Research methods: basics

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Starting points

I have been primarily been brought up to think about research in a quantitative way. But during a long period as a ‘statistical’ advisor, two things became abundantly clear:

- Quantitative methods have much less to do with Statistics than with measurement instruments, research design, modelling and an astute interpretation of the results. In this respect there is no difference between qualitative and quantitative approaches.
- Complex phenomena, in particular those involving dynamic changes, are extremely difficult to properly investigate (and, therefore, model) in a quantitative way. Although qualitative researchers usually don’t claim that their methods allow to investigate such things, their way of data collection offers much more information on detail.

Example of a research problem that is difficult to investigate with quantitative methods

If one wants to study the decision process in an intensive care unit, it is hard to come up with a proper quantitative research design. With qualitative research methods you can get closer: the result will not be a complete description of the process, but an elicitation of the essential elements.

A big gap

Quantitative and qualitative methods have different background paradigms:

- Quantitative methods are based on statistical concepts
- Qualitative methods could be called phenomenological

Definition

Triangulation means that, to investigate a phenomenon, several viewpoints on the available information are taken in the hope to reveal the truth
Considerations leading to the use of mixed methods

Many research questions can be solved by quantitative methods, but not all.
In many cases, qualitative methods can give no decisive answer to a well-specified research problem.
Results of qualitative studies are often formulated in a vague and imprecise way.
But maybe the use of diagrams provides a formalized way to represent qualitative results.

Combining ‘the best of both worlds’

The idea to combine qualitative and quantitative methods, although obvious, is only recently gaining grounds. The process is hindered by the fact that not many people are jacks-of-both-trades.

Examples of mixed approaches

Why do rheumatologists only scarcely use combination therapy for rheumatoid arthritis?
Is it allowed to give advice to people during an interview? (A study on death wishes of elderly people)
How do you analyze results of a qualitative study? (A study on quality of life of elderly people)
How do you compare groups in a qualitative study? (Gender differences in reasons for sickness absence)

In quantitative research, diagrams can be used to specify theoretical concepts.
The controversy: why?

When and how should we use combined approaches?

References

Example of diagrams used in quantitative research
Diagrams in qualitative research
Artificial Administration of Fluids and Food
Development of dementia
The decision making process

In qualitative research, diagrams can be used to describe the results

We construct so-called result diagrams of a qualitative research project concerning the decision making on the artificial administration of foods and fluids (AAFF) to demented patients. Based on these diagrams, we could formulate research hypotheses for subsequent research. (Adèr, The, & Pasman, 2003, 2004)

The decision to start or forego AAFF

The study concentrated on the decision to start or forego artificial administration of fluids and food (AAFF) to nursing home residents with dementia. The results of the project have been described in several articles: The et al. (2002), Pasman et al. (2003a, 2003b, 2003). The last of which is a quantitative study to construct a questionnaire based on previous qualitative results.
**Reasons to follow a qualitative study by a quantitative one (1)**

To replicate the qualitative study in a quantitative way

**Not recommended!**, because:

- Most qualitative studies are undertaken because the phenomena to be studied are of a complex nature, for which it is difficult or impossible to find an equivalent quantitative research design;
- if findings of both studies **concur**, the exercise is clearly superfluous; it only functions to convince the disbelievers of qualitative research. There are much better research designs to demonstrate that.
- If results essentially **differ**, it is difficult to indicate what the reasons for the differences are, the essence being that differences can be ascribed both to flaws in the qualitative design and/or in the quantitative design.

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**Reasons to follow a qualitative study by a quantitative one (2)**

To assess the **generalizability** of the qualitative findings

**Also to be avoided!**

The two approaches have different sampling strategies. In qualitative research, so-called **judgemental sampling** is applied and this is done until saturation: new units are purposefully assessed when it is expected that new evidence can be gained from them. In quantitative research a **random sample** is drawn from a well-defined population. Again, if the findings are the same for both types of research, the quantitative study has been superfluous; in the other case, one stays in doubt whether this is due to the different research type or to differences in population.
Motivation
The controversy: why?
Triangulation
Diagrams
When and how should we use combined approaches?
References

Replication
Generalizability
To develop a measurement instrument
Assess incidence and estimate
As a follow-up study

Reasons to follow a qualitative study by a quantitative one (3)
To develop and test a measurement instrument based on qualitative findings

Perfectly valid!
However, the usual strict procedures for the validation of the new instrument should be applied

Reasons to follow a qualitative study by a quantitative one (4)
To assess the incidence of the events that were found influential during the qualitative study and to estimate the strength of the relationship between phenomena

Quite worthwhile!
This supplements the qualitatively obtained information. In this way it is a good example of triangulation. In terms of the diagrams that were shown: it would add attributes in the form of estimates of the strength of the relations in the diagrams.

Reasons to follow a qualitative study by a quantitative one (5)
To investigate findings that turned out essential in the qualitative study (follow-up)

The most interesting procedure!
This requires a carefully constructed quantitative research design that focus on the particular point suggested by the qualitative study.
Summary

- Qualitative methods allow to investigate complex phenomena
- The application of mixed methods seems a sensible way to proceed, but there are several obstacles
- Examples of applications of mixed methods
- The concept of Triangulation
- Example of result diagrams in a study on artificial administration of foods and fluids (AAFF) to demented patients
- When can you follow a qualitative study by a quantitative one? (Dos and Dots)

References


