Binding guidelines for writing a scientific thesis

Chair for Strategy and Organization

Academic Department: Marketing, Strategy & Leadership

TUM School of Management

Technical University of Munich

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Preliminary remarks

With the following instructions we aim to help you writing a scientific paper at the Chair for Strategy and Organization. In supervising and evaluating your work, we assume that you know these guidelines and adhere to them. For formatting your thesis, you should apply the guidelines of the Manual of the American Psychological Association (APA). At first, we would like to provide you with some important points in a condensed way:

- Avoid general, abstract, descriptive and process-oriented sentences, write precise and results-oriented statements. An example: Instead of the descriptive sentence "The effect of patents on disruptive innovations was examined" you should use the concrete and results-oriented statement "The more firms use patent rights, the higher their success in disruptive innovations".
- Please make sure that each sentence in your manuscript builds on and is connected to the preceding sentence. In addition, each paragraph should be connected to the preceding paragraph and lead over to the next one. A clear reader guidance is essential.
- If you find something interesting, that is, however, not directly relevant for your thesis, you should not include it in your thesis. A scientific thesis is not the documentation of your total work done (including the rough pre-reading for specifying your topic), but a clear, plain and complete presentation of your research question.

General Instructions

Use of literature

We expect that you know the scientific literature on your topic and that you can scientifically evaluate this literature. This means that you know what has been explored on your topic and what was *not yet or so far insufficiently explored with regard to content or methodology investigated*, so you can identify the need and relevance of research and outline arguments. With scientific literature we predominantly refer to publications in scientific, peer-reviewed journals. Journal rankings like the ranking by *Verband der Hochschullehrer für Betriebswirtschaft* as well as the so-called impact factor, which in simple words measures how often articles in a specific journal are cited, will give you a first impression about the quality of journals and the published articles. Although we recommend these rankings, you also need to be cautious in using them. You must decide for yourself to what extent results presented in a research paper are relevant for your work. Therefore, you should not be blinded by whom and where the corresponding results were published. Rather, you need to evaluate the sources yourself with regard to your topic and the quality of the conducted research. Textbooks can help in starting and structuring your work and provide an overview. In some cases books can also be a standard reference for a specific topic used from all authors. Overall, however, you should primarily build on literature published in scientific journals.

The best way to search literature are electronic databases such as EBSCO, PsychInfo and Google Scholar. The University Library of the TU Munich in combination with the Bavarian State Library provide access to all articles (with very few exceptions) for free as PDF. To get an overview on a particular research area, we recommend review articles and meta-analyses. If you have found a relevant article on your topic, it helps to check the sources listed in the references as well as those articles that have cited this article. With the functions "Quoting" and "Find articles with quotes" in Google Scholar, you can narrow down the search for those articles that have cited this article very quickly.

A popular question of students refers to the number of sources that are necessary for a scientific thesis. The general answer to this question is that it is most important that you find the sources that are relevant for your topic. As emphasized above, this can be usually achieved rather with articles from peer-reviewed journals than with general book chapters. Also, topics vary in how much scientific literature already exists. We do not count the number of pages of the references, but we pay attention to whether your sources are relevant and important for your area. A random citation of irrelevant literature or only vaguely connected literature with the topic makes an equally bad impression as references, in which the specific literature for the examined research question is incomplete.

If we provide or name introductory literature, it often is not complete and is rarely meant as a strict instruction. If you have intensively worked on your research question, you may know more than your supervisor. It may even happen that the original literature is no longer or only marginally relevant.

If you cite literature, you should have read it in its original version. You should only work in exceptional cases—if sources are not available anymore—with secondary citations (e.g. Müller, 1930, cited by Schulze, 1990). You need to list all used (that means, those cited in your thesis) sources in the references. But you should only list these. Do not give us an overview of the work that you have read but not have used in the end. Your thesis and the references will not improve by doing so, they rather worsen. And a final note: Do not use Wikipedia or other "free" websites as a source (you should work with the original sources).

Writing the thesis

We highly recommend to look into the guidelines of the APA to obtain examples for outlines, structure, topic focus, and presentation of results. Particularly quantitative research papers have certain components and are very similar in structure. Further, it is helpful to look into the relevant literature for guidance on structure and to read articles with a focus on understanding their structure.

It is also important that you have completed the checklist of the Chair of Strategy and Organization prior to the actual writing. The checklist summarizes the main points for conceptualizing a research idea. It is very important that you work out the status of the current literature and the research approach. Thereby, it not only is important to know exactly what is to be investigated – but, in particular, why the investigation is relevant.

You should begin as early as possible to outline the structure of your thesis (which sometimes has to be continuously adjusted until the last day). This way you will see if you are able to plan your exact line of argumentation. The outline of your thesis should be discussed with your supervisor. It provides a basis for the registration of your thesis.

Next to the outline, the different sections will help you to structure your work and your thoughts. Each section of the text should contain one central idea and not more. Avoid the introduction of secondary aspects that are not directly relevant. In this way you can build your argument step by step, or better section by section.

We also recommend to begin early with writing your thesis. It may happen that you realize later that some parts that you have already written are irrelevant or do not fit into the structure and should therefore be deleted. Very often you only realize during writing if you have clearly understood the connections and whether the planned structure is useful indeed.

With regard to language and writing style, please keep in mind that too many spelling, grammar and formatting mistakes leave a poor impression. You should let several other people check your work, because you will get a “tunnel vision” after some time. You will be surprised by how many small mistakes these people will find in your work, even if you have proofread it several times on your own. Plan enough time for proofreading ahead before handing in your thesis and keep in mind that a thesis of more than 30 pages cannot be read within one day by your friends or acquaintances.

Please keep in mind that you are writing a scientific thesis, not a gloss or a commentary—ambiguities, irony, sarcasm and dirty jokes are inappropriate here. A scientific

writing style is also characterized by clarity. Writing well is judged in terms of clear expressions and the ability to explain complicated relationships clearly and understandably. This implies in many cases that long convoluted sentences are not necessary and may rather worsen your thesis. In relation to the total length of the thesis, this also means that a short (and concise) thesis is usually better than a long (and tedious) one.

Most probably, you will include tables and figures in your text. These can facilitate the reading and offer the advantage that not every number or element is in need of an explanation. One table that needs be included in every quantitative empirical thesis, is the table including the descriptive statistics (i.e., means, standard deviations and correlations) which should be formatted in line with the guidelines of the APA. Tables and figures must be referred to and embedded in the text. To this end, you should insert an appropriate placeholder that refers to the particular table or figure. Here is an example:

Insert Figure 1 about here

Tables and figures should be inserted after the references with one table or figure per page. A row of numbers and/or tables that are not explained or only marginal fit with the text, are evaluated negatively. Interesting "supplementary information" or analyses that are not dealt with in detail in the text, can be " banished" in an appendix. However, even these should be used rarely and be as short as possible.

You should create tables and figures yourself or adopt them from other authors (with an appropriate citation). Unacceptable is the "Copy and Paste" insertion of automatically generated tables like SPSS output. These tables should be edited in line with the APA guidelines so that the reader can easily extract the generally common information. It generally applies for empirical theses that results are to be presented so that the reader can easily understand the analysis.

Language

You can write your thesis in either English or German. We would like point out that at the background of the general internationalization of science and the economy, we highly recommend you to write your thesis in English. Thereby, you can prove that you can express yourself in the most important business and scientific language and further, you can considerably expand your potential audience. Finally, you will find out that the scientific literature is mostly in English. Therefore, the confrontation with technical terms and phrases in English is inevitable.

Formal design of scientific theses

Length of your thesis

As rules of thumb, term papers should be about 15 pages, Bachelor thesis 30 (+/- 10%) pages and master and diploma theses 50 (+/- 10%) pages.

Formal structure

The thesis begins with a *cover sheet*, followed by an *abstract*, which is followed by your actual text. After the text follow the *references*, *figures* and *tables* and then possibly the *appendix*. At the very end you should attach your declaration of authorship. Current samples for the cover page and declaration of authorship can be found in the download area of the faculty homepage.

Text format

Use the font style *Times New Roman* (font size 12) for the text. Write with a line spacing of 2.0. All margins should be 1 inch. If you use footnotes: These should have font size 10 with no line spacing.

Citations

If not discussed otherwise your supervisor, you should use the citation guidelines of the American Psychological Association (APA) in your thesis. You can access the APA Publication Manual in the library. Even if the manual should be out of stock, you can easily

follow the APA style via various sources and assistance in the internet. The website of the APA itself provides a good tutorial as well as APA manuscripts and corresponding reference lists as examples for download.

There exist various reference management programs (like EndNote or Citavi) that facilitate your work. Further information can be accessed through the University Library of the Technical University of Munich. Please note that reference management programs do not always present references correctly even if you have selected the APA format. You have to check the formatting of the references in any case.

Content design of the work

Usually final theses are empirical work. The ideal structure of an empirical paper follows a certain pattern: the introduction is followed by the theory and the derivation of hypotheses. Then, the empirical research follows (one chapter methods and one chapter results), which is followed by the discussion of the results.

Notes on the structure of your thesis

Invest time to structure your thesis during all stages of your work. This will help you to write precisely. A thesis that is not well-structured has little chance of being graded well. The outline should be balanced, which means that important chapters must have an appropriate length.

The APA guidelines specify five heading levels. However, not all heading levels need to be used necessarily. Too many sub-sections impair the fluency of reading. Also note that sub-sections should not stand on their own, which means that there need to be at least two sub-sections below each section. Avoid any "stage directions" (in the sense that you give a longer outlook on what is happening in the sub-sections), but lead the reader to the sub-sections.

Notes on the chapters of your thesis

Abstract. Every scientific thesis should start with a short and concise abstract. This summary should give a brief overview of the entire thesis. The maximum length of the abstract is one page. Make sure to write your summary results-oriented and not process-oriented (result-oriented: "The study found that older consumers set less value on status symbols compared to younger consumers"; process-oriented: "A study on the importance of status symbols was conducted with 8 young and old consumers."). Do not use citations and abbreviations in your abstract unless these are compellingly necessary. Do not use sentences that solely describe the structure of your thesis (e.g., do not write: "The introduction derives the research question based on the existing literature "), but focus your sentences on content (e.g., "Based on an analysis of currently used personality models it is hypothesized that the similarity between brands and consumer personality has a positive effect on consumer behavior only in socially relevant dimensions"). You can refer for guidance to abstracts that have been published in relevant journal articles with the same topic.

Introduction. You should first describe the relevance of the topic in the introduction. You must justify why your topic requires a scientific elaboration. You can do this by referring to the relevance of the topic in business practice and/or to the timeliness of the topic in the scientific discussion. This can be achieved, for example, by showing the need for research in a not yet observed area, the demonstration of contradictory results or by uncovering methodological flaws in previous research. You should do this by adding appropriate citations and examples and not impose any unverifiable claims.

Once you have established the need for research, you should clearly elaborate the goal of your thesis. This is followed by the theoretical implications, which means the formulation of the contribution you will make to the scientific discussion. In general, you can expand the scientific knowledge, integrate two or more research areas or challenge the current scientific knowledge. You should delineate to which scientific discussion you are contributing by mentioning the name of the most important authors and by precisely describing the

contribution. The theoretical implications are followed by the practical implications. Again, you should specify to whom (for example: employees, executives, business or politicians) you will pass that knowledge and which implications you can provide for improving a situation. The introduction should end with a brief statement focusing on how you are making these contributions.

Theory and derivation of hypotheses. In this section you should introduce the main theories to show your hypotheses. Possibly, also important definitions can be inserted, if this is necessary. Generally, however, definitions should always be provided when you refer to a concept for the first time. So, this usually is already necessary in the introduction. The focus in this section is on your arguments for the hypothesized relationships. You have to show that you are able to derive arguments for explaining and justifying your hypotheses based on existing theories and previous findings. Therefore, the justifications formulated here should be well thought out and well-founded. The derivation of each hypothesis should be completed in each case with an explicit and concise formulation of the hypothesis. Often a graphic illustration of all hypotheses contained in your research models helps to get a general overview.

Especially in this part of the thesis you may have to deal with conflicting theories and/or results of previous research and transfer them in a theoretical model/hypotheses. This part of the thesis should be mature and if possible, it should be discussed with your supervisor before you collect empirical data. Otherwise you may notice after the collection and analysis of the data that you forgot important aspects.

Methods. Transparency is crucial in this part of your thesis. You must present your research in a way such that it could be replicated by the reader. For the reader it has to be clear how you have collected your data (show the sample, the study design, the questionnaire, the database, the response rate, the study period and the period of investigation) as well as how you have handled this data during the analysis. For this part applies: In the case of doubt,

better provide a little too much information than too little. Please also refer to the APA guidelines for the necessary content in your methods report.

Results. The results should be presented in a very structured way. It is common that researchers perform a variety of analyses and present only a fraction of them in their papers. Please note: In this part of the thesis you should factually report your results. You should not interpret and discuss your results. A generally good structure for reporting your results is, after restating the hypothesis, report the results of the analyses, which were used to test this hypothesis, followed by a short statement whether the hypothesis has been confirmed or not. Several hypotheses can be processed this way and each hypothesis can be marked with the number used in the theoretical part. If you are insecure about how certain methods and results are conventionally reported (that means which coefficients you need to present how), please refer to the APA Publication Manual.

Discussion. In our experience, there is great confusion about this essential part of a scientific thesis. You should understand this section as an opportunity to promote the factually presented results in the previous part. In other words, you should show here why your thesis is important and should make researchers and/or practitioners to rethink or change their actions. The discussion should begin with a brief summary of the results in just one section. The summary is followed by the theoretical contributions, practical contributions, limitations and future research (the latter two are usually integrated in one subsection). Their order can vary. In the theoretical contribution you should integrate the main results—even those in which a hypothesis has not been confirmed—into the existing literature. This section should contain the theoretical implications that were highlighted in the introduction. But it often has a broader scope and may also include additional points. Also, the practical contribution should be broadly based on the practical implications described in the introduction. Based on these, it should be extended by a complete representation and presented with examples. The section on limitations and future research should include the weaknesses of your work. It is important

that you show an understanding about the statements you can make based on your investigation and which statements you cannot derive. You should therefore also show which future research is required to substantiate your results even better or to put them critically under question.

Conclusion. It may make sense to give a brief summary of the main findings of the thesis (not: a summary of the whole thesis and your approach!). In any case, your thesis should finish with an interesting and concise sentence.

Breadth of Content

With respect to the breadth of content and consolidation (not to the length of the chapters!), the structure of an empirical thesis follows an hourglass shape. Lead the reader at the beginning gently but determined to the topic. Do not introduce cases that are irrelevant to the actual work. Check each sentence on its relevance and value added. Avoid repeating statements. Imagine your introduction as an inverted pyramid in which you narrow down your research question. At the end of the pyramid, the reader must agree with you that your addressed research question needs to be investigated urgently (see the pyramids Principle by Barbara Minto). The subsequent step is limited to the description and the analysis of the data you collected. This is the center of the hourglass. Only in the discussion, the results are again placed in a wider context, and finally the consequences in science and industry are discussed.

Generally, you should focus on the questions and hypotheses that you actually examine in your work. You do not need to describe all the constructs used in the relevant literature but those that are necessary for understanding your work. The constructs should be used consistently in the thesis in line with the terminology used in the literature; do not change these terminologies. Pay attention to the terminology while reading articles in scientific journals so that you can use them properly in your own work.

Plagiarism and Forgery

Your work is a scientific work and must not only comply with a scientific claim with regard to the choice of methods and the logical stringency, but also needs to follow ethical principles in research. Plagiarism and forgery mainly are the scientific "mortal sins".

Plagiarism. Today, we have access to a large number of scientific and unscientific texts such as monographs, articles, Wikipedia articles or even scientific theses through search engines, online databases and online archives. Modern research is differentiated in such a high degree that the probability to find a thematically related article somewhere, is relatively high. Do not be tempted to use individual ideas and formulations from others without an explicit reference to these sources; this is your job. Should you, however, think that the work of another author is relevant, you should refer to it according to the APA guidelines (see above). Furthermore, you can assume that your reviewers use a software to check plagiarism and are proficient in reading scientific literature so that they will see variations in your writing style immediately. By plagiarism you not only disqualify yourself morally from the scientific community. Plagiarism also has serious legal consequences like invalidating the thesis and the (also retroactive) withdrawal of your title.

Forgery. What applies to plagiarism, similarly applies to forgery. You should start early to secure the data collection and the quality of the sample. Do not put yourself under pressure to confirm your hypothesis by all means: unconfirmed hypotheses also provide valuable results. They support the validity of existing theories and shift the focus of further scientific work in a different direction. Therefore, do not try to manipulate your data sources (for example, including false questionnaires, interviews,…) or the evaluation process, or—in the worst case—generate data on yourself. Similar to the plagiarism your reviewers are familiar with empirical data. Furthermore, there are statistical procedures that help to reveal potential irregularities. Of course, we assume that you behave correctly while doing your work. But we want to emphasize at this point that plagiarism and forgery are not a harmless

crime, but destroy the reputation of science. A thesis at a university should be the highlight and not the lowest point of the scientific education.