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# Research Methodology in Computing and Technology (RMCT)

# Assignment: Research Concept Paper

1. **LEARNING OUTCOME:**

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| --- | --- |
| CLO2 | Investigate the Design Science concepts in designing an artefact to solve current business or societal problems (C4, PLO2). |
| CLO3 | Present Design Science concepts in the investigation of current business or societal problems (A2, PLO5). |

**B. ASSIGNMENT DETAILS:**

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| --- | --- |
| **Module Code:** | CT098-3-2 |
| **Module Title:** | Research Methodology in Computing and Technology (RMCT) |
| **Module Lecturer:** | Intan Farahana Kamsin |
| **Weighting:** | Coursework weighted at 40% (Research Concept Paper) + 10% (Presentation) |
| **Assessment Title:** | Research Proposal |
| **Assessment Type:** | Individual work |
| **Hand out date:** |  |
| **Submission date:** |  |

**C. YOUR ASSIGNMENT:**

A research concept paper acts like a proposal and enables a student to define and communicate a research/project topic to broader audience. A well-constructed concept paper should capture the interest of the reader and provide a clear indication of what the students intends to do, how they intend to do it and the justification for doing so. For the purposes of this assessment, you will be writing a research concept paper which acts as a proposal using the template provided.

Your paper should set out the central issues or questions that you intend to address, as well as It outline the general area of study within which your research falls, referring to the current state of knowledge and any recent debates on the topic. It should also demonstrate the originality of your proposed research (system) and the potential contribution.

You should aim to address the following through your paper:

1. The topic is feasible in terms of availability of resources, equipment, supervisors, data, etc.
2. There is a need for your proposed system; it is significant and important.
3. The topic matches your programme of study, interests, and capabilities.
4. The research can be completed in the expected duration.
5. You are contributing something original to the field.

## Research Contribution:

Your work will make a worthwhile contribution to the field if it fulfils one or more of the following:

1. It proposes a new solution to a new problem (Invention),
2. It proposes a new solution to a known (established) problem (Improvement), or
3. Applies a known solution to a new problem.

**D. ASSIGNMENT REQUIREMENTS:**

**PART 1: RESEARCH CONCEPT PAPER (40%)**

**General Structure of a Research Concept Paper:**

The following sections are recommended for your proposal report. Check with your lecturer for optional sections, variations and additional sections that may be required.

1. Research title
2. Abstract
3. Key Terms
4. Introduction
5. Literature Review (research domain & similar system)
6. Problem statement
7. Research Aim
8. Research Objectives
9. Research Questions
10. Research Significance
11. Research Methodology
12. Proposed System Overview
13. Conclusion
14. References

### Research Title

The title summarizes the main idea or ideas of your study. A good title contains the fewest possible words that adequately describe the contents and/or purpose of your research paper.

### Abstract

One (1) paragraph that is a summary of the entire proposal, typically ranging from 150 to 250 words. It is different from a problem statement in that the abstract summarizes the entire proposal, not just

mentioning the study’s purpose or hypothesis. A good abstract accurately reflects the content of the paper, while at the same time being coherent, readable, and concise.

### Key Terms

The purpose of key terms or also known as keywords in a research paper is to help other researchers find your paper when they are conducting a search on the topic. Key terms define the field, subfield, topic, research issue, etc. that are covered by the article. Most electronic search engines, databases, or journal websites use key terms to decide whether and when to display your paper to interested readers. key terms make your paper searchable and ensure that you get more citations. Thus, it is important to include the most relevant key terms that will help other authors find your paper.

### Introduction

Introduce the reader to your paper, including a brief introduction to the recognised general subject area and how your topic is related. Briefly point out why it is a significant topic and what contribution your work will make. At the end of your introduction, you can add a paragraph to explain the outline of your paper. The outline is the skeleton of your document. It shows how various sections in your proposal are connected and gives the reader an indication of the logical development of your research paper.

### Literature Review

This section provides a brief literature review and the background for the research problem and illustrates to the reader that the researcher is knowledgeable about the scope of the theory. Research as many studies pertaining to the topic area as possible and summarize them in a succinct manner. The literature review should explain the relation of your topic and research aims to significant literature and recent (and current) research in your field. The literature review should place your proposed research topic clearly in its relevant research context and should demonstrate your awareness of significant similar or relevant research.

### Problem Statement

The “Problem Statement” is an imperative part of the paper, for research to be conducted, one must notice a problem in the existing literature that has not been previously addressed. For this section, the following questions should be answered: Why does this research study need to be conducted? What specific issues does this study raise that have not been observed in other literature pertaining to the topic? Answering these questions will allow readers to understand why this particular study is important and how the study will attempt to answer new, never-before asked questions. Problem statement should be strongly justified by literature. It is recommended to support your problem statement by recent, strong and reliable references.

### Research Aims

It is appropriate include a sentence saying “The main aim of this research is to … ” under this section. Clearly identify the goal of the study in one precise sentence. Your aim is basically what

you intend to do to address the problem you have identified. Once you have developed your project aim you can develop objectives. As mentioned above, your project has one overall aim.

### 1.8 Research Objectives

In order to achieve research aim, a number of objectives should be formulated. Each objective is a small, achievable and assessable unit, i.e. a sub-goal of the project. Objectives should be formulated in such a way that fulfilling the objectives leads to the overall aim being satisfied.

### Research Questions

It is important that the research questions for which the proposed investigation aims to find an answer are explicitly formulated. These are sometimes referred to as the sub-problems. In this regard, ensure that collectively, the sub-problems encapsulate the import of the main Problem Statement.

### Research Significance of the

This section also known as ‘rationale’ or ‘justification’ of the study is crucial because it is one place in which the researcher tries to convince the reader that the research is worth carry out. This section describes the potential value of study and findings.

### 2.1 Methodology

Describe your proposed methods in sufficient detail so that the reader is clear about the following:

* What kind of information will you be using?
* From what sources will the information be obtained?
* What resources will you require?
* What methodology will you be using?
* Why have you selected this approach?
* What ethical and safety issues have you identified and how do you propose to proceed?

This section is essential to most good research proposals. How you study a problem is often as important as the results you collect. This section includes a description of the general means through which the goals of the study will be achieved: methods, materials, procedures, tasks, etc.

An effective methodology section should:

* Introduce the overall methodological approach for each problem, question, or objective. Is your study qualitative or quantitative? Are you going to take a special approach, such as action research, or use case studies?
* Describe the specific methods of data collection you are going to use—e.g. experiments, surveys, interviews, questionnaires, observation, archival or traditional library research.
* Explain how you intend to analyse and interpret your results. Will you use statistical analysis? Will you use specific theoretical perspectives to help you analyse a text or explain observed behaviours?
* Address potential limitations. Are there any practical limitations that could affect your data collection? How will you attempt to control for potential confounding variables and errors?

### Proposed System Overview

In this section you provide an overview of the system you are proposing, explaining how it will address the stated problem. Provide an explanation of the functionality, and if possible, provide some architectural designs to help contextualise your system.

### References

List all publications cited in your proposal. Use the style recommended by the school or your supervisor. You should use the APA referencing system (see the library webpage of APU). Use current and reliable references from journal articles, conference proceedings, books, theses, etc. it is recommended to use a reference manager (such as EndNote, Mendeley, etc) to help you in formatting the references and save your time.

**PART 2: PRESENTATION (10%)**

1. Briefly describe in detail on Research Concept Paper created.

**E. REPORT QUIDELINES:**

* + 1. **Part 1: Research Concept Paper**

|  |  |
| --- | --- |
| Submission | : Week 12 |
| Format | : Follow paper template provided (page 7) |
| Word count | : Maximum of 3000 words excluding references. |
| Line spacing | : 1.0 lines |
| Font Size | : 12 (titles and headings should be **Bold**) |
| Font Type | : Times New Roman |

* + 1. **Part 2: Presentation**

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| --- |
| * Starting on Week 13 * Slides required. |
|  |

## Plagiarism

Basically, 'plagiarism' means representing someone else's work as if it is your own. This is a very serious academic offence for all students within the University regulations and is particularly reprehensible for a researcher. Please do not even consider it. The proposal will be submitted online via Moodle, due to that the Turnitin Software will run automatically for the plagiarism checking. Remember that accidental plagiarism (or the appearance of it) may be avoided by referencing your work properly. This **gains** you credit, not loses it! The simple rule is that you must not represent the ideas of other people (whether they are published works or the work of other students) as your own.

The golden rule on plagiarism is **DO NOT DO IT!**

**Paper Template**

You should structure your paper as follows, using two columns:

**Title**

Author

Email

***Abstract*— Provide a clear and concise abstract here.**

***Index Terms***

**Enter key words or phrases in alphabetical order, separated by commas.**

* + - 1. **Introduction**

This section should be succinct, with no subheadings. This heading should be Times New Roman 10-point boldface, initially capitalized, flush left, with one blank line before.

* + - 1. **Literature Review**

Your literature review goes here.

* 1. **Research Domain**

As in this heading, they should be Times New Roman 10-point boldface, initially capitalized, flush left, with one blank line before.

* 1. **Similar System** 
     + 1. **Problem Statement**

The study show that there is a gap …….

* + - 1. **Research Aims and Objectives**

This section may each be divided by subheadings or may be combined

* + - 1. **Research Objectives**

This section may each be divided by subheadings or may be combined

* + - 1. **Research Questions**
      2. **Research Significance**
      3. **Methodology**

The research will using ……

* + - 1. **Overview of the Proposed System**

Figure 1.0 show the proposed system overview …..

* + - 1. **Conclusion**

This should clearly explain the main conclusions of the work highlighting its importance and relevance.

**References**

References here in APA format:

## RMCT Marking Sheet

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Criteria** | | | **weight** | **First Marker**  **(out of 100)** |
| C1 | **Documentation (40%)** | Grammar, formatting, citation | 4 |  |
| C2 | Background, Justification & Scope of the Research | 16 |  |
| C3 | Problem Statement, Aim & Objectives | 10 |  |
| C4 | Research Methodology | 6 | /40 |
| C5 | Overview of System | 4 | = % |
|  |  | | |
| C6 | **Presentation (10%)** | Presentation | 4 |  |
| C7 | Slides Quality | 2 | /10 |
| C8 | Questions and Answers | 4 | = % |
| **Total Mark of this assignment** \* | | | **50** |  |

Comments:

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## RMCT Assessment Criteria and Marking Scheme

| **Paper (40%)** | **Distinction** | | **Merit** | **Pass** | **Fail** | |
| --- | --- | --- | --- | --- | --- | --- |
|  | **80 - 100** | **70 - 79** | **60 - 69** | **50 - 59** | **40 - 49** | **0 - 39** |
| **(C1) Grammar, formatting, citation (4%)** | Excellent and professional writing, few grammatical or spelling mistakes. There is full, accurate, and professional citations of very recent sources and reliable references with correct for­mat. | Clear and consistent writing, with few grammatical or spelling errors. Source are generally cited correctly, the majority of references are recent and reliable, and format is mostly correct. | Generally good writing, some errors, inconsistent spellings. Citations are mostly done, and references are up to date, but there are some outdated and non-reliable sources, suitable format. | Writing is not very good, but still understandable, with some errors and inconsisten­cies. References and citations are acceptable, but lack of high quality and professional sources, acceptable format with some mistakes. | Poor, grammar sometimes makes meaning difficult to in­terpret, Inconsistent spelling, or grammar. Inadequate citations of sources, outdated and unre­liable references, poor for­mat with many mistakes. | Falls far below the standard for submission and is frequently difficult to follow. Very poor citations, refer­ences, and format. |
| **(C2) Background, Justification & Scope of the Research (16%)** | Outstanding evidence of sys­tematic review using multi­ple searches and data­bases. The significance and scope of the research is clearly described. The research is strongly justified and supported by reli­able references. | Very careful reviewing, sys­tematic combinations of search terms. The significance and scope of the re­search is clear, but could be written better. The research is justified and supported by reliable references. | Evidence of reviewing, possi­bly complete, and using ap­propriate approaches. The significance and scope of the research is clear, but there is a lack of strong support by reliable references. | Incomplete and not system­atic, but adequate to iden­tify part of the literature. The significance and scope of the research is moderately clear, by weak support from references. | Fails to identify enough of the literature to yield an in­formative review. The significance and scope of the study is described, but it is not clear or supported by any reference. | Little or no evidence of a systematic approach, incom­plete review. Significance and/or scope of the study is missing or contain irrelevant description, without any reference. |
| **(C3) Problem Statement, Aim & Objectives (10%)** | The research problem is clearly defined, and relevant to the programme of study. PS supported by very recent references. RQs are very clear and relevant to the PS. Aim and objectives are con­cisely elaborated. Original and highly relevant ROs are clearly articu­lated. | The research problem is clear and relevant, and sup­ported by LR, but could be written better. RQs are clear and relevant to PS, but need some minor corrections. Aim and objectives are well selected. Clearly relevant ROs are determined. | The research problem is moderately clear and rele­vant, but it is not strongly supported by LR, and need some adjustments. RQ could be written better. Aim and objectives are identified and mostly rele­vant to project. Relevant ROs outlined, but could be tighter in their focus. | The research problem is un­derstandable, but not very clear and relevant to the programme of study. It is not sufficiently supported by LR. RQ need to be modified. Aim and Objectives are described clearly, but not biased from PS. | The research problem is not clear or relevant to the pro­gramme of study. It is not supported by LR. RQs are not related to the PS, and should be revamped. Aim and objectives are de­scribed in broad terms only. ROs outlined but lack­ing in clarity or focus. | The research problem is not understandable and rele­vant. RQs are not designed well, or not significant, and relevant to the PS. Aim, objectives are missing or so poorly written meaning is unclear |
| **(C4) Research Methodology (6%)** | Creative and highly appropriate methodology is clearly articulated and justified. | Methodology is well argued and justified. | Methodology is explained and appropriate for the project. | An appropriate methodology is broadly outlined, but details are not always clear | The methodology is either not appropriate for the project or is poorly articulated suggesting deficits in understanding. | Missing methodology part or not relevant information is given. |
| **(C5) Overview of System (4%)** | Excellent description of the proposed system is provided, detailing the features/functionality and how it addresses the problem statement. Description is supported by appropriate diagrams | A very good description of the proposed system is provided, detailing the features/functionality and how it addresses the problem statement. | Clear description of the proposed system is provided with very little omissions | Description of the proposed system is provided, with some omissions in description or the deliverables. | Insufficient detail provided of the proposed system | No description of the proposed system provided |

| **Presentation (20%)** | **Distinction** | | **Merit** | **Pass** | **Fail** | |
| --- | --- | --- | --- | --- | --- | --- |
|  | **80 - 100** | **70 - 79** | **60 - 69** | **50 - 59** | **40 - 49** | **0 - 39** |
| **(C6) Presentation (4%)** | The presentation was excellent, with a clear structure and included all the necessary parts and contents with de­tails.  Time management, and Eng­lish presentation were excel­lent. | The presentation had a clear structure and included most of the necessary parts and details.  Time Management and English presentation were good. | The presentation had a clear structure and included most of the required sections, but some details were not presented.  Time management and English presentation needed to be improved. | The presentation had a mod­erately clear structure and in­cluded the required contents, but details of contents are not provided. Time management and English presentation were satisfactory. | The presentation was weak in terms of structure, contents, and details.  Time management and English presentation were weak. | No presentation or very poor presentation. |
| **(C7) Slides Quality (2%)** | The presentation used excellent slides, in terms of layout, content, consistency of formatting, order of information, title page, page numbers, references, etc. | The presentation used very good slides, in terms of layout, content, consistency of formatting, order of information, title page, page numbers, etc. However it could be improved. | The presentation used good slides, in terms of content, but some feature of a professional slides are not provided, or inconsistencies in terms of layout or formatting. | Slides were satisfactory, but slides are not prepared in a good manner in terms of content/Inconsistency of layout and formatting | Slides were poor and most of feature to show a satisfactory presentation were not included in slides/ poor layout and formatting | No slides or very poor slides prepared. |
| **(C8) Questions and Answers (4%)** | The student was able to interpret correctly the questions, and answer accordingly and very confidently. Responses to questions were at the correct depth, and in an appropriate language given the audience. A deep knowledge and understanding of the subject area was demonstrated. | The student was able to interpret correctly the questions, and answer accordingly. Responses to questions were at the correct depth, and in an appropriate language given the audience. A knowledge and understanding of the subject area was demonstrated. | The student was able to interpret correctly the questions, and answer accordingly. Responses to most of questions were at the correct depth, and in an appropriate language given the audience. A knowledge and understanding of the subject area was mostly demonstrated. | The student was able to interpret correctly some questions, and answer accordingly. Responses to questions were mainly at the correct depth, and in an appropriate language given the audience. Knowledge of the subject area was satisfactory. | The student was not able to interpret many questions correctly, and responses were not I correct depth and appropriate to the question. A low level of knowledge and understanding of topic is demonstrated by the student. | The student did not answer or was not able to interpret the majority of questions, and responses were not correct or in an appropriate language. |