

Elements of typical research/diploma manuscript

Title page

The front pages according to the University requirements
(see WUT format in Faculty web page)

List of contents, list of figures, notation/list of symbols (if needed)

Element: **Introduction: general information , summary of your manuscript**

Element (A): **Theory (review of the literature)**

- You should produce a short and synthetic text describing and discussing the "state of the art" in your subject area. This is called a **literature review**. Critically evaluate existing knowledge, including background literature and relevant data.
- References should reflect an updated knowledge of the field.

Element (B): Objectives of your research

Research question will make explicit your research subject and objectives. These questions are the most important element in the research plan.

1st component: motivation -> background and significance **(define research subject and why is worth to be investigated)** : Basis on the state of the art make explicit y motivations for solving a specific problem (e.g. why is relevant, why is needed, how it can help , make progress ... etc.) Few sentences that demonstrate its theoretical and maybe practical interests.

Two to three pages is recommended for this problem background and significance section.

2nd component; objectives: "the big question/questions" to be solved, Say clearly what you wish to achieve, because this will determine your research questions and/or hypothesis and that are usually presented after the review of theory.

If appropriate, you can show if/how you plan a valorization activity , e.g. how you plan to transfer results to a "real context".

- After having defined your research questions, you should give description of your overall approach (for example "experimental design", "survey study", "usability study", "design" if hasn't been done in the introduction). Outline what are you going to do (and what not, but would be needed). After having defined your research questions, you should give description of your overall approach (for example "experimental design", "survey study", "usability study", "design" if hasn't been done in the introduction). Show convincingly *how you are going to answer each research question !*

Element (C): Approach & methodology

- Briefly describe the overall approach you are using
- You also can discuss conceptual frameworks (if not done before)
- For experimental studies: clearly describe the experimental conditions

Basic principle:

- Show convincingly *how you are going to answer each research question !*
- Obey guidelines dictated by the general approach

Element (D): Description of your solutions (core of the thesis)

Some hints

- You also discuss here the conceptual frameworks (if not done before)

- For experimental studies: clearly describe the experimental conditions
- Describe only the theory you are using with referring to the source materials
- Describe the data gathering techniques (if it concerns) and sampling strategies (or justification of singular case selection)
- For experimental studies
 - there is a strict way of doing things ! You have to describe in detail experimental conditions, materials used, sampling conditions etc.
- Describe analysis techniques (both qualitative and quantitative)
- It is advised to finish each chapter of this part by short summary

Element (E): Conclusions and future work suggestions

- **Conclusions are not the summaries, describe the observations from your work, point out the difficulties, possible improvements, emphasize what was your own invention/contribution.** Highlight why research findings are important beyond the confines of the specific research project (e.g., significance; how research results can be applied).

Element (F): Information sources

- Bibliography (keep the consistent format, refer to the recent and relevant works)

The hints for deciding about the research topic

Check:

1. Theoretical feasibility
 - You can't do it all by yourself, check the literature (if not already done so, find overview and "ground breaking" articles)
 - In particular: theoretical frameworks, analysis grids, theoretical statements.
 - organize an interview with a least an academic and a domain expert
2. Inventory of approaches and methods
 - There exist constraints, you can't study everything in any way (but you do have choice, but check with your advisor !)
 - finding a good design always is an iterative process (so don't worry if your first version looks bad)
3. Identify your main approach :
 - Look at similar research
 - Remember, if you want to "**prove things**" and make causality claims, you need comparison !

- Use qualitative approaches to explore and to understand, quantitative approaches to confirm, generalize, prove, ...
- 4. Methodological feasibility
 - Dress a list of all the *concepts* that appear in your research questions (and hypothesis if you have)
 - Take each concept apart for its dimensions,
 - Operationalize each empirical dimension (make it is measurable)
- 5. Does your theory part really relate to your empirical / practical part ?
- 6. Make sure that you can produce needed data and then analyze them
 - ...
- 7. Check your skills and resources
 - Can you handle these data ?
- 8. Do some planning

Advices for writing the diploma manuscript

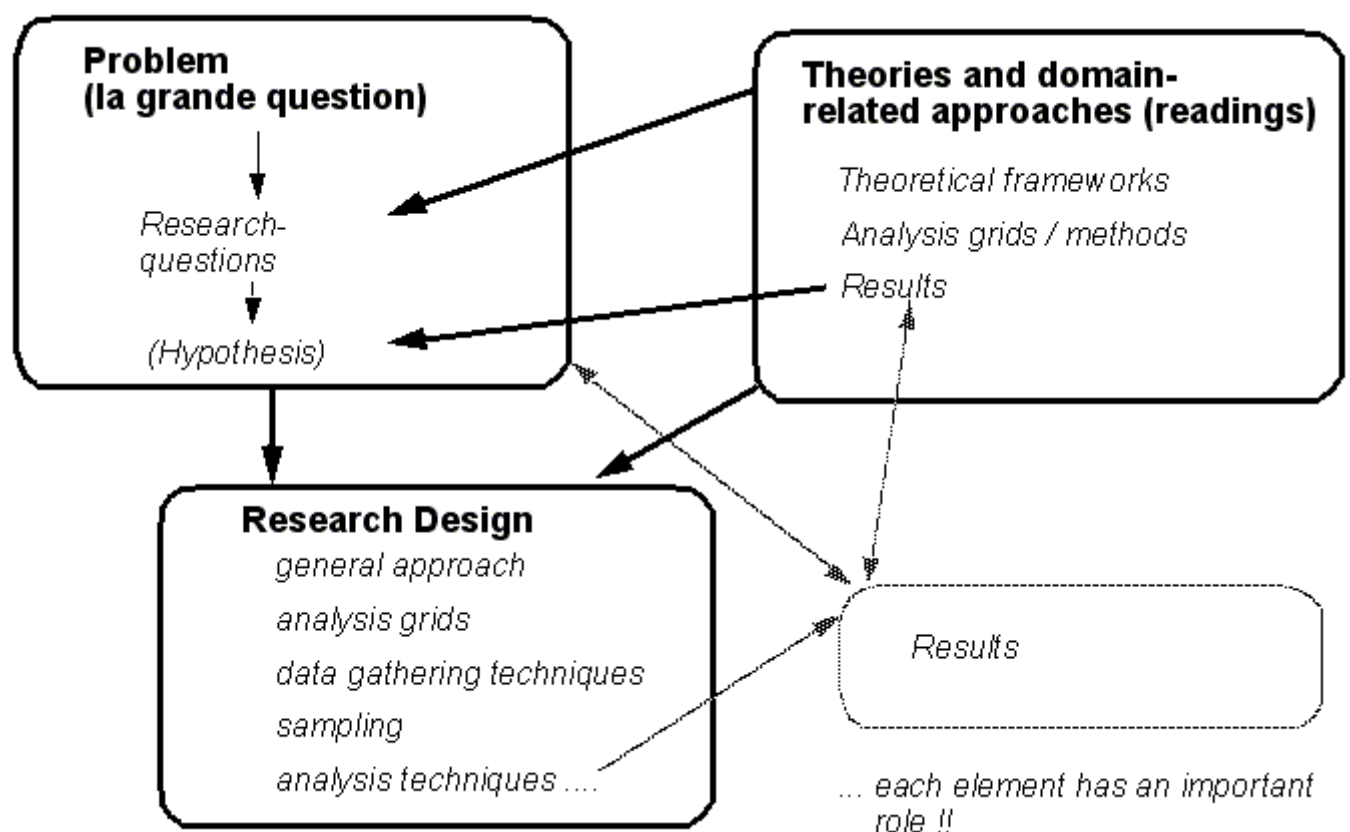
- Be sure to access and mention in the manuscript the major publications concerning your subject. Read the ones you quote from !
- You may point out inconsistencies and gaps, which adds additional interest to your project
- Identify theories and conceptual models that you will use
 - maybe add your modifications and present both at the end of the review
- Make sure that you define all the concepts
 - A lot of concepts are controversial, e.g. pedagogical effectiveness, efficiency, ...
- Only introduce theory that is relevant for your research
- Make sure to write a synthesis and not just a simple linear collection of uninteresting summaries. Each section of your theory part should end with a conclusion that you later can use to justify your research questions.

Prepare the Work Agenda

Some planning can help. The minimum you should do is to make a list of the major steps:

- Delivery date - Final research plan
- Delivery date - Good draft of the literature review
- Delivery date - Data gathering/preliminary concept/preliminary design
- Delivery date - Data analysis/ concept analysis, calculations, or the design analysis
- Delivery date - Writing the text / First draft
- Delivery date

In your work agenda major elements must be linked together



Writing your Research Planning Report: do not exceed 17 pages for items A,B,C, including tables and figures. The front pages and part F should be provided as well.

For the diploma thesis: Part A can not be more than 10-20% of your manuscript.

The overall diploma manuscript size 70-100pgs.

For the format please check the Faculty web page