How to write a scientific paper?

Steps for writing a scientific paper

The main idea of the paper is to answer the question posed!

- Prepare an outline of your ideas
- Write your main statement
- Write the body
- Write the introduction
- Write the conclusion
- Add finishing touches / pay attention to your style

Specifics of literature overviews

- **Introduction:**
  - Introduce the field you are writing about
  - Explain the main phenomena with simple words and examples?
  - Introduce the main classifications that you are going to pursue
  - Highlight the main result of your paper / make it understandable

- **Main body: literature review**
  - Is a main body of the paper!
  - Write a <u>consequent</u> story of <u>what</u> has been done in the field
  - Use different <u>classifications</u> of the research: group papers e. g. by theory used to understand a phenomenon, by subjects, by methodology (experiment, statistical methods etc.)

- **Conclusions**

- Example paper: Levin I., Schneider S., Gaeth G., (1998): All frames are not created equal: a typology and critical analysis of Framing Effects. Organizational behavior and human decision processes, 76(2), 149-188

Specifics of empirical papers

- Also has introduction, main body, conclusions
- Main differences from the literature overview - the main body part

- **Main body:**
  - **Literature review:**
    - Write a <u>consequent</u> story about the investigated question/phenomenon
    - Give the reader an understanding for <u>what</u> was made in the field before your work and <u>why</u> your research question is new and important
  - **Research question** discussion: after a literature review comes the discussion of the research question!
  - **Theory** that you need to answer you question
  - **Methodological part**: Experiment/statistical analysis used
  - **Results**: depending on the research question (you test a theory or find behaviour regularities)

- Example paper: Tversky A., Kahneman D., (1981): The Framing of Decisions and the Psychology of Choice. Science, 453 - 458

How to find literature

- Searching with key words (topics, authors, faculties, …)
    - www.jstor.org (business papers)
    - www.sciencedirect.com
    - Web of Science (www.ub.hu-berlin.de; Datenbanken; Online-Datenbank-Zugänge; Web of Science)
    - ttp://scholar.google.com
    - www.ssrn.com (not yet published articles)
    - Authors' web page or CV
- Check references of papers
- Library

- Hint: Start with a survey article on the subject or a handbook article in order to get a grasp of the subject

How to analyse literature? (1)

- Structure & link articles and books

- Questions:
- What kind of phenomena and/or problems are the authors concerned with describing and/or explaining?
- By what methods do they think such knowledge can be acquired? By what methods do they think such knowledge can be applied?
- What are their key concepts? How are these concepts connected?

How to analyse literature? (2)

- What assumptions are made with respect to values, human nature, method?
- What kind of data are collected?
- What are the major contributions?
  - More descriptive information about a particular phenomenon?
  - A new conceptual scheme (useful way of thinking) for
    - Investigation and research
    - Improved practice
    - Or both?
  - A new method or a refinement of an old one?
  - New findings (empirical generalizations, correlations, statements that a significant relationship exists between X and Y, causal relations)?
  - A new theoretical explanation for the findings?

Graphs, tables, statistics

Graphs, tables

- Give a self-contained caption
- Introduce graphs and tables in text before you insert them
- In text: give a source if graph/table is made by others
- Explain shortly all the data in the table and provide the main message of the graph

Statistics. Example: doing means comparison

- Indicate the sample for this comparison
- T-statistic for the test, the p-value
- Give a an interpretation of the mean
- Quote the paper which has the same result or the opposite

How to check your paper

- Literature

  - Did you include all citations in the list of references?
  - Are they correct in regard to name, year of publication, etc.?
  - Do they correspond to the indicated references in the text?

- Writing

  - Does it make logical sense?
  - Do the sentences flow smoothly from one another?
  - Have you done a spell and grammar check?

- Order of the paper

  - Meaningful subtitles
  - No abbreviation or formulas in the titles
  - No titles at the end of a page
  - Max. 3-4 breakdowns of titles (Gliederungsebene)
  - Min. 2 under points for one over point

Citations and references (1)

- Report of thoughts and ideas: Reference will be given in the flow of the text
  - Kahneman and Tversky (1979) show, that ….
  - Prospect theory deals with … (see Kahneman and Tversky, 1979)
- Direct citation (includes page number):
  - "Probabilities are overweighed …" (Kahneman and Tversky, 1979, p. 263)
- Precise reference will be stated in the list of references
  - Kahneman, D. and Tversky, A. (1979): Prospect theory: An analysis of decision under risk, Econometrica 47(4), 263-291.
- Different handling in English and German papers (and vs. /)
- For 3 or more authors the first Author is used with et al.
  - Robinson et al. (1991)

Citations and references (2)

- Articles in journals
  - Kahneman, D. und Tversky, A. (1979): Prospect theory: An analysis of decision under risk. Econometrica 47(4), 263-291.
- Books
  - Kagel, J.H. und Roth, A. (1995): The handbook of experimental economics. Princeton, NJ: Princeton University Press.
- Working paper
  - Schade, C. und Kunreuther, H. (2002): Worry and the illusion of safety. Evidence from a real-objects experiment. Working Paper 02-09-HK. Philadelphia, PA: Wharton Risk Management and Decision Processes Center.

Citations and references (3)

- Articles in books
  - Güth, W. und Tietz, R. (1986): Ultimatum bargaining for a shrinking cake – An experimental analysis, In: Tietz, R., Albers, H. und Selten, R. (Hrsg.): Bounded rational behavior in experimental games and markets, Berlin: Springer Verlag, 1-23.

- Internet sources
  - Markman, G.D. und Baron, R.A.: Adversity quotient: Perceived perseverance and new venture formation, http://www.unbsj.ca/~davis/citation.html (Stand: 31.01.2005)

- Unpublished manuscripts
  - Michels, S. (1995): Heteroskedastie- und Autokorrelations-konsistente Kovarianzmatrixschätzung, mimeo.

Criteria for overall evaluation
(these are general requirements that are adapted on the specific task and level of exam)

1) **Clarity of presentation:** Flow of thoughts (indicate your mother tongue), essay form, internally consistency, density and precision of thoughts (used mathematical models where appropriate, used the correct concepts as introduced in the lecture, ...), close to the question.

2) **Conceptual adequacy:** Are the definitions correct and reasonably connected to other relevant concepts? Are the methods correctly described?

3) **Technical adequacy:** Are all relevant assumptions stated, are they discussed with respect to reality? Are the results interpreted correctly? Are potential problems and pitfalls discussed? Are potential improvements discussed?

4) **Originality:** Is it repeating the lecture slides only or can own ideas be recognized (with respect to combining concepts, adapting concepts, thinking critically, well-reasoned creativity, ...)

Some further ideas on writing

- Find a paper that suites best to the structure you want to have in your paper, take it as a guideline for the structure

- **Repeat the main idea of the paper at least 3 times – in introduction, in results part and in conclusion**

- Each **chapter** has an introducing paragraph and a concluding paragraph saying what was done in the chapter and how this contributes to answering the main question of the paper

- If you use a term/notation in the paper
  - Stick to this notation throughout the whole text
  - Do not use synonyms without introduction to a reader

- Each task has sub-questions. Answer each sub-question fully

- Connect all the sub-questions with the overall logic of your paper with each other, so that the paper looks that all the pieces in it serve the unique main question posed in the topic