RESEARCH METHODOLOGY
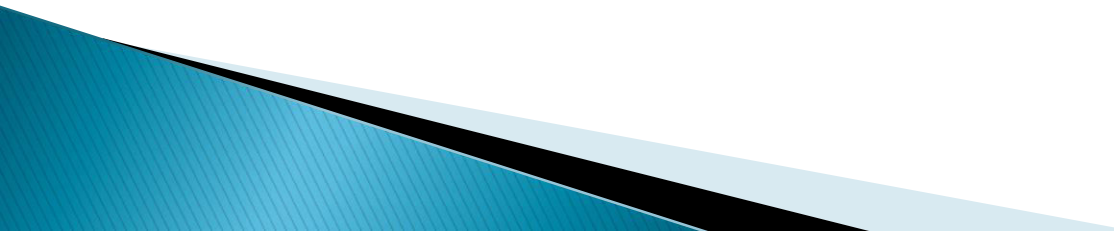
Dr. K. Subrahmanyam
Professor

Agenda

- Research Process & design
  - Literature Search & Review

- Academic misconduct

- Turn-it-in software & demo

The Research Process

Identify an area of study
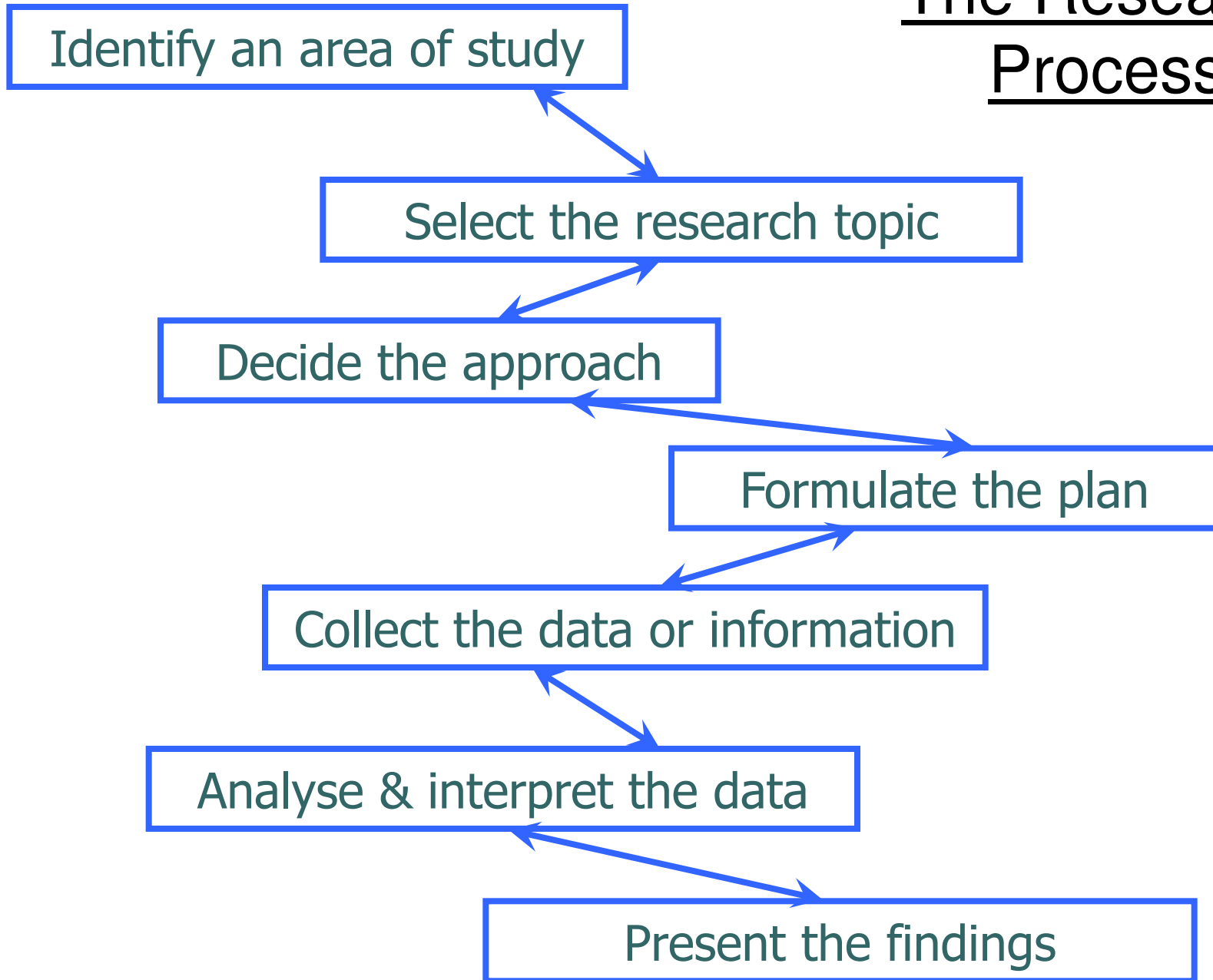
Select the research topic

Decide the research approach

Formulate the plan

Collect the data or information

Analyse & interpret the data

Present the findings

The Research Process

Identify an area of study

Select the research topic

Decide the approach

Formulate the plan

Collect the data or information

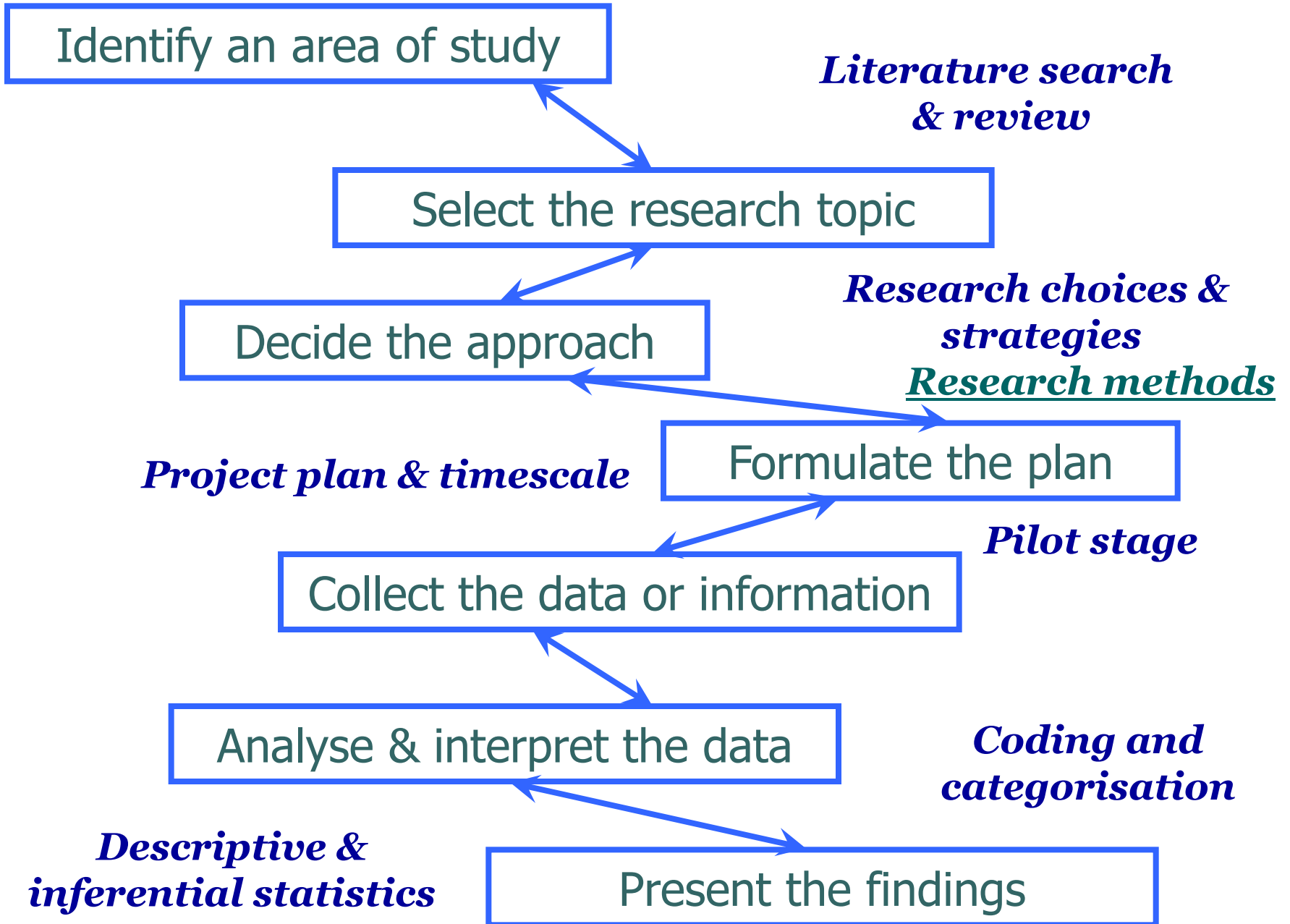Analyse & interpret the data

Present the findings

The Research Process

Identify an area of study

Literature search & review

Select the research topic

Research choices & strategies
Research methods

Decide the approach

Formulate the plan

Project plan & timescale

Pilot stage

Collect the data or information

Analyse & interpret the data

Coding and categorisation

Descriptive & inferential statistics

Present the findings

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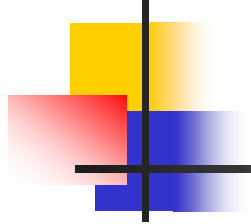
Descriptive & inferential statistics

Present the findings

Research Design

Literature Search & Review

Why Search the Literature?

- Two major reasons:
  - A preliminary search helps you to generate and refine your research ideas;
  - A critical review of the literature is an essential part of the research allowing you to demonstrate:
    - Awareness of the current state of knowledge in your subject,
    - Its limitations, and
    - How your research fits in this wider context.

Why Search the Literature?

- Knowledge doesn't exist in a vacuum
- Your work only has value in relation to other people's
- You need
  - to establish what has been published in your chosen area
  - to identify other research currently in progress
- Searching is normally undertaken throughout the project

The Literature Search Cycle

Research questions and objectives

1. Define parameters
2. Generate & refine keywords
3. Conduct search
4. Obtain literature
5. Evaluate literature
6. Record literature
7. Draft literature review
8. Redefine parameters, etc

[Saunders et al (2000)]

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[Saunders et al (2000)]

Define Parameters

- Clarify the meaning of your topic
  - Use lecture notes, course textbooks
- Clarify meaning of particular words
  - Specialist dictionaries can be useful
- Decide on scope and boundary
  - If area is a large one, you may need to choose a specific aspect
  - Other constraints include time, support, library resources, length of paper/report

Define Parameters (Cont.)

- Set limitations to your search:
  - Language of publication
  - Publication date – how far back in time do you want to search
  - Geographical area
  - Literature type – journals, books, conference proceedings, …
  - Country of publication

Generate & refine keywords

- Identifying keywords or search terms
  - The most important part of planning your literature search
- Define your topic in terms of words to search for in the various literature sources
- Undertake readings of articles by key authors
- Read recent review articles in the area
  - These provide current state of the art in the subject

Generate & refine keywords (Cont)

- Refining keywords can be done by thinking about:
  - Alternative words
  - Alternative meanings and contexts
  - Ways of combining words
  - Alternative spellings
  - Changes in terminology over time
  - Ways of linking keywords

Generate & refine keywords (Cont)

- If using online databases, remember
  - There is no consistency between databases
  - Default settings vary
  - Options vary between databases
  - Familiarise yourself with the way each one works
    - Use on-screen links and help pages

Conduct search

- Draw up a list of sources/databases in which to search for references
  - Print-based and electronic sources
  - The Library Catalogue
  - Electronic Gateway to Information

Conduct search

- Literature sources available:
  1. Primary literature
  2. Secondary literature
  3. Tertiary literature

Literature sources

Primary:
- Reports
- Theses
- Conference reports
- Company reports
- Emails
- Unpublished sources

Secondary:
- Books
- Journals
- Newspapers

Tertiary:
- Indexes
- Abstracts
- Catalogues
- Dictionaries
- Encyclopaedias
- Bibliographies
- Citation indexes

Conduct search

- Search through each source/database
- Keep a record of your searches
  - Accurate, consistent and correct!
  - Include years searched and terms used
- Record all useful references
  - Use standard citation system
- Review progress after searching ~5 sources
  - Have you found relevant material?

Obtain literature

- Check library catalogue
  - Large number of journal subscriptions are maintained – in print or online
  - Many full-text databases also available
- If not available locally, then use Inter-Library Loans
  - Check value of your reference before ordering
  - Inter-Library Loans cost the library
  - There may be a week or two time delay

Reading to Undertake a Review

- This is different from reading for pleasure.

- You have a goal of producing a product:- an analytical evaluation of the research of your topic.

- Analytic reading cannot be done in one reading or in a short period of time
  - It could take 3, 6 or even 12 months ….

Reading Analytically

- This is a process that progresses from the general to the particular.
- When reading:
  - Skim through first of all
  - Pick out some details
  - Skim again before reading more closely the rest of the contents.
- This does not mean you have to read the whole book, article or paper.

Reading Analytically (Cont.)

- Main purposes of reading to review are to identify the information components in the literature, such as:

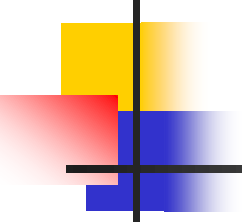|		
Arguments	Styles	Problems
Events	Conclusions	Theory
Motives	Hypothesis	Ethics
Standpoint	Politics	Justification
Concepts	Techniques	Questions
Evidence	Definitions	Ways of thinking
Perspective	Interpretations	

Reading Analytically (Cont.)

- As you read each item
    - Ask yourself how it contributes to <u>your</u> research questions and objectives
    - Make notes with this focus
        - Even if you take photocopies, it is still a good idea to make separate notes;
        - This will help you to think through the ideas being presented to you, and
        - Helps to sort out your own ideas.
    - Rank each item as to its relevance

- So, having done the literature searching to have found some articles and papers
- You need to read them …
- Ready for writing a literature review.

Evaluating the Literature

- Two important considerations:
  - How do you know what you are reading is relevant?
  - How do you know when you have read enough?
- You need to <u>read all</u> the literature closely related to your research question(s) and objectives.
- It is the literature that is <u>less</u> closely related that may cause problems…

Evaluating the Literature (Cont.)

- Look at factors external to the item – to determine credibility and authority
  - Author – expertise; reputation; credibility; look at other papers and books…
  - Publication – credibility & reliability of the publisher; editorial board…
  - Target audience – vocabulary, types of sources cited…

Evaluating the Literature (Cont.)

- Analyse argument and evidence in the text:
  - Logical progression
  - Structure of argument
  - Range of evidence – personal opinions or observations; research; case studies, statistics; facts; quotations;…
  - Assess how the author(s) present alternative perspectives or arguments
  - Locate gaps or inconsistencies
  - …

Evaluating the Literature (Cont.)

- Relevance of the item
  - Depends on research questions & objectives
- Some things to look for:
  - How recent is the item?
  - Is it likely to have been superseded?
  - Have you seen references to the item or its author(s) in other items that were useful?
  - Does the item support or contradict your arguments?
  - …

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[Saunders et al (2003)]

Record literature

- As you read each item
  - Ask yourself how it contributes to <u>your</u> research questions and objectives
  - Make notes with this focus
    - Even if you take photocopies, it is still a good idea to make separate notes;
    - This will help you to think through the ideas being presented to you, and
    - Helps to sort out your own ideas.
    - Writing a brief summary of the content is a useful aid to your memory.
  - Rank each item as to its relevance

Bibliographic details

- These details are required in order:
  - To cite the work correctly in your review
  - To cite them in the list of References or Bibliography
  - To enable other people to identify and trace sources used in order to continue their own research

Record literature

- Tools & techniques for recording
    - Notebook
    - Summary sheets
    - Record/index cards
    - Generic computer software, e.g. Word, Excel, Access
    - Specialist computer software, e.g. Procite or Endnote
- Remember to be:
    - Accurate, consistent and correct!

Summary record sheet: To record key aspects of your readings, e.g.

Author/ date	Theory/ standpoint	Evidence, data	Useful references	Notes	Rank/ relevance

Worksheet or matrix: to make comparisons between different authors, e.g.

	Author date #1	Author date #2	Author date #3	Author date #4
Key Concept:				
Description				
Evidence; data				
Methodology used				
Critical concepts				
Conclusions				
Miscellaneous				

Other categories: *Demographics, Geographic location, Consequences (of the evidence), Part of (major category)*

Preparing for Writing the Review

- There are different ways of doing this
- One of the most effective is to try to map out the topic area
  - Provides an overview of the topic
  - Sets out the 'geography' of research & thinking that has been done on a topic.
    - Identifying what has been done
    - When it was done
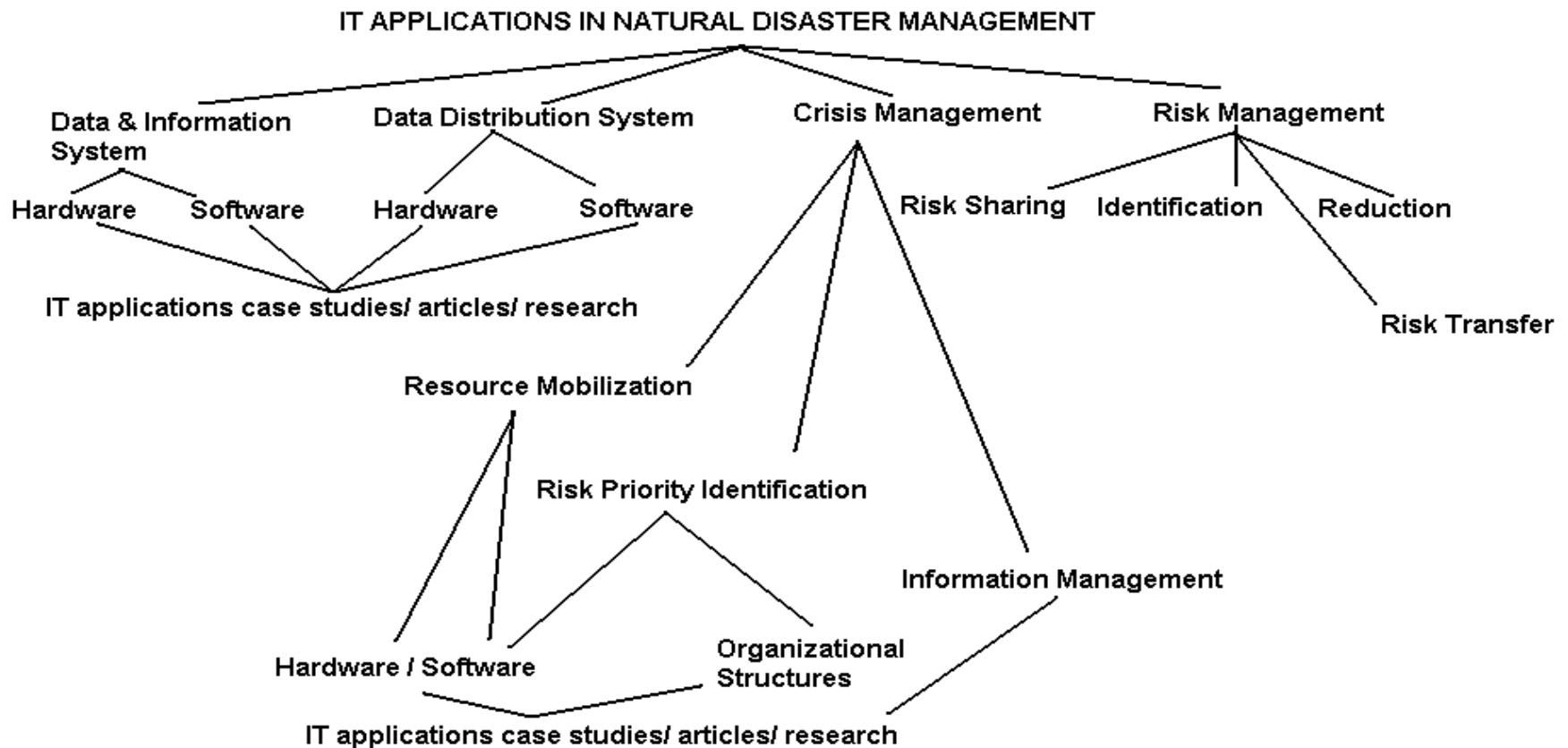   - What methods have been used
    - Who did what

Mapping & Analysing Ideas (Cont)

- Common methods of mapping
    - Feature maps
    - Tree constructions
    - Content maps
    - Taxonomic maps
    - Concept maps
    - ....

Relevance tree

How can technology, through the use of IT applications, help in Natural Disaster Management

IT APPLICATIONS IN NATURAL DISASTER MANAGEMENT

Data & Information System — Hardware, Software

Data Distribution System — Hardware, Software

IT applications case studies/ articles/ research

Crisis Management

Risk Management — Risk Sharing, Identification, Reduction, Risk Transfer

Resource Mobilization

Risk Priority Identification

Information Management

Hardware / Software

Organizational Structures

IT applications case studies/ articles/ research

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The Literature Review

"The selection of available documents (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint to fulfil certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed."

[Hart (1998)]

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[Hart (1998)]

Academic Misconduct

- While referencing the literature and using its content in your thesis/paper you can be accused of plagiarism (<u>Academic Misconduct</u>).

Plagiarism detection Software

- [Turn-it-in](#)