

Master Thesis Requirements

Depending on the type of thesis you write, there are different expectations as to what you should be able to do or be willing to learn for the thesis. There are, in principle, three main types of thesis: (1) a literature review, (2) an empirical analysis based on quantitative data, or (3) a case study based on one or a few exemplary cases.

1. Literature Review

Do not underestimate the difficulty of gathering, structuring, and presenting the information required to answer your research question in a literature review in a sophisticated way. You can find a detailed description on how to approach a literature review in the “ScientificPaperGuide” Document.

2. Quantitative Data Analysis

You are expected to be able to do the following things when working with quantitative data:

- The goal of your thesis is to provide a robust explanation for an assumed relationship. There are two common mistakes: (1) Discussion of trivial statistical issues: Avoid discussing relatively trivial statistical issues in too much detail. This section should not remind the reader of a textbook for introductory econometrics. (e.g. discussing homoskedasticity, heteroskedasticity, and how robust standard errors can correct heteroskedasticity in detail. Instead, in most cases, one sentence that states you are using robust standard errors to account for heteroskedasticity in your data suffices.) (2) Similarly, avoid being too technical. For example, you should be aware of the main assumptions of your estimation method (e.g. Gauss-Markov-Assumptions for ordinary least squares), but you should not discuss them in detail. Instead, focus on questions pertaining to your research question and data specifically. (e.g. is there a differential effect that may be important for the understanding of the data? If so, then running an additional analysis with an interaction term may be helpful to increase our understanding. Or, does the data have strong outliers that may drive the results? If so, then winsorizing the data or removing the outliers may be valuable.) Remember, the goal is to convince the reader that your findings are valid and that you thought thoroughly about your research question.
- Provide (1) useful and comprehensive descriptive statistics (mean, standard deviations, minimum, maximum, etc.), (2) a correlation table, (3) figures and graphs that help illustrate your data, (4) run t-tests, and (5) simple multivariate regression analysis. This usually requires the use of a statistical software package (preferably Stata) to analyze your data. Below you find some information about learning resources that help you utilize statistical software.

- You should also include an extended discussion after your main analysis. Here you want to elaborate and show why your main findings are valid, how they fit in with the literature, why you find consistent or maybe conflicting results with previous studies and if so, describe some reasons why you find conflicting results (e.g. differing samples, study designs, etc.). This entails asking yourself questions, such as (1) what are possible reservations and criticisms readers might have, and how can they be addressed, (2) what are potential limitations of my analysis (such as endogeneity, omitted variables, etc.) and how may these limitations be addressed (e.g. through better data, robustness checks, or different analysis techniques), (3) what tests would increase the robustness of the main finding, or increase the understanding of the main effects (e.g. interactions or split sample analysis), and (4) are there possible alternative explanations for the findings?

Depending on whether you gather your own data or whether you work with an established dataset, the expectations toward your analysis are different. If you work with an available dataset, the main focus of your thesis is the analysis of this data. Thus, your analysis should not only include the main effects that you want to analyze, but also possible moderating effects (e.g. through interactions, or split samples analysis), as well as some robustness checks to better understand your data.

If you gather your own data or have to spend a substantial amount of time to prepare the data for analysis, then your analysis may be simpler, but your thesis should still include some simple multivariate regression analysis. Keep in mind that it takes a considerable amount of time to gather data, so you should start your data gathering process as soon as possible.

For empirical data analysis (with Stata software), the following references may be helpful.

Literature:

- Angrist, J. D., & Pischke, J. S. (2014). *Mastering'metrics: The path from cause to effect*. Princeton University Press.
- Hassler, U. (2009). *Statistik im Bachelor-Studium: Eine Einführung für Wirtschaftswissenschaftler*. Springer.
- Winker, P. (2007). *Empirische Wirtschaftsforschung und Ökonometrie*. Springer.
- Wooldridge, J. M. (2015). *Introductory econometrics: A modern approach*. Nelson Education.

Practical:

- Cameron, A. C., & Trivedi, P. K. (2010). *Microeconometrics using stata* (Vol. 2). College Station, TX: Stata press.
- STATA USER'S GUIDE: <https://www.stata.com/manuals/u.pdf>
- STATA Software – help function
- STATA YouTube channel: <https://www.youtube.com/user/statacorp>

3. Case Study Theses

Case studies are based on a few exemplary cases (max. 8 cases), possibly only one case, where you have good access to information. Getting access to valuable information may, however, be quite challenging. A good opportunity for this type of thesis could be an internship at a company. Alternatively, you may know several entrepreneurs that you are able to interview, or you may have access to other sources that provide interesting information about companies (e.g. through their social media). Below you find some information about learning resources for case study analysis and software tools that you may find helpful. Keep in mind that it takes a considerable amount of time to gather data, so you should start your information gathering process as soon as possible.

Case study research consists of an intensive analysis of one (single) or more cases (multiple cases) by utilizing one or (ideally) more sources of evidence such as interviews, documents, and statistics. A case study design is ideal when: (a) the focus of the study is to answer “how” and “why” questions; (b) you cannot manipulate the behavior of those involved in the study; (c) you want to cover contextual conditions because you believe that they are relevant to the phenomenon under investigation; or (d) the boundaries are not clear between the phenomenon and context. It can be used to describe, explore, or explain a particular phenomenon. Its primary units of analysis are cases, i.e., phenomena occurring in a relatively bounded, real-life context. These can range from individuals, organizations, projects, products, sectors, cities, nations, policies, relationships, communities, strategies, networks, et cetera. The primary unit(s) of analysis can be conceptualized and analyzed either as a single entity (holistic case study design) or as embedded in another unit (embedded case study), such as an employee as part of a team or a business unit as part of the firm.

A case study may be based on a research question that is an extension of the existing literature or based on a typology that is derived from the literature. In this case, the main challenge (other than getting the information) will be to connect your case to the literature, which can be quite difficult and thus, should not be underestimated.

Alternatively, you may want to investigate a more exploratory question, where research in the literature is not yet well established. However, it is extremely difficult for a student to judge whether a particular research question has not yet been addressed and to identify a clear research gap for exploration. For this reason, if you have an idea for a case study that is more exploratory in nature you should consult your supervisor, as to whether the question you want to address really is not yet established in management literature or what research streams may be relevant for the question you want to address.

Given that you have only a few months to conduct case study research, the expectations from your thesis are focused on the consistency of the research design rather than merely on the novelty of the findings. In particular, a well-conducted case study should maintain a logical link between the research question(s), theoretical framework, data collection, analysis, and findings. In this regard, it is mandatory for students to establish the quality of their case study research by using the standard quality criteria of validity and reliability.

Tips and suggestions for master's students:

- Identify the type of research question(s) that you are going to investigate: is it a 'how' or a 'why' research question?
- Define the purpose of your case study research: Are you looking to describe, explore, explain, or compare cases? Do you seek to develop a new theory or to test a well-established theory?
- Identify your case(s) and how you are going to analyze them, i.e., as embedded, or holistic units?
- Choose the most informative case(s), i.e., case(s) that you have access to; for instance, if you have done an internship (Praktikum), you may consider studying the organization you have done your internship with.
- Start your data collection as soon as you have identified the case(s) that would like to investigate.
- Start your data analysis immediately after you have conducted your first interview or gathered your first round of documents.
- Use an interview protocol to conduct interviews.
- Develop a coding scheme to analyze interviews and/or documents as early as possible.
- Choose your data analysis strategy: is it going to be grounded theory, template analysis, or mixed-method analysis?
- Choose a Computer-Aided Qualitative Data Analysis Software (CAQDAS) such as NVIVO, MAXQDA or RQDA (free open source) to analyze your qualitative data.
- Use multiple sources of evidence as this increases data credibility and eliminates bias.
- Organize your data: create and maintain your case study database regularly.
- Keep notes and memos of the data collection and analysis process.
- Use a set of quality criteria (reliability, construct validity, external validity, or internal validity) to ensure that your case study analysis produces reliable findings.

General References for Case Study Research:

- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, 13(4), 544-559.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, 14(4), 532-550.
- Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative inquiry*, 12(2), 219-245.
- Gray, D. E. (2019). *Doing Research in the Business World (Chapter 11: Designing Case Studies for Business)*. Los Angeles: Sage Publications.
- Mills, A. J., Durepos, G., & Wiebe, E. (Eds.). (2009). *Encyclopaedia of Case Study Research*. Los Angeles: Sage Publications.
- Stake, R. E. (1995). *The Art of Case Study Research*. London: Sage.
- Yin, R. K. (2017). *Case Study Research and Applications: Design and Methods*. Sage publications.

References for collecting primary and secondary data for Case Study Research:

- Interviews:
Gray, D. E. (2019). Doing Research in the Business World (Chapter 15: Interviewing). Los Angeles: Sage Publications.
- Documents:
Gray, D. E. (2019). Doing Research in the Business World (Chapter 19: Unobtrusive Measures). Los Angeles: Sage Publications.
- Questionnaires:
Gray, D. E. (2019). Doing Research in the Business World (Chapter 14: Questionnaires). Los Angeles: Sage Publications.
- Surveys:
Gray, D. E. (2019). Doing Research in the Business World (Chapter 10: Designing Descriptive and Analytical Surveys for Business). Los Angeles: Sage Publications

References for analysing primary and secondary data for case study research:

- Qualitative data analysis:
Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative sociology*, 13(1), 3-21.
King, N. (2012). Doing template analysis. *Qualitative organizational research: Core methods and current challenges*, 426, 77-101.
- Quantitative data analysis:
Byrne, D. (2002). *Interpreting Quantitative Data*. Los Angeles: Sage.

References for evaluating and assessing the quality of case study research:

- Gibbert, M., Ruigrok, W., & Wicki, B. (2008). What passes as a rigorous case study? *Strategic Management Journal*, 29(13), 1465-1474.
- Yin, R. K. (2017). *Case Study Research and Applications: Design and Methods*. Sage publications.

