

TU-E0100 - Research Assignment D

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WHAT IS THIS COURSE ABOUT?

When reading research articles, consultancy reports, or news articles that summarize research, how can you judge if you should trust their findings? Relatedly, what do you do when faced with conflicting or ambiguous findings? When tackling an organizational problem, how can you design an empirical study that leads to reliable and valid findings and informs your decision-making? This course aims to help you (1) understand the basic aspects of research design, (2) assess how research results are produced, and (3) evaluate the credibility of empirical evidence. Therefore, during the course, you will learn the basics of how to produce and evaluate empirical evidence, which aspects you should pay attention to when analyzing the credibility of research, and most importantly, why you should do so.

Research assignment is an empirical assignment on a research topic in the fields of strategy, operations management, and organization design and leadership done in groups of students. The exact number of students for each group will be communicated during the first lecture. This course provides you with an introduction into the research methods used in Industrial Engineering and Management research, and aims to help you write a Master's thesis that meets the required academic standards.

This course will expose you to the process of doing actual Industrial Engineering and Management research. This process may be different – at least more rigorous – than what you have experienced in previous assignments. The main idea is to show you the reasoning process in academic research, i.e., how an academic argument is built and how the empirical data (together with the related theory) is used to back up such argument. Engaging in this process will improve your ability to understand what makes an empirical research credible judged by academic standards, which is an important benchmark to help evaluate empirical research in general. In other words, we do not concentrate only on teaching you a set of tools for carrying out a specific type of research. Rather, we aim to equip you with frameworks for thinking about and evaluating empirical research, give you the “big picture”, and let you point out issues that can diminish the credibility of research (but are not necessarily self-evident to see).

If (and for most students when) you choose to have a career outside academia, it is unlikely that you will follow academic research process again in your day-to-day job. However, professional knowledge workers often need to conduct more or less formal research to analyze situations and conditions, to solve problems and to design effective solutions. Also, understanding the reasoning process should make you a more conscious consumer of empirical research – be it done by practitioners or academics.

FOR WHOM IS THIS COURSE?

This course is primarily intended for master's students in the Industrial Engineering and Management Master's Program. We recommend that you complete the compulsory courses of your major before you take this course. This course fits best in the first spring or second autumn of your master's studies. To be able to deliver a good research assignment, you need a thorough

understanding of the related research and organizational contexts, which can be demanding without knowing the basics.

WHEN IS THIS COURSE ARRANGED?

The course is offered twice a year, one in the fall semester and the other in the spring semester. Each course is composed of a set of introductory lectures and a research assignment. Introductory lectures cover the practicalities of the course, some generic issues regarding the reasoning in scientific research, and basics of quantitative and qualitative data analyses. The purpose of these lectures (together with related readings) is to give you the very basic understanding of how to conduct a research assignment properly. We also discuss the design of case studies and qualitative research and introduce the key issues in collecting data and carrying out empirical analysis. Therefore, you are supposed to take the introductory lectures *before* you begin to do your research assignment. The exact schedule will be updated on MyCourses.

THE PROCESS OF CONDUCTING A RESEARCH ASSIGNMENT

ENROLLMENT

We may have to limit the number of participants we can take. If you are studying in DIEM or Information networks, or the course is compulsory for you according to a study guide you are following, you are free to attend and the only thing you need to do is to enroll via MyCourses before the course begins. If the course is not compulsory for you (and you are not a DIEM or Information Networks student), please drop a line to the course instructor and briefly state your background, motivation, and qualifications to take this course.

LECTURES

Please note that attending the lectures is highly important to deliver a successful research assignment and to pass the course. The examination is composed of sets of post-class questions, for which you need to submit the answers via MyCourses. All sessions have required pre-reading documents and post-class questions.

- Attending the lecture means that you are present in class, have read the set of pre-reading materials before the session, and understand the contents well enough to be able to discuss it.
- After the class, you will need to answer a few post-class questions and return the document the night before the following class.

Pre-reading materials and post-class questions will be posted on MyCourses.

FINDING A TOPIC

We will provide you a list of available topics before the first lecture starts on MyCourses. These topics are usually related to the existing research projects, provided by our faculty members, and are all pre-screened to be suitable for research assignments. It is important that you understand what the topic is and what the related requirements are before you commit yourself to take it. Especially, if the topic requires you to get access to a particular dataset or to create a new dataset, you should agree beforehand how the access is organized and who (and under which conditions) can use the data. For some projects, you may need to sign a non-disclosure agreement to access the data.

You can also suggest your own topic as long as your topic entails an interesting research question (from a theoretical standpoint) and it is in the domain of the three majors of DIEM-program: strategy, operations management, and organization design and leadership. In such case, you need to find yourself a faculty member who is willing to guide your work. We do not necessarily refuse a company project to be a research assignment topic, but in general, we advise against it. Based on our experience, there is easily a conflict of interests between satisfying the company client and the academic requirements of the course. In any case, the project has to be conducted according to academic standards and have a research question that raises theoretical interest. If you need to get credits based on the work or reports you did during your previous summer jobs, consult your study guide how to get credits from practical training.

We are also open to research assignments on a topic that is related to your Master's thesis, and research assignments that utilize empirical data collected while writing your thesis. For instance, analyzing your data from a different perspective would be one possible option. However, there are some limitations:

- 1) We do not want that writing your research assignment on the topic related to your thesis conflicts with your thesis in any way causing extra work for the person who is guiding your thesis. Therefore, before proposing such topic, please contact your thesis supervisor and make sure that she or he finds the arrangement acceptable. We are not going to accept the topic unless it is approved by your thesis supervisor.
- 2) Please note that you cannot use the same text both in your thesis and in your research assignment.
- 3) The research problem you are addressing must still be related to academic research in the fields of strategy, operations management, or organization design and leadership and have some theoretical interest for the academic community.

If you are not choosing one of the topics provided by us, please contact the course instructor in your major as soon as possible.

QUANTITATIVE STUDIES: STATA AND SPSS

Quantitative topics require you to analyze data statistically, which means that you will need to use statistical software like STATA or SPSS, which are available at Aalto University. You are also free to use other software (e.g., R is a popular choice for students) if appropriate for the analyses you need to perform.

STATA: There are many excellent tutorials on how to get started with Stata. For instance, first two chapters of the Web-book "Regression with Stata. UCLA: Academic Technology Services, Statistical Consulting Group." <https://stats.idre.ucla.edu/stata/webbooks/reg> is a good starting point. As Aalto University students, you can download and install STATA MP on your own computer from <https://download.aalto.fi/>. STATA is also available on the computers in the TUAS computer room.

SPSS: There are many excellent tutorials on how to get started with SPSS. For instance, there are books available but also numerous websites, such as <http://www.spss-tutorials.com/basics/> which provide a good starting point. SPSS is available on the computers in the TUAS computer room and also, you can get it from the IT service.

R is a free software and can be downloaded at <http://www.r-project.org>.

QUALITATIVE STUDIES: ATLAS.TI SOFTWARE

Atlas.ti software is a good default choice for your qualitative analysis. For a brief overview of Atlas.ti –features, please read the two-pager from Sage Qualitative Research Dictionary: <http://srmo.sagepub.com.libproxy.aalto.fi/view/the-sage-dictionary-of-social-research-methods/n8.xml>

Atlas.ti is available at Aalto University. Students and personnel can download it also to their home computers at Aalto Download. See the bottom of page at <https://download.aalto.fi/student/index.html>

THE RESEARCH PLAN

We require you to provide a research plan before beginning the data collection (or analysis part) of the research assignment. The idea of the research plan is to be a feasibility check for your study. In case you have chosen an approach that has some serious methodological flaws, it is better to find that out before you spend much of your time doing work that might turn out to be useless for your study.

It is more effective and efficient to follow the generic structure of a published research paper when writing the research assignment. Sometimes we needed to ask students to re-write a research assignment because the structure was not adequate. Moreover, using a published study from a high-quality journal as a "template" can serve as a checklist for what kinds of analyses need to be performed and reported. For this reason, we require you to choose one published empirical paper in a high-quality journal that you want to use as a "template" for your research assignment. Choose an article with research methodology similar to your topic.

The research plan does not have to follow any specific format or length. In general, 3-5 pages of text might well be enough. At the minimum, the research plan should include:

A) Deductive studies

1. Brief literature review on why this study is interesting in current literature (3-4 paragraphs are enough)
2. The specific Research Question

3. Justification of the Hypotheses
4. Research design. Which methods used?
5. Description of variables and measures
6. A schedule with milestones and preliminary dates for guidance sessions
7. References

B) Inductive studies

1. Motivation for the study
2. Key concepts, very brief background on the topic
3. Research question(s)
4. Methodology
 - a. Research context, research design and unit of analysis
 - b. Data collection plan
 - c. Analysis plan
5. A schedule with milestones and preliminary dates for guidance sessions
6. References

Please understand that the more detailed research plan you provide, the easier it is to assess and the more relevant comments you are likely to receive. Please note that your research plan must be approved by the topic provider (or course instructor) prior to proceeding to data collection or analysis.

The deadline of the research plan will be announced during the first lecture.

THE RESEARCH ASSIGNMENT

Because research assignments are done on various topics using different methods, there is no one structure that suits for all possible topics. Qualitative and quantitative studies tend to emphasize different aspects in reporting empirical evidence. Thus, we advise you to follow the structure of a published "template" article when conducting your research assignment.

Length of research assignments. We do read your research assignment when grading it, and we care about its rigor, not the length. Since adding pages of nonsense or off-the-topic-text is definitely not going to improve your grade, we set a limit of maximum of 5000-6000 words (this translates into approximately 15-20 double-spaced pages) for the content of your assignment (excluding your reference, table, figure, and appendix). We appreciate high-quality writing and argumentation and therefore recommend compact forms of writing (i.e., good writing requires rewriting!).

Guiding. The topic provider and/or the course instructor will help you frame the research question for the assignment and get familiar with the *content* of the topic (e.g., recommending

papers that would be especially worth reading for a short literature review). The course instructor can help you if you want to discuss issues regarding research methods or the structure of your study at the general level.

You will receive feedback on your research plan from your topic provider and/or course instructor in the mandatory guidance meeting. In addition to receiving feedback on your research plan, you can also ask for optional guidance meetings to the topic provider and/or course instructor on the draft of your research assignment. This optional guidance meetings will be available upon request by making appointment with the topic provider and/or course instructor. However, please do not expect to receive any comments by one-day notice. The easiest way to book an optional meeting is to plan it ahead at the research plan stage or at least, submit the draft to the topic provider and/or course instructor way before you want to receive feedback.

GRADING

The final grading will be a weighted average of the grades of post-class questions and the research assignment. The weights are as follows:

- 40% for the post-class questions (individual grade)
- 60% for the research assignment (group grade)
 - 50% for the research assignment report
 - 10% for review of another research assignment report

The post-class questions and research assignment will be assessed on a 0-5 scale. You must submit all six post-class answers and get an accepted grade (minimum 1) for all of them. Post-class questions submitted after the deadline (i.e., before we uploaded the feedback on MyCourses) are automatically penalized by 1 grade. If you want to submit your post-class questions after the deadline with a deduction of 1 grade, it should be done BEFORE we upload the feedback on MyCourses. Grade will be round up if the decimal is 0.5 or higher (e.g., 3.4 will be a 3 and 3.5 a 4).

The group grade will be based on the merits of the research assignment report. While the guidance meetings will be provided by the topic provider and/or the course instructor, the grading of the research assignment will be done by the course instructor. The main question for grading will be: "Are the claims made in the study credible, generated using a coherent methodological approach and supported empirically?"

Only the final version of the research assignment will be graded and we do not accept any resubmissions. In other words, if you receive, say, the grade 2 for the final research assignment, we do not allow you to resubmit a newly improved version to be graded.

You should consider the submitted version as a chance to convince us that you can apply scientific knowledge and understand empirical research in the fields of strategy, operations management, or organization design and leadership. Even though we recommend that your research assignment report to follow a structure of a scientific paper, there are some issues and differences that we emphasize in grading: The research assignment is an empirical

assignment; thus, the methods, results and conclusions sections will have the greatest impact on your grade. However, in order to get a top grade, there are expectations on the quality of the introduction and theory sections as well. Following are the specific evaluation criteria for grading the research assignment.

- In the introduction, we are going to check how well you motivate your study (why your research question was worth studying in the first place and whether you have raised a clear research question that contributes to the literature). An effective introduction answers the following sets of questions: "(1) Who cares? What is the topic or research question, and why is it interesting and important in theory and practice? (2) What do we know, what don't we know, and so what? What key theoretical perspectives and empirical findings have already informed the topic or question? What major, unaddressed puzzle, controversy, or paradox does this study address, and why does it need to be addressed? (3) What will we learn? How does your study fundamentally change, challenge, or advance scholars' understanding? (Grant & Pollock, 2011:873)"
- The theory section does not need to be as extensive as in published papers; keep it lean but purposeful. We do not expect an extensive full review of the relevant theories and empirical research conducted on the topic. We will be assessing how you define concepts, lay out basic assumptions and core argument of your theoretical framework, justify your claims and, if appropriate, deduce and develop the hypotheses in a logical way.
- The methods section is one of the important parts of your assignment. We will check how you justified and reflected critically on the choice of methods (e.g., choice of sample, choice of variables and their operationalization, choice of analysis method) and whether you applied the chosen methods in a logical way that fits to answer the research question.
- The results section is an important part of your assignment. A proper results section explains the meaning and contribution of the results, discussing their validity and reliability, and suggests managerial and/or research implications. We will check whether the results are critically evaluated based on rigorous data analysis, accurate interpretation of results, and robustness check. Also, we will assess whether students can critically analyze and synthesize the results. If you have done your research assignment properly but end up having null results (e.g. statistically non-significant findings in quantitative study) or opposite results, that is perfectly acceptable and it does not have any negative impact on the grade – given that you can interpret those results properly.
- The conclusion section is also an important part of your assignment. We expect you to summarize the findings and explain how your study contributes to the literature. Also, we will assess whether you identified valid limitations and interesting future research areas. We will allow you a lot of flexibility when you discuss your limitations. Identifying the limitations that you have in your study and being able to discuss how those affect results and what follows is an acceptable way to show that you do understand how to apply knowledge and use methods properly.

- Presentation and language and structure will be assessed by the following criteria: (1) The research assignment is a coherent whole and follows guideline of the content structure. (2) The text is logical and readable, and the style is suitably formal and objective for an academic paper. (3) There are no grammar, spelling or other language errors that make reading difficult.
- Resource limitations can have a role on how comprehensive and perfect data you must have. For instance, conducting 20 interviews in, say, 50 hours is not a feasible requirement, and if you have not reached saturation with 12 interviews, it is completely okay as long as you can describe how the rest of the observations would have been acquired, and understand the related limitations. This does not mean that conducting one short interview and making up the rest would be acceptable, but the point is that not everything can be anticipated, there can be factors that you cannot control, and it will be taken into account in grading (given you made reasonable effort and had a plan in data collection). We will help you to adjust research assignment topics so that the workload required by data collection and analysis would stay reasonable (given that this is a 5 ECTS course).

ABSOLUTELY NO PLAGIARISM

In this course, our policy regarding plagiarism is very simple: we do not tolerate plagiarism. If you submit in

- 1) *any* work that contains intentionally plagiarized text or,
- 2) *more than once* submit in work that contains *any* plagiarized text,

then the default action is that you will automatically fail the course. Please note that in addition to exam submissions and final report, this rule applies as well to the versions sent in for comments because we really do not want to waste our time on commenting plagiarized text. We enforce the rule with plagiarism detection software (TurnItIn). It is your responsibility to make sure that you do not plagiarize anything even unintentionally.

Following a proper referencing practice is important so that the reader can be certain which parts of the work are a) based on your own ideas instead of someone else's ideas, and b) are your own writing instead of someone else's writing. When you choose to use ideas or information that you have taken from an outside source, you always need to give credit to the original author by *citing* the original work. Note that citing and quoting are two different things.

If or when you choose to use text that is copied from an outside source, you need to tell that explicitly to the reader so that one can know which part of the text is actually written by you. This is done by including such text inside quotation marks and providing a citation to the original work including the page number where the quoted text appears in the original work. In other words, if you take a full sentence (or even half a sentence) directly from the original, it is not enough to just cite the original work; you must include the text that is a direct copy inside the quotation marks. Including only the citation means that you are claiming to the reader that the idea is from the original source but you have written the text yourself using your own

words, which is deceiving (i.e. you do credit the original idea but fail to credit the original writing). Such writing style is considered plagiarism.

Use quotation marks and references properly if (or when) you choose to include text from other sources. See, for instance

<http://unitproj.library.ucla.edu/col/b Bruinsuccess/03/01.cfm>

or

<https://plagiarism.duke.edu/>

if you are unsure what is considered plagiarism and what is not. In addition, see Aalto Code of Ethics

<https://into.aalto.fi/display/enregulations/Aalto+University+Code+of+Academic+Integrity+and+Handling+Violations+Thereof>.

KEEPING THE DEADLINES

All deadlines will be communicated during the first lecture. You will have deadlines for the research plan, research assignment, and review assignment. Please note that late submissions will NOT be accepted.

Topics are usually taken directly from existing research projects of faculty members. Quite often the topic provider has chosen to separate a small part of the research project as a topic, and instead of doing part of the data analysis or collection him/herself, the topic provider has chosen to invest his/her time to guide the study, which is often more than the data collection/analysis would take. When doing that, the topic provider has had the impression that the research assignment will be finished within the time agreed. Thus, it may not be only your own schedule that is impacted if works are delayed.

REFERENCES

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