



Guidelines

for

Writing a Master Thesis
at the

Institute for Strategy, Technology and Or-
ganization

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Preface

These guidelines apply to all master's theses at the Institute for Strategy, Technology and Organization. The document contains formal requirements, guidelines and advice for the successful completion of your thesis. **Variations are only possible in well-founded cases and after consultation with your supervisor.**

Non-compliance with formal requirements (chapter 8) and violating citation rules result in deductions in the grading – in extreme cases the thesis will be graded „not satisfactory“.

We assume that you have read this document before contacting one of the IfSTO team members regarding your master's thesis. If there are still some questions to be answered, please write us an e-mail (elisabeth.brunner@wu.ac.at). We try to answer any open question and will include missing information, if of general interest, in future versions of this document.

1 Prerequisites for writing a master's thesis at IfSTO

All students of the Strategy, Innovation, and Management Control (SIMC) Master's program are invited to write a master's thesis at the institute. There are three prerequisites.

1. Successful completion of the course "Master's thesis seminar"
2. Proposal and a preliminary outline of the thesis (see 5.2)
3. Availability of supervisors at the institute

2 Scope of a master's thesis

- *A master's thesis identifies a general problem.* A problem is "general" when it refers not only to an individual case. "How should company XY set the price for the innovation Z?" corresponds to a singular problem. "What are the determinants of price setting in product innovation?" is a general question.
- *A master's thesis identifies a relevant problem.* A research question is relevant if it (1) has not been sufficiently answered by existing research, and (2) the answer is important and interesting.
- *A master's thesis contains the solution to the problem.* This is achieved, for example, through the testing of theoretical hypotheses or the development of theory by means of empirical data. Therefore, a quantitative or an exploratory empirical study are possible approaches.

Hence a master's thesis is **not a** project report, individual experience, personal opinion or a textbook.

From the above structure (master's thesis = developing a research question and answering it) it should be clear that a thorough and successful development of the research question is crucial for the subsequent quality of the thesis.

The way the problem statement is elaborated and how well (in terms of methodically correct, thorough and critical) the question is answered determines the quality of a master's thesis. This clear line is often referred to as the "common theme": a very good thesis is a compelling argument. It contains nothing superfluous and should be concise. The normal range is 40-60 pages (excluding bibliography and appendix).

3 Potential topics

The topics are predetermined in some way and are based on the areas of focus of the institute. You can find ideas for your thesis on the website of the institute in the research section. Subsequently, we encourage you to bring in your own topic based on our research

areas or the content of our teaching. Sometimes, the co-supervisors have topic suggestions that you can adopt or that you can develop further. These are usually aspects in which the assistants have a high interest due to their own research.

We are also open to your own topics with regard to the SIMC teaching issues. In this case you must find an assistant that is willing to co-supervise the subject. We take our responsibility very seriously, a relation to our research focus or our course content therefore is important

In all instances the topics are typically limited in scope to ensure a sufficient depth of your analysis. Your co-supervisor will assist in narrowing your research question, and help you develop the proposed topic into a thesis proposal. This phase may take some time, so start early enough.

Working on the problem statement with two or several students is possible, and is especially useful when there is a (large-scale) empirical study. However, the individual workloads must be clearly identifiable and separated from each other to be assessed.

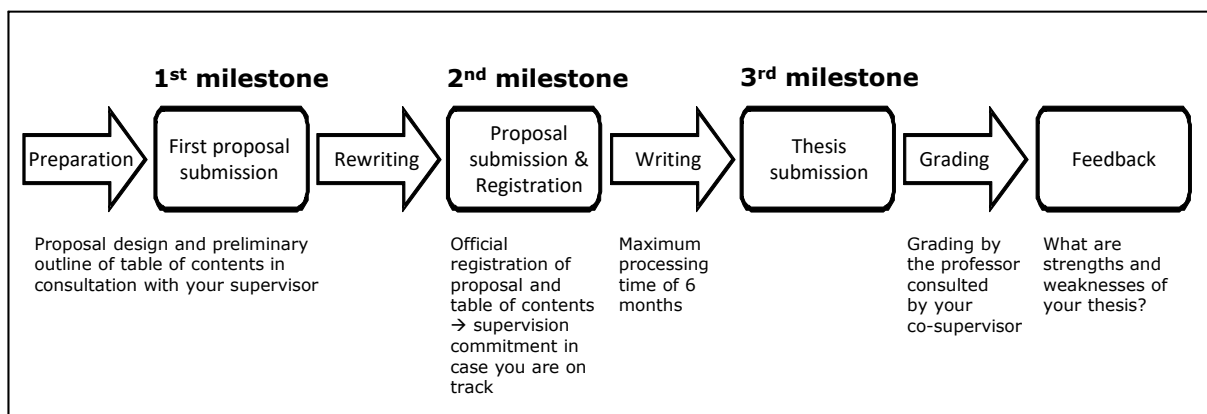
4 Supervisor

Your first points of contact are the research and teaching assistants or assistant professors of the institute. They are your "co-supervisor", and they decide whether your topic ideas go in the right direction, whether the status of proposal and outline is sufficient for registering and then accompany you, after official registration with Prof. Lettl (official supervisor of the thesis), during the process.

5 The process: From idea to grade

5.1 Process overview

The following figure illustrates the process of preparing and writing a master's thesis at our institute. The individual phases and milestones are described in the following chapters.



We ask you to send content-related questions **3 days in advance** of any meeting with your supervisor. This ensures enough preparation time and optimal supervision.

5.2 Commitment

Writing a good master thesis requires a lot of work both on side of the student and on side of the supervising faculty. We therefore designed the process to funnel your efforts. Every student is welcome to approach us for a topic and a first meeting. Handing in a research proposal is a clear commitment from your side to follow through in the process and to

complete the master thesis with us. In case you decide after the first meeting that you do not wish to write your master thesis with us, we certainly expect to be informed by you.

5.3 Preparation phase: First meeting and drafting a proposal

If you meet the requirements (see chapter 1) and are interested in a master's thesis at the institute, please contact one of the assistants at the institute.

In coordination with the co-supervisor you will narrow down your topic and develop a proposal. At this stage you should focus on the process of writing your master's thesis and developing the research proposal.

A proposal is a preliminary concept, which will serve as a guide for both the author and supervisor(s). It ensures that there are no (significant) misunderstandings between (co-) supervisor and student, that answering the research question is feasible and relevant, and that you are generally on the right track. The proposal consists of 2.500-3.000 words (excluding references) and includes:

In addition to the title of the thesis, which will be binding upon registration, your proposal should contain the following sections:

- *Introduction.* Try to generate reader's interest. Start by stating the relevance or general importance of the topic. Summarize the key sources of existing literature and explain, where prior research has inadequately addressed the research problem (research gap). Embed your research question in this research gap and briefly discuss how answering the question will advance the scientific-theoretical discourse. Guiding questions for the introduction might be: Why is the topic interesting? Why is your thesis necessary? What can be learned from your thesis?
- *Theoretical background.* Define central concepts and describe your theoretical context (theories, models, frameworks, views, etc.) that are relevant for your thesis. Review existing research that might be informative for your work with a focus on recent articles (state of the field). If you do quantitative research, you might consider developing first hypotheses at the end of this section.
- *Methods.* Elaborate on how you will proceed to answer the research question. Describe the empirical setting of your thesis (e.g., data availability, sampling, access to the field), the methods of data collection and data analysis. Always explain why this approach is suitable.
- *References.* State the table of used and potential references. Mark used references with an asterisk*.
- *Table of contents (1-2 pages).* Finally, the proposal should consist of a preliminary table of contents of your thesis. In contrast to the title of the thesis you can change this outline throughout the process.

5.4 First milestone: First submission of proposal

After the first meeting, you start on writing the research proposal. When you think that your proposal is finished, you send it to your co-supervisor, who will provide you with thorough feedback and the evaluation:

The evaluation of the proposal will be one of the following:

- *Major revision* (which means that you will have one month to thoroughly rewrite the proposal based on the feedback (with a possible extension of two weeks)
- *Minor revision* (which means that you will have two weeks to rewrite the proposal based on the feedback (with a possible extension of one week)
- *Accept* (which means that we will officially register the master thesis)

To set your expectations, we have very rarely read a research proposal and accepted it the first time. So far, proposals always needed a second and sometimes even a third round of

work. Extensions of the deadline after a minor or major revision will only be granted in case of extenuating circumstances, which should be requested at least one week prior to the deadline.

What constitutes a good research proposal?

- A focused topic on what you will study (first definition, research question, in some cases initial hypotheses). Most important is to be consistent throughout the proposal on what you want to study. Hence, do not change the topic throughout the proposal (not even the wording, although it may seem boring). The topic can be a phenomenon, a certain scientific concept, a relationship between two or more variables, etc...
- Clear arguments on why the study is important. Both the theoretical contribution and the practical contribution should be clear (only sometimes there is no direct practical contribution, which can be the case in studies that deal with theoretical scientific constructs).
- Clarify how you will conduct your study in order to be able to answer your research question(s) and why you think this study design and method is suitable.

The main weaknesses and reasons for a minor and often a major revision are:

- *Logical reasoning* (no logical flow from one sentence into another)
- *Structure* of the proposal (many elements are being mixed up throughout the entire proposal)
- After reading of the proposal there is no *clarity* on what the student is planning to study, why is the topic important from both a practical and scientific perspective, and how is the student going to study the topic/phenomenon/relationship between variables
- *Coherence and consistency* (very often we read proposals where key concepts are randomly described with "synonyms" (which are in fact not synonyms)) – for example, intrapreneurship, incubator programs, corporate ventures should not be used as synonyms). Furthermore, once multiple terms are used, the proposal becomes incoherent and the reader starts guessing (what is this study going to be about?)
- *Specification & focus* (very often proposals are written very broad and they lack specification). A good proposal consists of a clear topic and remains focused on the topic throughout the entire proposal (narrowing down instead of opening up). For example, the following should not be written in a proposal about the proposed structure of the final thesis. As you will see, there is no specification in these sentences at all.

"The thesis starts with an introduction to the topic and the research question. This is the first part of the thesis.

An extensive literature review on the topic will be conducted in the second part. The aim is to synthesize existing concepts and variables.

The third part deals with empirical data. It will be explained what methods will be used to collect data and what sorts of data will be gathered. Moreover, the data retrieved is also to be analyzed by use of proper analytical tools.

In a fourth section, the results will be presented and interpreted. Limitations and recommendations for future research will be made.

A concluding summary completes the thesis in the final section."

- No proper use and integration of existing literature from the first preliminary search for other studies on the topic

- *Citing* wrong literature (citing for example websites or other Bachelor- or Master theses). The sources should mainly come from scientific journals that are ISI indexed (www.isiknowledge.com)
- *English grammar errors* (we are no English experts, but we expect clarity in writing)
- *Professional layout* (use of different fonts throughout the proposal – yes this happens)

5.5 Second milestone: Registration and acceptance of supervision

After we have accepted your research proposal, your master thesis will be registered officially. The registration form can be downloaded from the IfSTO website. Registration serves as confirmation of supervision. The co-supervision assistant, in consultation with the supervisor, coordinates the registration appointment date. After registration you will have six months' time to complete your thesis.

As part of the registration, the topic title of the thesis will be binding. It cannot be changed afterwards. The student and co-supervision assistant will discuss the planned thesis with Prof. Lettl.

5.6 Writing phase: The process to solving the problem statement

Once you have a definitive confirmation of supervision, we strongly recommend starting to work on your topic immediately. We have deliberately introduced a time limit of six months, because we want you to concentrate on your thesis.

During the writing phase, you will stay in contact with the co-supervision assistant in order to keep him/her involved in any important decisions regarding your research. Use his/her expertise when it comes to steps such as, finding relevant literature, planning the design of the study, conducting an empirical survey, analyzing interviews, setting up experiments, searching for secondary data, analysis of data etc. At this stage though, the contact with the supervisor is typically not as close as during the "preparation phase".

Responsibility for completion lies with you. You decide when the work is finished or whether some things need to be amended or supplemented. The co-supervisor does not make a pre-correction for you. You decide alone and independently whether your work is ready to be submitted.

We strongly suggest that you look for someone to proof read the work for you - especially in regard to spelling, grammar and formalities, as well as content. Get feedback from non-specialist people on whether the thesis is structured in a clear and understandable way.

5.7 Third milestone: Submission of the master's thesis

Submit the master's thesis by the deadline, both electronically and in hard copy (bound). Should you foresee that you cannot comply with the deadline for a serious reason, you must submit a written request for extension to your supervisor in a timely manner (normally at least one month in advance).

You must attach a completed and signed cover sheet¹ to your hard copy. Submit the completed assessment protocol² with your data and literature used electronically as well.

¹ http://www.wu.ac.at/students/org/thesis/arbeit/deckblatt_master_en.doc

² http://www.wu.ac.at/students/org/thesis/arbeit/beurteilung_master_en.doc

5.8 Grading phase: Assessment of the master's thesis

By law, the assessment of the master's thesis will take place within two months of submission. Prof. Lettl decides on the final grading in consultation with the co-supervising assistant. The co-supervision assistant will notify you of your grade via e-mail.

5.9 Feedback

After the thesis has been graded, you can make an appointment with the co-supervision assistant for a feedback session. We want to ensure that you understand the details of the assessment so that it may benefit you as much as possible in future, similar challenges.

6 Role of the supervisor

From the above explanations, the role of the co-supervision assistant should have become clear. He/She has the function of an advisor that helps and provides support for your thesis.

The accomplishment itself lies with you and you have full responsibility. For example, it means that the input of the co-supervision assistant is an opportunity, not an obligation. You also have the duty to critically verify any advice given. However, you will not be left alone. We will support you in getting the most out of yourself.

7 Indications of a good master's thesis

7.1 Important components and core elements

7.1.1 A good title

The thesis's title should be descriptive and concise. Although it is not possible that it summarizes all aspects of the thesis, one should immediately know what it is going to be about. It should create a curiosity about its content. The final wording will be agreed upon as part of the registration.

Identification of lead users by means of the Broadcasting Search method: an exploratory analysis

→ Is a good title.

First propositions about factors that influence the broadcasting search process as part of lead user identification: an exploratory analysis of six lead user projects that use the broadcasting method

→ Content is correct, but cumbersome and impractical.

7.1.2 Structure: Introduction, body and discussion

The **introduction** has a central function in the thesis. It serves three purposes:

First, the objective of the thesis is stated. The underlying problem statement should be clear, and you develop a research question. The rest of the thesis will refer back to this part. Essentially, it should be clear *what* your thesis will be about.

Secondly, the relevance of the research question is *justified*. A characteristic of relevant research is that it helps to find *general explanations about reality*, or to check, amend and/or modify current explanations, thus expanding our knowledge about reality. There are many starting points, such as finding suitable systematization schemes, formal or behavioral modeling, deriving or analyzing theoretical models, and/or empirical exploration of phenomena, the empirical testing of theories/hypotheses, or a summary of existing empirical research results (meta-analysis) etc. Basically, you should be able to answer the

question of *why* your study is important both from a theoretical and a managerial perspective.

Third, the approach to problem solving is explained. The reader is offered a first overview of concepts, methods and results of the thesis. *How* does the author approach the topic? How do the individual chapters build on each other? What is the result of the thesis? The preview is thus a conceptual overview, a brief description of the methods used and a very brief summary of the (potential) key findings or conclusions.

The **body** of the thesis contains the actual problem solving. It introduces, analyzes and synthesizes the existing literature in the **theoretical background**. Reviewed academic works are not always on the exact same topic, but can also be related in other ways, for example, originate from analogous fields or involve more general statements. This means the statement that one cannot find any literature on the topic only points to the fact that no thorough literature and database search was carried out. Based on discussion about the scientific work, you should show exactly why this is not sufficient to answer the problem statement contained in your thesis. It is therefore necessary to point out the limitations of previous research. Based on these limitations, the contributions that your thesis makes can now be presented. What kind of support does your thesis offer to overcome these limitations? It may be useful to show on the one hand what your work accomplishes, and on the other hand what it does not address. Depending on your research question and the current state of the literature on your topic, the theoretical section may consist of propositions or hypotheses. Subsequently, in the body you will describe the **empirical background** of your study and the **methods** that were used. A thorough explanation of the **data collection**, sampling decisions, as well as the methods that were selected to collect and analyze the data are of utmost important as this mainly reflects your own academic efforts. Finally, this section closes with a presentation of the **results** from your empirical analyses.

In the concluding **discussion & conclusions section**, you should elaborate upon your results and give an interpretation of them in terms of what your study contributes to the literature. Hence, to what extent the research question was answered and are there any possible alternative explanations (especially in empirical studies)? Finally, in this section you reflect on the major limitations of your study and mention which additional questions emerged. These limitations and additional questions can be the input for a discussion of the issues that remain open, which could be handled in future studies (recommendations for future research).

7.2 Key success factors

7.2.1 Flow and structuring: achieving a „common theme“

An important assessment criterion is the structure of the thesis. A good thesis is characterized by a clear theme and a compelling argument. This is known as the "common theme". In a thesis that has a clear common theme, the results are answers to the research question, the analysis of the literature supports the argument and does not digress - in short, the thesis is well-rounded, complete and contains nothing unnecessary. The individual parts are logically linked to each other; there are no jumps and complicated pre- or recourses.

It is a lot of work to get a thesis to this point. In no case one will succeed right away. Usually a thesis must be revised several times. Here, critical feedback from someone who is not involved in the thesis is very important to get an external perspective.

7.2.2 A clear outline

Usually three to four numbered heading levels are sufficient. The outline is logical, self-explanatory and pinpoints the common theme.

Following are some common mistakes and potential improvements:

...

- 2. Acquisitions and their impact
 - 2.1. Motives for acquisitions and their various impacts
 - 2.2. Conflicting objectives: acquisition or innovation
- 3. Literary analysis of the impact of acquisitions on innovation

...

In this example, the first point (2.) is repeated through a sub-point (2.1.). This is illogical, because the first point should serve as the headline for the subordinating points. A second weak point is that points 2. and 3. are highly redundant, and therefore probably do not differ very much in content.

A much better division (which could of course continue to improve) would be:

...

- 2. Background: Acquisitions
 - 2.1. Overview
 - 2.2. Motives for acquisitions
 - 2.3. Conflicting objectives: acquisition or innovation
- 3. The impact of acquisition on innovation

...

- 5.2. Results of the empirical study
 - 5.2.1. The requirements for start-ups
- 5.3. Interpretation of results

...

In this structure, the question arises, why the author ever subdivided the top point 5.2. He only has one sub-point. In this respect, the title is not strictly speaking a headline. The sub-point should be eliminated.

...

3. Results of the empirical study

- 3.1. Methodology used
- 3.2. Importance of each founding motive
- 3.3. Correlation analysis between motive and success

...

Here the first point (3.) does not actually apply to all three sub-points. 3.1. is not a result, rather the approach. Either you make this into its own point, or you change the headline point to read „Empirical Study“.

...

5. Literature overview: establishing teams

- 5.1. Advantages of establishing teams
- 5.2. Supplemented by complementary skills
- 5.3. Problems of cooperation with engineers and economists

...

Here there is a hierarchy problem. The author presents different things at the same level. For example, 5.2. clearly a sub-point of 5.1. Also missing is the logical counterpart to the advantages, namely the disadvantages. A much better division would be:

...

5. Establishing teams

- 5.1. Advantages of establishing teams
 - 5.1.1. Supplemented by complementary skills
 - 5.1.2. Larger social networks
- 5.2. Disadvantages of establishing teams
 - 5.2.1. Different language between engineers and economists
 - 5.2.2. ...

...

7.2.3 Avoiding digressions

One should always focus on the fundamentals, namely the topic of the thesis. This means that for every chapter, every section, every paragraph, every sentence and even every word, you ask yourself one critical question:

Does it contribute to problem identification and/or problem solution?

There is a tendency to document your own learning process when working on longer, more complex projects. Also, there is a strong reluctance to delete something once it is written - whether it contributes to the topic or not. It is very likely that you will encounter this situation.

Things that deviate from the common theme, even if they are interesting and well written, will make the thesis *worse*. It will be necessary to revise the work several times and you will most likely have to remove some passages.

7.2.4 A clear writing style

A good thesis is clear and precise. The ability to express yourself can be learned and obviously need to be exercised. There is good literature on this subject. Some short rules below:

"What sounds simple is not scientific" – erase this misconception from your memory. Scientific writing does not mean incomprehensible writing. Formulate short sentences and use a clear, simple language. Someone who writes complicated usually thinks complicated. Remember what the philosopher Karl Popper said: "If you cannot say something simply and clearly, say nothing and go back to work, until you can say it clearly."

Writing is a process. No sentence that you have written must remain that way. On the contrary - the writer Heinrich von Kleist praised "the gradual formulation of ideas" when writing.

Do not force the reader to read a sentence three times. This happens when you spice up your text with insertions and subordinate clauses. Rule of thumb: An insertion must be less than three seconds long. Otherwise, the reader forgets the thoughts of the main clause, which drowns out information. For comparison: "The judge denied, after he had pronounced the sentence against the accused, the defense lawyer, by not saying goodbye, any respect." Would be clearer: "The judge denied the defense lawyer any respect. After he had pronounced the sentence against the accused, he did not say goodbye to him"

Distinguish between foreign and technical words. Many foreign words can be replaced with their English counterpart. Unlike foreign words, technical terms belong in a scientific text.

Be active. Scientific texts often suffer from becoming depersonalized. Use the personal pronoun "I" when you give your opinion, or call other authors by name. Do not write your sentences with a passive subject. Active formulations promote thinking.

Who, how, what? "The behavior of Homo economics must be considered carefully in order to draw conclusions about the effects of the lack of information." Huh? Who here has what, how, where and why? Ask yourself these questions to avoid errors in your wording.

Distrust the adjectives. They can often be replaced by a noun. A literary work is a book, positive developments are gains and critical statements are criticisms.

Paragraphs improve the readability of the text. Note that paragraphs should round off a train of thought.

Sometimes a simple test helps: Give the thesis to your parents or a non-business person and ask if they really understand the text or whether there are sentences that are not yet entirely clear. Also ask if the work is structured clearly, whether the central arguments are clear, and whether it is fun to read.

7.2.5 Anticipating technical problems

It is recommended that headings, figures, tables, etc. are formatted appropriately (this way, tables of content can be created automatically) and cross-references to pages, figures, tables, etc. are linked using the appropriate functions instead of manual references. This will save you lots of time. Also note that any changes to the printer driver can result in a formatting change.

Experience has shown that there are always surprises when printing. Therefore, it is best to print the master thesis several days before the deadline and pay attention to proper formatting when proofreading.

7.2.6 Tips for time management

Writing a research paper is a complex task. Particularly problematic is that the complexity is often drastically underestimated, as it will only become clear over the course of time. What initially seems simple can become very difficult and time consuming when it comes

to writing. Therefore, in almost all cases, time is a limited resource when working on your thesis.

This is all the more reason to plan the time required for the individual steps and chapters (use of milestones). This way it becomes evident whether your pace is sufficient to complete the work within the given time frame. When scheduling, please give yourself a buffer, as experience has shown that deadlines often cannot be met.

As pointed out several times, repeated self-critical reviews are absolutely necessary in writing a high-quality thesis. The quality of a work usually increases with time, through the effort and critique that you receive from the people that you have asked for feedback prior to submitting your thesis. Therefore, you should try to have written the thesis three weeks before the due date. This allows enough time to tweak and improve your thesis (and thereby your grade).

7.3 Tips for theses in collaboration with corporate partners

Principally we welcome theses that are developed through suggestion by and cooperation with corporate partners. Students who choose to go this route should note this is somewhat of a balancing act. The interests of academic research and practice are related, but not identical. The thesis is graded in terms of how well you work out an interesting and relevant problem and answer.

Experience has shown that there are always practitioners who would like the master thesis to only solve a single concrete problem and are not interested in a generalization of the results. It is your responsibility to ensure that the work is of general interest.

This means that the thesis is neither an internship report nor a project report. The master thesis aims to address a research gap and not only a particular knowledge gap of a company. We are glad to sketch out the differences for you in the first meeting.

Information on Non-Disclosure-Agreements:

Please note that in case of a collaboration with a company in the course of the thesis (e.g., data collection for a qualitative, quantitative or case study), neither the institute nor the individual supervisor can sign a Non-Disclosure-Agreement to limit the access of the thesis to institute/supervisor and student only. If the company asks for such agreement, it needs to be signed by the student who is then personally liable for anonymizing all critical data within the thesis before its submission.

7.4 Empirical studies: some additional notes

Required for any master thesis, is an evidence of relevant knowledge. Empirical studies will make it easier to achieve an advance in knowledge and to show your personal contribution. In empirical work, the golden rule is that you have to put in some thought in your approach and study design in advance, and not just "get started". Errors that happen by being too hasty are often irreversible. Hence, you should familiarize yourself with relevant concepts and methods.

Especially in empirical studies, you should formulate the problem so that you can thoroughly and comprehensively examine it. If the topic is too big and wide, the work is almost inevitably trivial and shallow. Ideal would be a "narrow" topic that you can analyze thoroughly and in depth.

It is very important to **document** the procedure accurately and comment critically in empirical work. There is often no ideal solution and you must make compromises due to practical reasons. The researcher almost always affects the results (through questions in the interview, deciding on items in questionnaires, analysis of data, interpretation of results, etc.) - this is perfectly normal and legitimate. However, it is essential that all actions, all ambiguities, all interventions etc. are disclosed and explained.

For quantitative work, it is often tempting to use every available statistic. However, writing an empirical work is not a competition of data. It's not about using as many procedures as possible, but using the correct ones. In extreme cases, it is only a simple count of frequency. The basic rule is that you should always consider what the evaluation of data contributes in terms of answering the research questions.

When **presenting results** (i.e., empirical findings), it has proven to be useful to just show the bare results, i.e. presented as a table or graph. In the text you can explain some of the key points (what is the average finding?) And finally, something that is often forgotten, interpret! Interpretation means that you try to describe what this result means in terms of the research questions, how it is classified, whether or not the result surprises you or not, and how this has an effect on the theory, etc. Of course we also explain the limits of interpretation, thus presenting "alternative explanations".

Especially in empirical work, clear **ethical principles** are important. Although we are not in the same situation as physicians or psychologists, who have to constantly worry, there are problems that can arise.

A guiding rule is that you cannot harm third parties, and must not abuse their trust. If you have promised respondents, for example, that after completing your investigation you will send them a brief summary of your findings, then you should do so. Personal data from interviews may of course not be disclosed to third parties. Also, the clever idea "I will announce that I am raffling off 10 MP3 players – they cannot verify who gets one anyways" is obviously not allowed. Should you have any doubts about something, you should seek the advice of your supervisor.

8 Formal requirements

Following formal requirements are „must requirements“. You have to follow this formatting. You can resolve not anticipated formatting issues at your own discretion.

8.1 Structure and outline of thesis

A master's thesis is written in English and includes the following parts:

- Cover sheet (available for download on the WU website)
- Acknowledgements (optional)
- Title page
- Contents
- Figures (if necessary)
- Tables (if necessary)
- Abbreviations (if necessary)
- Symbols (if necessary)
- Body
- Bibliography
- Appendix (e.g. interview transcripts)

You must submit two copies of your master's thesis at the institute (1x bound hardcopy and 1x electronically per learn@wu)

8.1.1 Contents

Use a decimal outline in order to structure your work.

1	Introduction and problem statement
1.1	Background
1.2	Aim of the thesis
1.3	Structure of the thesis
2	Current state of research
2.1	External problem solving: New resources leading to innovative solutions
2.1.1	Use of internal sources
2.1.2	Use of external sources
	...etc.

8.1.2 List of Appendices

If you have substantial documentation in your appendix, provide a list of appendices, stating the title and page number for each item.

8.1.3 Figures and tables

All figures and tables must be listed in a separate index stating the number, title and page reference.

8.1.4 Abbreviations and symbols

If you use abbreviations in your thesis, you must list and explain those in alphabetical order in an **index of abbreviations**. Abbreviations are in the left, the respective words in the right column.

Think about the use of abbreviations. Do not use them, because they are convenient. Allowed are **commonly used** (e.g. B.C.) and customary terms in the field (e.g. ICT) as well as acronyms of **journals** (AMJ, SMJ, RP) and **institutions, organizations and companies** (e.g. UNO, OECD, HP).

If you use formulas or mathematical symbols, you need to list them in an **index of symbols**.

8.1.5 Body

The body is the core of your thesis. The line of reasoning however differs between empirical and theoretical works.

Empirical theses

- State of the art (additionally in quantitative theses: deduction of hypotheses)
- Research design
- Results and findings
- Discussion and interpretation along your research questions (or hypotheses)

Theoretical theses

- Depiction of relevant theories and concepts
- Classification and definition of terms
- Propositions and hypotheses, and their empirical evidence

8.1.6 Bibliography

See 8.4.3

8.1.7 Appendix

The appendix documents the materials, which you have used in the thesis. It does not directly add to your argumentation. Examples are transcripts of your interviews, print-outs, additional figures and statistics, substantial mathematical proofs or excerpts from laws, regulations and guidelines. Figures, which are required for understanding the argument, must be integrated in the body. Proprietary or not published sources, e.g. company documents must be included in the appendix, as long as they are not confidential.

If you cite substantially information from conversations or interviews, it is necessary to take minutes and transcribe interviews and to document them in the appendix. The transcripts need to be approved through a signature by the interviewee. The list of interviews contains name/s of the interviewee/s as well as location, date, duration and topic of the conversation.

For short conversations, where only little information flows into your thesis, the source can be mentioned in a footnote,

e.g. ...¹

¹ Communication via phone with (name) on (date).

In this case written permission is not required; oral approval by the interviewee is still needed though.

8.2 Formatting the body

The master's thesis must be written on white paper (**DIN A 4**). Pages can be printed one-sided or two-sided (consult with your co-supervisor).

Font: Times New Roman

Size: 12 pt

Spacing: 1,5

Alignment: justified

Page borders: left: 3 cm, right: 2 cm, top: 2cm, bottom: 1 cm

Page numbering: on top in the middle of the page in between of two indents. All pages of the text must be numbered with Arabic numerals.

Formatting of foot notes: Footnotes are located – separated by a left-aligned, horizontal line from the text – below the text. Font: Times New Roman; size: 10 pt; spacing: 1 within and 1,5-lines between foot notes.

8.3 Citations in scientific work

8.3.1 Why cite and to what extent?

A scientific work builds on existing knowledge. Those who ignore the existing literature will not make a contribution to research. Therefore, the literature research and the reference to existing literature are of major importance. The WU library offers special courses in literature research on a regular basis. It is advisable to take advantage of this service.

The necessary number of references cited is a much-debated topic. It is not possible to specify a "minimum number". A relatively large literature base is not only advisable, but necessary for a good thesis. Of course it is important to note that it is not the quantity that

is important, but rather the quality of the sources and how well they are applied and integrated into the core arguments of the thesis. Strong empirical work, due to its focus, naturally uses fewer citations than a theoretical study. Although there are exceptions, 50 - 80 scientific sources tend to be the norm for a master thesis.

For citing, the citation guideline listed below must be followed. Any use of someone else's intellectual material in a scientific work must be accurately cited, or otherwise be considered plagiarism. This rule will allow the reader of the thesis to determine whether the ideas presented by the author are his/her own, or if they originated elsewhere. It should be easy to locate and review any citations. This applies both to verbatim and non-verbatim representation of others' work.

Plagiarism is not a petty offense and is easily found as it is created. At WU, as well as at the Institute, special software is used, which automatically compares the submitted work with all possible sources. For more information, see: http://www.wu.ac.at/lehre/sup-port/schreiben_zitieren/plagiate. Also, you are supposed to upload your master thesis to the learn@wu platform, which will automatically run a plagiarism check over your final submission.

8.3.2 Verbatim quotations

Verbatim reproductions are to be put in double quotes. Quotations within a quotation are indicated by single quotes. Note also 8.3.4 secondary quotes. Footnotes belonging to a quoted source are not incorporated. Long quotations (two or more lines) can also be shown by indentation and narrower font, but longer quotations are to be avoided if possible and to be replaced with brief summaries. Always make sure that the corresponding **page number(s)** are indicated.

Following particularities should be kept in mind when using verbatim quotations:

- 1 **Omissions** or **ellipses** are indicated by (..) for one word and (...) for multiple words. If the ellipsis is at the beginning or the end of the quote no dots in brackets are used, especially if the quote is incorporated in your own text.
- 2 **Grammatical changes** induced by your own sentence structure are indicated by squared brackets. Extensions to the quote are signaled by an author's note „[A/N]“.
- 3 Changes in **punctuation, spelling** or **spelling errors** are not allowed in a literal quote. You can identify it with "[sic]" or "[!]" after the word though. You can also customize your own text punctuation and capitalization at the beginning and end of the quote.
- 4 **Emphases** in the original text must be maintained. Emphases of your own have to be signaled by "[emphasis added]".

8.3.3 Paraphrases

Paraphrasing someone else's thoughts or expressions also requires correct citation. In this case you can start the citation with "cf." (compare), but it is equally just as common to omit this addition. Likewise, always make sure that the corresponding **page number(s)** are indicated.

8.3.4 Secondary quotations

Secondary quotes are quotes from the writings of an author A, which are not cited in the original text of the author A, but from a secondary source (author B).

Basically, all citations should be quoted from the original source, i.e. be checked in the original. This is necessary to make sense of and understand the context of the quote and whether a secondary source was even quoted correctly. If - in exceptional cases - the

original source cannot be retrieved, this must be indicated in the citation (B cited in A). A repeated use of secondary citations is often a sign of "sloppy" work.

8.4 Presentation of sources

8.4.1 Body

References in the body of the thesis are to be done either directly in the text (Harvard style) or by way of footnotes (German citation). Consult with your supervisor which method is preferred.

Harvard style displays the source in brackets directly following the quoted or paraphrased text. If you cite more than one publication in brackets, they are to be listed in alphabetical order and separated by a semicolon. The author's name and the year are usually not separated by a comma, except in publications with three authors, where the names are each separated by a comma. When there are more than three authors, only the first is listed and then appended "et al".

German citation uses an Arabic numeral superscript in the text, which is referred to in a footnote. The footnotes should be numbered consecutively for the entire work and be separated from the text by a solid line. Two or three authors are separated by a slash, and with three or more authors, you also only use the first author and add "et. al". The publications are also listed in alphabetical order.

All references in the body of the thesis include the author's name, year, and the exact page numbers. Only the bibliography includes the detailed description of the title, publisher, location, journal, volume, etc.

If the quote encompasses more than one page, this has to be indicated by "pp." (=following pages).

Harvard-Style:

Der Erfolg der Lead-User-Methode zur Generierung von innovativen Ideen für Unternehmen ist in der Forschung bereits empirisch belegt (Lilien et al. 2002, p.1051pp; Urban und von Hippel 1988, p.579; Olson und Bakke 2001, p.391).

Deutsche Zitierweise:

Der Erfolg der Lead-User-Methode zur Generierung von innovativen Ideen für Unternehmen ist in der Forschung bereits empirisch belegt.¹

¹ Cf. Lilien et al. (2002), p.1051pp; Urban/von Hippel (1988), p.579; Olson/Bakke (2001), p.391

8.4.2 Tables, figures, diagrams, maps, etc.

Figures are only of scientific value if they are verifiable. All figures are therefore provided with source data. Even well-known figures (such as population numbers and size information about countries) must be cited. If your thesis combines a number of different figures, re-arranged to make them comparable, so that citing every single number is no longer possible, the beginning of the section should list all the sources and then reference in a footnote.

As it is with verbatim quotations and paraphrasing of text, tables, figures etc. do not only need to be cited if the contents were reproduced 1:1, but also if they were simplified, supplemented, or modified in any other way.

For further clarification, footnotes on topical, time, spatial particularities of individual numbers should be indicated by small Latin letters (a,b,c,) to avoid misinterpretations. They are placed next to the figure or table.

Figures, which you have created yourself, need to be amended with „Own rendering“, modified figures of a different source are amended with „Own rendering based on...“.

Source: Own rendering based on Homburg and Krohmer 2003, p.195

8.4.3 Bibliography

Adhere to the following guideline for the bibliography:

– *Quoting from books*

- Surname of the author (without any title)
- First name(s) of the author (either written out or abbreviated)
- Year (The year of the book is on the title page or on the back of the title page. If there is nothing to indicate the year of publication, this must be identified as "n.d." [= not dated].)
- Title of book (subtitles can be omitted)
- Edition of the book (not required for the first edition)
- Location of publication of the book (if not identified in the publication, write "n.p" [= no place]. The location and the name of the publisher must be separated by a colon.
- Publisher

Gillis, Tom S. (1997): Guts & Borrowed Money, Austin: Bard Press

– *Quoting essays from journals, periodicals, etc.*

- Surname of the author (without any title)
- First name(s) of author (either written out or abbreviated)
- Year
- Title of the article
- Title of the journal, preceded by "in:"
- Name or the editors (without any title) with the suffix "(ed.)"
- Edition of the journal, if more than one edition has been published
- Location of publication (see above)
- Name of the publisher (see above)
- Page number (see above)

Dorn, Helmuth, Hiennerth, Christoph, Kessler, Alexander, Leutgeb, Kurt (2001): Verzicht auf statistische Sicherheiten bei Bürgschafts- und Garantieübernahmen bis ATS 1 Mio., in: Dokumentation des 4. G-Forums, Hrsg. Klandt, Heinz, Nathusius, Klaus, Mugler, Josef, Heil, Heinrike, Lohmar, Köln: Josef Eul Verlag, p.371-391

– *Quoting articles from magazines and newspapers:*

For articles with mention of the author the following information is required:

- Surname of the author (without any title)
- First name(s) of author (either written out or abbreviated)
- Year
- Title of the article
- Name of newspaper or magazine
- Volume, issue

Franke, Nikolaus, Shah, Sonali (2003): How Communities Support Innovative Activities: An Exploration of Assistance and Sharing Among End-Users, in: Research Policy, Vol. 32, Issue 1, p. 157-178

If you use numerous works of an author with the same publication year, distinguish the citations by adding a small letter at the end of the year. (e.g. 1981a, 1981b).

WTO (1981a), ...
WTO (1981b), ...

– *Quoting from URL (Publications on the World Wide Web)*

References to publications on the World Wide Web are cited separately in the bibliography. The year corresponds to the last review by the author.

EUROSTAT (1998): <http://europe.eu.int/en/comm/eurostat/eurostat.html>, European Statistical Office, last review on 5.12.1997
OECD (1997): <http://www.oecd.org>, last review on 5.12.1998

8.5 The Use of Artificial Intelligence (AI) Tools in Master Theses

As an institute, we support a responsible experimentation with AI tools in the courses as well as within the bachelor and master theses as we generally understand the possible assets such tools can provide. Given the institute's focus on innovation, we seek to lead the way of applying AI tools with benefit as well as care. However, we clearly want to outline that the application of such AI tools requires deliberate, responsible, reflective, and ethical handling.

Therefore, important considerations need to be made when applying such tools, mainly concerning academic integrity, compliance, and reliability of data. As AI technology is constantly evolving, we expect our students to adhere to the most recent policies and regulations.

In order to create the necessary awareness for a responsible application of AI tools, we have summarized the main aspects in the following guidelines which apply at all times when using such tools:

- Regarding the general areas of application, we clearly state that misusing text generated by AI tools (such as ChatGPT, Research Rabbit, Grammarly, Bard, or others) is not considered original work. It is considered academic misconduct under our policy, leading to serious disciplinary actions. While the core content of any of your assignments (within courses as well as the master thesis) should be your own creation, you are allowed to use AI-based tools for informative inquiries about theory or practice in a specific field, grammar checks and writing revisions. However, you are not allowed to use AI-based software to generate new text, for example, by using prompts like "write a paragraph about my topic" or "make this chapter longer". If you choose to use AI-based tools, please ensure that you provide a detailed overview in the appendix, including your prompts and the responses from the text generation software that you used to generate the section.
- When AI tools are applied within any course assignments or master theses, students must cite their use clearly and appropriately. Any use of such tools without providing proper reference according to academic standards is similar to the failure of citing any other reference—valued as academic fraud.
- Beyond proper citation of the application of such AI tools, students need to be aware that they are responsible for any content created when using AI tools. Content provided by AI tools can potentially be misleading in the formulation or even wrong; it is the students' responsibility to ensure the correctness and accuracy of the generated text prior to any submission of work, and to understand the limitations of using such tools. We therefore urge students to first and primarily engage with original work (e.g. the original research paper published in academic journals or books; original sources of market data).

Our institute supports the deliberate and ethical application of such tools under strict adherence to good academic citation standards. For any questions or unclarities on the usage of AI tools, please directly contact your course instructor or supervisor.

9 FAQ

We are asked frequently about following topics and therefore would like to clarify.

Do I need to find a topic on my own?

- Our website lists our areas of research from which you may derive ideas for your thesis. Sometimes, we have available topics and the assistants often have ideas as well.

Can I submit a business plan that I am writing for a start-up as a master thesis?

- No. A master thesis is the solution to a general problem. Perhaps it is possible to generalize a particular aspect of it. Talk to an assistant about it.

How often do I need to revise the proposal so that I receive an approval for supervision?

- Writing and editing a scientific work is an iterative process. Generally, the proposal and outline are revised several times. The number of revisions however, does not decide the approval for supervision. You will receive an approval when we are convinced that you are able to identify a problem and to structure a possible solution, thus composing a high-quality thesis.

Proposal, Application - why these hurdles?

- We have one goal: You should have every opportunity to complete a good thesis. This means that misunderstandings should be avoided whenever possible – ideally right from the beginning. This application process should ensure that you are on the right track.

Can I hand in my thesis to my supervisor for pre-correction before the final submission?

- No, not for pre-correction. You are responsible for the thesis, and must decide when it is done on your own. We will support you in all important decisions and steps in the process (see also "Role of the supervisor").

Is it true that you can only receive a one ("sehr gut" grade), if you write an empirical thesis?

- No. You will receive a one if you have done very good work - whether theoretically or empirically. However, it has been shown that some students find it easier to demonstrate their own performance and contributions in empirical theses.

How often do I have to report to my (co-) supervisor?

- This is your decision. Generally, there is more intense contact in the beginning, and then less frequent contact throughout the rest of the process.

How important is the appearance of the thesis? Is it worth it to spend a lot of money for color prints and leather bindings?

- No. Of course the work should be clean and neatly bound, but this is sufficient. Even with an exaggerated effort you cannot make a bad thesis any better.

Will I get some feedback on my thesis?

- Yes, of course. Make an appointment with your supervisor for a final feedback session. We will be happy go over the strengths and weaknesses of your thesis after it has been assessed, so that you can take away as much as possible from the experience.

10 Literature

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