Guidelines for Scientific Writing

Technology Marketing

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Preliminary Remark

This document aims to give some guidance on how to write a scientific paper (thesis, seminar paper …) in the field of marketing. When supervising and evaluating your work, we assume that you know and follow the present guidelines.

1. General Information

1.1 Use of Literature

We expect you to know and to be able to evaluate the scientific literature on your topic that has been published in relevant journals. Journal-rankings can serve as a guidance on the relevant scientific journals and their recognition within the community. Those rankings are mostly based on the *impact factor*. Basically, this factor measures how frequently articles from a certain journal have been cited. Although we recommend you to use the rankings as guidance, they should be treated with caution. It is up to you to decide how relevant the results from other authors are to your work. Therefore, you should rather evaluate the sources by your own judgment rather than by whom and from which institution it was published. Besides the recommended journals (and rankings), you can also find important research results in recently published dissertations. Textbooks may also serve as an introduction to a topic or as a structuring aid, but they are often outdated and lack in-depth information.

A popular question asked by students concerns the minimum number of references required for a scientific paper. But rather than finding a certain number of articles, it is important that you find the articles relevant to your topic of interest. As mentioned above, this is more likely to be achieved by articles from peer-reviewed journals than with textbook chapters. We do not count the number of pages of your bibliography, however, when evaluating your work, we do check if you have found the relevant and important references in your field of research. Therefore, you should become familiar with the corresponding databases (e.g. EBSCO).

We may give you some basic literature at the beginning of your project to provide you with a brief overview of the topic. Once you have gained a more in-depth insight through additional literature, this original literature may prove to be unnecessary or less relevant. As you are now the expert in the field, this is completely up to your judgment.

As a general rule, the cited literature should be read in its original form. If the original sources are not accessible (anymore), it is allowed to use secondary quotations (e.g. Mueller, 1930, as cited in Schulze, 1990).

Every work you rely on in your text has to be listed in the bibliography. Please do not list any additional sources that you have read, but have not used in your written work at the end. Also, do not cite from Wikipedia or any other "free" websites, but rather search and work with the original sources of information.

1.2 Writing the Thesis

It is advisable to start to structure your work as soon as possible (which may occasionally be adjusted until the last day if necessary). This way, you can make sure that you are able to stringently plan your line of argument. You should definitely consult your supervisor as regards the structure since it serves as a basis for the application of your work.

We also recommend you to start writing at a relatively early stage. One drawback may be that you have to change or remove parts later on when some sections written in the early stage become irrelevant or do not fit to the structure anymore. However, through your writing, you are also more likely to see if your line of thought can be easily followed and if your structuring makes sense.

Concerning language and style, you should bear in mind that spelling, grammar, and formatting errors can leave a bad impression, especially if there are too many. Since you may become routine-blinded after some time, you should get your work checked by others. You will be surprised by the amount of errors they will find in your written work, even though you may have already read and checked it multiple times. It is necessary to allow your friends and colleagues enough time for proofreading your work before you turn it in. It is almost impossible to properly review a scientific paper of over 40 pages within a day!

Keep in mind that you are writing a scientific paper and not a news article or commentary – bloopers, irony, sarcasm and dirty jokes are inappropriate. You can and should maintain your own original writing style as long as you stick to the facts. An academic writing style is distinguished by its clarity. A good writer is able to express and explain complicated contexts in a clear and comprehensible manner. Therefore, convoluted sentences should be avoided. For the same reason, a short (and concise) paper is usually better than a long one.

You will probably include tables and figures in your thesis. Tables, figures and overviews can facilitate reading and have the advantage that not every single number or element has to be explained in detail. However, they still need to be illustrated, related to the context, and referred to in the text. Avoid listing numbers and/ or tables, which are not explained or only fit marginally to the information covered in the text. Interesting additional information or analyses, which cannot be explained in depth, can be moved to the appendix. The appendix should also be kept as short as possible.

Tables and figures should be created by you or adopted from other authors (with the corresponding quotation). It is not acceptable to copy and paste automatic generated tables e.g. from SPSS-outputs. You should edit these tables, so that the reader can conveniently extract the generic information (see APA Publication Manual chapter 2.4 for further details). For empirical studies in general, results should be represented in such a way that the reader is able to understand and to reproduce the applied analyses. Before presenting your main findings, you should also briefly show basic results from pre-analyses – e.g. average values, standard deviation, and psychometric indicators.

2 The Style of Scientific Writing

2.1 Scope of Work (including Cover Page, Bibliography and Appendix)

As a rule of thumb, your work should roughly cover 15 (small) - 20 (large) pages for semester projects, approximately 30 - 40 pages for bachelor theses, and approximately 60 - 80 pages for master theses.

2.2 Formal Structure

Every thesis should begin with the *cover page* (see appendix 1), followed by an *abstract* (see chapter 3.3.1), a *table of content*, a *list of figures*, a *list of tables* and finally a *list of abbreviations* (labelled with Roman numerals up to this point). Your actual text follows next with all the essential tables and figures included in the text (Arabic numerals). The *bibliography* and the *appendix*, if necessary, are attached after the text. At the very end, you should append your signed declaration of originality (see appendix 2).

2.3 Text Format

Use the font *Times New Roman*, font size 12, with a line spacing of 1.5. The page margins should be 2.5 cm, only the left page margin should be sized more generously (4 cm). If you make use of footnotes: These should have the font size 10 and need to be single-spaced.

2.4 Citation

If you did not make any other agreement with your supervisor, you should follow the *American Psychological Association (APA)* citation style. The *APA Publication Manual* is available in the library or at the chair. Even if the manuals are out of stock, there are various sources and aids in the Internet to follow the APA-style. APA's website itself provides a good tutorial, APA-manuscripts, and respective bibliographies as examples to download (APA, 2011).

Reference management software (e.g. *EndNote* or *Citavi*) can facilitate the citation especially when you have to quote a lot of sources.

Please also note the ETHZ "Citation Etiquette":
https://www.ethz.ch/content/dam/ethz/main/education/rechtliches-abschluesse/leistungskontrollen/plagiarism-citationetiquette.pdf

3 Organization of the Thesis

3.1 Structure

We mainly give out projects of an empirical nature. The ideal-typical structure of such an empirical work follows a pre-defined scheme: After a brief *introduction*, the *conceptual and theoretical basis* of the work is explained. On this basis, the *hypotheses* and the *research model* are developed (a model is usually a graphical illustration of the hypotheses or respectively the postulated interdependences). Next, the *empirical study* (a chapter on the *methodology* and a chapter on the *results*) is introduced, followed by the *discussion of the results*. The work is finished with a *conclusion* (respectively final considerations).

3.2 Notes on the Outline

Invest time to structure your work throughout all stages of your work. This will help you to write your paper in a goal-oriented manner. A badly structured paper will hardly achieve a good grade. Most importantly, the outline should be balanced,

i.e. the important chapters should be allowed the appropriate length. This means that the chapters up to the empirical part get longer section by section and the discussion of the results should amount to at least 5-10% of the total text.

With respect to the granularity of the outline, we recommend using a maximum of four sublevels for theses and a maximum of three levels for semester projects. Too many sublevels in the outline will disturb the reading flow.

Please note that sublevels in the outline should not be used if there are not at least 2 of them; in other words, if there is no chapter 3.2.2, chapter 3.2.1 should not exist either. If a higher section level (e.g. 3.1) is followed by a lower one (e.g. 3.1.1), only a brief introduction should be placed under 3.1 and not a text of several pages. Also avoid long outlooks on what occurs in the subchapters; rather try to guide the readers through the subchapters with regard to the content.

3.3 Notes on the individual Chapters

3.3.1 Abstract (or Summary)

Every scientific paper – whether it is a semester project, bachelor , master or doctoral thesis – should start with a brief and concise abstract. It enables the reader to gain a short overview of the entire paper. Its maximum length should not exceed one page. Be sure to write the abstract as results-oriented as possible and not process-oriented (results-oriented: “The study shows, that older consumers attach less value to status symbols than younger consumers”; process-oriented: “A study has been carried out to investigate the importance of status symbols for younger and older consumers.”). Do not use any references or abbreviations in the abstract. Abstracts in relevant journal articles can provide good guidance.

3.3.2 Introduction

The introduction consists of the problem statement (usually 1.1) as well as the aim and structure of your thesis. In the problem statement, you should explain why the topic of your work requires a scientific debate. You may achieve this by emphasizing the importance of the topic from a managerial point of view, for instance, and/ or by underlining to the topic’s actuality in the current scientific debate. Of course, this statement should be backed up with corresponding citations and examples and not simply rely on non-verifiable claims or platitudes. Furthermore,

you have to point out that your research topic has been insufficiently studied (or not even explored, in the extreme case) in prior research. That is, you have to highlight that there is a research gap that you want to close with your work.

After you have justified the need for research, you should clearly define the objective of your thesis. Most of the time, you will not be able to answer all the questions connected to your identified problem and thus you have to narrow down your research question as much as possible. In particular, keep in mind that the achievement of your objectives is the most important criteria for the evaluation of your work. Although you already have to formulate your work's objective in your proposal, you may have to revise it after finishing all the other parts to ensure that you have stated only the objective that you have actually achieved. You may have to delete some paragraphs at the end of your project, although you have put great effort into formulating them. However, it will ensure that your paper contains only appropriate paragraphs and research questions that your final work can actually address.

3.3.3 Conceptual Foundation

Here, you should restrict yourself to the presentation and explanation of used terms and theory. Although it is important to explain and define non-trivial terms, it is normally counterproductive to describe disputes in theories and various definitions over multiple pages, unless your work's subject lies in this field. Otherwise, it is sufficient to depict two to three different definitions of your work's crucial terms and justify choosing one of them. Especially during the writing of this chapter, it is important to keep reminding yourself of your work's objective. It makes it easier to decide, whether it is necessary to include an aspect or to exclude it. Note that your work – a scientific work – should be based on a theoretical foundation. The definition of a term is not yet a theory!

From the presented theories, you should deduce your research model and your hypotheses.

Your research question is addressed within the developed research model and the respective hypotheses. For example, if you wish to address the research question whether younger or older consumers attach more value to status symbols, then you should develop concrete hypotheses based on a scientific theory in this section. For instance, based on the theory of the socioemotional selectivity (Carstensen,

Isaacowitz, & Charles, 1999) – which you should already have explained in the previous chapter – you could deduce (and justify) the hypothesis that older people attach less importance to status symbols than younger people.

In this section it is up to you to show that you are able to derive explanations and justifications from existing theories and previous findings. Thus, the formulated statements here should be well thought out and backed up with scientific facts. Especially in this part of your thesis, you may have to deal with contradictory theories and/ or results from previous research and have to link them with your research model/ hypotheses in a coherent way. This part of your thesis should be largely developed and preferably discussed with your supervisor, at least before collecting empirical data. Otherwise, you run the risk of forgetting important aspects and only realizing it after finishing your data collection and analysis.

3.3.4 Empirical Part: Methods

In this part of your thesis, transparency is of key importance. Your study has to be presented in such a way that the reader can replicate it. The reader should be able to not only see how you acquired your data (description of the sample, study designs, questionnaire, data base, response rate, time frame and duration of the study), but also how you handled it within the scope of the analysis. In case of doubt, you should provide rather too much information than too little in this section of your work.

3.3.5 Empirical Part: Results

In this section of your thesis, you should reflect the aims of your study again before reporting results of all analyses. It is common that researchers run multiple analyses and present only a few of them in their paper. Thus, you should focus and report those results that address your research question and the goal of your study. Please keep in mind that in this section, you should also "merely" report your results – that is, you should not yet interpret and discuss your results.

If you are not sure how to report certain methods and results in a typical way (that is, which coefficient to present in which way), you can look it up in the *APA Publication Manual* (see chapter 2.4).

3.3.6 Results and Discussion

From our experience, this – essential – part is the most confusing one. You should take this section of your paper as a chance to emphasize the significance of your results and therefore the importance of your paper as a whole in order to convince scientists and practitioners to rethink and/ or to change their behavior. Clearly, it makes sense to divide this chapter for these two target audiences accordingly – into a scientific and a practice-oriented discussion.

In the scientific discussion, you should explain how your insights help to close a present research gap and provide new knowledge. Here, you should also discuss unconfirmed hypotheses and/ or results that contradict findings from previous research. This section should also explain to the reader why the present paper helps science in this field move forward. Although you should generally emphasize the interesting aspects of your work in this section, you should also commentate which limitations your thesis has (e.g. methodical limitations).

In the practice-oriented discussion, you should discuss which measures managers and practitioners should take according to your insights.

3.3.7 Conclusion

In the last part of the paper, you should provide a brief summary of the *key results* of your work (*not: a summary of the whole work, that is, your approach!).* This should be followed by references to other works in the same topic area that are related to your work's results for instance, that are based upon these results or close research gaps that your work has left behind.

3.4 Breadth of Content

Regarding the breadth of content and the given emphasis (not the length of each chapter), the structure of an empirical work should have the form of an hourglass. Guide the reader cautiously but determined to the topic at the beginning. Sequentially narrow your topic down to the core, from a rather broad description of the fundamentals, to the formulation of the hypotheses, to a few very precise questions. The next step should be limited to the evaluation of your collected data; only then will the acquired results be applied on a larger scale and eventually the consequences for science and economy can be discussed at large.

3.5 Plagiarism and Falsification

Your work is a scientific work. It should not only meet the scientific standards with regard to the method of choice and the logical stringency, but also follow research-ethical principles outlined in the ETH citation etiquette (appendix). Especially plagiarism and falsification are regarded as scientific "mortal sins".

Please note the "Citation Etiquette": https://www.ethz.ch/content/dam/ethz/main/education/rechtliches-abschluesse/leistungskontrollen/plagiarism-citationetiquette.pdf

3.5.1 Plagiarism

Today, a huge number of scientific and unscientific documents – be it monographs, articles, Wikipedia-entries or diploma theses – are available through search engines, online databases and archives. Modern research is fine-grained to such large extents so that it is very likely that you will find some work, which is thematically similar to yours in many instances. Do not yield to the temptation of appropriating thoughts and wording of others. It is *your* work; if you still think that another one's work is extremely relevant for your study, cite it according to the APA citation style (see above). In addition, you can expect your correctors to be trained in reading scientific literature so well that they can immediately sense deviations and variation in your style of writing. You are not only morally disqualified from the scientific community by plagiarism – plagiarism has also serious consequences for your career as it may lead to invalidity of your thesis and even your title.

Do not take plagiarism lightly. In some cases, we already have noticed a very low sense of guilt among students, whose thesis contained several quotes and sources that were copied one-to-one from the internet or journal articles without correct citation. Please use and indicate citations and sources correctly and accurately.

3.5.2 Falsification

What applies to plagiarism, also applies to falsification. Take care of the origin and quality of your data. Do not put yourself under pressure to see your hypotheses confirmed at all cost: even unconfirmed hypotheses provide valuable results – they support the significance of previous theories and steer the focus of other scientific works in another direction. Thus, do not try to manipulate your data sources (e.g. people filling in questionnaires, interview partner,…) or the evaluation

process, or – in the worst case – to use self-generated data. In a similar way to plagiarism, your correctors are familiar with the handling of empirical data. Furthermore, there are statistical procedures that help identifying any irregularities.

Of course, we generally assume that you behave correctly and appropriately when writing your thesis. However, we want to emphasize at this point that plagiarism and falsification are no peccadillos, but destroy the self-concept of science. In order to better understand the serious consequences of academic misconduct, you may take a look at Reich (2009). For a graduate, a master thesis at the university should represent the highlight and not the rock-bottom of academic education.

References

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Appendix 1

Sample for a cover sheet for a semester project

Title

Semester Project/ Master Thesis

Technology Marketing

ETH Zürich

Professor:	Prof. Dr. Florian von Wangenheim
Supervisor:	Dipl.-Kfm./Psych. ...
Submitted by:	Magdalena Muster
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Date of Submission:	05.09.2014

Appendix 2 (obligatory part of your document)

https://www.ethz.ch/content/dam/ethz/main/education/rechtliches-abschluesse/leistungskontrollen/declaration-originality.pdf

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Declaration of originality

The signed declaration of originality is a component of every semester paper, Bachelor's thesis, Master's thesis and any other degree paper undertaken during the course of studies, including the respective electronic versions.

Lecturers may also require a declaration of originality for other written papers compiled for their courses.

I hereby confirm that I am the sole author of the written work here enclosed and that I have compiled it in my own words. Parts excepted are corrections of form and content by the supervisor.

Title of work (in block letters):

Authored by (in block letters):
For papers written by groups the names of all authors are required.

Name(s):	**First name(s):**

With my signature I confirm that

- I have committed none of the forms of plagiarism described in the 'Citation etiquette' information sheet.
- I have documented all methods, data and processes truthfully.
- I have not manipulated any data.
- I have mentioned all persons who were significant facilitators of the work.

I am aware that the work may be screened electronically for plagiarism.

Place, date	**Signature(s)**

For papers written by groups the names of all authors are required. Their signatures collectively guarantee the entire content of the written paper.