



RECAP - INTRO

Steps in Formulating a Research Problem:

1. Identify a broad field of interest
2. Dissect the broad area into subareas
3. Select what is of most **interest** to you, and something **manageable**
4. Write the problem statement
5. Formulate research objectives
 - Main objectives
 - Subobjectives

www.utm.my
inovatif • entrepreneurial • global



Use **action-oriented** words to describe objectives.

eg. To determine, to ascertain, to examine
to validate

6. State research questions (Need LR)
7. Assess the **feasibility** of your objectives
 - time, financial resources, technical expertise

www.utm.my
inovatif • entrepreneurial • global



Establishing Operational Definitions

- Give clear meaning of concepts/variables/study population used in your study
 - Eg. “Effectiveness” , “Young people”, “academic achievement”
- Define in practical, **observable and measureable** terms
- Can be different from legal definitions or those used by others.

www.utm.my inovatif • entrepreneurial • global



Examples of Operational Definition

Observable behavior, Measureable concept

- **Academic achievement** = CPA
- **Thirst** = Number of glasses of water to quench thirst
- **Success** = ??? **Motivation** = ???
 - May need many items in a survey to measure just one concept
- **Unidimensional or Multidimensional concept?**

www.utm.my inovatif • entrepreneurial • global



UNIVERSITI TEKNOLOGI MALAYSIA

The Problem Statement

- Example

Problem written in statement form:

Technicians have displayed different skill levels. This makes it difficult for the organization to assign tasks to technicians without first matching their skills to the tasks. The management is planning to offer individualized courses to improve their skills. This study is designed to measure the effect of an introduction of an individualized programme on the skill acquisition of technicians.

www.utm.my inovatif • entrepreneurial • global 5



UNIVERSITI TEKNOLOGI MALAYSIA

Statement of Purpose

The purpose of this study is to investigate the impact of an individualized course on the skill acquisition of technicians.

www.utm.my inovatif • entrepreneurial • global 6



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Research Objectives

Main objective:

To evaluate the effectiveness of individualized courses on technicians' skill levels.

www.utm.my inovatif • entrepreneurial • global 7



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

Specific objectives:

1. To develop a survey instrument to measure technicians' skills.
2. To design individualized courses for technicians.
3. To evaluate the effectiveness of the individualized courses.

www.utm.my inovatif • entrepreneurial • global



UNIVERSITI TEKNOLOGI MALAYSIA

Research Hypothesis

A **hypothesis**

- is stated in declarative form
- posits a relationship between variables
- reflects a theory or body of literature it is based on
- is brief and to the point
- is testable

www.utm.my inovatif • entrepreneurial • global 9



UNIVERSITI TEKNOLOGI MALAYSIA

Research Question:

What effect does an individualized course have on the technicians' skill level?

Research Hypothesis:

An individualized course increases the technicians' skill level.

www.utm.my inovatif • entrepreneurial • global 10



LITERATURE REVIEW (LR)

Contents

- Definition
- Purposes of LR
- Steps in conducting LR
- Examples



www.utm.my inovatif • entrepreneurial • global



What is LR?

- A comprehensive, in-depth, systematic, and **critical review** of the most important **scholarly** literature on a particular topic.
- *Scholarly literature* refer to **published** and **unpublished** data-based literature and conceptual literature materials.
 - **Data based literature**: reports of empirical research
 - **Conceptual research** : reports of theories, frameworks, concepts

www.utm.my inovatif • entrepreneurial • global



What is LR?

- Combines both summary and synthesis of the materials
 - A *summary* is a recap of the important information of the source.
 - A *synthesis* is a re-organization of that information
- Traces the **intellectual progression** of the field, including major debates

www.utm.my inovatif • entrepreneurial • global



Why do we perform LR?

To be familiar with the field of study.

To find the gaps.

To identify and indicate theoretical perspectives that are common to the study.

To identify who are the main researchers.

To identify suitable methodologies for the study.

www.utm.my inovatif • entrepreneurial • global



Purposes of Literature Review - 1

- To determine **what is known** about a subject matter, concept or problem (**Background**).
- The background may consider one or more of the following aspects depending on the research question being posed:
 - Theoretical background – past, present or future
 - Practice – previous or contemporary
 - Methodology and/or research methods
 - Previous findings
 - Rationale and/or relevance of the current study
- Discovering **important variables** relevant to the topic.



Purposes of Literature Review - 2

- To evaluate the existing literature and a **relationship** between the different works.
- To determine **gaps** (unanswered questions), consistencies & inconsistencies about a subject, concept or problem
- To describe **strengths & weaknesses of designs**, methods of inquiry and instruments used in earlier works
- To give a **new interpretation** of old material or combine new with old interpretations.



Purposes of Literature Review - 3

- To determine an appropriate **research design/method** (instruments, data collection and analysis methods) for answering the research question
- To determine the **need for replication** of a well designed study or **refinement** of a study
- To **discuss the results or findings** of a study. The discussion relates the study's findings to what was or was not found in the review of literature
(CHAPTER 5)



Purposes of Literature Review - 4

- **Resolve conflicts** amongst seemingly contradictory previous studies
- **Prevent duplication** of effort
- Point the **way forward** for further research
- Place **one's original work** in the **context of existing literature**

 **UTM**
UNIVERSITI TEKNOLOGI MALAYSIA

Stages in LR

- Development of the literature review requires **four stages**:
 - **Problem formulation**—which topic or field is being examined and what are its component issues?
 - **Literature search**—finding materials relevant to the subject being explored
 - **Data evaluation**—determining which literature makes a significant contribution to the understanding of the topic
 - **Analysis and interpretation** —discussing the findings and conclusions of pertinent literature

www.utm.my inovatif • entrepreneurial • global

 **UTM**
UNIVERSITI TEKNOLOGI MALAYSIA

Steps of Literature Review

Determine topic/concept/issue/problem

↓

Conduct computer search

↓

Save/Print the literature

↓

Use Endnotes to organize the references

↓

Conduct preliminary reading

↓

Critically read each source (evaluate, summarize & critique each source)

↓

Synthesize critical summaries

www.utm.my inovatif • entrepreneurial • global



Sources of Literature

Scholarly sources: Books, journal articles, electronic journals, theses and dissertations, conference proceedings, and reports.

Unscholarly sources: newspapers, magazines, documentaries.

www.utm.my inovatif • entrepreneurial • global



Primary and Secondary Sources

Primary source: is written by a person(s) who developed the theory or conducted the research

Secondary source: is written by a person(s) *other than* the individual who developed the theory or conducted the research

www.utm.my inovatif • entrepreneurial • global



Why Use Secondary Sources

1. Primary sources are unavailable.
2. A secondary source can provide different ways of looking at an issue or problem.

Secondary sources should not be overused

www.utm.my inovatif • entrepreneurial • global



Disadvantages of Secondary Sources

- All of the theory's concepts or aspects of the study and/or definitions **may not be fully presented**.
- If all concepts or aspects are included, the definitions may be collapsed or paraphrased to such a degree that it **no longer represents the theorist's actual work**.
- The critique (whether positive or negative) is based on the presentation of incomplete or interpreted data and therefore **less accurate**.

www.utm.my inovatif • entrepreneurial • global



Steps before doing LR

- **Find models**
 - Look for **other literature reviews** in your area of interest and read them to get a sense of the types of themes you might want to look for in your own research.
 - Type the word "**review**" in your search engine along with your other topic terms to find articles of this type on the Internet or in an electronic database. The bibliography or reference section of sources you've already read are also excellent entry points into your own research.

www.utm.my inovatif • entrepreneurial • global



Steps before doing LR

- **Narrow your topic**
 - The narrower your topic, the easier it will be to limit the number of sources you need to read in order to get a good survey of the material.
- **Consider whether your sources are current**
 - Some disciplines require that you use information that is as current as possible. Information more than five years old could be obsolete.

www.utm.my inovatif • entrepreneurial • global



Find a focus

- A literature review should be organized around **ideas**, not the sources themselves as an annotated bibliography would be organized. This means that you will not just simply list your sources and go into detail about each one of them, one at a time.
- Consider what themes or issues **connect** your sources together.
- Pick **one** of these themes to **focus** the organization of your review.

www.utm.my inovatif • entrepreneurial • global



Critique Questions

1. Does the literature review **uncover gaps or inconsistencies** in knowledge?
2. How does the review reflect **critical thinking**?
3. Are all the **relevant concepts and variables** included in the review?
4. Does the summary of each reviewed study reflect the **essential components** of the study design?

www.utm.my inovatif • entrepreneurial • global



UNIVERSITI TEKNOLOGI MALAYSIA

5. Does the critique of each reviewed study include **strengths, weaknesses, or limitations of the design; conflicts; and gaps or inconsistencies** in information in relation to the area of interest?
6. Were **both conceptual and data based** literature included?
7. Were **primary sources** mainly included?

www.utm.my inovatif • entrepreneurial • global



UNIVERSITI TEKNOLOGI MALAYSIA

8. Is there a written **summary or synthesis** of the reviewed scholarly literature?
9. Does the summary follow a **logical sequence** that leads the reader to why there is the **need for the research**?

www.utm.my inovatif • entrepreneurial • global



Steps before doing LR

- **Construct a working thesis statement**
 - use the focus to construct a thesis statement which argues for a particular perspective on the material.
- **Sample thesis statements for literature reviews are as follows:**
 - *A detailed conceptual framework for enterprise architecture is still lacking.*
 - *e-learning limitations can be categorized as technological limitations and limitations due to personal issues.*

www.utm.my inovatif • entrepreneurial • global



Steps before doing LR

- **Organize LR information:**
 - **Introduction:** Gives a quick idea of the topic of the literature review, such as the central theme or organizational pattern.
 - **Body:** Contains your discussion of sources and is organized either chronologically, thematically, or methodologically.
 - **Conclusions/Recommendations:** Discuss what you have drawn from reviewing literature so far. Where might the discussion proceed?

www.utm.my inovatif • entrepreneurial • global

What to write for LR?

- the accepted facts in the area
- the popular opinion
- the main variables
- the relationship between concepts and variables
- shortcomings in the existing findings
- limitations in the methods used in the existing findings
- the relevance of your research
- suggestions for further research in the area.

- Divide into categories
 - supporting a position
 - those against a position
 - alternative theses entirely
- Explanation of **how each work is similar** to and **how it varies** from the others
- Conclusions as to which pieces are best considered in their argument, are most convincing of their opinions, and make the greatest contribution to the understanding and development of their area of research

Language in LR

- Create a balance between direct quotation and paraphrasing. Avoid too much direct quoting.
The verb tense:
 - When you are citing a **specific author's findings**, use **the past tense**: (found, demonstrated)
 - When you are writing about **an accepted fact**, use the **present tense**: (demonstrates, finds)
 - When you are citing several authors or making a **general statement**, use the **present perfect tense**: (have shown, have found, little research has been done).

- **Comparison across studies**

- The aim is to extract key points by comparing and contrasting ACROSS studies, instead of reading one paper after another.
- Key points for a review may concern areas of similarities and/or differences in:
 - Research aim(s) or hypotheses
 - Research design and sampling
 - Instruments and procedures used
 - How data were analyzed
 - Results or findings
 - Interpretations

 **UTM**
UNIVERSITI TEKNOLOGI MALAYSIA

Writing Tips

Sentences	Express one idea in a sentence. Ensure that all sentences have a subject, verb and object.
Paragraphs	Group sentences that express and develop one aspect of your topic. Use a new paragraph for another aspect or another topic.
Consistent Grammar	Use sentences with appropriate use of commas, colons and semi-colons. Incorrect use of punctuation can affect the meaning.
Transition Words	Use words that link paragraphs and which show contrast and development to your argument e.g. 'hence', 'therefore', 'but', 'thus', 'as a result', 'in contrast'.

www.utm.my inovatif • entrepreneurial • global

 **UTM**
UNIVERSITI TEKNOLOGI MALAYSIA

Pitfalls in LR

- Vagueness due to too much or inappropriate generalizations
- Limited range
- Insufficient information
- Irrelevant material
- Omission of contrasting view
- Omission of recent work

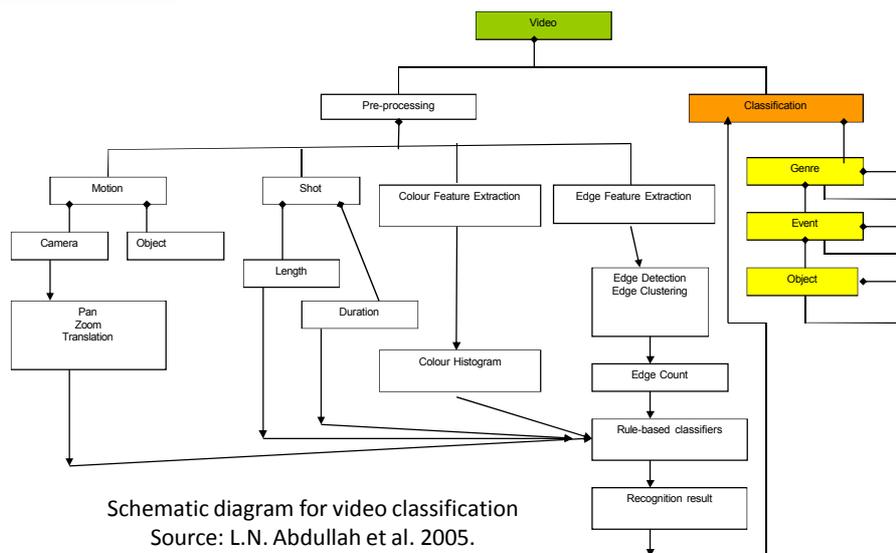
www.utm.my inovatif • entrepreneurial • global

Example 1

Early works have addressed some of the problems and issues discussed in video retrieval. Researchers have developed ideas and tools for supporting video editing, for example in [8]. They have defined a seamless video editing in the gradient domain. The spatial-temporal gradient fields of target videos are modified or mixed to generate a new gradient field, which is usually not integrate able. They have also described how semantic information about video can be structured and used for content-based access. [From a general video archive point of view, the problem with this tool is the lack of support for managing video document structures.](#) A digital video archive serving different categories of users [should offer a more structured way of describing video contents.](#)

*** Note the Summary and Identification of the GAP

Example 1 - Continued



Example 2

Hidden Markov Models (HMMs) are statistical tools that have been used successfully in modelling difficult tasks such as speech recognition [15] or biological sequence analysis [16]. Inspired by a similar speech application, Hidden Markov model (HMM) has also been applied to activity recognition. The first approach for the human movements based on HMMs was described in [13]. It distinguished between six different tennis strokes. This system divided the image into meshes and counted the number of pixels representing the person for each mesh. The numbers were composed to a feature vector that was converted into a discrete label by a vector quantizer. The labels were classified based on discrete HMMs. In [8], an HMM is used as a representation of simple actions which are recognized by computing the probability that the model produces the visual observation sequence. In [14] layered HMMs were proposed to model single person office activities at various time granularities.

***** Note the summary and synthesis of the literature

Example 2 – Continued (Summary in a table form)

Research	Technique	Features Used	Domain	Disadvantage / Advantage	Future Direction
Lin et al. 2007	A priori algorithm Association rule mining Pre-filtering architecture	Audiovisual	Weather Sports Commercial	Reduce the amount of misclassification errors. Able to identify a high percentage of positive instances in each concept	Due to the different properties of the data sets representing the semantic concepts such as weather, commercial, and sports, they proposed to use different strategies to merge the rules.
Davis & Tyagi 2006	Probabilistic reliable - inference framework Hidden Markov Model (HMM) output likelihoods and action priors Maximum likelihood (ML) and maximum a posteriori (MAP)	Motion	Walking, running, standing, bending - forward, crouching - down, and sitting	The system only makes classifications when it believes the input is 'good enough' for discrimination between the possible actions	



Some Academic Journals

Top IS journals are:

- MIS Quarterly
- IS Research
- European Journal of IS
- Information Systems Journal (ISJ)
- Journal MIS
- Journal of Strategic IS
- Management Science

www.utm.my
inovatif • entrepreneurial • global



Conferences

- The most up-to-date research outlet
- Some conferences have rigorous refereeing (check acceptance rate)
 - note difference between research papers, research in progress & posters
- Top IS conferences include:
 - ICIS and ECIS
 - HICSS, PACIS
 - ACIS

www.utm.my
inovatif • entrepreneurial • global



Assignment #2

Give a **critical** review of three recent (2013-2015) **articles** related to your research by doing the following:

- i) Present a summary of the findings in a table.
- ii) Write a synthesis of the literature (Identify relevant theories, concepts, specify the gaps in existing knowledge, recent advances and trends)

Submit both Bonus Assignment #1 and #2 on Tuesday 6/10/2015.



References

up.edu.ps/ocw/repositories/server_america/.../literature_review.ppt

csnotes.upm.edu.my/kelasmaya/.../LITERATURE%20REVIEW.ppt

cms.cnr.edu.bt/cms/files/docs/File/.../Literature%20Review.ppt

www.ucdenver.edu/academics/.../Lit%20Review%20Presentation.ppt

<http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=53>

Gough D, Oliver S, Thomas J (2012) *An Introduction to Systematic Reviews*. London: Sage