GEEM 445

Engineering Ethics and Professional Practices



When to write a Research Proposal?

- If you're **nearing the end of your degree program** and your **dissertation** or **thesis** is on the horizon, or

- You're planning to apply for a PhD program, chances are you're going to need to write a **convincing research proposal**..

What is a dissertation (or thesis) research proposal?

A research proposal is a **simply a structured, formal document** that **explains**:

- **what you plan to research** (i.e. your **research topic**),
- **why** it's **worth researching** (i.e. your **justification**), and
- **how** you **plan to investigate it** (i.e. your **practical approach).**



Purpose of Research Proposal:

- **To convince** your research supervisor, committee or university that your **research is suitable** (for the requirements of the degree program) and
- **Manageable** (given the time and resource constraints you will face).

Explanation:

- **Most important word** here is "**convince**" – in other words, your research proposal needs to ***sell*** **your research idea** (to whoever is going to approve it).

- If it **doesn't convince them** (of its suitability and manageability), you'll need to ***revise*** **and submit.**

- Will **cost your valuable time**, which will either delay the start of your research or eat into its time allowance (which is bad news).

What goes into a research proposal?

- A good dissertation or thesis proposal ***needs to cover*** the **"what",** the **"why"** and the **"how"** of the research.

WHAT – Your research topic

- Proposal needs to **clearly articulate** the research topic.
- Needs to be **specific** and **unambiguous**.
- Your research topic should ***make it clear exactly what you plan*** **to research** and in ***what context***.

Example of Research Topic:

"An investigation into the factors which impact female Generation Y consumers' likelihood to promote a specific makeup brand to their peers: a British context".

Topic is ***extremely clear***. From this one line we can see exactly:

- **What's** being investigated – factors that make people promote a *brand of makeup*
- **Who** it involves – female Generation Y consumers
- In what **context** – the United Kingdom

So, make sure that your research proposal provides a ***detailed explanation of your research topic.*** It should go without saying, but don't start writing your proposal until you have a crystal-clear topic in mind, or you'll end up waffling away a few thousand words.

WHY – Your justification

- It's **not good enough** to **simply propose a research topic** – you need to ***justify*** why your ***topic is original*****.** In other words, what makes it **unique?**

- What **gap in the current literature does it fill**? If it's simply a **rehash** of the existing research, it's probably not going to get approval – it needs to be **fresh**.

- But, **originality** alone is not enough. You also **need to justify** why your proposed ***topic is important***.

- In other words, **what *value* will it add to the world** if you manage to find answers to your research questions?

Example:

- Look at the sample research topic we mentioned earlier (factors impacting brand advocacy).

- In this case, if the research could ***uncover relevant factors***, these findings would be **very *useful to marketers*** in the cosmetics industry, and would, therefore, have ***commercial value***. That is a clear justification for the research.

- So, when you're drafting your research proposal, it's **not enough** for a **topic to *simply be unique***. It **needs to be *useful*** and ***value-creating*** – and you need to ***convey that value*** **in your proposal.**

HOW – Your methodology:

It's all good and well to have a **great topic** that's ***original*** and ***important***, but you're not going to convince anyone to approve it without discussing the **practicalities** – in other words:

- How you will **undertake** your research?
- Is your ***research design*** **appropriate** for your topic?
- Is your ***plan manageable*** given your constraints (time, money, expertise)?

Generally not expected that ***full research strategy*** at the proposal stage, but need to ***provide a high-level view*** of your research ***methodology***. Here are some important questions you'll need to address in your proposal:

- Will you take **a *qualitative*** *or* ***quantitative*** approach.
- Will your design be **cross-sectional** or **longitudal**?
- How will you **collect your data** (interview, surveys, etc)?
- How will you **analyze your data** (e.g. statistical analysis, qualitative data analysis, etc.)?

So, make sure you give **some thought to the practicalities of your research** and have at least a **basic understanding of research methodologies** before you start writing up your proposal.

How long is a research proposal?

Varies tremendously, **depending on**:

- the **university**, the **field of study** (e.g., social sciences vs natural sciences), and

- the **level of the degree** (e.g. undergraduate, Masters or PhD)

- So it's always best to **check with your university** what their specific requirements are before you start planning your proposal.

- As a rough guide, a formal research proposal at **Masters-level** often ranges between **2000-3000 words**, while a PhD-level proposal can be far more detailed, ranging from **5000-8000 words**.
- In some cases, ***a rough outline of the topic*** is all that's needed, while in other cases, **universities expect** a **very detailed proposal** that essentially forms the **first three chapters of the dissertation or thesis.**

- Be sure to **check with your institution** before you start writing.

How a research proposal is structured?

Exact structure and format required for a dissertation or thesis research proposal ***differs*** **from university to university**.

Five "***essential ingredients***" that typically make up the structure of a research proposal:

- A **descriptive title** or title page
- A rich **introduction** and **background** to the proposed research
- A discussion of the **scope** of the research
- An initial **literature review** covering the key research in the area
- A discussion of the proposed **research design** (methodology)

As you write up your research proposal, **remember the all-important core purpose**: **to convince**.

Your research proposal needs to **sell your research idea** in terms of suitability and viability.

So, focus on crafting a convincing narrative and you'll have won half the battle.

Technical Proposal of a Project



What is a technical proposal?

- A **document** that contains:

  -an **introduction to the product**,

  -an explanation of how it will help to address the recipient's problem,

  -company's execution plan, and

  -technical details of the deal.

- Should be **brief,** and it should **explain the complex product in simple terms.**

How to Create a Proposal?

Introduction: Should grab the attention of the reader.

What is the problem?

- Define the problem you are working on and what **would happen** if it is not resolved.
- Should be stated **clearly and concisely** to convince the reader that what you are proposing is necessary.

How will you solve the problem?

• What this section includes will vary depending on the type of proposal, but it will be the **most important part of the document**.

•When describing your proposed solution, any supplemental information can be **added as annexes** to the document.

Cost/Schedule

• Need to be **very descriptive** so as not to mislead the reader in any way.

Executive summary

• This is the conclusion.

•Needs to sum up the major points from your document and leave your reader with a good final impression.

Types of Technical Proposal types:

A technical proposal isn't limited to one type. Here are a **few types** of technical proposals:

Technical Business Proposal or Sales Proposal:

- Proposals given to **possible buyers** or **consumers** outside of the company.
- Sales proposals (in terms of form and style) **rarely resemble** one another.
- Frequently follow **very different** and **artistic directions**, similar to successful ads.

Technical Research proposals:

- Defined as an **academic plan with a clear and coherent overview** of the planned study.

- Professors or institutions often **use research proposals to get a grant** in response to a request or announcement from the government or another agency.

- Research proposal is a **detailed, well-thought-out strategy** written by the investigator or researchers.

Technical Design proposal:

- Proposal or design consideration

Technical Implementation proposal:

- An approach that is standards-based and uses shared infrastructure to develop a statewide **interoperable public safety communications system.**

How long should a technical proposal be?

- Difficult to create a proposal that's just the correct length.
- **Should not be too short**, as this will leave out important information.
- **Should not be excessively long**, either, as this may cause your client to skim or skip sections.
- Although proposals **of 10 to 20 pages are usual**, some clients prefer **short concept notes**, while others rather go for **extensive proposals of 50** pages or more.
- Ideal length is one that best **satisfies the needs of your client**.

Essential Elements of Technical Proposal:

Introduction:

- State that the **memo** contains a proposal for a specific project.
- Write at least **one short inspiring message** to encourage the recipient to keep reading and approve the project.
- Give an **overview** of the proposal's content.
- An introduction is required if the **proposal is unsolicited**, as you will need to convince the audience there is an opportunity that should be explored.

Background information.

- Background part often follows the introduction and outlines the necessity for the project—the **problem**, **opportunity for improvement**, and **scenario**.

- While the specified audience of the proposal **may be familiar with the issue,** writing the background section **helps demonstrate your unique perspective.**

Benefits and feasibility

- Most proposals briefly **explain** the project's benefits and its success rate in the form of a pro-project argument.

- In an **unsolicited proposal**, this section is critical to "sell" the project to the audience.

Task Description (results of the project)

- Most proposals must **describe the final product**.
- Most proposals also explain **how you will complete** the work.

- Ensure that your persuasiveness and demonstrates you have done your homework.
- Also shows that you know the field well enough to finish the project.

Schedule:

- Most proposals include a section **detailing the project's completion date,** as well as **significant milestones**.

- If you're working on a **long-term project**, **the timeline will include due dates for progress reports.**

Resources and Costs:

- Most proposals include a section on project costs and require you to include your **hourly rates**, **expected hours**, **equipment** and **supply prices**, and so on before calculating the final project cost.

Conclusions

- The closing paragraph or portion of the proposal should **remind readers of the project benefits**.

How to write Technical Proposal

General Points:

- Writing any kind of proposal follows a **process.**
- **Process leads toward the goal** of **getting your proposal accepted**.
- With a technical proposal, you have **defined parameters to use**.
- You propose to make something technical based either on an **original idea** or on a **need in the marketplace**.

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STEP 1: DEFINE

- **Define the need for the product** being proposed.

- Engage the reader of the proposal so that **at the end of the first section**.

For Example, if you are proposing an **Internet filter for parents** to use so their children can spend more time using the Internet, make sure to emphasize just how important it is for young people to be able to access the Internet and for parents to allow them to use it worry-free.

STEP 2: BENEFITS

- Describe the **benefits of what you propose.**
- Benefits of your proposal must flow directly out of your description of the need for it to exist.

- If your **Internet filter** is created for parents, more people will use the Internet—and your **product will be in greater demand**.

STEP 3: PROCESS

- **Outline the process needed to make the product** you are proposing.

- As this is a technical proposal, the process should follow a procedure already known to the reader of the proposal.

- If you are **creating a filter,** describe the creation in relevant terms, such as **writing software code**, not in any other, more showy terms.

STEP 4: VISION

- **Present a vision of the final product**.

- How will this new thing be brought out of the creation process and into the world?
- Who will use it, how will they learn about it and how will the reader of the proposal be involved?

STEP 5:

- **Highlight your own participation.**

- Explain what it is about this process that requires you to be doing this, instead of someone else.

Thanks