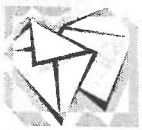
e-mail or Fax	Focus group	Telephone	Face-to-face	Postal
				
Response *rate about 5%* ***Response*** *speed fast* ***Accuracy*** *good* ***Problem*** *getting e-address*	***Response*** *rate about 20%* ***Response*** *speed fast* ***Accuracy*** *medium* ***Problem*** *getting accomm.*	***Response*** *rate about 10-20%* ***Response*** *speed fast* ***Accuracy*** *medium* ***Problem*** *getting numbers*	***Response*** *rate about 25%* ***Response*** *speed medium* ***Accuracy*** *good* ***Problem*** *getting accomm.*	***Response*** *rate about 5%* ***Response*** *speed slow* ***Accuracy*** *medium* ***Problem*** *getting address*

NB All data collection methods are 'noisy'

Timing Issues

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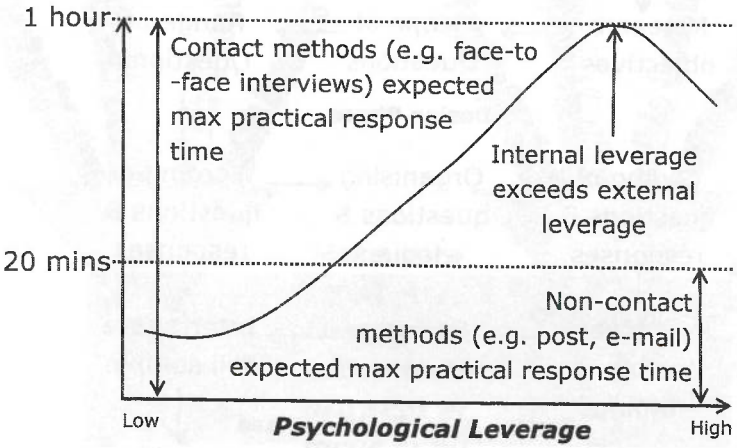
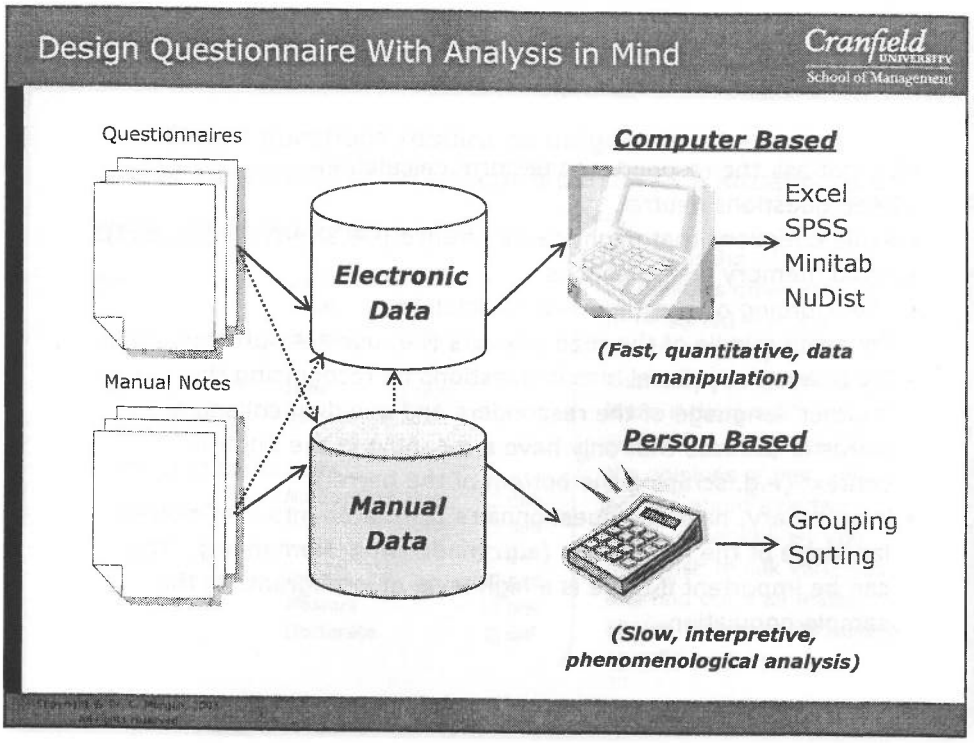
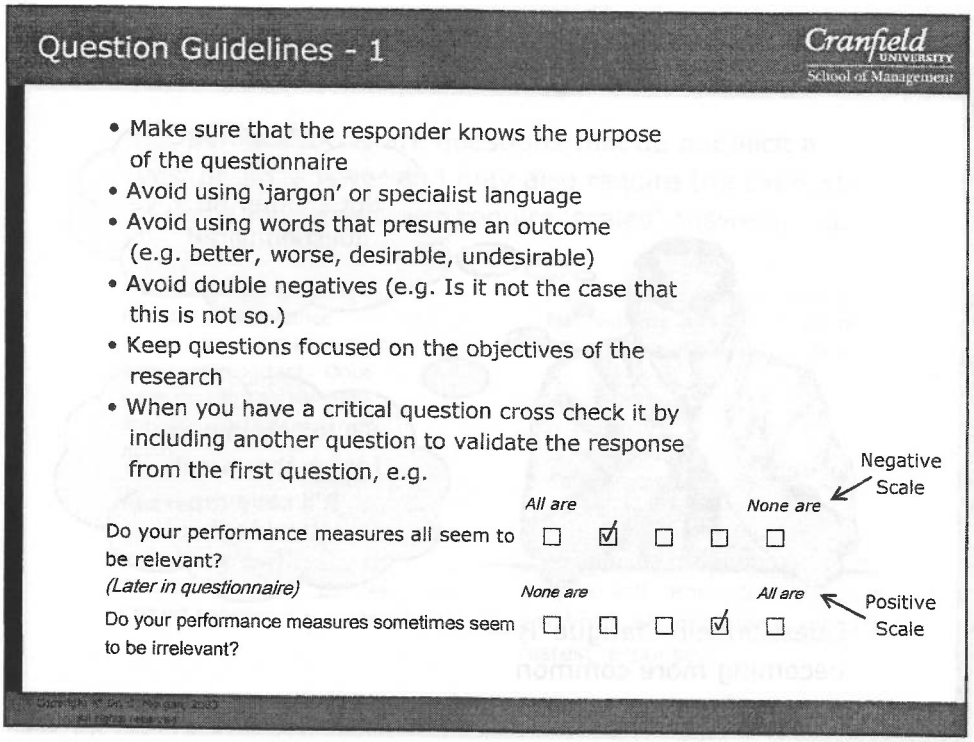


Work within 'reasonable' time limits to get best response

Data Collection Part 2





Data Collection Part 2

Question Guidelines - 2

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- Do not ask the responder to perform calculations.
- Keep questions neutral.
- Avoid questions that might cause offence (i.e. sexist, racist, etc.).
- Avoid memory test questions.
- Check timing of questionnaire completion.
- Try avoid middle of the road answers (i.e. use a 4 outcome scale)
- Try to avoid a cultural bias in questions by recognising the 'mother' language of the responders and avoiding colloquial words or phrases that only have a meaning in the English context (e.g. scraping the bottom of the barrel).
- If necessary, have the questionnaire translated into the 'mother' language of the responders (e.g. Hindi, Urdu, Romanian). This can be important if there is a high level of immigrants in the sample population.

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Question Guidelines - 3

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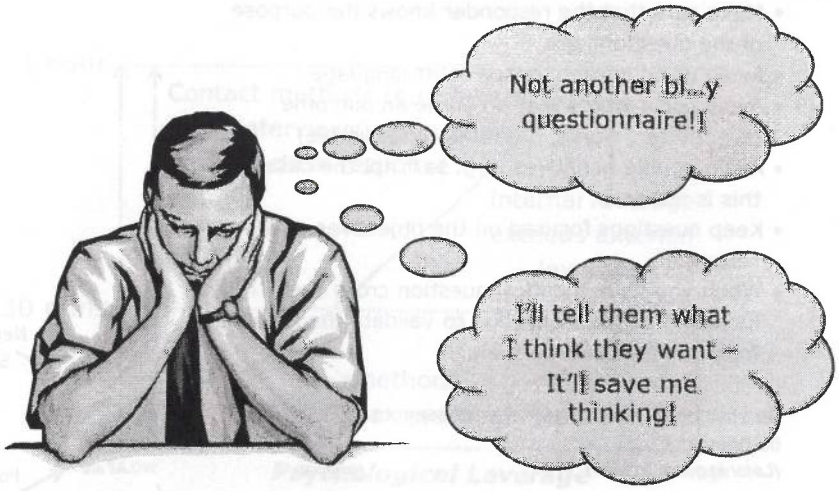

Questionnaire 'fatigue' is becoming more common

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Data Collection Part 2

Question Design – Closed Questions

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Closed questions require no judgement, they are usually statements of fact about a person or a situation e.g.

PLEASE TICK THE APPROPRIATE BOX

Age	15-30	☐ ca1
	31-45	☐ ca2
	46-60	☐ ca3
Sex	Male	☐ sam
	Female	☐ saf
Your highest qualifications		
	No qualifications	☐ qaa
	Higher Certificate	☐ qab
	Higher Diploma	☐ qac
	Degree	☐ qad
	Masters	☐ qae
	Doctorate	☐ qaf

This is useful information as it allows other data to be sorted – or 'cut' – in different ways. For instance, you may wish to know if there are any significant differences in the opinions of men and women about a certain issue. Alternatively you may wish to link variables and find out if all males above the age of 30 have a specific preference.

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Question Design – Open Questions

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Open questions are questions that do not illicit a 'yes' or 'no' answer and may also require the exercise of some judgement and require 'scaled' answers, e.g.

Please rank the following in order of importance to you. 1 = most important, 5 = least important. Once have ranked a factor you may not use the same rank again

	Ranking	
Fast response	____	ba1
Correct address	____	ba2
No damage	____	ba3
On time delivery	____	ba4
Correct paperwork	____	ba5

Please indicate how important a fast response is to your choice of 3PL provider. Only tick one box.

Very important	☐
Important	☐
Quite important	☐
Not too important	☐
Unimportant	☐

These kind of questions are often coupled with other questions such as 'Which 3PL provider(s) gives the fastest response?'

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Data Collection Part 2

Behavioural Questions

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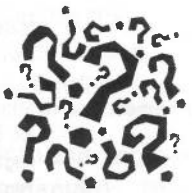
Behavioural questions are focused on what the responders is, does or interfaces with in some way. These kind of questions are often used to determine issues such as market size, market share, awareness, usage, etc.

- Do you ever use a contract shipper?
- Who do you know who supplies paper?
- How many parcels do you send each day?
- How do you stack your pallets?
- When did you last have an accident?
- Who handles the paperwork?



Attitudinal Questions

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Attitudinal questions are used to determine what people think about something or someone, their perceptions of something or why they do something. These questions are often interpretive in nature.

- Why do you put stock there?
- What do you think of the paperwork?
- Do you agree (disagree) with this statement?
- Which of these forklift trucks is most reliable
- How do you rate the reliability of the computer system?

Data Collection Part 2

Classification Questions

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Classification questions are used to determine how individuals or groups differ from one another. These kind of questions have already been illustrated and may include questions about:

- Age
- Gender
- Social class
- Education
- Location
- Family details
- Employment details
- Employer details

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Linking Questions

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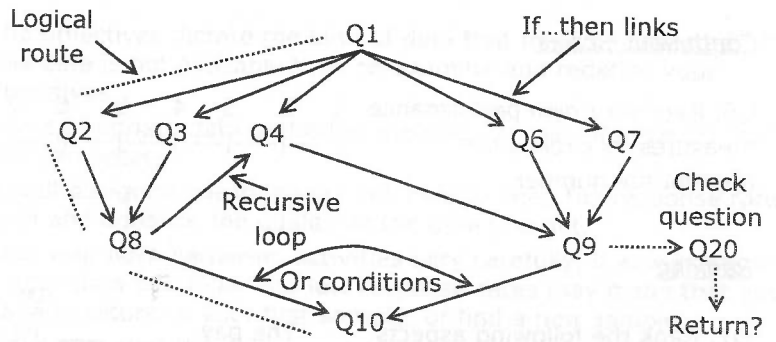

It is always worthwhile drawing a questionnaire map to check that all questions are linked in a logical network and that instructions within the questionnaire are consistent with the objectives of the research

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Data Collection Part 2

Scales – Likert Scale

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Q6. How important are the following logistics features to the company?

(Please tick one box for each characteristic)

Characteristic	Very Important	Quite Important	Undecided	Of little importance	Not important	
Access to site	✓					c6a
Size of unload bays		✓				c6b
Unloading Equipment				✓		c6c
Marshalling Area			✓			c6d
Access to racks	✓					c6e

Scales - Other

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Continuous Scales

Q6. Rate your own performance measures by circling the appropriate number.

1 2 3 4 5 6 7
|----|----|----|----|----|----|----| (c6b)

Ranking

Q7. Rank the following aspects of your work, where 1 is the aspect you like the most, and 5 is the aspect you like the least.

(c7)

The pay ____ (a)
The conditions ____ (b)
The work ____ (c)
The people ____ (d)
The company ____ (e)

Data Collection Part 2

Processing Data Methods

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	Exploratory Data Analysis	Confirmatory Data Analysis
Univariate data	*Presenting frequencies* -Tables - Graphs *Measuring location* - Mean - Median - Mode *Measuring dispersion* - Range & inter-quartile range - Standard deviation *Measuring change* - Index number	*Estimating from samples* - Confidence intervals (P) *Forecasting* - Time series analysis
Bivariate data	*Presenting frequencies* - Cross tabulations - Scatter diagrams - Stem plots	*Measuring association* - Pearson's coefficient (r)(P) - Spearman's rank coefficient (rs)(NP) *Measuring difference* - Chi squared test (NP) - Student t-test (P)

P = parametric techniques, NP = non-parametric techniques

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Conclusions

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- The objectives dictate the kind of data that must be collected. If this data is not available then re-examine and redefine your objectives.
- Use appropriate data gathering methods for the information that you can access.
- A well designed questionnaire will help to keep the response rate high and enhance the quality of the data you get.
- Plan your data gathering activities very carefully, it always takes longer than you think and low response rates may mean that you have to return to your first sample, or find a new sample.
- Make sure that the data you gather is valid and reliable.
- Process your data carefully, it is very annoying (for everyone!) if you have to correct your thesis because of silly arithmetic or technical mistakes
- Because data gathering takes so much time, make sure that you get the best out of the data you have.

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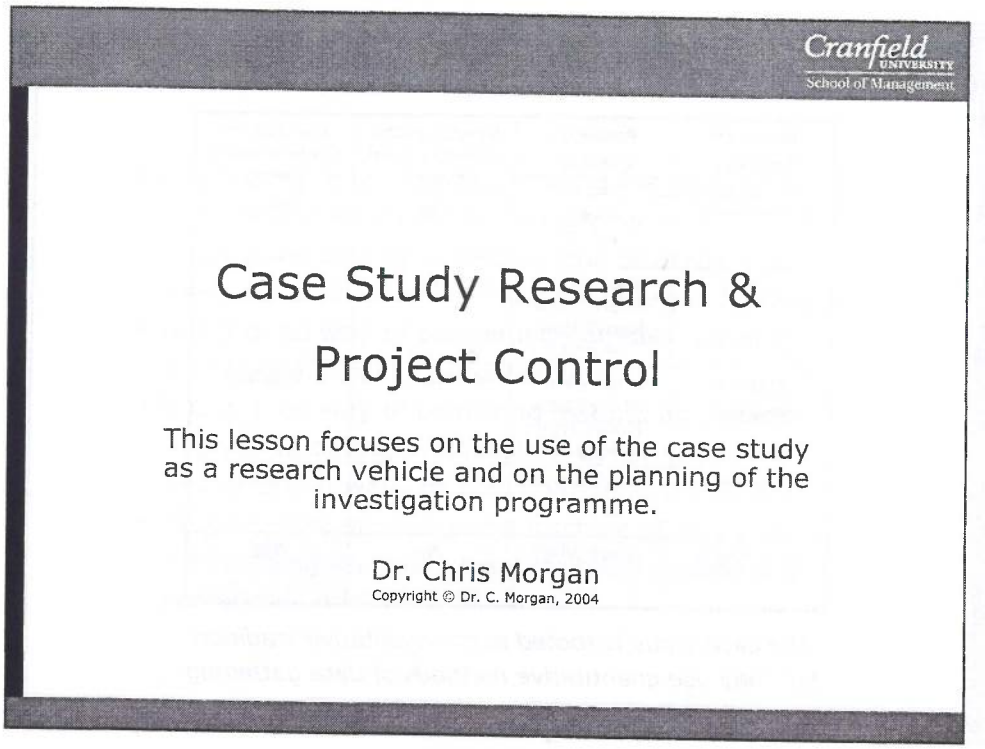
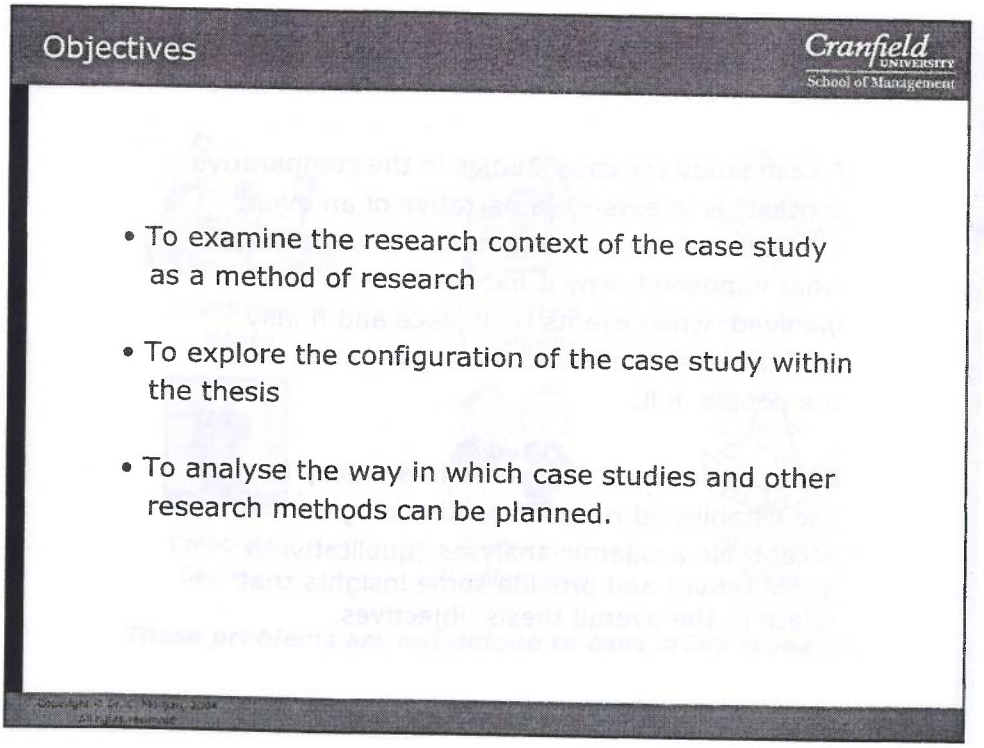
Case Studies & Thesis Planning





Case Studies & Thesis Planning

The Case Study in Context

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Research Strategy	Research Question	Needs Control of Behavioural Events	Focuses on Contemporary Events
Experiment	How? Why?	Yes	Yes
Survey	Who? What? Where? How Many? How Much?	No	Yes
Archival Analysis	Who? What? Where? How Many? How Much?	No	Yes/No
History	How? Why?	No	No
Case Study	How? Why?	No	Yes

The case study is rooted in the qualitative tradition but may use quantitative methods of data gathering

What is a Case Study?

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A case study (or case studies in the comparative context) is in essence a narrative of an event (or series of events) undertaken to understand what happened, why it happened, who was involved, when events took place and finally how the events affected the organization and the people in it.

Case studies must be rooted in a theory base, use established research methodologies, perform acceptable academic analyses (qualitative & quantitative) and provide some insights that relate to the overall thesis objectives.

Case Studies & Thesis Planning

Why Use a Case Study?

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- It is a good way of understanding the dynamics of a specific situation in an organization
- It is a good way of understanding strategic and operational change mechanisms in organizations
- It is a good way of comparing complex social & operational issues in organizations
- It is a good way of capturing historic information in order to define organization dynamics and to find effective ways to plan change in the future
- As most case studies use a mixture of research methodologies, problems over triangulation are sometimes minimal

What are the Problems with Case Studies?

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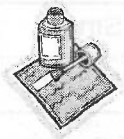
Selective/poor Memory

Paper Trails Incomplete



Paper Trails Falsified

Corporate Secrecy

Deliberate Misinformation

The 'halo' Effect

These problems are not unique to case study research

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Telling the Story

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- Describing the situation
- Identifying the main players
- Identifying the main relationships
- Identifying the main problems
- Establishing causality
- Temporal narrative with observations
- Identifying changes
- Measure & explain changes
- Describe outcomes
- Reflect on outcomes
- Linking outcomes to objectives

Many of the best stories are found in religious texts. These texts have stood the test of time and are written in an accessible and understandable format for a wide audience

Generic Types of Case Study

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Single	Exploratory	Descriptive	Explanatory
Multiple	Exploratory	Descriptive	Explanatory
	Aim is to define questions for a subsequent study or investigation	Aim is to describe a phenomenon within its context or environment	Aim is to establish cause – effect relationships and explain how and why things happened

In general it is best to keep within one of these six categories when focusing on the design of the case study. Otherwise the analysis may become over complicated

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Investigator Skills

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An investigator -

- Needs to be able to find, fame and construct good questions
- Needs to be able to listen without any 'hidden agenda' or preconceptions
- Needs to have a flexible response to situations and interviewees
- Needs to keep the investigation objectives firmly in mind to avoid meandering into time wasting
- Needs seek out and investigate evidence that presents a balanced view of the situation being investigated
- Needs to keep behaviour in line with situation and objectives

Typical Case Study Architecture

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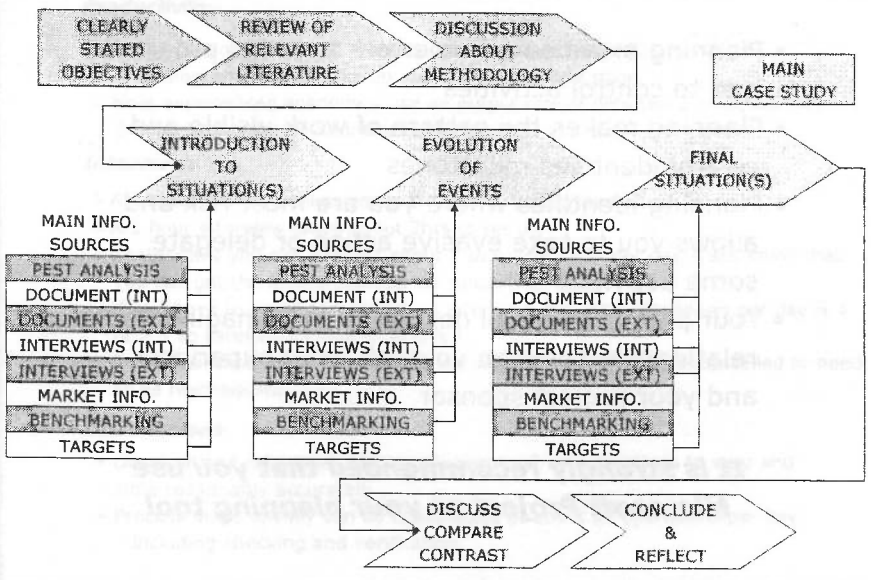

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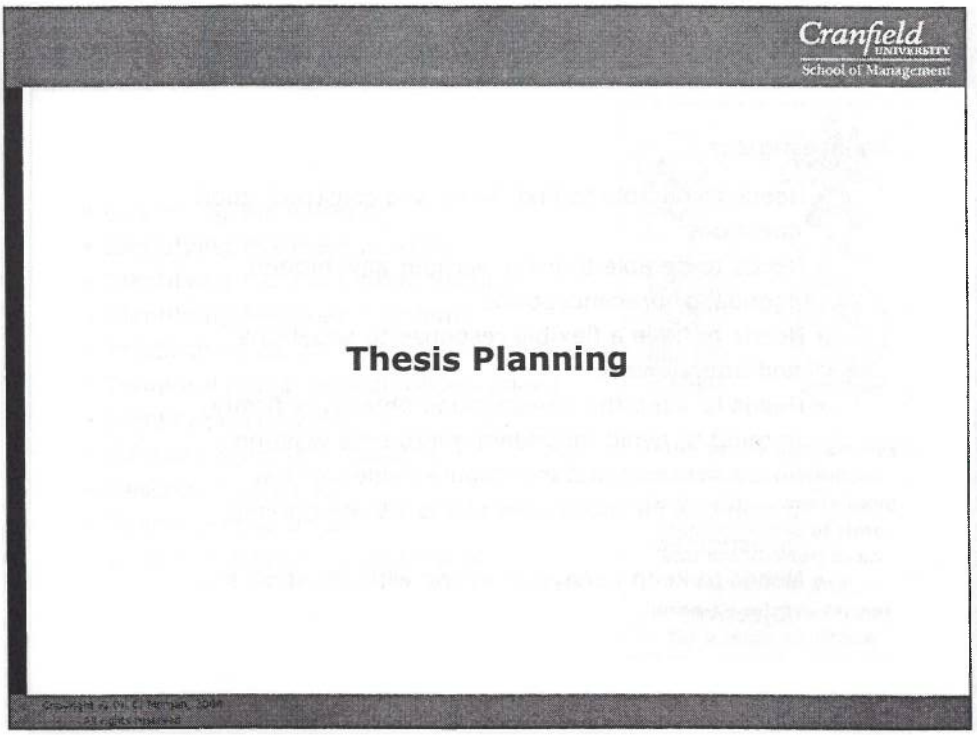

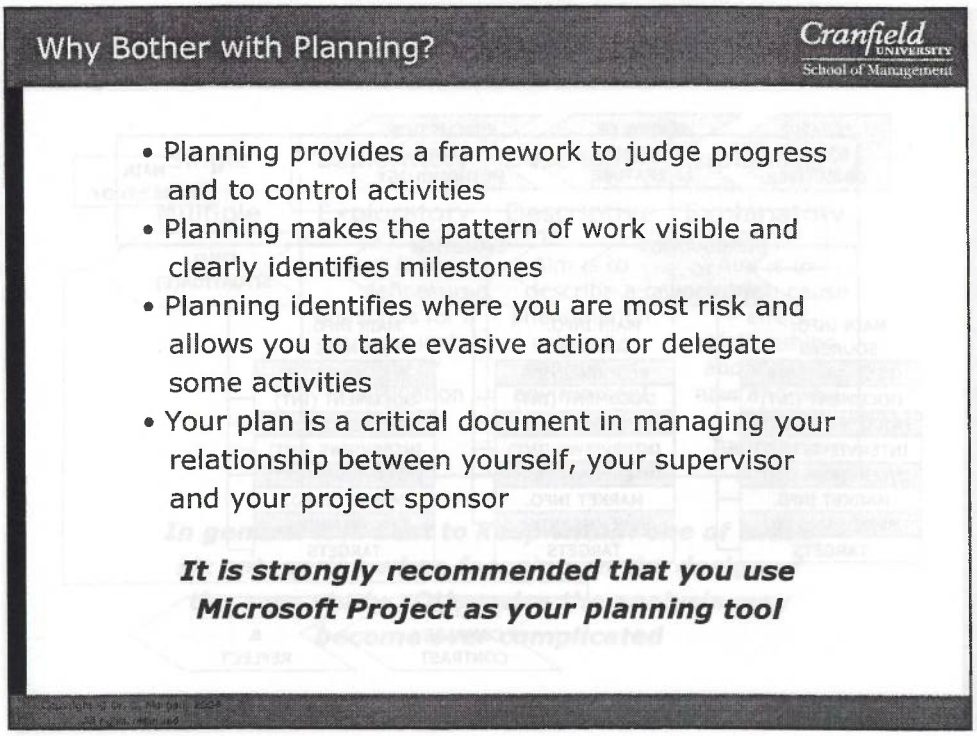

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Main Task Structure for Overall Thesis

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- The Mindmap on the previous pages illustrates an overall thesis structure and key tasks (NB your own thesis structure may vary – but is unlikely to be vastly different from this)
- The Microsoft Project listing has been generated so that you can think about the allocation of time for both the individual activities and the overall thesis
- On the following page are some planning parameters that you may wish to use as a guideline to time estimation

These are only guidelines and you will have to adjust them to your own situation and abilities

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Estimating Parameters - 1

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Productivity

- 1 page of double spaced typed script is approximately 250 words
- Most diagrams/tables take up about a quarter of a page
- Most experienced academics use an output rate of between 2 to 4 page per 8 hour day – this would include referencing and checking/reviewing

Interviews

- A 1 hour interview takes about 5 hours to transcribe & code
- A 1 hour interview takes about 2hrs to set up
- Realistically you can conduct about 2 to 4 interviews per day – assuming that you can get the timing right for all concerned
- If you have to travel to conduct an interview, the most interviews per day is 1 or 2 – so careful planning is required
- Even if carefully planned, about 1 interview in 5 will be either cancelled or need to be rescheduled

Observations

- Observations (of processes) usually require 2 or 3 iterations to map and time reasonably accurately
- Process maps usually can be constructed at about 50 operations per day - including checking and verification

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Estimating Parameters - 2

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Questionnaires

- Internal questionnaires, followed up by researcher, will have a response rate of 80 to 90%
- External questionnaires normally have a 1 in 50 response rate (good) to 1 in 100 response rate (poor)
- About 1 in 10 questions will illicit either no response or the wrong response
- e-mail questionnaires have a widely varying response rates – sometimes as low as 1 in 200
- Telephone administered questionnaires usually take between 0.5 hrs to 1 hr to complete (who is picking up the bill?) with a hit rate of about 30% on first approach
- Questionnaire data (quantitative) usually takes between 5 to 15 minutes to enter into Excel or SPSS

Information Access

- Each piece of quoted literature will take about 0.25 hrs to locate & note from library electronic resources, 0.5 hrs on the Internet
- Book access is quicker than 'e' access providing books are in the general library or in SCKC

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Conclusions

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Case Studies

- Case studies are not a 'soft' option
- Case studies need a very disciplined approach because much of the data is subjective in nature
- Triangulation emerges as a very important issue in case study methodologies

Thesis Planning

- Preparation for conducting research and thesis writing needs to be thorough and estimates realistic
- The plan for the work on the thesis should be used for monitoring & control purposes
- The plan can help to motivate the project sponsor & impress urgency for people providing data