



Title of Research Proposal [English]

Title of Research Proposal [Arabic]

Student Full Name
Student ID
Email Address

Advisor(s)
Advisor Full Name

Research proposal for the degree of
MSc/PhD in [Department Name]
College of Computer and Information Sciences
King Saud University

[First/Second Semester]
[Date Hijri dd/mm/yyyy]
[Date Gregorian dd/mm/yyyy]

ABSTRACT

The abstract is a brief summary of your Research Proposal, and should be no longer than 200 words. It starts by describing in a few words the **knowledge domain** (broad area of research) where your research takes place and the key issues of that domain that offer opportunities for the scientific or technological innovations you intend to explore. You then present briefly your **research statement** (focus area), your proposed **research approach**, the **results you expect** to achieve, and the **anticipated implications** of such results on the advancement of the knowledge domain. It is important to keep your abstract concise, clear, and objective.

الملخص

الملخص عبارة عن تلخيص للمقترح البحثي، ويجب ان لا يحتوي أكثر من ٢٠٠ كلمة. يبدأ الملخص بوصف مختصر لمجال المعرفة (المجال العام للبحث) والتي تظهر أهمية البحث والنقاط الأساسية في المجال. بعد ذلك يتم عرض خطوات البحث (المجال الدقيق)، طريقة البحث المقترحة، النتائج المتوقعة، الأثر المتوقع لهذه النتائج على مجال المعرفة. كما يجب التنبيه على جعل الملخص مختصر، واضح، وموضوعي.

KEYWORDS

This section is a list of the more appropriate words or expressions (up to twelve), separated by commas that you would use in a search engine to find a research proposal identical to yours. Your proposal title can be useful in identifying keywords.

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King Saud University
College of Computer and Information Sciences

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1. INTRODUCTION

This template is designed to assist you in writing a research proposal in the correct structure and format as required by the College of Computer and Information Sciences (CCIS). This template should serve as a starting point for any student writing a research proposal. The headings and styles give an indication of the sections required in the research proposal. A research proposal is an outline of your proposed project that is designed to:

- Define a clear question and approach to answering it
- Highlight its originality and/or significance
- Explain how it adds to, develops (or challenges) existing literature in the field
- Persuade readers of the importance of the work.

The introduction of the research proposal should aim to catch the reader's interest and should be written in a style that can be understood easily by any reader with a general computing science background. It gives an overview of the research project you propose and explains the background of the project, focusing briefly on the major issues of its knowledge domain. It then proceeds with the presentation of the research focus, which can take the form of a hypothesis, a research question, a project statement, or a goal statement. Research proposals may vary in length, but in general, it should not exceed 10 pages in length.

2. OVERVIEW OR BACKGROUND

Give an overview of the knowledge domain (broad area of research) where your research takes place. This section should take the form of an abstract of the general subject or study area and identify the discipline(s) within which it falls.

3. PROBLEM STATEMENT

In this section you should provide a research statement that captures both the essence of the project and its delimiting boundaries (scope). Hence it should be followed by a clarification of the extent to which you expect its outcomes to represent an advance in the knowledge domain you have described. This section states the problem that you are exploring. The research statement is *specific*, *concise*, and *clear*. Answer the question: "What is the gap that needs to be filled?" and/or "What is the problem that needs to be solved?" State the problem clearly early in a paragraph. Limit the variables you address in stating your problem. Consider framing the problem as a question. You will probably need to address questions such as;

- What is the specified aspect in the defined area (you provided the area in the research problem section) in which you will be working?
- What is the shortcoming in the defined area or gap in this defined area that you would like to address

4. RESEARCH GOAL AND OBJECTIVES

Next, you have to describe the research goal(s) as it relates to solving the uncertainty or question you are interested in. It should explicitly hint towards the contribution you want to make with the intended study. You will elaborate on the scientific contribution made in a later section. **Goal** describes what you want to achieve. **Objectives** describe **how** you are going to achieve the goal(s).

Objectives should be S.M.A.R.T.:

- **Specific** – be precise about what you are going to do
- **Measurable** – specify an indicator for success, so that you will know when you have reached your goal
- **Achievable** – a less ambitious but completed objective is better than an over-ambitious one that you cannot possibly achieve.
- **Realistic** – do you have the necessary resources to achieve the objective?
- **Time constrained** – determine when each stage needs to be completed.

The clarification of the research objectives should relate your research to the work carried out by others. It should explain the measure to which your work develops from their work and the extent to which it diverges from theirs to open up new and yet unexplored avenues. It explains what you plan to do to tackle your research problem, why you plan to do it that way, and how you are going to do it.

5. LITERATURE REVIEW

The Literature Review serves several purposes. First of all, it demonstrates that you have built a solid knowledge of the field where the research is taking place, that you are familiar with the main issues at stake, and that you have critically identified and evaluated the key literature. On the other hand, it shows that you have created an innovative and coherent view integrating and synthesizing the main aspects of the field, so that you can now put into perspective the new direction that you propose to explore. It should be accompanied by comprehensive references, which you list at the end of the proposal.

In this section you should demonstrate that you are aware of the issues raised in related literature. You should provide a description of recent academic research in your chosen focus area; including the below parts:

1. How other scholars have written about your topic: include the list of references to key texts and recently published articles should be made to convince that you appreciate their integrative relevance to your research area.
2. The range of methods/ theories used to scrutinize, analyze and or test data: *List the best methodologies and research techniques for your particular topic.* Justifies methodological choices.
3. How other scholars connect their specific research topics to larger issues, questions, or practices within the field.
4. Identify potential gaps in knowledge: illustrates the uniqueness, importance of and need for your particular project.
5. Establish a need for current and/or future research projects.

6. RESEARCH METHODOLOGY

The “how to” component of the proposal is called the Research Methodology, component. In the computing field, there are several research methodologies, including quantitative, qualitative, formal, experimental, build, process, and model [1], more on research methods in the computing discipline can be found in [2] . Usually, the activities required to tackle a single research question may include several of these methodologies.

You need to display an awareness of the available methodologies and show a clear understanding of the methodologies that would be most suitable for your research. You need to address the following:

- Introduce the overall methodological approach: What steps will you take and what methods will you use to address your question? How will your proposed method provide a reliable answer to your question? method provide a reliable answer to your question
- Resources Requirements: What practical considerations are there; for example, equipment, facilities, and other resources will be required
- Explain how you will test your findings: such as methods of data collection laboratory procedures, interviews, questionnaires, modeling, simulation, text analysis, use of secondary data sources, etc.
- Explain how you intend to analyze and interpret your results (i.e. statistical analysis, theoretical framework).
- What do you want to demonstrate, test, investigate or examine?, e.g. Experiments must contain the following steps to be considered "good science."
 - a. Must keep track of the information by recording the data.
 - b. The data should be presented visually, if possible, such as through a graph

or table and results can be compared to something.

c. Errors must be reported

- Are there particular ethical issues that will need to be considered (for example, all *projects using human participants require ethical approval*)?
- Are there any *potential problems / difficulties* that you foresee (for example, delays in gaining access to special populations or materials) that might affect your rate of progress?
- Address potential limitations

7. CONTRIBUTION TO THE FIELD/ SIGNIFICANCE AND /OR IMPACT OF PROPOSED RESEARCH

You will need to explain the proposed research significance, and locate it within the relevant literature. A convincing statement is required as to why your topic is worth scientific research, i.e. how it will contribute to and enrich the academic knowledge. This contribution results from your research activities, which are conducted to discover new information, as well as to expand and verify existing knowledge. You need to provide indication of how you feel your research can make an original contribution, how it may fill gaps in existing work and how it may extend understanding of particular topics in your particular subject area. The working paper by Dr. John Morrison [3] is a good resource for helping you understand what constitutes a contribution.

8. RELEVANCE TO THE DEPARTMENT

You should relate the proposed research to the existing specialties in the department in which you are studying and understanding of computing within your specific discipline (department specialty)

9. RESEARCH PLAN AND TIMELINE

You need to include a preliminary time and work schedule outlining the main phases in your research project. You will need to provide a rough time line for the completion of your research to show that the project is achievable (given the facilities and resources required) in no more than (XX semesters).

It is important to establish specific milestones and timelines and a Gantt diagram. It should also anticipate the conferences and journals to which the work in progress is expected to be submitted along the way.

10. REFERENCES

Your references should provide the reader with a good sense of your grasp on the literature and how you can contribute to it. A full list of references to key texts and articles

must be included. Referencing should be done according to the IEEE referencing styles [4]. References are numbered in square brackets [] as sources are introduced in your writing. A full reference list with sources listed according to the order used in the paper is then provided with full source details.

The CCIS website has comprehensive details on the postgraduate programs. The templates and brochure can be downloaded from: <http://www.ccis.ksu.edu.sa/>.

The most important thing regarding references is that you should start collecting and recording all details of your references using tools that help manage and organize your references such as EndNote, Reference Manager, Docear, Zotero, Mendeley, BibSonomy, etc.

REFERENCES FOR THIS GUIDE

- [1] R. Elio, J. Hoover, I. Nikolaidis, M. Salavatipour, L. Stewart, and K. Wong, "About Computing Science Research Methodology."
- [2] I. Vessey, V. Ramesh, and R. L. Glass, "A unified classification system for research in the computing disciplines," *Information and Software Technology*, vol. 47, no. 4, pp. 245–255, Mar. 2005.
- [3] John Morrison, "A Contribution to Scientific Knowledge," 2003. [Online]. Available: http://www.usb.ac.za/Common/Pdfs/Working_paper%5B1%5D.pdf. [Accessed: 16-Jan-2015].
- [4] "The University of York - IEEE referencing style." [Online]. Available: <http://www.york.ac.uk/integrity/ieee.html>. [Accessed: 17-Jan-2015].

APPENDIX A: GENERAL GUIDELINES FOR PREPARING THE RESEARCH PROPOSAL

Title

Ensure that your proposal title includes important 'key words' that will relate your proposal to the specific field of study (focus area). The title should be **short, and describes what your research is about**. It should also give an indication of your approach or key question. The Arabic translation of the title should be an **accurate and meaningful translation**. Standard Arabic computing terminology lexicons should be consulted to accurately translate the proposal title.

Style

The research proposal is not only judged on content, but also judged on form and presentation. Your research proposal must look professional, and to help you we have provided a template with a specified form and styles. Please adhere the form and style required by CCIS.

Use the CCIS proposal template as a guide for required sections in the proposal. For styles, the template contains CCIS specific styles, please use them according to the following table:

Section	Style
Title (English)	CCIS_Title_Appendix (center alignment, Arial, Bold, 16 point) Paragraph Spacing (before 18, after 18)
Title (Arabic)	Font: Traditional Arabic (Mohannad) (center alignment, Bold, 26 point) Paragraph Spacing (before 18, after 18)
Author Name, Email, Advisor Name, Department, College, University, Dates	CCIS_Affiliation (center alignment, Arial, 12 point) Paragraph Spacing (before 18, after 18)
Headings (Abstract, Keywords)	CCIS_Heading (left aligned, Arial, Bold, 12 point, All Caps) Paragraph Spacing (before 18, after 12)
Main Sections (Introduction, Overview/Background, Research Focus, Literature Review, Research Methodology, Contribution to Science, Research Plan and Timeline)	CCIS_Heading 1 (left aligned, Arial, Bold, 12 point, All Caps) Paragraph Spacing (before 18, after 12) First level numbering
Sub-headings (Research problem, research question, aims and objectives)	CCIS_Heading 2 (left aligned, Arial, Bold, 12 point) Paragraph Spacing (before 12, after 12) Second level numbering
Normal text, references list, and all other text.	CCIS_Normal (Justified, Arial, 12 point) Paragraph Spacing (before 0, after 6) Line spacing 1.15

Page Layout

The general page layout of your research proposal should be an A4-size page with 2 cm margins on all four sides.

Headings and Lists

New headings or lists (bullet/numbered) should not start at the bottom of a page with less than two lines. Rather insert a page break and start the heading on a new page.

Tables and Figures

Tables should be centered. The table text is slightly smaller at 10 point Arial and has space of three points around it. Each column should have a heading in bold.

Figure captions are given below the figure, and start with a sequential figure number (e.g. Figure 1). All figures in your proposal must be referred to in the main body of the text. Captions should be descriptive of what is being figured.

Table captions are given above the table, and start with a sequential table number (e.g. Table 1). All tables in your proposal must be referred to in the main body of the text. Captions should include a statement of what is being presented in the table.

Language

It should be typed and it should be written in good English. It is important that you carefully check your proposal for typographical and spelling errors, consistency of style, and accuracy of references, before submitting it. Please have it proof-read before submission to the CCIS graduate studies committee.