Full Thesis Title

*A thesis submitted in partial fulfilment of the requirements for the Doctor of Philosophy (or Master of Science degree) degree in the Department of ………. at the College of Engineering, King Saud University*

**Student’s full name**

**Month and Year of Submission**

Examination Committee

The committee for

**[Student Full Name]**

certifies that this is the approved version of the following dissertation and is acceptable in quality and form for publication in paper and in digital formats:

**Thesis Title [English]**

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Committee Supervisor: [insert name]

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Committee Co-Supervisor *(if appropriate*): [insert name]

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Committee Co-Supervisor *(if appropriate*): [insert name]

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**King Saud University**

Date

Abstract

Put your abstract here (do this last).

الخلاصة

قم بكاتبة الخلاصة باللغة العربية هنا ...

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List of Abbreviations

If appropriate, list any abbreviations in alphabetic order used in the thesis.

|  |  |
| --- | --- |
| **CDF** | Cumulative Distribution Function |
| **KSU** | King Saud University |
|  |  |

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Declaration

I, [please print name], declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research [title of thesis].

I confirm that:

* This work was done wholly or mainly while in candidature for a research degree at King Saud University;
* Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
* Where I have consulted the published work of others, this is always clearly attributed;
* Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
* I have acknowledged all main sources of help;
* Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
* Either none of this work has been published before submission, or parts of this work have been published as: [please list references below]

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Acknowledgements

Write here …

# Introduction

The introduction chapter needs to state the objectives of the program of research, include definitions of the key concepts and variables and give a brief outline of the background and research approach. The aim of the introduction is to contextualise the proposed research.

In the opening paragraph, give an overall view of what is included in the chapter. For example:

This chapter outlines the background (section ‎1.1) and context (section ‎1.2) of the research, and its purposes (section ‎1.3). Section ‎1.4 describes the significance and scope of this research and provides definitions of terms used. Finally, section ‎1.5 includes an outline of the remaining chapters of the thesis.

## Background

Give the background of the problem to be explored in your study and what led you to doing the thesis. For example, you might discuss educational trends related to the problem, unresolved issues, social concerns. You might also include some personal background.

## Context

Outline the context of the study (i.e., the major focus of your study) and give a statement of the problem situation (basic difficulty – area of concern, felt need).

## Purposes

Define the purpose and specific **aims and objectives** of the study. Emphasise the practical outcomes or products of the study. Delineate the research problem and outline the **questions** to be answered or the overarching objectives to be achieved.

## Significance, Scope and Definitions

Discuss the importance of your research in terms of the topic (problem situation), the methodology, and the gap in the literature. Outline the scope and delimitations of the study (narrowing of focus).

## Thesis Outline

Outline the chapters for the remainder of your thesis.

# Literature Review

The literature review chapter should demonstrate a thorough knowledge of the area and provide arguments to support the study focus. The aim of the literature review chapter is to delineate various theoretical positions and from these to develop a conceptual framework for generation of hypotheses and setting up the research question. The literature review chapter needs to:

* Critically evaluate the literature rather than merely describe previous literature (i.e., what is good/bad about the body of literature?).
* Show a synthesis and be integrated rather than being more like an annotated bibliography.
* Identify key authors and the key works in the area, thus acquainting the reader with existing studies relative to what has been found, who has done work, when and where latest research studies were completed and what approaches to research methodology were followed (literature review of methodology sometimes saved for chapter on methodology).
* Constitute an argument.
* Clearly identify the gap in the literature that is being addressed by the research question.

Suitable sources for the literature review include:

* General integrative reviews cited that relate to the problem situation or research problem such as those found in psychological and sociological reviews of research.
* Specific books, monographs, bulletins, reports, and research articles – preference shown in most instances for literature of the last 10 years.
* Unpublished materials (e.g., dissertations, theses, papers presented at recent professional meetings not yet in published form, etc.).

The literature review chapter can be arranged in terms of the questions to be considered or objectives/purposes set out in the Introduction chapter.

Start with an overview of this chapter by outlining the topics to be discussed. For example [your thesis may have more than 3 topics and therefore more sections]:

This chapter begins with a historical background [optional] (section ‎2.1) and reviews literature on the following topics: [topic 1] (section ‎2.2) [briefly describe the topic]; [topic 2] (section ‎2.3) [briefly describe the topic]; and [topic 3] (section **Error! Reference source not found.**) [briefly describe the topic]. Section ‎2.4 highlights the implications from the literature and develops the conceptual framework for the study.

## Historical Background [optional]

Write here …

## Topic 1

Present and discuss your first topic.

## Topic 2

Present and discuss your second topic.

## Summary and Implications

Summarise the literature review and discuss the implications from the literature for your study – the theoretical framework for your study. Here you can make an explicit statement of the hypotheses, propositions or research questions and how they are derived from existing theory and literature. Establish from the literature (or gap in the literature) the need for this study and the likelihood of obtaining meaningful, relevant, and significant results. Outline any conceptual or substantive assumptions, the rationale and the theoretical framework for the study. Explain the relationships among variables or comparisons, and issues to be considered. This section should demonstrate the contribution of the research to the field, and be stated in a way that leads to the methodology.

## Using Figures

Figures must be numbered consecutively throughout the entire thesis. A decimal system (1.1, 1.2, 1.3, 2.1, 2.2, etc.), in which the first digit corresponds to the chapter number and the digit after the decimal point is the figure number within the chapter, should be used. For example, Figure 2.1 shows a histogram with a distribution fit.



**Figure ‎2.1** Histogram with a distribution fit (Centre Alignment)

Do not number figures by section (e.g., 1.2.1, 1.3.2, or the like. Using this method, figures in Appendix A, B, C, and so forth would be numbered A.1, A.2, B.1, B.2, C.1 and so on). If using figures from external sources, obtain necessary permissions and provide appropriate citations to acknowledge the original source. Follow citation guidelines for images or figures as mentioned in **References**.

## Using Tables

Tables serve as indispensable tools in a thesis, aiding in the systematic organization and presentation of complex data, statistical findings, or other tabulated information. Table must be numbered consecutively throughout the entire thesis by using a decimal system as well (1.1, 1.2, 1.3, 2.1, 2.2, etc.). Tables should be accompanied by a descriptive title that summarizes its content. Additionally, tables should be referenced appropriately within the text, allowing readers to easily locate and contextualize the information presented. It is essential to ensure that tables are formatted consistently throughout the thesis, with clear headings, properly labelled rows and columns, and appropriate units of measurement. When designing tables, prioritize simplicity and readability, avoiding overcrowding with excessive data or unnecessary details. Finally, when presenting data from external sources, ensure proper citation and attribution to maintain academic integrity. Table 2.1 shows an example of using a table in a thesis.

**Table ‎2.1** An example of using a table in a thesis (Align Left)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Table | C1 | C2 | C3 | C4 |
| R1 | a | b | c | d |
| R2 | e | f | g | h |

## Using Equations

When incorporating equations, it is essential to ensure clarity and accuracy to facilitate understanding for readers. Each equation should be numbered sequentially, typically aligned to the right side of the page, and accompanied by a brief explanation to provide context and interpretation. Equations should be referenced within the text, allowing readers to locate the corresponding mathematical expressions easily. It is crucial to use standard notation and formatting conventions consistently throughout the thesis to maintain coherence and readability. Additionally, when introducing complex equations or mathematical derivations, consider providing step-by-step explanations or supplementary materials to aid comprehension. For example, Equation 2.1 shows the cumulative distribution function (CDF) of random variable *X*.

|  |  |  |
| --- | --- | --- |
|  | $$F\_{X}\left(x\right)=P\left(X\leq x\right), for all x\in R$$ | **(****‎2.1)** |

# Methodology/ Research Design

This chapter of the thesis should outline the design and methodology of your research. The basis for the choice of research method should be whether it will help you answer your research question(s).

Give an overview of what is to be included in this chapter. For example:

This chapter describes the design adopted by this research to achieve the aims and objectives stated in section ‎1.3 of Chapter 1 [if you wish, you can restate those objectives]. Section ‎3.1 discusses the methodology [to be] used in the study, the stages by which the methodology was [will be] implemented, and the research design; section ‎3.2 details the participants in the study; section ‎3.3 lists all the instruments [to be] used in the study and justifies their use; section ‎3.4 outlines the procedure [to be] used and the timeline for completion of each stage of the study; section ‎3.5 discusses how the data was [will be] analysed; finally, section ‎3.6 discusses the ethical considerations of the research and its [potential] problems and limitations.

## Methodology and Research Design

### Methodology

Discuss the methodology [to be] used in your study (e.g., experimental, quasi-experimental, correlational, casual-comparative, survey, discourse, case study, analysis, action research). If using stages, outline them here. The methods used must link explicitly to the research question and must be suited to the nature of the question. Discuss any methodological assumptions.

### Research Design

Outline the research design (e.g., quantitative, qualitative). If quantitative, spell out the independent, dependent and classificatory variables (and sometimes formulate an operational statement of the research hypothesis in null form so as to set the stage for an appropriate research design permitting statistical inferences). If qualitative, explain and support the approach taken and briefly discuss the data gathering procedures that were [will be] used (observations, interviews, etc.)

## Data Collection/ Participants

Give details of who/ what were [will be] the participants in your study (including, if applicable, sample type and size, reasons for the number selected and the basis for selection).

## Instruments

List and briefly describe all the instruments (e.g., tests, measures, surveys, observations, interviews, questionnaires, artefacts) [to be] used in your study for data collection and discuss their theoretical underpinnings, that is, justify why you used [will be using] these instruments. So that the line of argument is not broken, it is useful to place copies of instruments in Appendices to which this section can refer.

## Procedure and Timeline

Outline the procedure across and within the techniques [to be] used in your study for collecting and recording data. This could include how, when (in what order) and where the instruments were [will be] administered (for example, field, classroom or laboratory procedures, instructions to participants or distribution of materials) and how the data was [will be] recorded. Include the rationale for the procedures used. If the study was [is to be] done in stages, give a timeline for the completion of each stage.

## Analysis

Discuss how the data was [will be] processed and analysed (e.g., statistical analysis, discourse analysis). This section needs to link the analysis of the research to the methods and demonstrate why this is the best approach to analysis. For qualitative research, justification needs to be provided for methods such as coding and dealing with divergent data. For quantitative research, justification of the choice of statistics and the expected results that they will provide [confirmation document] should be described. There should be enough detail for the reader to replicate the analysis. For example, “SPSS will be used” is not adequate. Rather, the approach to coding, including how categories were [will be] derived and validated, how the data was [will be] structured, and specific analytical techniques applied, should be included.

## Ethics and Limitations

Outline the ethical considerations of the research and any [potential] problems and limitations (weaknesses), as well as any [anticipated or actual] threats to the validity of the results.

# Results and Discussions

*Note: Results and Discussions can be presented in a single chapter or in two different chapters depending on the length of your thesis.*

Chapter 4 details all the results of your study. You can put some analysis and discussion of the results here, but generally just the results are presented, without interpretation, inference, or evaluation (which will be in Chapter 5). The results should be linked inextricably to the design – describe what happened factually and unemotively. However, in certain historical, case-study and anthropological investigations, factual and interpretive material may be interwoven rather than being presented as “findings”.

Include a paragraph at the beginning of the Results chapter outlining the structure of the chapter. The results should be reported with respect to furnishing evidence for your research question(s) as outlined in Chapter 1. Thus, you might choose to use headings that correspond to each main question of your hypothesis/objectives from Chapter 1 and/or your theoretical framework from Chapter 2. Or you might organise your results in terms of the stages of the study (if applicable).

Present the findings/results in tables or charts when appropriate, making sure to use correct citation formatting for any tables used.

# Analysis/ Discussions

*Note: Similarly, Results and Discussions can be presented in a single chapter or in two different chapters depending on the length of your thesis.*

Chapter 5 contains a full discussion, interpretation and evaluation of the results with reference to the literature. This chapter can also include theory building.

As with the previous chapters, include a paragraph at the beginning summarising the structure of the chapter. Organise the chapter in terms of the objectives of the study and/or the theoretical framework. For each objective, discuss the results with reference to the literature, for example, the similarities/differences to the findings in the literature review. Develop theory or models from this comparison and evaluation.

It can be useful to check your literature and try to find a place for as much of the literature as you can. If you find that a section of your literature can not be used in this chapter, it may be useful to consider the pertinence of this literature and reduce the space in the literature chapter given to it.

Thus, your research outcomes are tied together in relation to the theory, review of the literature, and rationale.

# Conclusions

This chapter contains conclusions, limitations, and recommendations – so what is the theory? Where to from here? What are the practical implications? Discussion of where the study may be extended.

Again, the chapter should begin with a summary paragraph of the chapter structure. The opening section(s) of the chapter should be a brief summary of everything covered so far. Follow this with your conclusions. This is the “so what” of the findings – often the hypothesis/research question(s) restated as inferences with some degree of definitive commitment and generalisability, and the raising of new and pertinent questions for future research. You could include a final model of the theory.

It can be useful to use the purposes from Chapter 1 as an organising structure for this chapter. The chapter should also include a discussion of any limitations of the research, and should end with your final recommendations – practical suggestions for implementation of the findings/outcomes or for additional research.

References

Referencing in a thesis is an essential component that provides credibility and support to the arguments and claims made within the document. It involves acknowledging the sources from which information, data, or ideas have been drawn, ensuring academic integrity and honesty. Proper referencing not only lends authority to the thesis but also allows readers to trace the origins of the information presented, facilitating further exploration and verification. Referencing should be done according to the IEEE referencing styles. For more details please visit ([IEEE Reference Guide](https://journals.ieeeauthorcenter.ieee.org/wp-content/uploads/sites/7/IEEE_Reference_Guide.pdf)).

There are a number referencing tools, such as Zotero, Mendeley, and EndNote, which offer functionalities that allow users to collect, organize, and cite references efficiently. They typically feature browser extensions or plugins that enable users to capture citation information directly from websites, databases, and academic articles. Additionally, referencing tools often provide citation style formatting options, automatically generating reference lists. Overall, referencing tools significantly reduce the time and effort required for managing citations, freeing researchers to focus on the content and analysis of their work.

Appendices

* + 1. Title

Start each appendix on a new page. Place appendices in the same order as they are referred to in the body of the thesis. That is, the first appendix referred to should be Appendix A, the second appendix referred to should be Appendix B, and so on. Appendix formatting can be different to the main document.

List of Publications

Add the first page of each research papers, journal articles, and conference proceedings that have arisen from the research being presented in your thesis.