Research Questions, Objectives & Hypotheses
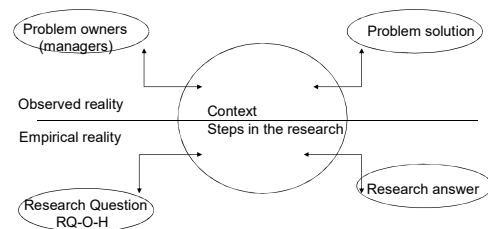
Revisiting Last Tutorial

Motives in Research

- Motives in Research
  - Exploration: Radiation hazards of wireless technology
  - Description: Impact on work quality and technical manpower in contracting organization
  - Explanation: Technology Innovation success factor
- Types of Research Projects
  - Descriptive: describes using constituent variables
  - Relational: describes/explains by co-relating variables
  - Causal: explains by revealing cause and effect variables
- Objective/application
  - Prediction/Prognosis
  - Generalization/Particularization/Removing ignorance

Selecting the Format of

- **Objectives, Research Questions and Hypotheses**
- form of statement depends on
  - type of study & personal preference
- Descriptive studies > objectives or questions
- Experimental studies > effectively served by hypotheses but may use objectives and questions also
- Survey and exploratory studies > questions
- Applied/ professional disciplines >hypothesis

Problem and Research

Problem owners (managers)

Problem solution

Observed reality

Empirical reality

Context
Steps in the research

Research Question RQ-O-H

Research answer

The Problem in Real life

- Identify the general <u>problem</u> area of your interest
  - This would be typically to broad to address in a single research study
  - So need to narrow it down to a more specific aspect
  - E.g. of problem: Many people in Kathmandu suffer from cardio-vascular health problems. How can we improve their health?
  - Develop the research question
    - Often stated in the context of some theory advanced to address the problem

Research Question

- Develop the research question
  - Often stated in the context of some theory advanced to address the problem
  - E.g. the theory might be that air pollution is the main reason for cardiovascular health problems and that internal combustion engine vehicles (ICEVs) are the main cause of KTM's air pollution
  - E.g. of research question: Will a pollution tax on fossil fuels used by ICEVs improve the health of Kathmanduites?

Research Objectives

- **Objectives** are written in measurable terms that can be easily used to determine the achievement of those objectives.
  - E.g. of Objectives: The objectives of this study is to assess (1)the relationship of air pollution to cardiovascular health problems in Kathmandu, (2)the contribution of ICEVs emissions to air pollution and (3) the level of taxation on fossil fuel to offset the cost of treatments.

Hypothesis

- A hypothesis is different from a general theory and should be specific. "A hypothesis could say that if the theory behind it is correct, such and such will happen in a particular situation."
- Hypothesis is usually used to see whether a theory is correct or not.
- A hypothesis must be testable and it must also be possible to falsify (reject) it.

Hypothesis

- **Hypothesis** is written as a proposition and describes in operational terms what you think will happen in a study.
- E.g. of hypothesis: A pollution tax on fossil fuels will significantly reduce the number of asthma attacks experienced by chronic asthma patients (within 1 year of imposing the tax)

RESEARCH TYPES

- BASIC
  - Theoretical
- APPLIED
  - Process – applicative research
  - Didactic- Instructions for doing
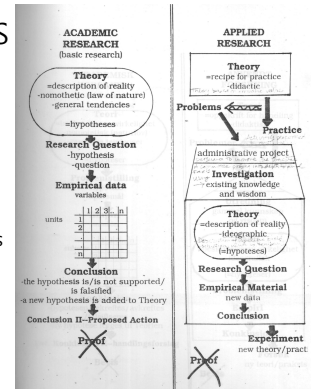
Literature Review
Library and Internet Search

Lecture 4.2

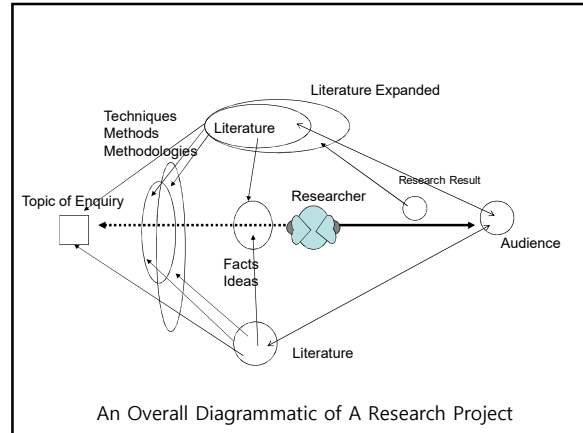## The Literature Review

- Literature is a body of information existing in a wide variety of stored formats that has a conceptual relevance for a particular topic of enquiry

- Literature review is a survey of various sources for information on the specific topic of enquiry
  - It is essential at the start of any research process, and
  - Is continuously carried out throughout the research process

- Literature Review as an Exploratory System:
  - What are the key sources?
  - What are the key theories?
  - What are the major issues and debates about this topic?
  - What are the epistemological and ontological grounds for the discipline?
  - What are the main questions and problems that have been addressed to date?

The Literature Review

- **Most Important EARLY step**
- **Identifies the related research by showing gaps in theory, praxis in research results or methods,**
- **Provides a conceptual and theoretical context of the research**
- **State of the arts in the scientific literature**
  - There is so little there! Is the research explorative?
  - It is all there! Is the research 'reinventing the wheel'?

An Overall Diagrammatic of A Research Project
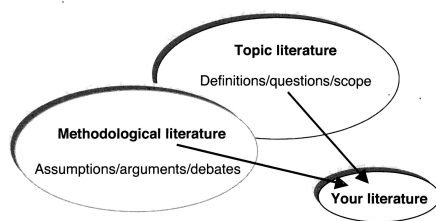
Literature Review

Figure 1.1   *Two kinds of literature*

Literature Review in Research Proposal

- **Introduction** (need, importance and rationale)
- **Problem Statement** (basic review of the situation giving rise to the study) >> THEORY
- **Statement of Purpose** (Objectives, Research Question or Hypotheses)
- [Further *review of literature* to establish a critical theoretical/literature base]
- **Methodology** (The research design and process described step by step in detail)
- **References**

Uses of Literature Review

- **Using Literature review to identify the Research Question**
  - **Analyzing, critiquing and suggesting improvements to an extant work**
  - **Comparison of two related but different realities or representations in literature**
  - **Using existing theories to examine related themes**
  - **Testing existing theories in literature**
  - **Expanding/elaborating on existing theories**
- **Using Literature review to focus the topic of enquiry**
- **Using Literature review to understand the makeup of a research question**
- **Using Literature review to understand an idea's genetic routes**
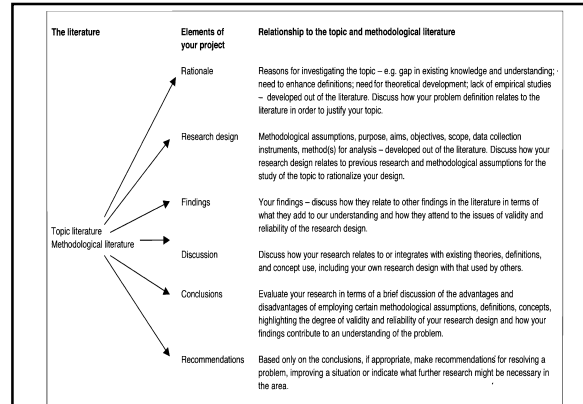

The literature	Elements of your project	Relationship to the topic and methodological literature
	Rationale	Reasons for investigating the topic – e.g. gap in existing knowledge and understanding; need to enhance definitions; need for theoretical development; lack of empirical studies – developed out of the literature. Discuss how your problem definition relates to the literature in order to justify your topic.
	Research design	Methodological assumptions, purpose, aims, objectives, scope, data collection instruments, method(s) for analysis – developed out of the literature. Discuss how your research design relates to previous research and methodological assumptions for the study of the topic to rationalize your design.
Topic literature Methodological literature	Findings	Your findings – discuss how they relate to other findings in the literature in terms of what they add to our understanding and how they attend to the issues of validity and reliability of the research design.
	Discussion	Discuss how your research relates to or integrates with existing theories, definitions, and concept use, including your own research design with that used by others.
	Conclusions	Evaluate your research in terms of a brief discussion of the advantages and disadvantages of employing certain methodological assumptions, definitions, concepts, highlighting the degree of validity and reliability of your research design and how your findings contribute to an understanding of the problem.
	Recommendations	Based only on the conclusions, if appropriate, make recommendations for resolving a problem, improving a situation or indicate what further research might be necessary in the area.

Figure 1.3 *Relationship between the literature and the project elements*

General Tactics of Literature Review

- **Organizing literature in terms of facts and ideas**
  - **Idea as an inference or hypothesis or an interpretation**
  - **Fact as a 'clear and distinct relation held to be so tacit agreement.'**
- **Organizing Literature as Primary and Secondary sources**
  - **Primary sources are the topic that other sources comment upon. Key or Basic sources**
- **Methodology Literature could be classed as theory and application**

Specific Tactics of Literature Review

- **Knowing where the resources are**
  - **Internet, Library, Archives, Organizations and agencies, popular media**
- **Having an Organizing and Retrieving System**
  - **Note taking usually on computers, note books, cards, bibliographic notes,**
  - **Notes to ideas, imaginative grouping of notes, order and coherence of facts and ideas**
  - **Order makes retrieval manageable**
- **Bringing Motivation and Imagination to the task**
  - **Forming base Concepts as the notes from literature are organized**
  - **Imagining the report or drafts of possible inferences could provide motivation**

The Literature Review

- **Credible and Scientific literature**
  - *'Virinchinarayan' by Jit Bahadur Manandhar!*
- **Research Journals/ Peer review/ Blind review**
- **Research reports – Books may be more useful for 'slow disciplines' or 'mature areas'.**
- **Similar researches, similar methods, problematic findings, constructs/models**
- **Directly relevant or of Indirect relevance**
- **Exhaustive search >> evaluated selection**

The Internet

- Internet collections are extensive!
  - Internet Search Engines
  - Specialized Search Engines
  - Full text services
  - Library Databases
  - Specific web sites
- Take all leads
  - Do not dismiss any without evaluating!

The Library

- Library collections are extensive!
  - From leaflets to almanacs
  - Dictionary, Bibliographic sources, Books, Books in print, List of periodicals, Journals, Abstracts, Proceedings, Technical reports, Handbooks, Codes of practice, etc.
- Take all leads
  - Do not dismiss any without evaluating!

The Actual Review

- Classify, sort out, read, draw major points
- Use own experience and ideas to tie them up into a readable practical logical sequence
  - For establishing background, need, importance and usefulness of research
  - To show the circumstances creating the problem >> research studies and their findings, methods, tools etc.
  - To establish the theoretical base of the study

Some Basic Principles

- Principle of exhaustiveness
- Relevant literature : avoid padding!
- Quote, Paraphrasing and citing - precision, clarity and relevance- blend with your ideas!
- Organize into sections- state the sectionings for guidance and end in concise summary.
- Write in third person past tense – present tense only for universal truths
- Summarize

Referencing and References

What is Referencing?

- Standardized method of acknowledging sources of information
  - Quotes, facts and figures, ideas, theories
  - Published/unpublished works
- Unique identification
- Allow possibility of verification, follow-up, read further
- Avoid plagiarism
- Harvard Referencing

Referencing

- Take down bibliographical details, page number(s)
- Bib. Detail of book
  - Author/editor, year of publication, title, edition, volume number, place of publication, publisher
- Bib. Detail of Journal Article
  - Author of article, year of publication, title of article, journal/serial title, volume number, issue number, page numbers on which the article appears
- Bib. Detail of electronic information
  - Author/editor, year of publication, article title, journal title, type of medium, (CD-ROM, Online etc.), pages-length, available statements, access date

Citations in text

- Insert the citation at the appropriate place within the text of the document (see examples below).
- Provide a reference list at the end of the document (see examples below).

- **How to cite references within the text of an assignment**
- When citing references within the text of an assignment use only the name of the author, followed by the year of publication.
- Larsen (1971) was the first to propound the theory.
- OR
- The theory was first propounded in 1970 (Larsen 1971).
- When directly quoting from another source, ensure that quotation marks are used and the relevant page number(s) are given.
- Larsen (1971, p. 245) noted that "many of the facts in this case are incorrect".
- OR
- "Many of the facts in this case are incorrect" (Larsen 1971, pp. 245-6).

Citations in text

- **Works with no author:** When a work has no author (including legal materials) or the author is anonymous, cite in-text the first few words of the reference list entry (usually the title) and the year. Use italics for the title as follows:
- This was apparently not the case in seventeenth-century England (*On Travelling to London* 1683).
- OR
- *On travelling to London* (1683) reveals that this was not true.

Citations in text

- **Multiple authors:** When a work by two or three authors is cited in parentheses, the textual reference should be as:
- (Larsen & Green 1987)
(Larsen, Green & Withers 1987)
- When the authors' names are incorporated in the text, the ampersand is replaced by 'and':
- Larsen and Green (1987) were unable....
Larsen, Green and Withers (1987) agreed....
- For a work that has more than three authors, only the surname of the first listed author is used, followed by the expression 'et al.' (or 'and others'). For example, a work by Larsen, Green, Withers and Gonzales becomes:
- Larsen et al. (1987) have found....
....is the best example (Larsen et al. 1987).

Citations in text

- **Citing a Web site:** To cite a Web page within the text of an assignment, give the address of the site (e.g. http://www.apa.org). To cite a *document* from a Web site you must follow the author/date format. In both cases an entry will still be required in the reference list.
- **How to create a Reference List**
- A list of references contains details only of those works cited in the text. If relevant sources that are not cited in the text are included, the list is called a bibliography.
- The Reference List is arranged alphabetically by author. Where an item has no author it is cited by its title, and ordered in the reference list or bibliography in sequence by the first significant word of the title.

References and Bibliography

- **Examples of different types of References**
- **Articles/chapters in book:**
- Bibliographic details are arranged in the sequence:
- author of chapter, year of publication, chapter title, title of book, editor(s) of book, publisher, place of publication, article or chapter pages
- **Article or chapter in a book**
- Blaxter, M. 1976, 'Social class and health inequalities', in *Equalities and Inequalities in Health*, eds C. Carter & J. Peel, Academic Press, London, pp.120-135.
- **Article or chapter in a book (no author)**
- 'Solving the Y2K problem' 1997, in *Technology Today and Tomorrow*, ed. D. Bowd, Van Nostrand Reinhold, New York, p. 27.
- **Article in an encyclopaedia**
- Stafford-Clark, D. 1987, 'Mental disorders and their treatment', in *The New Encyclopedia Britannica*, 5th edn., vol. 23, Chicago, Encyclopaedia Britannica, pp. 956-975.

33/31

References and Bibliography

- **Book**
- Bibliographic details are arranged in the sequence:
- author/ editor(s), year of publication, title of book, edition of book, publisher, place of publication
- **Book with a single author**
- Adam-Smith, P. 1978, *The ANZACS*, Thomas Nelson, Melbourne.
- **Book with 2 authors**
- Butler, J. D. & Walbert, D.F. (eds) 1986, *Abortion, Medicine and the Law*, Facts on File Publications, New York.
- **Book with 3 or more authors**
- Leeder, S. R., Dobson, A. J., Gibberd, R. W. & Patel, N. K. 1996, *The Australian Film Industry*, Dominion Press, Adelaide.
- **Book with no author (note edition)**
- *The Australian Concise Oxford Dictionary* 1992, 2nd edn, Oxford University Press, Melbourne.

34/31

References and Bibliography

- **Government and Parliamentary Publications**
- **Act of Parliament**
- Copyright Act 1968 (Cwlth), ss. 1-3.
- **Australian Bureau of Statistics bulletin**
- Australian Bureau of Statistics, 1985, *Domestic travel and tourism survey, Australia, 1983*, Cat. no. 9216.0, ABS, Canberra.
- **Government report**
- Office of the Status of Women 1981, *Fair Exposure*, AGPS, Canberra.
- **Journal Article**
- Bibliographic details are arranged in the sequence:
- author of journal article, year of publication, article title, title of journal, volume of journal, issue number of journal, article pages
- **Journal article**
- Dewhirst, C. 1986, 'Hot air over the Himalayas', *World Geographic*, vol. 1, no. 4, pp. 44-45.
- **Journal article (no author)**
- 'Anorexia nervosa' 1969, *British Medical Journal*, 1, 529-530.

35/31

References and Bibliography

- **Newspaper article**
- Legge, K. 1987, 'Labor to cost the "Keating Factor"', *Times on Sunday*, 1 Feb., p. 2.
- **More than one item by the same author published in the same year**
- Dewhirst, C. 1986a, 'Hot air over the Himalayas', *World Geographic*, vol. 1, no. 4, pp. 44-45.
- Dewhirst, C. 1986b, 'Cold water around the Antarctic', *World Geographic*, vol. 1, no. 5, pp. 32-39.
- **ERIC Document (microfiche)**
- Davis, R.K. & Lombardi, T.P. 1996, 'The quality of life of rural high school special education graduates: A follow-up study', in *Rural Goals 2000: Building Programs that Work* [Microfiche]. Available: ERIC Document: ED394765.
- **Personal Conversation**
- Doe, J., Lecturer at Curtin University of Technology 2000, Conversation with the author, 14 Apr.

36/31

References and Bibliography

- **Videorecording**
- *Apartheid did not Die* (video recording) 1998, London, Carlton International, Written and produced by John Pilger.
- **Examples of types of electronic references:**
- **Journal Article**
- Bibliographic details are arranged in the sequence:
- author of journal article, year of publication, article title, title of journal, type of medium (use "Electronic" if you are unsure if it is online or networked CD-ROM), volume of journal, issue number of journal, article pages or indication of length, "available" statement: supplier/database name/identifier or number if available/item or accession number, access date
- **Journal article abstract from Electronic Database**
- Ryles, R. 1996, [Abstract of 'The impact of braille reading skills on employment, income, education and reading habits', *Journal of Visual Impairment and Blindness*, vol. 90, no. 3, pp. 219-226], [Electronic], Available: Silver Platter File: CINAHL/1996036756 [1997, June 7].

References and Bibliography

- **Full text journal article from CD-ROM (BPO)**
- La Rosa, S.M. 1992, 'Marketing slays the downsizing dragon', *Information Today*, [CD-ROM], vol. 9, no. 3, pp. 58-59, Available: UMI/Business Periodicals Ondisc/92-20889 [1999, Jan. 15].
- **Full text journal article from Electronic Database**
- Sale, P. & Carey, D.M. 1995, 'The sociometric status of students with disabilities in a full inclusion school', *Exceptional Children* [Electronic], vol. 62, no. 1, pp. 6-22, Available: Information Access/Expanded Academic ASAP/A17435391 [1998, June 12].
- **Full text journal article from an Electronic Journal**
- Skargren, E. I. & Öberg, B. 1998, 'Predictive factors for 1-year outcome of low-back and neck pain in patients treated in primary care: comparison between the treatment strategies chiropractic and physiotherapy', *Pain* [Electronic], vol. 77, no. 2, 201(7pp.), Available: Elsevier/ScienceDirect/S0304- 3959(98)00101-8 [1999, Feb. 8].

References and Bibliography

- **Article from Curtin Electronic Reserve**
- Avgerou, C, Siemer, J. & Bjørn-Anderson, N. 1999, 'The academic field of information systems in Europe', *European Journal of Information Systems* [Electronic], vol. 8, pp. 136-153, Available: Curtin University Library and Information Service E-Reserve/dc60005019 [2001, Jan. 22].
- **Discussion List**
- Berkowitz, P. 1995, April 3, 'Sussy's gravestone', *Mark Twain Forum* [Online], Apr. 3, Available E-mail: TWAIN-L@yorkvm1.bitnet [1995, Apr. 3].
- **World Wide Web**
- **World Wide Web page**
- Beckleheimer, J. 1994, *How do you cite URL's in a bibliography?* [Online], Available: http://www.nrlssc.navy.mil/meta/ bibliography.html [1995, Dec. 13].

References and Bibliography

- **World Wide Web page (no author)**
- *Educating America for the 21st century: Developing a strategic plan for educational leadership for Columbia University, 1993-2000 (Initial workshop draft)* 1994 [Online], Available: http://www.ilt.columbia.edu/CONF/ EdPlan.html [2001, May 16].
- **World Wide Web page (no publication date)**
- Prizker, T.J. n.d., *An early fragment from central Nepal*, [Online], Available: http://www.ingress.com/~astanart/pritker/ pritzker.html [2000, Dec. 12].