Lectures Notes No. 3

Research Methodology in ICT

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Dr. Antar S.H. Abdul-Qawy

Department of Mathematics and Computer Science

SUMAIT University, Zanzibar, Tanzania

SUMAIT University

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Department of Mathematics and Computer Science
SUMAIT University , Zanzibar, Tanzania
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Dr. Antar S. H. Abdul-Qawy

Ph.D. (ECE), M.Tech (CS), BCSE (CE)

Faculty of Science, SUMAIT University, Zanzibar, Tanzania
Email: antarabdulqawy@sumait.ac.tz, Cell Phone: +255776438887

RESEARCH METHODOLOGY

❖ Research Methodology

- **The research methodology refers to all steps of doing research (research process), from the research <u>proposal</u> to writing the final report or publication paper.**

- **It shows the path through which researchers need to conduct their research, starting by formulating their problem and objective and ending with presenting their research result**

- **It is also defined as the study and analysis of the methods applied in the stream of research, to ensure that the conclusions drawn are valid, reliable, and credible too.**

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RESEARCH PROPOSAL

❖ **What is Research Proposal?**

- **A Research proposal is a document that is typically written to express an intent that research or an investigation on a certain topic should indeed take place by a scientist, academician, or students.**

- **It presents and justify the need to study a research problem and to present the practical ways in which the proposed study should be conducted.**

- **The research proposal outlines the research process from beginning to end.**

RESEARCH PROPOSAL

❖ **Why is Research Proposals?**

- **Generally, research proposal aims to request the following:**

  ➢ **Approval of the research topic**

  ➢ **Financing for the project**

  ➢ **Certification or permissions for performing certain parts of research of the experiment.**

  ➢ **Permissions for other tasks/things required before beginning the actual research.**

RESEARCH PROPOSAL

❖ **Purpose of Research Proposals?**

- **Research proposals can be classified into different categories based on their purpose**

  ➢ **Academic purpose**

  ➢ **Business purpose**

  ➢ **Government purpose**

  ➢ **. . .**

- **Depending on the purpose, there are variations in the composition or organization of the research proposal.**

RESEARCH PROPOSAL

❖ **Importance of Research Proposals**

- **Good research proposals quickly and easily answer the following questions:**

  ➢ **What do you want to do, and how do you plan to do it?**

  ➢ **How much will it cost, and how much time will it take?**

  ➢ **How does the proposed project relate to the proposer's or sponsor's interests (if sponsored)?**

  ➢ **What difference will the project make to:**

    - **Your institution / organization,**

RESEARCH PROPOSAL

❖ **Importance of Research Proposals**

- **Your students,**

- **Your discipline,**

- **The community, or**

- **Any other concerned parties?**

➤ **What has already been done in the area of your project? Why should you, rather than someone else, do this project?**

➤ **How will the results be evaluated?**

RESEARCH PROPOSAL

❖ **Types of Research Proposals**

- **There are five common types of research proposal:**

  ➤ **Unsolicited proposals**

  ➤ **Solicited proposals**

  ➤ **Preproposals**

  ➤ **Continuation or non-competing proposals**

  ➤ **Renewal or competing proposals**

RESEARCH PROPOSAL

❖ **Unsolicited proposals**

- **Proposals submitted to a academic supervisor or sponsor that has not issued a specific solicitation but it usually is initiated by the applicant and submitted according to the academical or sponsor's broad guidelines.**

- **Here, it is believed by the investigator that the supervisor or the sponsor has an interest in the subject, and the acceptance of unsolicited proposals may include funding arrangement (i.e., usually a grant).s**

RESEARCH PROPOSAL

❖ **Solicited proposals**

- **It is one that is submitted in response to a specific call issued by a sponsor. Such solicitations, typically called Request for Proposals (RFP) or Request for Applications (RFA) is sometimes used by sponsors to solicit proposals for specific research, development, or training projects (or to provide specific services or goods).**

- **The RFP or RFA generally includes standard terms, conditions, and assurances that the institution is asked to accept.**

RESEARCH PROPOSAL

❖ **Preproposals**

- **These are proposals requested by a sponsor who wants to minimize an applicant's effort in preparing a full proposal.**

- **Preproposals are usually in the form of a letter of intent (LOI) or brief abstract, which may be used by the sponsor to determine who will be invited to submit a full proposal.**

- **After the preproposal is reviewed, the sponsor notifies the investigator if a full proposal is required.**

RESEARCH PROPOSAL

❖ **Continuation or non-competing proposals**

- **This type of proposals confirms the original proposal and funding requirements of a multi-year project which the sponsor has already provided funding for an initial period (normally one year).**

- **Continued support is usually dependent on satisfactory work progress and the availability of funds.**

RESEARCH PROPOSAL

❖ **Renewal or competing proposals**

- **These are proposals which request continued support for an existing project that is about to end.**

- **From the sponsor's viewpoint, these requests, generally have the same status as an unsolicited proposal.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

- **Research proposals whether for sponsored or unsponsored activities generally follow a similar format.**

- **Their variations may depend on whether the proposer is seeking support for a research grant, a training grant, an academic pursuit or a conference / curriculum development project.**

- **Generally, the outline of a research proposal will cover the primary components of a research proposal.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

    1. <u>Title Page:</u>

        ➢ **Titles are usually brief but comprehensive enough to indicate the nature of the proposed work.**

        ➢ **You must keep it concise and make it attention catching**

    2. <u>Abstract:</u>

        ➢ **This is a brief summary of the proposed research.**

        ➢ **States the problem addressed by the applicant**

        ➢ **Identifies the solution, and**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

        ➢ **Specifies the objectives and methods of the project.**

        ➢ **Outline expected results and outcome**

        ➢ **Also, should outline funding requirements and show the ability to source for funding.**

    3. <u>Table of Contents:</u>

        ➢ **If the proposal is brief with few sections, it usually does not need a table of contents; However, long and detailed proposals may require a table of contents; in addition, a list of figures and a list of tables.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

> ➤ **The table of contents lists all major parts and divisions, including the proposal.**

4. **Introduction and Background**

> ➤ **Begins with a captivating statement and then proceeds to introduce the reader or audience to the proposed research.**

> ➤ **It usually begins with a brief historical overview of the topic, then indicates what you are interested in the study.**

> ➤ **It introduces research problem, and makes it clear what the research problem about, and exactly what is to be done.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

5. **Significance and Objectives of Research:**

> ➤ **This part describes the significance of the problem(s), referring to appropriate studies or statistics (if any)**

> ➤ **Shows how the proposed solution will advance the field or be important for some other work.**

> ➤ **It should also indicate the purpose/and objectives (in points) of the research clearly.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

    6. **Preliminary Literature Survey:**

        ➢ **In the literature review, discussions in brief of the work done by others should lead the reader to understand:**

            ▪ **What work has been done before, and limitations or gap found.**

            ▪ **How you will build upon past research and also how your work differs from theirs.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

    7. **Proposed work (Body of Research Proposal)**

        ➢ **This section is the heart of the proposal and the main part of it, where the primary concern of technical reviewers focusses on.**

        ➢ **It shows what you are going to do in more details, and how**

        ➢ **It should Indicate any preliminary work you have done in developing this research or in laying the groundwork.**

        ➢ **At the end, it should show that you have accomplished something and are ready to undertake the next.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

    8. **Research Methodology:**

- ➢ **This indicates the way and route you will follow to conduct your research from the beginning till the end.**

- ➢ **This includes the research design, data collection, data analysis, testing, and verification.**

- ➢ **Here, you outline the instruments you intend to use e.g., interviews, surveys, content analysis, case studies, meta-analysis, experiment.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

    9. **Expected Result:**

- ➢ **This area states the possible outcomes that are expected from the research.**

- ➢ **It also indicates the strengths and advantages/benefits of the outcomes**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

10. **Relevant Institutional Resources**

➢ **This section details the resources available to the proposed research project.**

➢ **In case of a sponsored research, it should show why the sponsor should select you and your group for this particular research.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

11. **Personnel:**

➢ **Specifies all persons that will be participating in the project.**

➢ **Any student participation, paid or unpaid, should be mentioned, and the nature of the proposed contribution detailed.**

➢ **These personnel section usually consists of two parts:**

✓ **An explanation of the proposed personnel arrangements**

✓ **The biographical data sheets for each of the main contributors to the project.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

    12. Time frame/Budget:

➢ **This part lists the time and dates for each program of the research or activities to be accomplished.**

➢ **It also shows the budget and costs to be met by the funding source, including personnel, non-personnel, administrative, publication, overhead expenses, etc., and the funds will be used to implement the research.**

RESEARCH PROPOSAL

❖ **Components of a Research Proposal**

    13. List of References (bibliographic):

➢ **This part contains a list of all the resources consulted or to be consulted in the course of the research**

➢ **The style of the bibliographical item itself depends on the disciplinary field.**

➢ **The main consideration is consistency; whatever style is chosen should be followed carefully throughout the proposal.**

RESEARCH PROPOSAL

❖ **Steps in Design of Research Proposals for ICT Projects**

- There are eleven structured steps in designing a good research proposal for ICT Projects. These are:

    1. **Determining the general topic**

    2. **Performing a Literature review on the topic**

    3. **Identifying a gap in the literature**

    4. **Identifying a problem highlighted by the gap in the literature and framing a purpose for the study**

    5. **Writing an Introduction to the study**

RESEARCH PROPOSAL

❖ **Steps in Design of Research Proposals for ICT Projects**

- There are eleven structured steps in designing a good research proposal for ICT Projects. These are:

    6. **Framing research hypotheses and or research questions to investigate or guide the study**

    7. **Determining the method of investigation, and outlining the research design**

    8. **Defining the Sample size and the characteristics of the proposed sample**

RESEARCH PROPOSAL

❖ **Steps in Design of Research Proposals for ICT Projects**

  ▪ **There are eleven structured steps in designing a good research proposal for ICT Projects. These are:**

    9. **Describing the procedures to follow for data collection and data analyses.**

    10. **Identify the resources, personnel, time and budget.**

    11. **Write your final organized proposal as have been indicated above**

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Thank You