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Introduction to writing scientific papers

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agenda

ÿ Scientific work

ÿ Structure of a scientific work

ÿ Scientific literature review

ÿ Searching literature, and rankings ÿ Tables and figures ÿ Referencing literature ÿ Citing text from literature ÿ General hints

Scientific work

ÿ Systematic elaboration of an underlying research objective based on

ÿ Relevant theoretical foundations

ÿ Empirical findings and / or conceptual approaches ÿ An underlying research paradigm ÿ A set of scientific methods to answer the research question(s) or to test the hypotheses shaping the research objective

cf. Bänsch, A., *Scientific work.* – 9th Edition 2007. Munich, Oldenbourg Wissenschaftsverlag; Helmut Balzert, Christian Schäfer, Marion Schröder, Uwe Kern: Scientific work: science, sources, artefacts, organization, presentation. W3l GmbH, 2008 Murray, R., Moore, S., The Handbook of Academic Writing. A fresh approach. Open University Press, UK, 2006

Systematic elaboration of research – six core contents

1. Research objective & research question(s) or hypotheses
2. Theoretical foundations
3. Methodological foundations
4. Execution of the own research
5. Evaluation and discussion of the own research results in relation to existing literature
6. Reviewing the research question(s) or hypotheses and arguing the contribution to research (and practice)

cf. Bänsch, A., *Scientific work.* – 9th Edition 2007. Munich, Oldenbourg Wissenschaftsverlag; Helmut Balzert, Christian Schäfer, Marion Schröder, Uwe Kern: Scientific work: science, sources, artefacts, organization, presentation. W3l GmbH, 2008 Murray, R., Moore, S., The Handbook of Academic Writing. A fresh approach. Open University Press, UK, 2006

Different types of scientific work …. some examples (1/2)

*	Literature Analysis / Theory building	Concept Development	implementing / Experimental development	empirical work	Comparative analysis
1	Research objective and hypothesis (or research question(s))	Research objective and research question(s)	Research objective and research question(s)	Research objective and hypothesis or research question(s)	Research objective and research question(s)
2	Extensive literature analysis of relevant theories	Literature analysis on relevant concepts and related work	Literature analysis on relevant foundations and related work	Literature analysis on relevant foundations and related work	Literature analysis on relevant foundations and related work
3	Methodical foundations	Methodical foundations	Methodical foundations	Methodical foundations	Methodical foundations
4	Development of theory, synthesis of findings	Development of conceptual artifacts	Development of concept, programming software artifact(s)	Development of instruments for data collection; data collection; Data analysis	Elaboration of comparative analysis

* *Number referring to the core content spotted in slide 4*

Different types of scientific work …. some examples (2/2)

*	Literature Analysis / Theory building	Concept Development	implementing / Experimental development	empirical work	Comparative analysis
5	Evaluation of hypothesis and/or theory	Evaluation of conceptual artifacts	testing of software	Interpretation of data & testing of hypothesis	Synthesis of findings from comparative analysis
6	Extending a theory / adding knowledge to literature	New concept(s) / architecture / conceptual solution	New IT solution / innovation	New insights from empirical findings / providing evidence for theory	New insights from comparative analysis & providing evidence

* *Number referring to the core content spotted in slide 4*

Derived eg from: Bänsch, A., *Scientific work.* – 9th Edition 2007. Munich, Oldenbourg Wissenschaftsverlag; Balzert, H., Schäfer, Ch., Schröder, M., Kern, U., Scientific work: science, sources, artifacts, organization, presentation. W3l GmbH, 2008
Murray, R., Moore, S., The
Handbook of Academic Writing. A fresh approach. Open University Press, UK, 2006

Core guiding questions for scientific work

ÿ What problem / challenges shall be resolved / elaborated? ÿ

What is the research gap that shall be closed?

ÿ What objective(s) drive(s) the research? ÿ

Formulating a clear objective, AND ÿ

Transforming the research objective(s) into research questions / hypotheses ÿ

How will the research gap be closed? ÿ

What methods will be applied to close the research gap (forming the research design)?

ÿ And what results will be generated thereby to close the research gap?

Methodical foundations (1/2) ÿ

Grounding on a research paradigm – some examples ÿQualitative or quantitative empirical research ÿ N. Baur, J. Blasius (Eds.): Handbuch Methods of Empirical Social Research, Springer VS, Wiesbaden, 2014

ÿDesign Science Research

ÿ Hevner, March, S., Park, J., & Ram, S.: Design Science Research in Information Systems. In: MIS Quarterly, 28(1), 75–105, 2004

ÿetc.

ÿCase study research ÿ

Eisenhardt, KM: Building Theories from Case Study Research. In: Academy of Management Review, 14(4), 532-550, 1989

ÿQualitative content analysis ÿ P. Mayring, Qualitative Content Analysis - Theoretical Foundation, Basic Procedures and Software Solution. Klagenfurt: Beltz, 2014

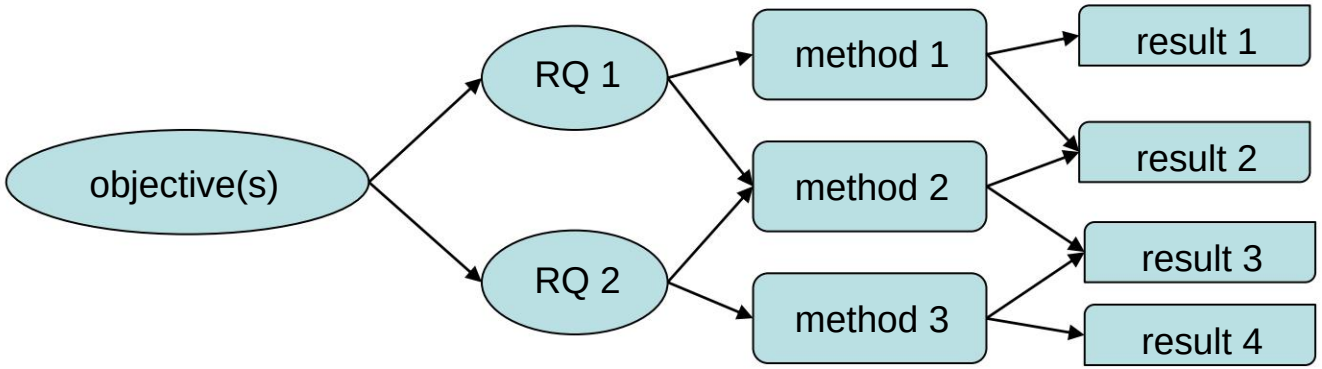
ÿGrounded Theory ÿ

JM Corbin and A. Strauss, “Grounded Theory research: Procedures, canons, and evaluative criteria,” Qual. Sociol., 13(1), 3–21, 1990

Methodical foundations (2/2)

ÿ Research design ÿ
Tabular or
graphical
presentation
AND
ÿ Textual description

Research objective (1)	Research question(s) (or hypotheses)	Methods per RQ	Results per RQ
objective(s)	RQ1	method 1	result 1 Result 2
	RQ2	method 2 method 3	Result 3
	RQ3	method 4	result 4



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General structure of a research paper - a template

ÿ Introduction

ÿ Problem definition, incl. embedding in the research field, motivation for the research (ie research gap), objective and research questions, outlining research design and expected research, remainder of the paper ÿ Theoretical foundations & related work

ÿ Methodical foundations / research design ÿ

Documentation of research, including evaluation of findings ÿ Discussion,

lessons and recommendations ÿ Conclusions

ÿ Review of RQs and describing how these have been answered, limitations of research, future research needed or planned

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What to cite?

ÿ Any concepts, results or ideas that are not your own but taken from another source need to be referenced

ÿ **Using others' work without attribution is plagiarism**

- ÿ Plagiarism is the unethical practice of using sentences or ideas (either planned or accidental) of another author/researcher or your own previous works without proper acknowledgment
- ÿ Plagiarism if detected leads to failing the exam and likely the entire study program
- ÿ Teachers use plagiarism finders to detect such severe misbehavior – we use TurnItIn

Where to apply literature review in the paper? (core parts)

Introduction	Research gap to be explained along a brief overview of scientific literature (grey literature may also be used, but not solely), critique on existing literature forming the gap Research environment along relevant concepts , definitions from literature
Theoretical foundations	Analyzing scientific literature, including definitions, summaries of relevant theories, concepts, etc. and synthesis of findings from literature review. Guiding questions: what theoretical concepts shape your research? These must be put in relation with your own research, including explaining how it will be used throughout the work
Methodical foundations	Explaining underlying research paradigm, research design and individual methods applied: brief description of methods followed by explanation how these are applied throughout the research conducted
Related work	Literature analysis of related works: much of research has already been researched; many similar case studies exist; the paper needs to summarize the main findings from the analysis of these scientific (and grey) papers, including explanation of what the own paper aims to add new to the findings of existing studies

Literature review related to the own contributions in the paper

Documentation of research, including evaluation of findings	This part mainly contains the own contributions. Therefore the number of references to scientific literature is rather small. Cross-references to the methodical foundations or the theoretical foundations are important to demonstrate the links between theory and own contribution, and to ensure rigor. Any content taken from another source needs the indication of the source in any case, for example, along tool comparison or comparative case analysis, the references to the tools or cases, or to papers describing respective tools or projects.
Discussion, lessons, and recommendations	This part also contains a substantial own contribution. However, it also demands discussion and reflection of the own contribution with the theoretical foundations -> what is new, what is the addition, how valid are the findings compared to related works and theoretical foundations, etc.
conclusions	This part only refers to literature if the own findings are compared, and evaluated against findings from existing literature

Discussion of content from literature - literature synthesis

ÿ Not just repeating or paraphrasing contents one after the other ÿ

Integrating the contents into your own discussions

ÿ Ensuring the link to your problem scope / research gap and objective:
make clear what the statement(s) from literature add to your own

research ÿ Summary / Synthesis of theoretical foundations and related work must conta

insights into findings and how these contribute to own research ÿ

This shall conclude each section / chapter

ÿ Ensuring critical distance ÿ Eg

not just paraphrasing a positive statement about a concept or solution [in particular
no textual parts from marketing brochures or project promotions! ->
these are not meeting scientific writing standards]

Adomavicius and Tuzhilin, 2005a: A good example for an extensive literature analysis (1/2)

- ÿ Clear description and scoping of the research field
- ÿ Clear research objective and structure of the paper
- ÿ Extensive literature analysis
- ÿ Tables summarizing the contents to facilitate comprehension

Source: Adamavicius, G.; Tuzhilin, A.: Toward the Next Generation of Recommender Systems: A Survey of the State-of-the-Art and Possible Extensions, in: IEEE Transactions on Knowledge and Data Engineering, 17 (6), 2005a, pp. 734-749 .

Adomavicius and Tuzhilin, 2005a: A good example for an extensive literature analysis (2/2)

ÿ Extending the existing body of knowledge in the research field (Originality) ÿ New structure / good overview ÿ Own conclusions

ÿ Things presented and summarized in a new way (eg interdisciplinary view)

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How to find relevant literature? Search strategies for literature reviews

- Keyword search
- Scientific articles that provide an overview about the subject of study
- Applying the snowball principle
  - Analyzing the references in relevant articles found and searching further relevant papers through scanning the articles in the reference list of that articles

Methodical foundations for systematic literature analysis:

Webster J, Watson RT (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. In: *MIS Quarterly,* 26 (2): xiii-xxiii

Kitchenham, B., Brereton, OP, Budgen, D., Turner, M., Bailey, J., Linkman, S.: Systematic literature reviews in software engineering – a systematic literature review. Information and Software Technology 51(1), 7-15 (2009)

Hart, C. (1998). Doing a Literature Review: Releasing the Social Science Research Imagination. London: Sage

Scientific literature rankings

ÿ Only double-blind peer-reviewed journal and conference articles count as scientific literature ÿ Distinction into A*, A, B, and C publications

ÿ Rankings of different communities, eg CORE ranking

ÿ Conference Rankings: http://portal.core.edu.au/conf-ranks/ ÿ

Journal Rankings: http://portal.core.edu.au/jnl-ranks/ ÿ

Individual Rankings of Journals: see https://www.scimagojr.com/journalsearch.php?

ÿ Important to consider: Indexing of journals in EBSCO, SCOPUS, WebOfScience, DBLP or similar

ÿ Rankings of the communities of the main research discipline(s) the work is embedded in

ÿ Eg in Research Group E-Government, these are Electronic Government, Information Systems, but also areas of Computer Science, depending on the subject of study and the research design selected

ÿ Eg Rankings of Information Systems Community, see eg

– BISE in Germany, and other journals see https://wirtschaftsinformatik.de/ -> see tab Research –

AIS Senior Scholar Basket https://aisnet.org/page/SeniorScholarBasket at international –

VHB https://vhbonline.org/vhb4you/vhb-jourqual and https://www.vhbonline.org/fileadmin/user_upload/JQ3_WI.pdf

Scientific journals relevant in E-Government - with impact factor (status Dec 2021) if available -

- Government Information Quarterly (7,279): https://www.journals.elsevier.com/government information-quarterly
- Information Polity: https://www.iospress.nl/journal/information-polity/
- International Journal of E-Government Research: https://www.igi global.com/journal/international-journal-electronic-government-research/1091
- Journal of Information Technology & Politics (until 2007 Journal of E-Government) (3.7): https://www.tandfonline.com/toc/wzeg20/current
- Electronic Government, an International Journal /1,5): https://www.inderscience.com/jhome.php?jcode=eg
- eJournal of eDemocracy and Open Government: https://www.jedem.org/index.php/jedem

Scientific conferences relevant in e-government

- Relevant conference proceedings with double-blind peer-review process
  - IFIP EGOV and ePart conferences (Springer)
  - DG.O conference proceedings (ACM)
  - ICEGOV conference proceedings (IEEE)
  - Information Systems conferences with E-Government track (HICSS, ICIS, ECIS, WI, …)
- Important: Indexing of conference proceedings in EBSCO, SCOPUS, WebOfScience, DBLP or similar

“Qualitative ranking” of literature sources (1/2)

(any must be referenced if content is taken from the source)

Scientific sources (nr. indicates rank): 1.
Journal articles

2. Peer-reviewed conference articles (“paper”)

ÿ In some computer science disciplines, articles in peer-reviewed proceedings may sometimes be ranked higher than journal

articles 3. Monographs and chapters in collective volumes (often with limited or no peer review process); this category includes published doctoral theses

Gray literature (no ranking) ÿ

Studies, Technical Reports, White Papers, Research reports, Working Papers ÿ
Master theses

“Qualitative ranking” of literature sources (2/2)

(any must be referenced if content is taken from the source)

Other sources to be referenced (no order) ÿ

Norms and standards (incl. URLs)

ÿ Laws, online lexicon or encyclopedia (eg Gabler)

ÿ Contributions in domain-specific magazines or press articles (eg c't magazine)

ÿ Internet sources

- ÿ URLs to projects, software, web presence of institutions or subjects, case studies, tools

etc. ÿ Such sources do not count as scientific literature, nonetheless these must be indicated

- ÿ Internet sources are mainly indicated in footnotes (instead of entries in the reference list), and the date of last access is to be provided

What references are accepted?

ÿ Evidence needed: only published papers or articles accepted for publication ÿ

Wikipedia ÿ

Only used in exceptional cases, eg for technically new concepts where no other higher ranked source exists so far to cite or reference. As a rule, references of higher quality than Wikipedia exist and must be given preference over Wikipedia

ÿ For definitions of terms or concepts, Wikipedia is NOT accepted ÿ

As a rule, established literature is to be given preference over Wikipedia

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Tables are worth a thousand words

Table 1: Roadmap table with actions, means, and actors for research themes for the research theme: Trust in e-government [19]

#	Description	Means	Actors
1	Studies to investigate a proper understanding of trust in e-government, including: What is trust, and how to create trust? The differences among key trust relationships in C2G, B2G, G2G What kind of trust impacts e-government? E.g. trust in government, trust in ICT, trust in jurisdiction, execution and legislation To what degree trust is needed in order to offer sophisticated eServices?	Action research, analysis, desk research	Research with key players from governments with some support of ICT industry & consulting
2	Develop a framework of mechanisms for monitoring trust between governments and citizens, including: Can ICT enable fair behavior? What kind of behavior is acceptable? How to prevent unfairness?	Action research, gap analysis	Governments, research and consulting
3	Assessment of the risks of a trust framework for e-government, thereby identifying both the potential threats and the level of distrust which can be tolerated	Action Research	Research, consulting, governments
4	Develop a legal basis for implementing a fully trusted e-government framework	Legislation	Governments, Consulting, Research

Don't forget the table caption (with indication of source if it applies)!

Table captions usually above the table

[19] Wimmer MA, Bicking M, Bogataj K, Bowern M, Codagnone C, Dawes SS, Janssen M, Klein M, Ma X, Malinauskiene E. & Pucihar, A. Roadmap for future research and implementations in eGovernment: Research themes and roadmap charts. In: [4], 2007, pp. 123-148.

Figures are worth a thousand words

Figure 1: E-government as a multidisciplinary research domain (Wimmer 2007)

Don't forget the figure caption (with indication of source if it applies)!

Figure captions usually below the figure

Recommendation: Plea the reviewers and cite / reference their works

Maria A Wimmer. The Role of Research in Successful E- Government Implementation. In: Zechner (Ed.). E-Government Guide Germany. Strategies, Solutions and Efficiency. Stuttgart, Fraunhofer IRB Verlag, 2007, pp. 79-87.

Referencing tables and figures in running text

- Figures and tables must have proper caption
  - Source of the figure / table to be provided in the caption (in parenthesis)
- Text in tables and figures (font size) must be readable
  (do not use text smaller than 9 points)
- Figures and tables must be referenced and explained in the running text:
  - Good: “The evaluation results are shown in Table 1. <adding some explanations of the main findings shown in the table>”
  - Not accepted in academic works: “The results are shown below:”
- Avoid figures that add nothing to the paper, for example
  - Screenshots of an online platform
  - Images such as logos

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Different styles of referencing - APA (American Psychological Association - http://apastyle.apa.org/)

ÿ Referencing content from a source in the running text

- ÿ Krallmann et al. argue that … (Krallmann et al., 2001, pp. 3-4).
- ÿ (Krallmann et al., 2001) argue that …
- ÿ Krallmann et al. define … *"<citation text>" (Krallmann* et al., 2001, pp. 3-4).

ÿ Reference entry in the bibliography (ordered alphabetically)

- ÿ Krallmann, H.; Bobrik, A.; Levina, O.: System analysis in companies: process-oriented methods of business informatics, Oldenbourg: Munich, 2001.
- ÿ see guideline under https://apastyle.apa.org/style-grammar guidelines/references/examples

Different styles of referencing - Springer LNI (Lecture Notes of Informatics)

ÿ Example of abbreviated form facilitating the remembering of authors ÿ

Referencing content from a source in the running text ÿ

Krallmann et al. argue that … ([KrBoLe01], pp. 15f). ÿ Further details are provided in [KrBoLe01].

ÿ Reference entry in the bibliography (ordered alphabetically) ÿ

[KrBoLe01] Krallmann, H.; Bobrik, A.; Levina, O.: System analysis in companies: Process-oriented methods of business informatics, Oldenbourg, Munich, 2001.

Different styles of referencing - IEEE (Institute of Electrical and electronic engineer)

ÿ Used mainly in more technical disciplines ÿ

Referencing content from a source in the running text ÿ

Krallmann et al. argue that ... [2, pp. 15f]

ÿ A more detailed elaboration can be found in [1].

ÿ Reference entry in the bibliography (sorted alphabetically or along first occurrence of reference – depending on publication outlet) ÿ [1]

Adomavicius, G.; Tuzhilin, A.: Personalization Technologies: A Process-Oriented perspective. *Communications of the ACM,* 48 (10), 2005a, pp. 83-90.

ÿ [2] Krallmann, H.; Bobrik, A.; Levina, O.: System analysis in companies: Process-oriented methods of business informatics, Oldenbourg, Munich, 2001.

If the content from the source spans across several sentences or even a paragraph …

- In case a summary of content from a source spans across several sentences:
  - APA: According to Krallmann et al., completion of sentence 1. sentence 2. sentence 3 (Krallmann et al., 2001, pp. 25-27).
  - LNI: Krallmann et al. argue that … completion of sentence 1. sentence 2. sentence 3 ([KrBoLe01], pp. 25-27).
  - IEEE: Krallmann et al. argue that … completion of sentence 1. sentence 2. sentence 3 ([2], pp. 25-27).

Indicate names of authors in running text … example

Charalabidis et al review the three generations of electronic (or digital) government and outline Government 3.0 along the following characteristics (Charalabidis et al, 2019):
• Main goal: Societal problem-solving, citizen well-being, optimization of resources •
Main method : Smart governance and data-intensive decision- and policy making •
Usual application level: local to international •
Key tool: ubiquitous sensors, smart devices, applications (apps), artificial intelligence (AI) • Key
ICT area: AI and Internet of Things (IoT) • Most
needed discipline, beyond ICT: Wide variety, depending on the application area.

Charalabidis Y, Loukis E, Alexopoulos C, & Lachana Z (2019). The Three Generations of Electronic Government: From Service Provision to Open Data and to Policy Analytics. In Lindgren I. et al. (Ed.), Proceedings of Electronic Government 2019 (pp. 3–17). Cham: LNCS 11685, Springer. https://doi.org/10.1007/978-3-030-27325-5_1

Bibliography heavily impacts impression of an article … example

ÿ Exaggerated but genius:

112 references in an article of 16 pages

sources:

(Adomavicius and Tuzhilin, 2005)

[105] L.H. Ungar and D.P. Foster, "Clustering Methods for Collaborative Filtering," *Proc. Recommender Systems, Papers from 1998 Workshop*, Technical Report WS-98-08 1998.

[106] W. Wade, "A Grocery Cart that Holds Bread, Butter, and Preferences," *New York Times*, Jan. 16, 2003.

[107] Y. Yang and B. Padmanabhan, "On Evaluating Online Personalization," *Proc. Workshop Information Technology and Systems*, pp. 35-41, Dec. 2001.

[108] K. Yu, X. Xu, J. Tao, M. Ester, and H.-P. Kriegel, "Instance Selection Techniques for Memory-Based Collaborative Filtering," *Proc. Second SIAM Int'l Conf. Data Mining (SDM '02)*, 2002.

[109] K. Yu, A. Schwaighofer, V. Tresp, X. Xu, and H.-P. Kriegel, "Probabilistic Memory-Based Collaborative Filtering," *IEEE Trans. Knowledge and Data Eng.*, vol. 16, no. 1, pp. 56-69, Jan. 2004.

[110] *Proc. WEBKDD 2002—Mining Web Data for Discovering Usage Patterns and Profiles*, O.R. Zaïane, J. Srivastava, M. Spiliopoulou, B. M. Masand, eds., 2003.

[111] Y. Zhang and J. Callan, "Maximum Likelihood Estimation for Filtering Thresholds," *Proc. 24th Ann. Int'l ACM SIGIR Conf.*, 2001.

[112] Y. Zhang, J. Callan, and T. Minka, "Novelty and Redundancy Detection in Adaptive Filtering," *Proc. 25th Ann. Int'l ACM SIGIR Conf.*, pp. 81-88, 2002.

Use of software tool to manage the references highly recommended

ÿ To ensure consistent referencing, it is advisable to use citation software, eg

- ÿ Mendeley
- ÿ Zotero
- ÿ Citavi (installation with Uni account)
- ÿ EndNote (license)
- ÿ JabRef
- ÿ Integrated literature management in text editing tools

Databases and sources to find scientific literature - examples

- http://www.citeseer.com
- https://dblp.org/
- http://scholar.google.com
- ACM Digital Library
  http://portal.acm.org/dl.cfm
- IEEE Digital Library
  https://www.computer.org/csdl/home
- AIS eLibrary https://aisel.aisnet.org/
- Springer: https://link.springer.com/
- ResearchGate:
  https://www.researchgate.net/
- University library: http://www.ub.uni koblenz.de/, online access:
  http://aleph1.uni-koblenz.de/
- E-Government Reference Library:
  http://faculty.washington.edu/jscholl/archiv/e-government-reference-library-egrl-8-0-now-with-5050-references/
- Scanning list of publications of research groups or individual researchers

Further readings on academic writing

ÿ Academic writing

ÿ Theisen, Manuel René (2005): Scientific work Munich: Vahlen, 2005

ÿ Murray, Rowena, Moore, Sarah (2006): The Handbook of Academic Writing. A fresh approach. Open University Press, UK

ÿ Writing style ÿ

Strunk, William, EB White and Maira Kalman (2005): The elements of style. New York: Penguin Press, 2005

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Direct citations (quotations) are OK, but don't use too many cites and too long cites

ÿ It is better to transfer content into your own words (paraphrasing)

ÿ Too many citations give the impression that the author was “lazy”

Author didn't feel like it to paraphrase or to translate a technical term (eg into a different language)

Example of quotation

ÿ This quotation is at max. accepted length limit:

> *„Perhaps the most radical difference is the shift in the balance of power from merchant to consumer. The Internet, merchants are discovering, is a tremendous word-of-mouth amplifier. On a hundred newsgroups, mailing lists and chat sites, ordinary people can tell the world what they like, what they hate, and what they are buying – or returning." [The Economist 1997]*

ÿ It would have been better to paraphrase: According to The Economist, a shift of power from merchant to radical consumer can be observed with the Internet [The Economist 1997].

Paraphrase instead of citing verbatim

ÿ Ronzhyn et al. [2] identified *“ethical issues in AI and Big Data along the ten ethical considerations”*

Better (paraphrase, integrate in text):

ÿ In their work, Ronzhyn et al. identified ten ethical considerations and provided examples of ethical issues in AI and Big Data [2].

ÿ However, definitions may (and often should) be cited verbatim. ÿ

German defines trust as *“confidence that one will find what is desired from another rather than what is feared” [3,* p.149] ÿ

When making a direct citation, the page number should be provided!

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Make paper understandable

- ÿ Introduce terminology
  - ÿ What do you mean by “open government”, “policy making”, “e-democracy”? Define them.
    - ÿ “We use Janssen's [21] definition of digital government, …”
  - ÿ Do not assume the reader knows what you know
- ÿ Introduce abbreviations first time you use them: ÿ

  “Information and communications technology (ICT) contributes …”

Ensure that the text is relevant for the target audience

ÿ Omit too superficial or too complicated writing style ÿ

You can expect that the reader knows basic concepts and solutions in the field / the reader is familiar with the general developments in the field

ÿ Reader knows basics Computer Science, Information Systems, E-Government – depending on which discipline the research you conduct can be affiliated with

ÿ Basic terms do not need to be explained – a reference to reading materials or in case of standard software suffices

ÿ Such examples are: Byte, WLAN, HTML

ÿ Specific concepts of the field must be explained / defined ÿ Eg

Government 2.0 (What does it stand for, what is particular?, also in relation to general understanding of e-government?)

Ensure consistent structure

ÿ If you use subsections, you must at least have two – one single subsection would NOT be OK

ÿ 1 Introduction

ÿ 2 Digitalization in the public sector

ÿ 2.1 Understanding the core concept

ÿ 2.2 Historical evolution

ÿ 2.3 Current status

quo ÿ Subsections need to suit the subject of the main

chapter ÿ Ensure same level of substructure throughout the

chapters ÿ Structure must follow a logical narrative (see hints at the beginning)

Introduction

ÿ Shall be short – max 10% of content

ÿ Omit verbose sentences, not coming to the point ÿ Omit

“general wordings”

- ÿ "Due to increased competition, nowadays, costs must be reduced more and more.”
- ÿ ÿ such a sentence is terrible for the reader! Does not contain any new points, no evidence, etc.

(Schoder 2005)

Omit too long sentences and too convoluted

ÿ Avoid too long and complicated sentences ÿ

Direct and short sentences are preferred.

ÿ Example in German: "After the transmission to the central computer system, if the blocks to be transmitted have been received correctly, which is achieved by special check codes (longitudinal check, block check), whereby cyclic block protection has proven to be the most effective, it is just a simple Character sent back to the terminal which, if received correctly, will trigger a retransmission until the operator intervenes..."

(Schoder 2005)

Filler words / verbose

ÿ English example: “It should be noted here that the statement is made can that the flower is red.” ÿ ÿ

The flower is red.

ÿ Use simple and clear language

Omit Weasel Words - these indicate bad writing style and laziness as evidence/sources are not provided

ÿ “A **weasel word,** or **anonymous authority,** is an informal term for words and phrases aimed at creating an impression that something specific and meaningful has been said, when in fact only a vague or ambiguous claim has been communicated. Examples include the phrases "some people say", "most people think", and "researchers believe." Using weasel words may allow one to later deny any specific meaning if the statement is challenged, because the statement was never specific in the first place. Weasel words can be a form of tergiversation and may be used in advertising, (popular) science, opinion pieces and political statements to mislead or disguise a biased view”.

see: https://en.wikipedia.org/wiki/Weasel_word

ÿ Who said that? Where is the evidence? Where is the result?

Use academic style of writing

ÿ Avoid informal phrases: ÿ “And here is the interesting part, …” ÿ “Results surprised us, …” ÿ “The platform was cheap to implement.”

ÿ Avoid contractions

- ÿ It's > it is
- ÿ Don't > do not

ÿ Avoid expressing belief

- ÿ “We believe this model to be true” > “The model is consistent with empirical result”

Be clear

ÿ Do not overuse passive voice ÿ

“Analysis has been conducted …” > “We analyzed …”

ÿ “our results are in agreement with the findings in [x, y]” > “our results correspond to the findings of [x, y]”

ÿ Avoid redundancies, phrases without meaning

ÿ “The results of the research conducted in this paper” > “the results”

ÿ Proof-read the paper within your group or even by a professional proof reader service

conclusions

- Summarize results of your analysis
  - Explain what allowed you to make a specific conclusion
  - Connect the results to previous sections
- Answer your research question(s) based on the analysis
- Do not introduce new concepts in the concluding chapter
- Frame the results in terms of existing literature (go back to introduction, theoretical foundations, related work)
- Max 10% of content of paper

Many thanks for your attention!

Your questions...

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