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DEPARTMENT OF FARM MANAGEMENT

PRODUCTION THEORY AND RESOURCE ECONOMICS

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Tips and Tricks for

Preparing a Scientific Thesis

Contents

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TIPS AND TRICKS FOR PREPARING A SCIENTIFIC THESIS

by

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1. Introduction

A scientific thesis prepared to complete an academic degree should show that the candidate is capable of addressing a problem in the field of agricultural sciences, working independently within a specific period and also applying scientific methods. Ideally, this should be a culmination of the candidate's studies, providing an opportunity to creatively apply all that has been learned by combining an interesting question with a certain depth of knowledge to provide an end product which can be useful to others in the field. This ideal, however, does not usually coincide with reality. For some students, the final thesis is seen, even before it is begun, as a huge, almost insurmountable obstacle which during the thesis process seems to become even larger and more difficult to overcome. Nevertheless, the preparation of a final thesis is far from impossible. The preparation of such a scientific work can even be enjoyable, if one remembers to make use of certain tips and tricks.

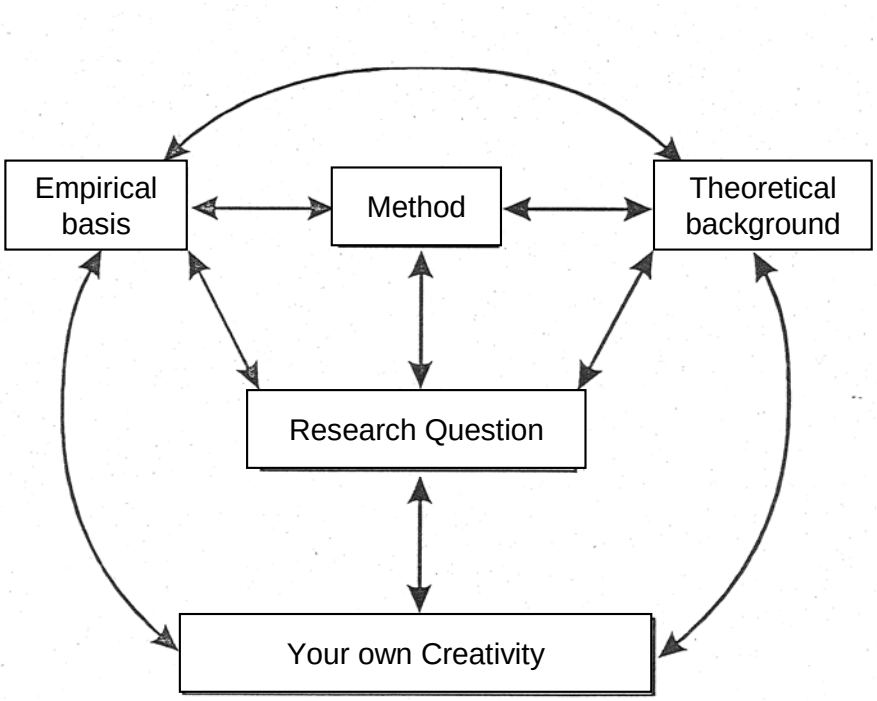
The goal of this paper is to provide some helpful guidelines on this process and to clarify what is expected of a thesis in this field. This information is provided, however, with the caveat that it should not be considered to be the last word on thesis writing, but rather a sampling of the knowledge provided by years of experience in Bachelor and Master thesis supervision.

2. Choice of Topic

The most important criteria for choosing a topic are:

- You should be interested in the topic. Only when you yourself think that the topic is important, will you be motivated enough to work through periods of difficulty. If you have a clear idea of your career plans, it would be advantageous to work on a topic that would be relevant for future work.
- The topic must be manageable, i.e. within the time usually allotted for a thesis it is normally only possible to effectively consider one aspect of large and complex topics; therefore, limiting the scope of your thesis is important. You must be careful to put a limit to what you expect of yourself and the project – you cannot expect to cover everything!

Figure 1: Elements of a scientific work



Source: Own Figure

A common source of difficulty is in making the mistake of picking a topic which is too broad. Although it is good to have a short title, when in doubt it is better to develop a title for your work which is longer, but more specific. (Example of a poor title: “The development of the agricultural sector.” A better title would be: “The development of the agricultural sector in Germany since 1950.” Or better still, an even more clearly defined topic: “The development of the agricultural sector in East Germany under the influence of reunification (1990-1993)”). It should be possible to formulate the topic as a single question. Try it! If you find you cannot state your topic as a clear and understandable question, it is probably not specific enough.

Figure 1 aims to show that the question which forms the focus of the thesis should (in most cases) have an empirical basis, a theoretical background and a methodological framework; aspects which you will bring together using your own creativity.

It is also important to remember that the thesis should answer the questions it poses. Even in science, it can be easy to wander off the path dictated by your topic, but your research question should be thought of as a promise, which must be kept, i.e. a question which must be answered!

The most common mistake in choosing a topic is that of waiting too long before adapting the

topic to what is practically feasible; i.e. allowing the topic to be too broad. The time available for completing the thesis plays a deciding role in deciding the topic; make use of the help and experience of your supervisor to develop a topic which is appropriate.

There is a list of suggested topics offered by our institute (http://www.uni-hohenheim.de/i410a/diplom/master.pdf), which is updated regularly. You are also free to come and talk to us about your own ideas for a thesis topic.

3. Supervision

There are two possible responsible supervisors at the department for your thesis. The topic and context of your thesis should be thoroughly discussed with your supervisor, as well as your outline and work plan.

In order to make your meeting as constructive as possible, it helps to have one (or more) specific topic suggestions and a rough outline (with tentative work schedule) to provide a basis for discussion. These two points will normally be discussed over two meetings with your supervisor; either by attending your supervisor's office hours, or by scheduling an appointment with the department secretary. If you have additional questions, or wish to discuss something further (e.g. the practical possibilities for researching your topic), the department head is at your disposal. In the past, it has proved helpful to have an assistant, aside from the department head, who is available to handle questions. This is usually someone who, through their own research, is involved with the topic and/or is familiar with its context. Please understand, that the assistant can support you only to a limited extent (2-3 appointments.)

4. Review of Relevant Literature

Employing scientific methods includes reviewing the current information available for the topic at hand. As a rule, this means you will be spending extra hours at the university library in order to find out who has previously worked on your topic. This will primarily include reading scientific literature (journals, textbooks, etc.) and, depending on your topic, trade magazines, legal texts or other relevant works. The literature review should be a particularly intensive period of work, done at the beginning of your work on the thesis. It is often practical to conduct this 'reading stage' in parallel with choosing your topic and developing a thesis outline. To have an idea of how long this should take, you have probably read enough literature on your topic when you begin to notice repetitions of important arguments. For a

thesis which includes an empirical part (this applies to most of the theses in the department), you must be careful not to let the time spent reviewing literature to get out of hand, in order to leave sufficient time for your research phase.

It is a good idea to make ongoing records of the literature you read, e.g. make photocopies of particularly interesting articles, or save them on your computer. Make sure to note all bibliographic data.

With current computer-assisted methods of literature research, it is, in principle, also possible to collect too much literature. This is, however, rarely the case. In your thesis you should quote a selection of the most important literature. You should possess and yourself have read any literature you use or quote in your thesis; always avoid quoting "second hand."

The purpose of the literature review is to be able to integrate your own results within the greater context and knowledge available on your topic. Therefore, when writing your discussion, you should include the most important points which arose from your literature review (the bulk of which will be placed earlier in your thesis).

5. Methodology

Within our department, most of the theses employ methods taken from empirical sociological research, statistical methods (e.g. regression models) or programming models. Various methodologies can also be combined. Such standard methods do not need to be described in detail. Assume that the reader has some knowledge of the field and does not need to read for the umpteenth time what the mathematical formula is for a linear programming model. If you are employing standard, widely used methods, it is sufficient to refer to the appropriate articles in which the method is described.

When describing your methods, concentrate on answering two questions:

- Why are these methods appropriate for answering your research questions?
- What 'content' did you use to apply your methodology (databases, special formulas in LP, statistical tests, survey procedure, etc.)?

Ideally, your methodology will be sufficiently described so that the reader would be able to follow the same procedure themselves. Of course, you are also free to use methods which may be a bit out of the ordinary; applying uncommon methods can be particularly interesting and

make the thesis more exciting. In this case, you would also have to clearly describe the basis for your methodology.

The description of your methods is important because it is closely linked to the reliability and validity of your results. Your results are only as reliable as the methodology you used to produce them. If someone were to question your results, a likely objection would be that the methodology applied was not appropriate for answering your research question.

6. Outline and Work Schedule

An outline and work schedule are the two most important elements which help you towards a successful thesis. These should be developed as early as possible. Any thoughts of it being "too early" to plan or that "there is still lots of time" should not be paid attention to! As early as you can, write down a tentative outline of the thesis and when you wish to have certain steps completed. Both the outline and the work schedule should be further developed as you gather more information and your plans become more detailed. This only requires one or two pages at the most and will provide a thread for you to follow as you work.

The work schedule forces you to realize that individual work stages are also subject to a time restriction (as a rule, usually a few weeks). If you discover that you will not be able to keep to the schedule, you must then consider what steps are the least important, or what could/must be shortened. It is a good idea to keep a buffer of 20 -25% in your work schedule, since individual steps will often take longer than planned, meaning that information will not be able available when it is expected. Be prepared for problems; although each thesis is different, there has hardly ever been one in which there were no unexpected difficulties.

7. Presentation

The written presentation is the physical result of your work. Your theoretical considerations may be trailblazing, your model sophisticated, or your results provocative, but if you are unable to appropriately express all this on paper, then all your efforts are in vain. The time required for writing is often underestimated. In order to avoid this, take the time to start writing from the very beginning! You can begin with just key words, and later move on to paragraphs, and then individual sections or chapters. Do not be afraid of writing rough drafts. Whatever already exists on paper, or saved on file, can be easily improved or further

developed. A final draft of your thesis is written much more easily and quickly when you already have earlier drafts to work from than if you try to write from scratch.

Try to formulate your text so that it flows. It is particularly important to try to be as clear and concise as you can. Normally, scientific texts use a rather matter-of-fact style. Nevertheless, you should feel free to converse with your reader. When in doubt, it is more important to be comprehensible and precise than to express yourself elegantly.

Introductions (at the beginning of the thesis and at the beginning of each section) and transition paragraphs (at the end of a section) to bridge the gap between sections, can greatly help the reader follow the train of thought, clarifying why the current point is important and what points are to follow.

Statements which are not clearly reasonable must be proven; this is normally done by presenting the main arguments for the statement given. It may also be necessary to provide reference literature here.

Tables and figures should be provided to further clarify necessary points and should be possible to understand without additional text (i.e. stand on their own). This is achieved by providing an appropriate title and legend. The data source should also be given, e.g. “source: own data.”

Figures should be used sparingly; they are characterised by a lower density of information compared to tables and can require (in spite of modern software) a lot of work. However, for particularly important results which you wish to emphasize, the use of a figure can be a good idea. You should note, however, that figures can also be used to manipulate results; make sure you avoid presenting misleading figures, for example, graphs with axes which are not proportional or to scale.

The abstract of your thesis should contain the fundamental results. An abstract is not normally more than two to three pages, while the entire thesis can be between 30 and 80 pages, depending on the type of thesis. A Bachelor thesis should consist of about 30 pages, while a Masters thesis should be longer, about 60 to 80 pages. Of course, there are always exceptions, but theses which are overly long (over 100 pages) are often very redundant or contain

unnecessary text. Parts which are unnecessary are those which do not directly contribute to the topic at hand, but rather just aim to make the author look smart.

An important rule to remember is: never hand in a thesis which has not been proof-read by at least one other person. If possible, it is often helpful to have your thesis read by several other people (also those who are not familiar with the field). Grammatical or spelling mistakes, sentences which are not clear and other errors will distract the reader from your work. You should also check for technical errors; missing pages, figures which are upside down, mistakes in numbering and similar faults can be easily avoided with a bit of effort.

The layout of your thesis forms the first impression. There are no guidelines given for the text layout, so you must decide this yourself. Be careful to choose a font(s), font size, spacing and headings/footnotes that will make your work something which is easy and pleasant to read. This can be easily done by following the example of texts that you yourself like. The layout of the text you are reading now is one option. For the title page and formal declaration at the end of the work, there is an obligatory format which can be found here: https://pruefungsamt.uni-hohenheim.de.

The format for your citations should be uniform throughout the text, and the bibliography should be complete and without errors. A complete bibliographic listing should include the name of the author (including first name or initial), title, location of publication and publication year for books, and for journal articles the page numbers should be provided. The literature which is given in your bibliography should be cited within the text of your thesis, and of course, all cited literature should be in found in your bibliography. Literature in the bibliography should be listed alphabetically, by the name of the author. Quotes which are taken directly from another text have to be indicated by quotation marks, along with the page number of the original text. If we find in your thesis a case of plagiarism (e.g. one direct quote taken from a publication or the Internet without clear indication of this) your work will be graded with an F (=fail). Be careful to leave yourself enough time for writing the conclusion and formatting the layout of your thesis, as these tasks often take much longer than planned.

Do not to underestimate the importance of such details in formatting. Citations which are sloppy or inconsistent will lead the reader to think the same of the rest of your work (for example, in your calculations or results).

8. Conclusion

There is hardly another opportunity like writing a thesis conclusion for further developing and displaying your own creativity and intellect. The tips and suggestions we've already mentioned can help you to make the most of this; to write a successful thesis and, what is also important, to enjoy and take pride in your work.

9. Examples of Bibliography Listings

The following list should serve as an example of how to put together your own bibliography. However, the format shown here is not obligatory. What is most important is that, whichever format you use, your bibliography and citations are consistent.

Single Volume

Last name, first name, [where applicable further names] (Year): Title, Edition [only 2nd Edition or later]. Publisher, City, number of pages.

Example:

Dabbert, S., Häring, A., Zanoli, R. (2002): Politik für den Öko-Landbau. Eugen Ulmer Publishing, Stuttgart, 125 p.

Collected Works (Books and Series)

Last name, first name, [where applicable further names] (Year): Title. In: Last name, first name [where applicable further names of editors] (Eds.): Title of publication, [where applicable name and edition of series]. Publisher, City, Country [if abroad], p. xx-yy.

Examples:

Dabbert, S. (2001): Das agrarökonomische Paradigma: Basis für erfolgreiche Forschung im neuen Jahrhundert? In: Isermeyer, F., Böttcher, J., Kalm, E., Otte, A., Werner, W. (Eds.): Glanzlichter der Agrarforschung. Bilanz internationaler Top-Ereignisse des Jahres 2000, agrarspectrum 33. DLG-Verlag, Frankfurt am Main, p.115-121.

Vogel, T., Dabbert, S. (2001): Analyse von Schutzprogrammen in Brandenburg und Mecklenburg-Vorpommern. In: Kratz, R., Pfadenhauer, J. (Eds.): Ökosystemmanagement für Niedermoore: Strategien und Verfahren zur Renaturierung. Verlag Eugen Ulmer, Stuttgart, S.265-279.

Dabbert, S., Kilian, B. (2002): Ökonomie. In: Werner, A., Jarfe, A. (Eds.): Precision Agriculture: Herausforderung an integrative Forschung, Entwicklung und Anwendung in der Praxis. Tagungsband Precision Agriculture Tage, March 13-15, 2002 in Bonn. KTBL-Sonderveröffentlichung 38. Kuratorium für Technik und Bauwesen in der Landwirtschaft (KTBL), Darmstadt, p.423-446.

Dabbert, S. (2003): Organic Agriculture and Sustainability: Environmental Aspects. In: Organic Agriculture: Sustainability, Markets and Policies. Proceedings of the OECD Workshop on Organic Agriculture, Washington D.C., September 2002. CABI Publishing, Wallingford, United Kingdom, p.51-64.

Contributions to Conference Proceedings

Last name, first name, [where applicable further names] (Year): Title. In: Last name, first name [where applicable further names of editors] (Eds.): Title of conference proceeding. City, Country [if abroad], p. xx-yy.

Examples:

Dabbert, S. (2001): Der Öko-Landbau als Objekt der Politik. In: Reents, H.-J. (Eds.): Beiträge zur 6. Wissenschaftstagung zum Ökologischen Landbau. Freising-Weihenstephan, p.39-43.

Dabbert, S., Zanoli, R., Lampkin, N. (2001): Elements of a European Action Plan for Organic Farming. In: Organic Food and Farming, Towards Partnership and Action in Europe, Mai 10-11 2001, Proceedings. Copenhagen, Denmark, p.149-161.

Articles in Journals, Magazines, etc.

Last name, first name, [where applicable further names] (Year): Article Title. Journal title, Issue (instalment number), p.xx-yy.

Examples:

Kächele, H., Dabbert, S. (2002): An economic approach for better understanding of conflicts between farmers and nature conservationists – an application of the decision support system MODAM to the Lower Odra Valley National Park. Agricultural Systems 74 (2), p.241-255.

Röhm, O., Dabbert, S. (2003): Integrating Agri-Environmental Programs Into Regional Production Models: An Extension of Positive Mathematical Programming. American Journal of Agricultural Economics 85 (1), p.256-267.

Dabbert, S., Häring, A. (2003): Vom Aschenputtel zum Lieblingskind. Zur politischen Förderung des Ökolandbaus. Gaia 12 (2), p.100-106.

Private Publication

Last name, first name, [where applicable further names] (Year): Title, Edition [only 2nd Edition or later]. Department, University, City, number of pages.

Example:

Billen, N., Arman, B., Häring, G., Sprenger, S. (2002): Der heimliche Verlust der Bodenfruchtbarkeit – Ein Schlüssel zur ökologischen und betriebswirtschaftlichen Bewertung von Bodenerosion und Schutzmaßnahmen für Landwirte und Beratung, 2nd, reworked edition. Department of Farm Management, University of Hohenheim, Stuttgart, xxx p.

Research Reports (not officially published)

Last name, first name, [where applicable further names] (Year): Title of report, addressee of report, City, number of pages.

Example:

Dreier, M., Sladek, C., Lippert, C. Köbler, M. (2000): Endbericht zum Forschungsauftrag „Preisliche Anreize zum Ausgleich positiver externer Effekte: Praktische Beispiele in ländlichen Räumen“ an das Bundesamt für Bauwesen und Raumordnung. Referat I 4 - Wirtschaft und Gesellschaft, Bonn, 71p.

Other Sources

[Article in newspaper, broschures, etc.]

Example:

Häring, G. (2001): Von Heumachern und "Börsenspekulanten". Article in the Hohenloher Zeitung on July 19, 2001, p.xx.

Internet Sources

Last name, first name, [where applicable further names] (Year): Article Title, publishing institution, date of retrieval, internet address, number of pages.

Example:

BMELV (2006): Verbesserung der Lebensmittelsicherheit – Das Reformpaket des BMELV. Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz, Berlin. December 19, 2006. URL: http://www.bmelv.de 232 p.

Legal Sources

Example:

Regulation (EG) Nr. 1493/1999 of the Council, on May 17, 1999 on the common market organisation of Vienna. In: ABl., L179 as of 14.07.1999, p. 1.

Verbal Communication

Name, Vorname: Daten. - Form. - Ort und Anlass. - Datum. - Evtl. Hinweis auf Ort einer geplanten Veröffentlichung

Beispiel:

Walter, S. (2001): Mündliche Mitteilung an die Verfasserin vom 20.01.2001. Statistisches Landesamt, Stuttgart.

Meier, A. (2001): Daten über Deckungsbeiträge. Hofgut Meier, Stuttgart. Unveröffentlichte Daten.

10. References

Brink, A. (2005): Anfertigung wissenschaftlicher Arbeiten: ein prozessorientierter Leitfaden zur Erstellung von Bachelor-, Master- und Diplomarbeiten in acht Lerneinheiten. 2. völlig überarb. Auflage. Verlag Oldenburg, München/Wien/Oldenburg. 246 S.

Corsten, H., Deppe, J. (2002): Technik des wissenschaftlichen Arbeitens: Wege zum erfolgreichen Studium, 2. völlig überab. Auflage, Verlag Oldenburg, München/Wien/Oldenburg. 118 S.

Grieb, W. (2004): Schreibtipps für Diplomanden und Doktoranden in Ingenieur- und Naturwissenschaften, 5. Auflage. VDE Verlag, Berlin/Offenbach. 272 S.

Karmasin, M., Ribing, R. (2006): Die Gestaltung wissenschaftlicher Arbeiten: ein Leitfaden für Haus- und Seminararbeiten, Magisterarbeiten, Diplomarbeiten und Dissertationen. Facultas Verlag, Wien. 140 S.

Kropp, W., Huber, A. (2006): Studienarbeiten interaktiv: erfolgreich wissenschaftlich denken, schreiben, präsentieren. ES –Erich Schmidt- Verlag, Berlin. 175 S.

Theisen, M.R. (2006): Wissenschaftliches Arbeiten: Technik-Methodik-Form, 13. neu bearb. Auflage. Vahlen Verlag, München. 300 S.