LUDWIG-
MAXIMILIANS-
UNIVERSITÄT
MÜNCHEN

FAKULTÄT FÜR MATHEMATIK, INFORMATIK UND STATISTIK
INSTITUT FÜR INFORMATIK
ARBEITSGRUPPEN MEDIENINFORMATIK UND
MENSCH-MASCHINE-INTERAKTION

Qualitative Data Analysis

Julia Klose
Michael Seifert

edia nformatics m u n i c h

Verantwortlicher Professor:
Dr. Florian Alt

Introduction

What is Qualitative Data?

Non-numeric data, e.g.

- Images

- Sounds

- Video

Data Acquisition

Can be generated through

- Interviews
- Case Studies
- Experiments
- Ethnography
- Surveys
- Action Research

Motivation

With qualitative data, you can

- Evaluate existing theories (deductive approach)

- Create new theories (inductive approach)

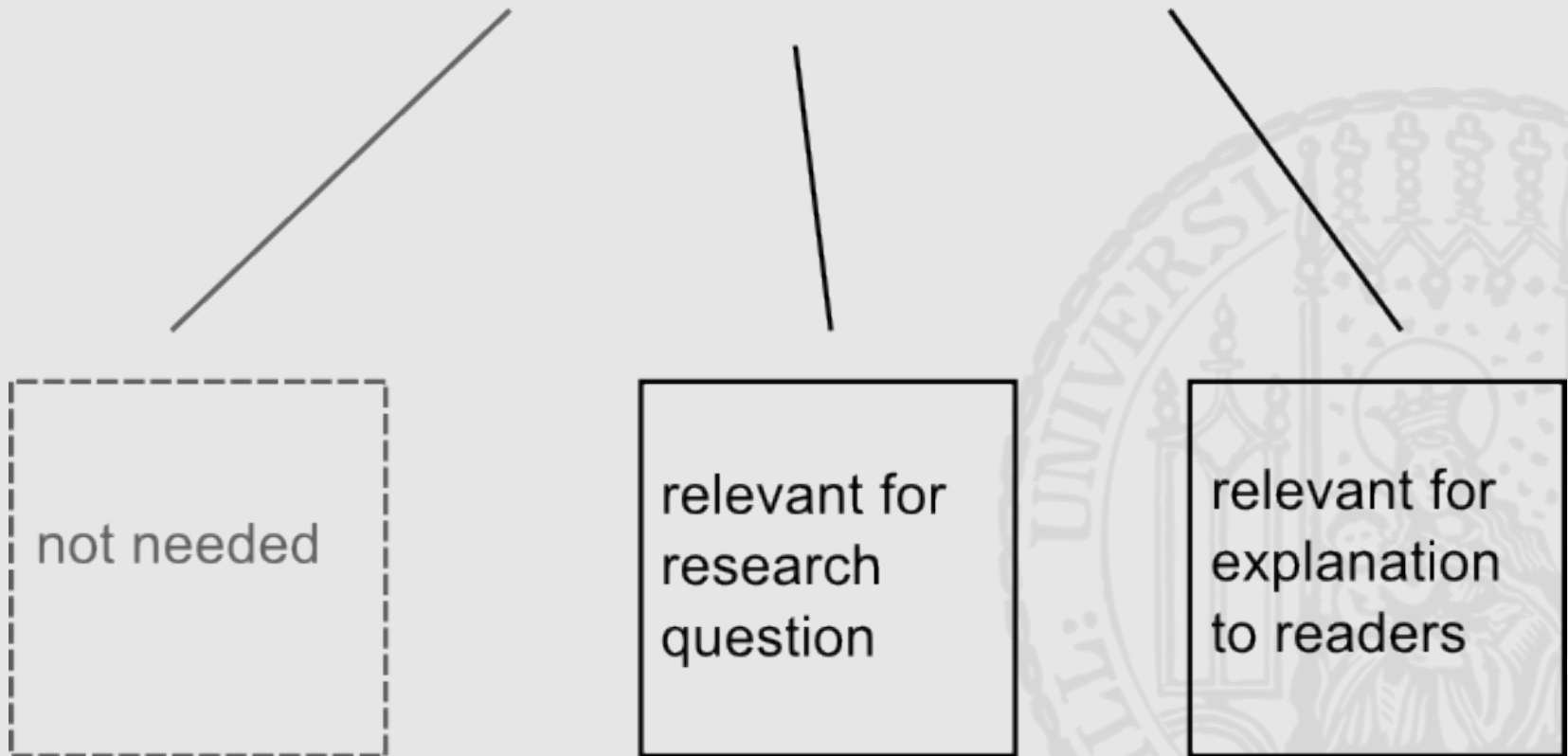- Use quantitative analysis

Data Preparation

- Transcribe your data
  (4-5 hours for 1 hour of audio)

- Organize your data

- Backup your data

Data Analysis

Get a general impression

Divide the data into segments

```
not needed
```

```
relevant for
research
question
```

```
relevant for
explanation
to readers
```

Data Analysis

- Now only focus on relevant data

- Categorize every unit of data

  - Based on existing theories (Deductive approach)

  - Using own criteria (Inductive approach)

Data Analysis

- Refine categories

- Look for connections between categories

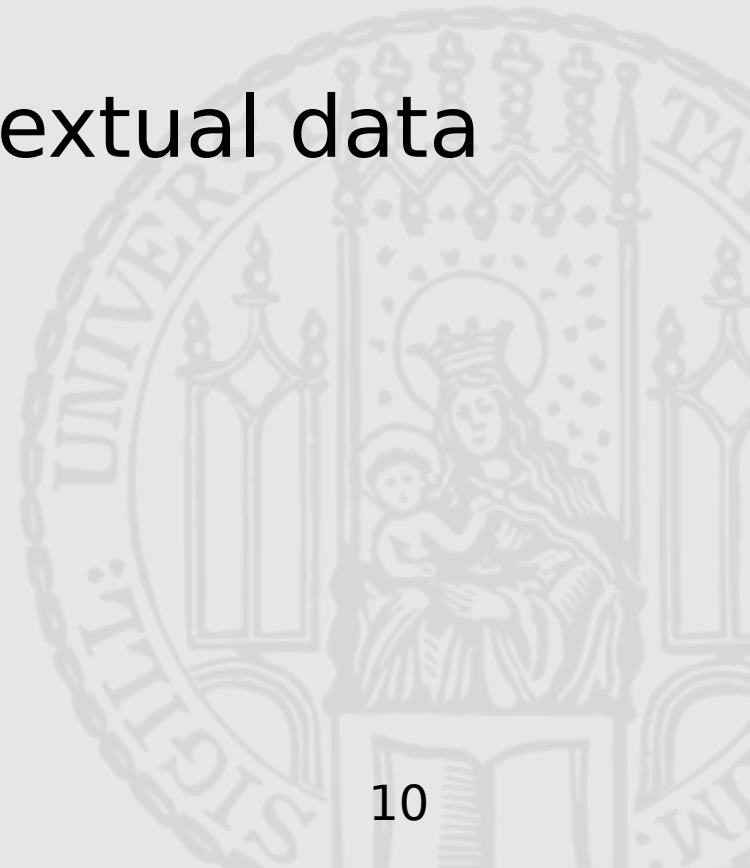- Use visual aid (tables, diagrams…)

Data Analysis

- Try to explain and interpret patterns in your data

- Form or use a theory that matches your findings

- Test your emerging theory

- Do not always stick with your first theory!!

- Document your process

Non-textual Data

- Mostly used as supportive documents for textual data

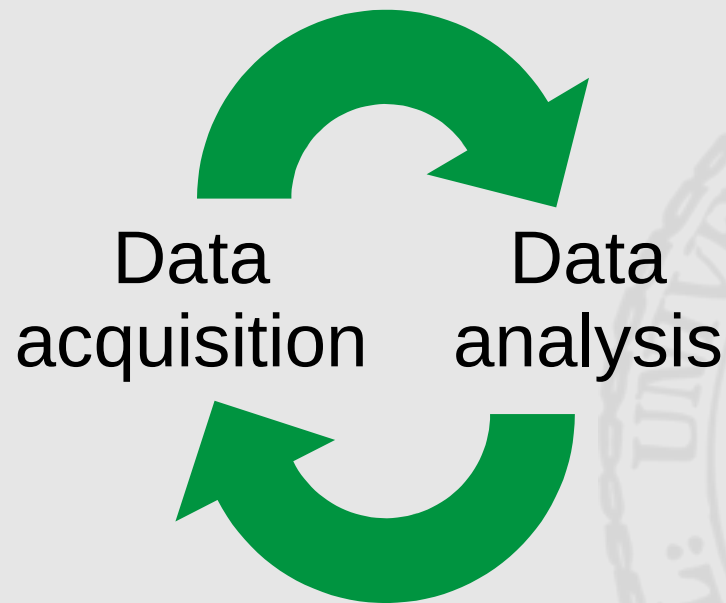- Preparation similar to textual data

Non-textual Data

- Pay attention to the context,
  not only to the content itself!

    - Connotation
    - Author
    - Audience

- Often several transcripts
  with different focuses are needed

Grounded Theory

Inductive approach to qualitative research

Data acquisition

Data analysis

Grounded Theory

- First proposed by Glaser and Strauss 1967

- Different variants exist
  → refer to the one you are using

Grounded Theory

Selection of people and instances:

- – Research starts with one person or instance
- – Data generation first unstructured, then more and more structured

Grounded Theory

Data analysis

- Three phases of coding:
  1. Open coding
  2. Axial coding
  3. Selective Coding
- Data coding should be objective but analytic (i.e. not only descriptive)
- Constant comparative method

Grounded Theory

Transcript excerpt

"Basically we are looking at umm basically how the data base works and possibly some of the points that we are looking, particularly about improving." [1]

Grounded Theory

Transcript excerpt

"Basically we are looking at umm basically how the data base works and possibly some of the points that we are looking, particularly about improving." [1]

1. Open coding

Assign codes to chunks of data

Possible open code: "Scoping"

Grounded Theory

2. Axial coding

Group open codes into categories. Important categories will emerge.

Example:

Open codes

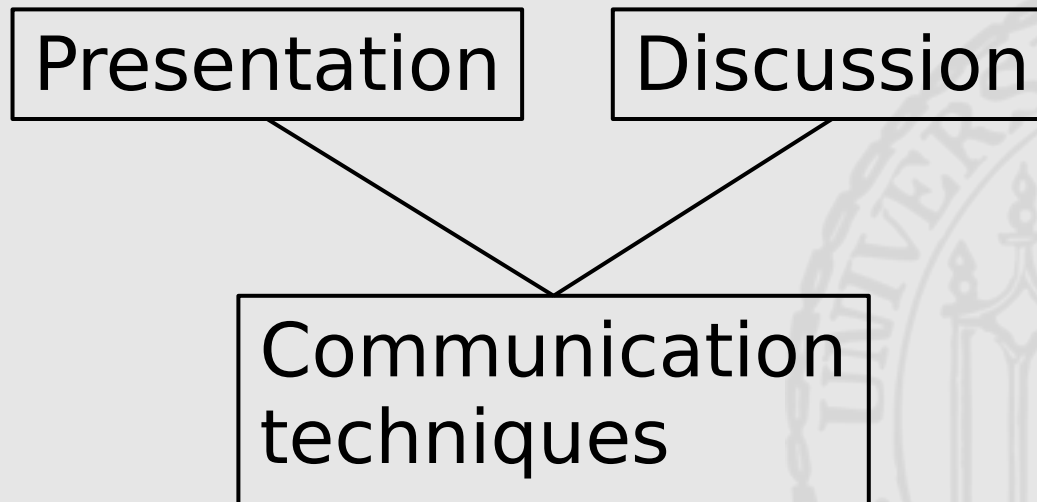| Scoping | Explanation | Problem statement | Suggested solution |

Possible categories

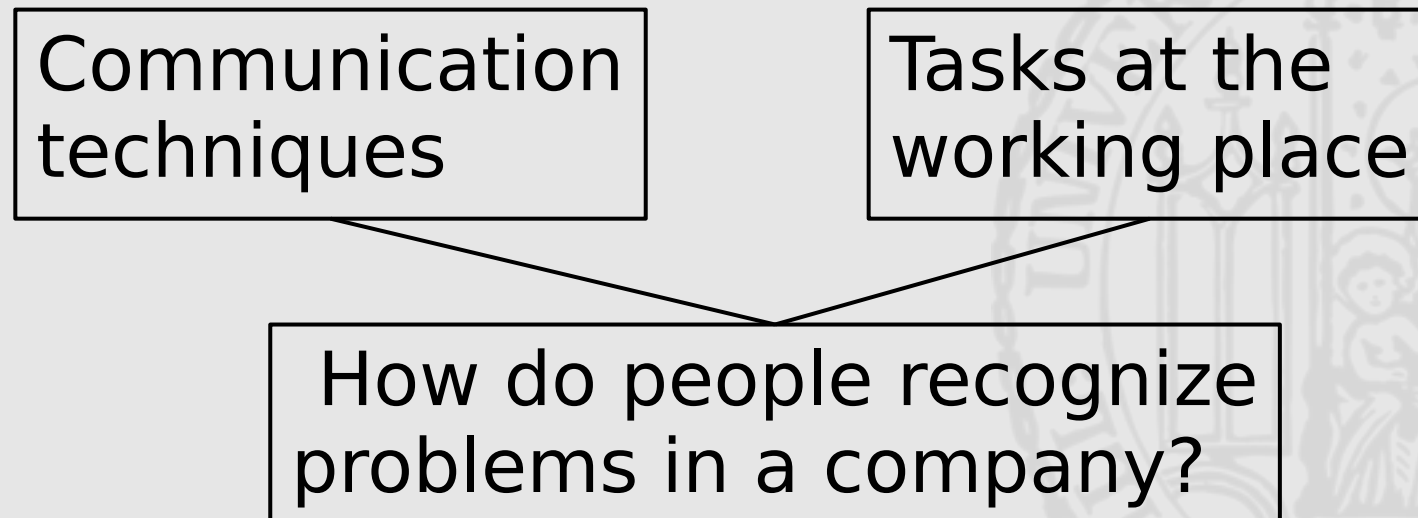| Presentation | Discussion |

Grounded Theory

2. Axial coding

Overlapping categories indicate the need for refinement

```
  ┌──────────────┐   ┌──────────────┐
  │ Presentation │   │ Discussion   │
  └──────────────┘   └──────────────┘
          \              /
           \            /
          ┌───────────────────┐
          │ Communication     │
          │ techniques        │
          └───────────────────┘
```

Grounded Theory

3. Selective coding

Focus on most important categories. Try to form a theory explaining the subject of investigation.

Communication techniques

Tasks at the working place

How do people recognize problems in a company?

Grounded Theory

- Repeat cycle until categories no longer change *(theoretical saturation)*

- If you followed this guideline, your theory should have practical relevance

Evaluation

Advantages:

- – Manifold and detailed result
- – Vivid
- – Allows alternative interpretations

Evaluation

Disadvantages:

- – Amount of work can be over-whelming

- – Results dependent on researcher

- – Difficult to communicate as text

- – When multiple people analyse the data, a measure for their agreement has to be found (see [3] and Cohen's Kappa)

Evaluation Guide

1. What kinds of data were analysed?

2. Did researchers use grounded theory?

3. Identified themes and relationships?

4. Were categories and explanations checked out?

5. Tables or diagrams for explanation?

Evaluation Guide

6. Alternative explanation?

7. Conclusions justified?

8. Limitations in analysis

9. Other flaws?

10. How effectively reported and used?
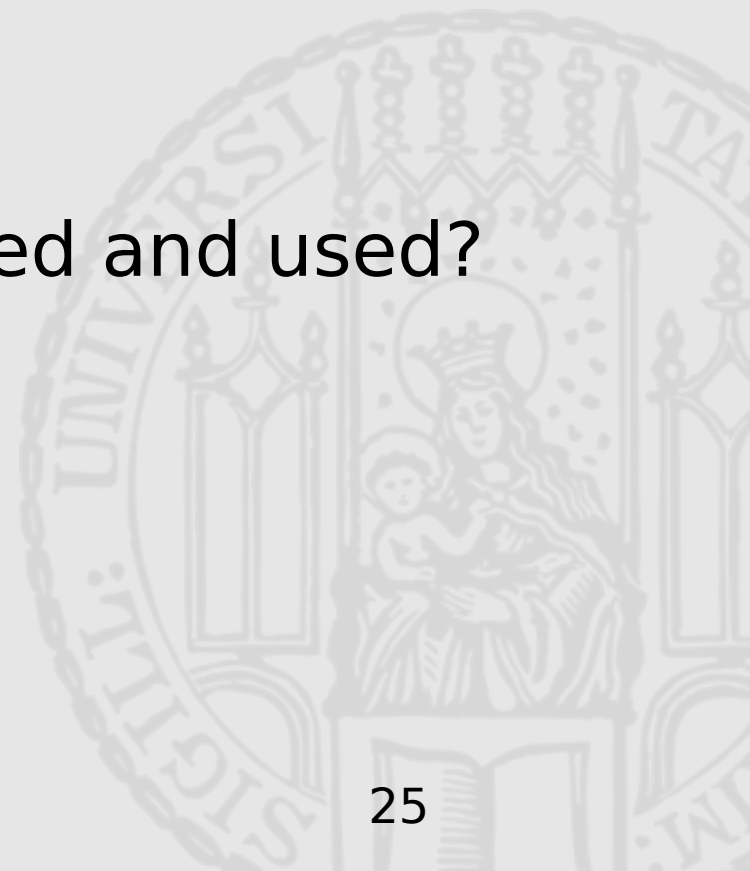
Take-home Messages

- Use of qualitative data analysis for evaluation of existing theories or generation of new ones

- Good documentation is important for traceability of your work

- Qualitative data analysis can be very time-consuming, do not underestimate this!

References

- [1] Urquhart, Cathy. An encounter with grounded theory: tackling the practical and philosophical issues. *Qualitative research in IS: Issues and trends* (2001): 104-140.

- [2] Oates, Briony J. Qualitative Data Analysis. In *Researching information systems and computing* (p. 266-279). ChaptSage, 2005

References

- [3] Landis, Richard J, Gary G Koch. The Measurement of Observer Agreement for Categorical Data. *Biometrics,* Vol. 33, No. 1 (1977): 159-174.
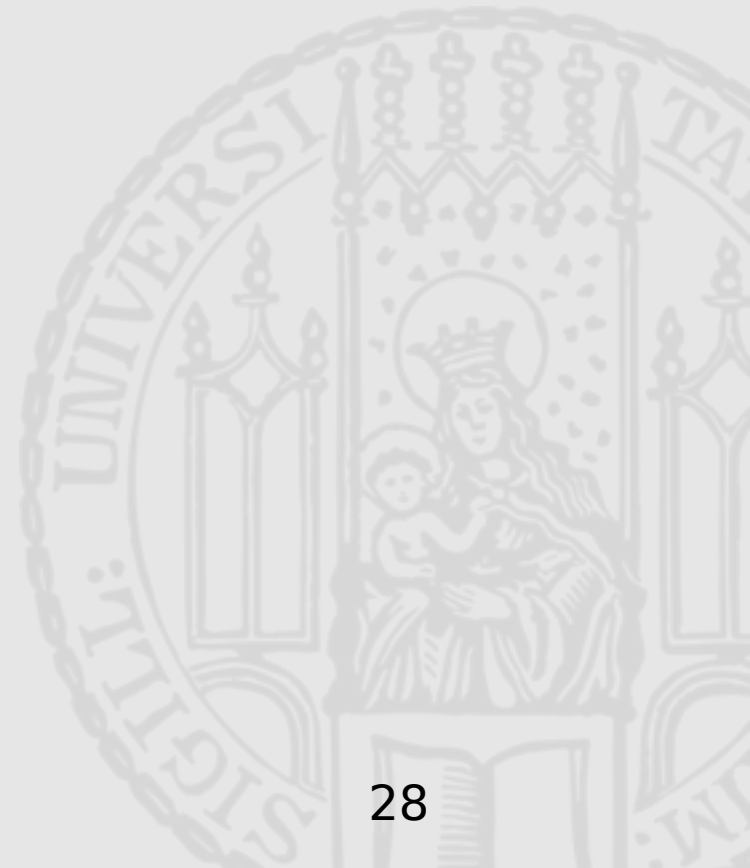
Thank you!

Questions?

Discussion

- Did anyone of you use qualitative analysis? / Tell us about your experience!

- In which fields is it advisable to use qualitative data analysis?

- Danger of subjectivity of study?