ZIMBABWE OPEN UNIVERSITY

"Empowerment Through Open Learning" ®

FACULTY OF TECHNOLOGY

PROJECT GUIDE FOR THE UNDERGRADUATE RESEARCH PROJECT (BITH480/BSEH480)

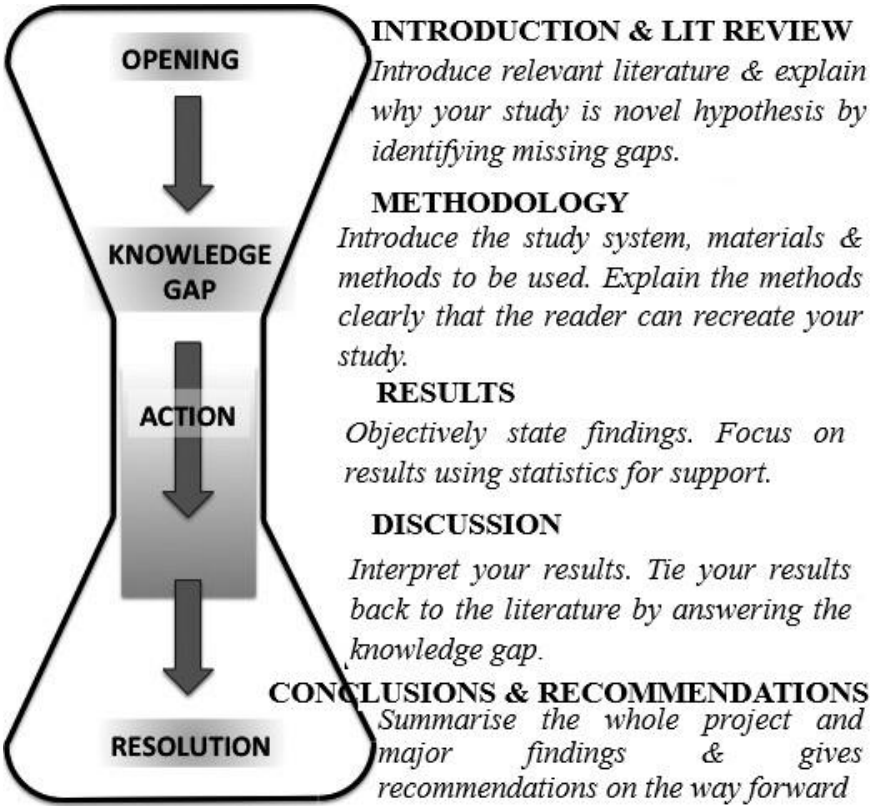
Expected Output

Depending with your program you are expected to follow this or discuss with prospective supervisors before you embark on the journey if the research is doable.

a. **Software Engineering**- there must be a system prototype to show your coding skills.
b. **IT**- a system prototype or implementation of existing system and/or modification.
c. **Network Computing**- network prototype coded or simulated
d. **Multimedia technology**- animation or prototype

Note these are generally accepted guidelines, however you could have something different in mind. Before embarking on the journey it is important that panel of lecturers agree with your proposed topic or nature of research suppose if it be purely research.

How to conduct a scientific research



When conducting a scientific research, the structure of the research mirrors that of an hourglass, opening broadly and narrowing to the specific question, hypothesis, methods, and results of the study. Effective papers widen again in the discussion and conclusion, connecting the study back to the existing literature and explaining how the current study filled a knowledge gap.

What is an abstract and its purpose?

An abstract is a concise summary of a research paper or entire thesis. It is an original work, not an excerpted passage. An abstract must be fully self-contained and make sense by itself, without further reference to outside sources or to the actual paper.

It is a well-developed single paragraph of approximately 250-300 words in length. The function of the abstract is to outline briefly all parts of the paper.

An abstract should include a statement of the problem you are trying to solve and the purpose of your research, the methods used to find the solution, the results and the implications of your findings.

Although it is placed at the beginning of your paper, immediately following the title page, the abstract should be the last thing that you write, once you are sure of the conclusions you will reach.

One common way to structure your abstract is to use the IMRaD acronym structure. This stands for:

- ✓ Introduction
- ✓ Methods
- ✓ Results
- ✓ Discussion

Structure of the report

Report consists of the following chapters:

i. **Chapter 1**: Introduction
ii. **Chapter 2**: Literature Review
iii. **Chapter 3**: Methodology
iv. **Chapter 4**: Results & Discussion
v. **Chapter 5**: Conclusion & Recommendations

CHAPTER I

INTRODUCTION

This chapter is entitled introduction to emphasize its relative functions and the chapter will contain the following subunits

1.1 Introduction

- You outline the broad field of study. This section aims to orient the reader of what you are going to do and to get his or her attention.
- Setting the scene.
- You adopt the funnel approach in your research (The general idea is that you begin with a very broad statement, before narrowing your focus a little and providing some introductory comments pertaining to your ideas. You start with the broader aspects of your topic (the contextual background, for instance) and then gradually narrow your focus until you reach the specific aspect of the topic that you will be addressing.
- You can reference at least 4-5 authors and this is to demonstrate that care has been taken to broaden the gap of knowledge. This should be brief and indicate that its covered in detail in chapter 2

1.2 Background to the study/ problem

- this contains a brief overview of the proposed research
- explain the factors leading to the study
- What is needed is the background of the problem and not background of the organization.
- The background places the research study into some intelligible context or perspective, touching broadly on some of the issues related to it.
- Generally you will rely on some information which led you to get to the source of this particular research problem in the first place.
- You might want to touch on the commercial, social, geographical, educational and or the various dimensions in which it manifests itself
- The researcher should identify the gap that must be filled by the present study and where the background depends on the literature, this must be cited.

1.3 Statement of the problem

- This is the broad problem to be analyzed and should not be answered with a **yes or no**
- It should be such that thinking is needed on the part of the researcher.
- A problem statement is a discussion of exactly what is to be studied or formulated into a research problem or is a clear statement of the problem to be solved.
- Research is usually motivated by the need to handle a problem
- The problem statement should thus follow from the background, specifying what is to be studied and the problem
- It is important to demonstrate that the problem is critical and warrants a study.
- One can also discuss the potential consequences if the problem is not addressed.
- Some of the characteristics of a good research problem statement are that it should be:

1) Researchable i.e. it should be possible to investigate it empirically. It should be answered through the collection and analysis of data

2) Precise i.e. it should be written in clear unambiguous language

3) Resolved through research – the researcher should make sure that the problem chosen offers definite sources of information which when collected, can answer the key questions sufficiently.

4) Carefully fit into the broader content of current theory and relevant research

5) Clearly and logically related to its research questions, objectives and prepositions

1.3.1Research Questions

- -Research questions are developed from the research problem
- -These can be written as mere statements
- -Good research questions ought to be amenable to some or less definite answers.
- -However while the question must lead itself to some answer , it must not be totally answered by a simple “yes “or simple “no”
- It must require you to collect and process research evidence as part of the answer

- -Research questions must specify variables
- -When research questions are addressed individually they yield responses which can be reconstituted to make up a complete answer to the main research problem
- -The research questions must be precise
- -The research questions must be 3-5 and not more than five

1.3.2 Research Objectives

- Objectives are formal expression of the researchers intentions
- The objectives have to be clear and **smart**
- Objectives start with "to"
- You may want to explore, to explain or in some cases you may want to replicate what is already known (describe), hence you must make it clear. These terms are explained as:

(a) **To explore**

- Is to just to find out more about an area which few or no people have ventured into

-Exploratory studies are done in areas which are little understood and where the relationships among variables are unknown or only a little is known

(b**) To describe**

- That is to reveal patterns and trends of situations or events objects phenomena or behavior

-By describing them the hope is that they well be understood better and so answer the questions "why, how?

(c) To explain

-is to reveal the linkages among the elements constituting a situation, events and phenomena

-It also attempts to answer the question "why"

1.3.3 Research prepositions/ statement of hypothesis

- Hypotheses are tentative answers or "intelligent guesses" or "probable answers' to the research problem.

- The research prepositions start with **that**
- Hypothesis can be written in null or alternate form i.e. H0 and H1 (these are the exact opposite of the other)
- Research prepositions should be simple and concise
- They should guide the whole dissertation and is often used as a reference point in the subsequent chapters such that the researcher stays within the context of the research

1.4 Justification of the research

- The research should be justified and should not address a trivial research area.
- It is not enough to show that there are gaps in the research area, they must be important gaps which when addressed would lead to contributions to the body of knowledge.
- Explain clearly the reasons why you think the research should be conducted i.e. its relevance.

Justification fronts- Justification can be based on the following four fronts.

i. The fact that other researcher have neglected an issue on the research problem. You must indicate that which previous researches missed on the research problem.
ii. The importance of the subject matter under study. How is it going to benefit the society, the organization, the student etc.
iii. Relative neglect of the research's methodologies by other researchers i.e. either quantitative methods have been used most thereby neglecting quantitative methods.
iv. Potential applications of the research findings. You should indicate that these are discussed in detail in chapter 5.

NB: Justification can be on all fronts and you must put sections to the fronts used.

1.5 Methodology

- State the aim of the study.
- Which methodology is going to be followed, ie is it an exploratory study, explanatory study or descriptive study.

1.6 Data collection and analysis

- Explain how you are going to collect data and how you are going to analyze the data.
- Are you going to use primary sources of data or secondary sources or both?
- Which system/ package of data analysis are you going to use.

1.7 Assumptions

- These are statements of what the researcher believes to be fact but these cannot be verified.
- Assumptions are not the object of the research but do strengthen the basis of your research
- These assumptions, like the significance of the study have practical and theoretical

implications

- Without assumptions, your research cannot be carried out.
- For you to be able to carry out the study you should hold certain facts about the study as given.
- These are the assumptions that your study makes which would influence your research findings.

1.7 Delimitations of the study

- Delimitations refer to the boundaries of the study.
- These enable you to point out clearly what is included in the study and not
- A description of both conceptual and practical (physical) boundaries is needed.
- Delimitations answers the following questions:-

i. What are the concerns of this study?
ii. What are not its concerns?
iii. How far does it go into the treatment of the given issues and where does it stop?
iv. How wide is the field from which it sources its data.

- In short, delimitations point out what is included in the study such as the population or sample size and the variables etc.

1.8 Limitations of the study

- Limitation are those conditions beyond the control of the researcher that may place restrictions on the conclusions of the study and their applications to other situations.
- It is not enough just to state these limitations (weaknesses or constraints) without suggesting the compensatory factors that ensure that the research remains valid and reliable.
- Limitations are weaknesses that are inherent in the research, which the researcher is given credit for pointing out and serve to alert the reader /user of the research about what to take note of when interpreting and generalizing the findings and conclusions of the study.
- These limitations should be comprehensive hence you need to sufficiently clarify them to the reader.

1.9 Definition of terms

- You should identify all terms that need to be defined in order to avoid any misinterpretations.
- These definitions help you to establish the frame of reference with which you as the researcher approach the problem.
- The variables to be considered should be defined in operational terms, that is, they should either be observable or measurable so that they can be manipulated scientifically.
- These terms should be employed consistently throughout the research project.
- Dictionary meanings do not serve adequately in defining terms of a research project.

1.10 Thesis/report outline

This is an outline of what is covered in each chapter of the thesis or dissertation.

1.11 Timeframe (Gantt Chart)

A proposed timeline to carry out the research. Below is a sample of a Gantt chart, you can customize as per your research.

ACTIVITY	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Problem Identification											
Reviewing Literature											
Devising Objectives, Questions, Prepositions											
Designing Research											
Writing Research Proposal											
Submission of Research Proposal											
Further Literature Review											

ACTIVITY	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Designing and Pilot Testing Questionnaire											
Documents Review											
Conducting Interviews and Focus Group Discussions											
Data Analysis											
Submission of Draft Research											
Revision of Draft Research											
Final Submission											

1.12 Resources/budget

- A budget outlining the resources needed to carryout the research.

1.12 Conclusion

- You should highlight the constituent parts of chapter one and the emerging issues.
- A statement linking this chapter with chapter two is needed.

N.B (***This above serves as the guideline for your proposal stage, which if accepted will turn into***

your chapter 1 in the final research document.)

CHAPTER II

LITERATURE REVIEW

Knowledge is cumulative; every piece of research will contribute another piece to it. That is why it is important to commence all research with a review of the related literature or research, and to determine whether any data sources exist already that can be brought to bear on the problem at hand. This is also referred to as secondary research.

Just as each study relies on earlier work; it will provide a basis for future work by other researchers. The literature review should provide the reader with an explanation of the rationale of the problem being studied as well as what research has already been done and how the findings relate to the work at hand.

The quality of the literature being reviewed must be carefully assessed. Not all published information is a result of good research design or can be substantiated. Indeed, a critical assessment as to the appropriateness of the methodology employed can be part of the literature review. This is covered by Chapter Two.

Books, journals, articles, websites etc. should be read with a view of identifying existing information gaps and the entry strategy into the literature debate.

Literature review is also called the "THEY SAY...I SAY" chapter. Think about it as someone who has just entered into a room full of people having an argument. You first listen to them and their heads of arguments before you open your mouth otherwise you will utter senseless words and highlight to the world your foolishness. This is the same with academic research. It is from this that you find your niche or the gap you intend to solve.

Key points to note:

1. There should be debate in chapter two depending on the research.
2. Literature should speak and not the researcher.
3. Citations should be recent and not too old unless in cases where no other researches or publications were done recently (5 years and below recommended from the time you are doing the research). Citations can be older if you are referring to the source of a key word or meaning/ terminology that you are working on.
4. It should be relevant to the research study
5. Students are not allowed to do cyber plagiarism.
6. The major purpose of literature review is compose and contrast
7. Dominant terms used in literature review are as follows:
   i) Describes
   ii) Agrees
   iii) Contends
   iv) States
   v) Notes
8. Literature should be characterized by critical reflection
9. Literature review should answer research questions and at least **20** relevant sources should be reviewed.

Referencing

- APA system
- Style of citation briefly identifies the source for readers and enable them to locate the source of information in the alphabetical reference list at the end of an article or research. Below are guidelines using Harvard referencing system. You must however use APA as it is the university standard.
- Eg Mutero (2021:15) for one author and there is a direct quotation of the author. Where the direct words of the author are used, researcher must include the year and page number.
- Mutero and Mafuhure (2020) for two

Where there are many authors eg. Matthew, Mark, Luke, Jacob and Moses and also Matthew, Mark, Luke, Amos, Adam and Eve.

You quote as follows:

- Matthew, Mark, Luke, Jacob et al (2009).
- Matthew, Mark, Luke, Amos et al (2010).
- For authors with a similar surname, include the abbreviations e.g. G Gutu (1974) and M Gutu (1980)
- For two or more works within the same parenthesis e.g. Zivanai (2000, 2008, 2012) in the same order in which they will appear in the reference list.
- Other examples: Mutembwa (2010) cited by Tagwireyi (2011) stated .....
- Zhou (2012, Feb, 2012, Aug) or Zhou (2012a, 2012b) where the author being quoted has more than one publication in a year.
- Webology: Author (year), title, website, date and time you searched in (full references) in the main text just write the author and year.

Order of citing

- Chronological sequence in citing, using the research objectives if possible for clarity
- The researcher should try to provide the answers to the research questions using literature

Review of related literature

- This involves the documentation of a comprehensive review of the published and unpublished work from secondary sources of data in the areas of specific interest to the researcher.

Role of Related literature

(i) Ensure that no important variable is ignored – all important variables are treated adequately

(ii) Enables the researcher to define frontiers of the research field – indicate how far the researcher can go with the research.

(iii) Helps to limit problem or research questions

- Assists in the focusing of the research problem and research questions

- A research problem may be too vague or too broad to be put into concrete operation, literature review thus assists.
- Literature review enables review of the initial question so that it can be investigated.

(iv) Clarifying concepts- it assists in making concepts clearer to the researcher and setting of operational definitions and meanings.

(v) Insight into reason for contradictory results- contradictory findings or inconsistencies may be caused by research design used for resolving the problem or type of instruments employed or the methodologies and analysis made. A comparison of the procedures of these studies may explain the inconsistent findings.

(vi) Learning which methodologies have proved useful – assists researcher in seeing better ways in which studies could have been done.

(vii) Avoiding unintentional repetition of previous studies:

- A researcher should not carry out an investigation where a similar study was done before.
- If there is a deliberate want to replicate a previous study the reason for it must be given
- For example a study for large companies could be replicated with focus on small firms.

(viii) Places researcher in a better position to interpret significance of results-becoming familiar with theory in the field and with previous research prepares researcher for fitting the findings of the research into the body of knowledge in the field.

(ix) Basis for developing comprehensive theoretical framework

Organizing Related Literature

Literature review is organized into three distinct steps

(i) Identifying the various sources of published and unpublished materials that are available on the topic(s) of interest and gaining access to these.
(ii) Gathering the relevant information
(iii) Writing up the literature review

Sources of Information

- A researcher can use bibliographical indexes in compiled periodicals that list book journals etc.
- Use of computer online systems – this collects published information on various topics
- Text databases are also used on computer online systems such as:

(a) Bibliographical database – this displays the bibliographic citations i.e name of the author, source of publication, year, volume, and page numbers.
(b) Abstract database which provides, in addition, an abstract or summary of the article
(c) Full text database – this provides a full text of the article with entire articles retrievable online.

- Use of search engines – find more information and the use of these.
- Books in the area of interest are also of great use.

Gathering the relevant information

- After identifying the relevant sources a printout can be obtained that provides a comprehensive bibliography on the subject.
- Whereas a printout may contain many titles, a glance at the titles may indicate which of these may be relevant.
- After identifying the relevant titles, detailed information relating to the subject of the problem area can be extracted.
- Consider the design of the study such as sample size, data collection methods and the ultimate findings
- Note the apparent relationships between major variables in the texts being perused.
- It is also advised that the researcher use a research diary that records information and the full description of the source because of the obvious danger of forgetting.

Writing up literature review

- The documentation of information is given in a chapter or section of the research called Literature Review.
- The chapter is a clear, logical presentation of research work by the researcher.
- All significant findings from earlier research are taken down.
- The researcher is to present the literature in a way to show that the researcher is knowledgeable about the problem area.
- Literature review should bring together all relevant information in a cogent and logical manner instead of presenting all studies in chronological order with bits and pieces of uncoordinated information.
- When citing references the Harvard System of referencing is recommended e.g. Wood (2002) found out that……..
- In the Harvard System only the author's surname, the year of the particular publication and the page number where applicable are given.
- In the References section that is where the full descriptions are given

The other suggested alternative treatment of such internal information might be to discuss it in chapter two under empirical literature/evidence from the researcher.

CHAPTER III

RESEARCH METHODOLOGY

One important research methodology that has been used by most researchers in Information Technology and Information Systems is Design Science Research (DSR). You might be interested in using this methodology, so let me unpack it a bit. DSR is a problem-solving paradigm that seeks to enhance human knowledge through the creation of innovative artifacts (Brocke, J. et al, 2020). The purpose of Design Science Research is to enhance human knowledge by creating innovative artifacts and generate design knowledge by coming up with innovative solutions to real-world problems (Hevner, March, Park, & Ram 2004). According to this research paradigm, these innovative artifacts are created to solve problems and improve the environment in which they are instantiated. This paradigm views research as a means to extend the boundaries of human and organizational capabilities by designing new and innovative artifacts represented by constructs, models, methods, and instantiations (Hevner et al. 2004, Gregor & Hevner 2013). In Information systems DSR aims to generate knowledge of how things can and should be constructed or arranged to achieve a desired set of goals. DSR results in Information Systems have impacted significantly in economic and societal development (Gregor & Hevner 2013, vom Brocke et al. 2013). While Social and Behavioural Sciences seek to understand reality, DSR seeks to invent (design) new means to change and improve reality (Venable, John R.; Pries-Heje, Jan; and Baskerville, Richard L 2017). Peffers K et al (2007) discussed the six steps involved in a Design Science process namely problem identification and motivation, definition of the objectives for a solution, design and development, demonstration, evaluation, and communication.

The DSR methodology can be followed in designing and developing software products, in designing and IoT solutions or any other solution in the field of Computer Science. Hevner et al. (2004) presented a conceptual framework for understanding, executing, and evaluating design science research. The framework below can give us insight on some of the activities that a researcher can engage in during an IT project. We have cited several advocates of the DSR just to point you to resources you may want to use in coming up with your capstone 2 project. You can also refer to the same sources in your future research tasks. Let me quickly point out to the fact that there are many other research methodologies you may choose depending on how you want to carry out your research.

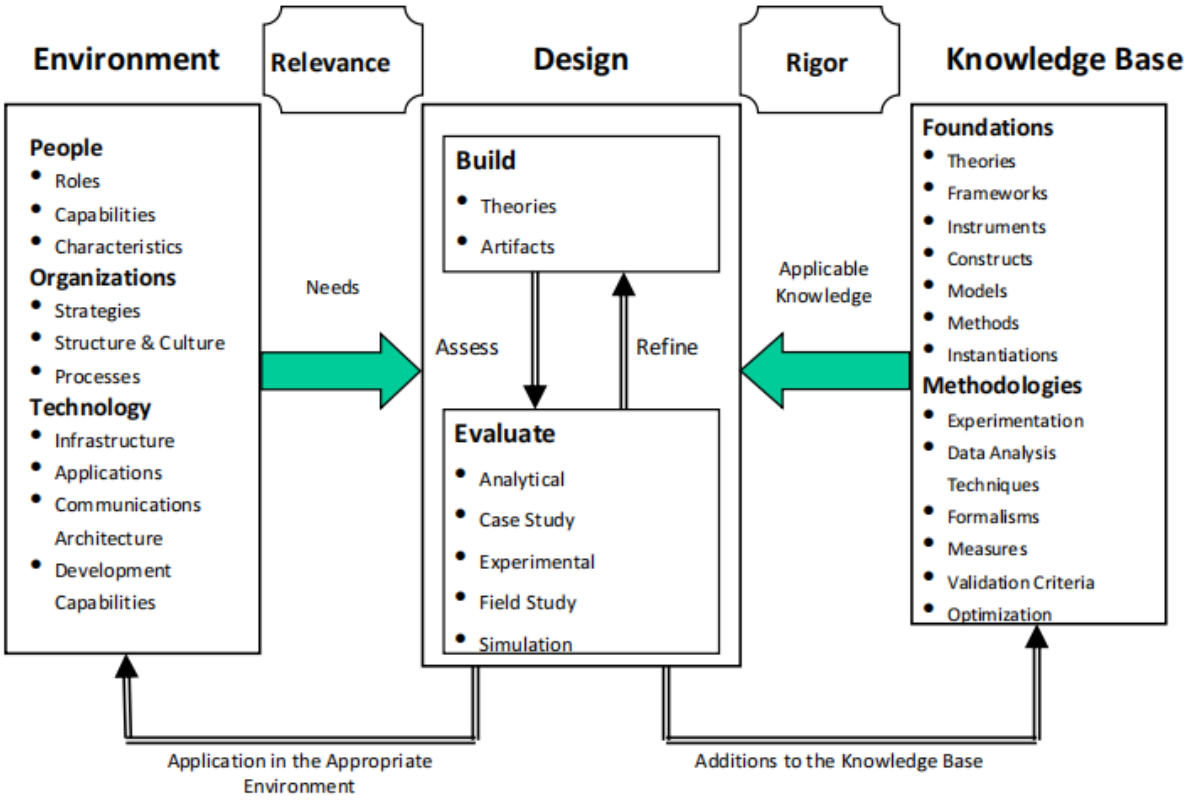


Figure 1: Design Science Research Framework (Adapted from (Hevner et al. 2004))

The research methodology section is arguably the most straightforward section to write; you can even begin writing it while performing your experiments to avoid forgetting any details of your experimental design. In order to make your paper as clear as possible, organize this section into subsections with headers for each procedure you describe (e.g., field collection vs. laboratory analysis). We recommend reusing these headers in your Results and Discussion to help orient your readers.

This chapter can also be called Materials and Methods or Experimental, is a description of the materials and procedures used - what was done and how. Describe the process of preparation of the sample, specifications of the instruments used and techniques employed. The Method should include such things as sample size, apparatus or equipment used, experimental conditions, concentrations, times, controls etc.

The aim of this chapter is to demonstrate that you used scientifically valid methods and provide the reader with enough information to recreate your experiment. In chronological order, clearly state the procedural steps you took, remembering to include the model numbers and specific

settings of all equipment used. In addition to your experimental procedure, describe any statistical analyses that you performed. If you followed a procedure developed from another paper, cite the source that it came from and provide a general description of the method. There is no need to reiterate every detail, unless you deviated from the source and changed a step in your procedure. However, it is important to provide enough information that the reader can follow your methods without referring to the original source.

- This defines how the research was carried out
- It assumes activities and procedures undertaken during the course of the research
- Review of related literature should have assisted in reaching suitable methodology for the study.
- This is in future tense at the proposal stage,
- As the researcher reports, he transcribed this into past tense

Common aspects usually included in this chapter include:

i. **Site characterization**:

Study organism used, its origin, any pre-experiment handling or care

Description of field site or site where experiment was performed

ii. **Experimental design**:

Step-by-step procedures in paragraph form

Sample preparation

Experimental controls

Equipment used, including model numbers and year

Important equipment settings (e.g., temperature of incubation, speed of centrifuge etc.)

Amount of reagents used

Particular techniques used and why? Prototyping, waterfall, agile, extreme programming etc.

Assumptions underlying the study

Specific measurements taken (e.g., wing length, weight of organism)

• Statistical analyses conducted (e.g., ANOVA, linear regression etc.)

Here is where you draw diagrams for experiment designs, DFDs, ERDs etc. showing exactly what the author did.

CHAPTER IV

RESULTS & DISCUSSIONS

Purpose:

- Summarizes and analyzes the study's data
- summaries the whole project and major findings of the research,

- Brings your readers as close as reasonable to the original data and experiences of your study
- Gives the reader some chance to form his or her own inferences from your data
- Match analysis against conclusions in chapter 5
- It should begin with a brief review of the purpose of the study and the research method employed.
- Chapter 4 should closely follow the guiding questions or hypotheses articulated earlier in the dissertation
- These questions and hypotheses could be used as headings for sections.
- What did you observe
    - Present in table, chart etc.
    - What does it show?

The Results section provides a space to present your key findings in a purely objective manner and lay the foundation for the Discussion section below, where those data are subjectively interpreted. Before diving into this section, identify which graphs, tables, and data are absolutely necessary for telling your story. Then, craft a descriptive sentence or two that summarizes each result, referring to corresponding table and figure numbers. Rather than presenting the details all at once, write a short summary about each data set.

As you relate each finding, be as specific as possible and describe your data ICT-wise/biologically/any other science field you are in rather than through the lens of statistics. While statistical tests give your data credibility by allowing you to attribute observed differences to non-random variation, they fail to address the actual meaning of the data. Instead, translate the data

into biological terms and refer to statistical results as supplemental information, or even in parenthetical clauses (Schimel 2012). For example, if your dependent variable changed in response to a treatment, report the magnitude and direction of the effect, with the P-value in parentheses.

e.g. "By day 8, cowbirds reared with host young were, on average, 14% heavier than cowbirds reared alone (unpaired $t16 = -2.23$, $P = 0.041$, Fig. 2A)."

(Kilner et al. 2004)

Use of software

- SPSS, Microsoft Access, Tableau, Power BI, Microsoft Excel etc.
- Results should be presented first in their simplest form
- Use simple narrative descriptions, simple counts of frequency, and descriptive statistics.
- Later use more complex forms of data presentation,
- Like use of multifactor interactions and generalized patterns or inferential statistics.

4.3.1 Table 4.2 Qualifications of Members according to Post

Level	Frequency	Percentage %
Degree	10	20
Higher Diploma/diploma	20	40

- Tables should be clear and well presented
- Charts must be edible with clear labels
- Each table or chart should be followed by a brief narration on the less obvious.
- Avoid duplicating charts and tables showing same information.
- Variety is the spice of life!!

NB: For tables – the title should be on top of the table.

For charts – the title is usually at the bottom of the chart

DISCUSSIONS

The Discussion section usually requires the most consideration, as this is where you interpret your results. Your Discussion should form a self-contained story tying together your Introduction and Results sections (Schimel 2012). One potential strategy for writing the Discussion is to begin by explicitly stating the main finding(s) of your research (Cals and Kotz 2013). Remind the reader of the knowledge gap identified in the Introduction to re-spark curiosity about the question you set out to answer. Then, explicitly state how your experiment moved the field forward by filling that knowledge gap.

After the opening paragraph of your Discussion, we suggest addressing your question and hypotheses with specific evidence from your results. If there are multiple possible interpretations of a result, clearly lay out each competing explanation.

Intermingled with these interpretations, reference preexisting literature and report how your results relate to previous findings (Casenove and Kirk 2016). Ask yourself the following questions: How do my results compare to those of similar studies? Are they consistent or inconsistent with what other researchers have found? If they are inconsistent, discuss why this might be the case.

Summary

In this section one does the following;

- Restate the aims (research)
- Summarizing the content and how the aims were achieved (i.e. literature review and methodology in brief)
- Summaries the findings (research)
- Significance of the findings (research contribution)

Restatement of the aims of the research

We need to know the purpose the study and how you have achieved them (accomplishment of research objectives). There are many ways of stating the purpose the following are some of the ways;

- This study set out to determine.....
- The present study was designed to determine the effect of.....

- In this investigation, the aim was to assess.....
- The purpose of the current study was to determine.....
- This project was undertaken to design ..... and evaluate.....
- Returning to the hypothesis/question posed at the beginning of this study, it is now possible to state that.....

Summarizing the content

It is important to capture the reader about the content of the research. How the objectives were achieved by literature review and methodology in brief. Suggested way of saying this are

- **This** paper has given an account of and the reasons for the widespread use of X.....
- This essay has argued that X is the best instrument to.....
- This assignment has explained the central importance of X in Y.
- This dissertation has investigated.....

Summarizing the findings

This is the section in which you summarize all the major findings of the research. Without reading chapter 4, I should be able to pick the major findings from this section. Some of the ways of putting your ideas across are

- This study has shown that.....
- These findings suggest that in general....
- One of the more significant findings to emerge from this study is that.....
- It was also shown that.....
- This study has found that generally.....
- The relevance of X is clearly supported by the current findings.
- This study/research has shown that.....
- The second major finding was that.....
- The results of this investigation show that.....
- X, Y and Z emerged as reliable predictors of.....
-

Significances of findings (research contribution)

We need to know whether the research was of some significance. This must set out clearly in this section. If your research had some implications for existing theories you must mention the main works that represent the theories that you are commenting on. You must, in the context of those works, point out the conclusions from your work that impact them, what the implications are and why the reader should agree with you about them.

Some of the suggested ways of putting across your ideas are as follows;

- The X that we have identified therefore assists in
- These findings suggest that in general.....
- One of the more significant findings to emerge from this study is that.....

- It was also shown that.....
- This study has found that generally.....
- The following conclusions can be drawn from the present study.....
- The relevance of X is clearly supported by the current findings.
- This study/research has shown that.....
- The second major finding was that.....
- The results of this investigation show that.....
- The most obvious finding to emerge from this study is that.....

CHAPTER V

CONCLUSIONS & RECOMMENDATIONS

This chapter covers three sections which are;

- highlights the conclusions arrived at based on the findings
- and gives recommendations on the way forward

Conclusions are shorter sections of academic texts which usually serve two functions. The first is to summarize and bring together the main areas covered in the writing, which might be called "looking back"; and the second is to give a final comment or judgments on this. The final comment may also include making suggestions for improvement and speculating on future directions.

In dissertations and research papers, conclusions tend to be more complex and will also include sections on significance of the findings and recommendations for future work. Conclusions may be optional in research articles where consolidation of the study and general implications are covered in the discussion section. However, they are usually expected in dissertations and essays.

Conclusion give answers to all sub problems, confirmation or rejection of hypothesis. They are the things that you can deduce from your work as a whole. They answer your thesis statement .In simpler terms they are what you can now confidently state, thanks to the work that you did, that you could not state before. Conclusions must always link back clearly and explicitly to your thesis statement.

The conclusion, generally located in its own short section or the last paragraph of the Discussion, represents your final opportunity to state the significance of your research. Rather than merely restating your main findings, the conclusion should summarize the outcome of your study in a way that incorporates new insights or frames interesting questions that arose as a result of your research. Broaden your perspective again as you reach the bottom of the hourglass. While it is important to acknowledge the shortcomings or caveats of the research project, generally include these near the beginning of the conclusion or earlier in the Discussion. You want your take-home sentences to focus on what you have accomplished and the broader implications of your study, rather than your study's limitations or shortcomings (Schimel 2012). End on a strong note.

Recommendations

Recommendations must be theoretical, practical and manageable

Recommendations are in 3 parts;

- Recommendations from the research findings,

- recommendations for further work (research), and
- Recommendations for practice or policy makers

Recommendations from the research findings

The main purpose of the research is to fill up the gaps. As such this section should be able to provide practicable solutions to the problem/s on the ground.

- This research has thrown up a number of recommendations……
- It is recommended that……..
- This research has brought about the following recommendations...

Recommendations for further work/research

Recommendations can be made for further researches/work to be done. Here are some of the expressions

- It is recommended that further research be undertaken in the following areas:
- Further experimental investigations are needed to estimate.....
- What is now needed is a cross-national study involving.....
- More broadly, research is also needed to determine.....
- It is suggested that the association of these factors is investigated in future studies.
- Further research might explore/investigate.....

Recommendations for practice or policy.

An important research /dissertation will come up with some recommendations for practice or policy. Ways of putting your ideas

- These findings suggest several courses of action for.....
- An implication of these findings is that both X and Y should be taken into account when.....
- The findings of this study have a number of important implications for future practice.
- There is, therefore, a definite need for.....
- There are a number of important changes which need to be made.

References

Cite any references that you have used, ensuring that each item in the reference list has an in-text citation, and every in-text citation has a full reference in the reference list at the end of your paper.

Ensure that the references are formatted according to the style required by the university (or your lecturer/supervisor) in this case APA.