**SENSOR GUIDANCE Konte Exam MEE115 Applied social science research methods, Autumn 18**

1. The municipality of Stavanger just launched its new *Climate and Environmental Plan 2018-2030*. You want to do a case study on the new plan. Explain how you would proceed and what you would do in order to secure the validity and reliability of your case study.

A good answer to this question does not require knowledge of the *Climate and Environmental Plan 2018-2030*. It would start out by defining what a case study is (based on Yin), then a discussion of what this eventually could be a case of. It could include a discussion of a possible problem statement, objectives and research questions and the core elements of a case study research design: A study’s questions; its propositions, if any; its unit(s) of analysis; (”what the ’case’ is”, ”time boundaries”), the logic linking the data to the propositions; and the criteria for interpreting the findings (Yin, 2003: 21). It could also include a discussion of whether it should be designed as a single, comparative and/or embedded case study.

The second part of this task is the most difficult one. A good answer should say something about what validity and reliability is, as a start:

* **Construct validity**: establishing correct operational measures for the concepts being studied
* **Internal validity**: (for explanatory and causal studies only): establish a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships
* **External validity**: establishing the domain to which a study’s findings can be generalized
* **Reliability**: demonstrating the operations of a study – such as the data collection procedures – can be repeated, with the same results

For those who have read Yin, the table below gives the answer to how validity and reliability can be secured in a case study:

|  |  |  |
| --- | --- | --- |
| **Tests:** | **Case study tactic:** | **Phase of research in which tactic occurs:**  |
| Construct validity | * Use multiple sources of evidence
* Establish chain of evidence
* Have key informants review draft
 | Data collectionComposition |
| Internal validity | * Do pattern matching
* Do explanation building
* Adress rival explanations
* Use logic models
 | Data analysis |
| External validity | * Use theory in single case studies
* Use replication logic in multiple-case studies
 | Research design |
| Reliability | -Use case study protocol-Develop case study database | Data collection |

It is not expected that all of these are included in the discussion. But a good answer would include at least a couple of these. The more the better.

1. *Today, the goal to increase the number of renewables (RE) is common throughout many countries. However, individual countries vary in their natural, socio-economic and political features. The Qualitative Comparative Analysis (QCA) presents an opportunity to compare these features and their impact on the development of RE across a medium number of cases. Evaluate the potential of this method to study the development of RE, and compare its strengths and weaknesses against small-N and big-N studies!*

QCA is located on a middle ground between large- and small-N studies, and represents a strategy to integrate quantitative/variable- and qualitative/case-oriented research. Located on the side of case-oriented methods, it emphasises case based, comparative research.

The method treats each case as a complex yet coherent configuration of different *attributes* or *conditions*. These stand in relation to one another. According to QCA theory, the conditions are the factors which (alone or in combination) cause the matter of interest (or *outcome*). The method’s central aim is to determine which combination of conditions is *necessary* or *sufficient* to achieve a certain outcome.

In practical terms, sets containing a medium number of cases are grouped together. In a second step, these cases are broken up into their conditions and the outcome (that is those aspects the researcher is interested in). In order to be analytically fruitful, the study’s set of cases needs to be *calibrated*; this process requires a careful definition of the relevant population of cases, a precise definition of the meaning of all concepts used in the analysis, and a decision on the presence and non-presence of a given phenomenon. To determine which combination of conditions are necessary or sufficient to achieve a given outcome, the principles of logical minimization are used to look for commonalities between those cases with the same outcome.

Renewables like wind and solar power meet certain conditions (be they natural, political, economical, technical or social); the latter also vary strongly throughout different countries. The combination of these conditions should also determine the outcome of any attempt to increase the share of renewables. In order to investigate conditions necessary and sufficient to cause growth in the renewables segment a number of countries (cases) can be broken up and analysed along the lines of QCA. Selection procedures should aim at a broad variation.

Naturally, the conditions also vary over time, as they follow national legislation, economic development etc.; moreover, it can be expected that these variations affect the development of wind and solar power growth rates. The analysis should take these variations into account, for example by preparing sets of cases for different points in time.

3.2) Compare the strengths and weaknesses of the QCA method against small-N and big-N studies:

By bringing together a number of cases (with individual conditions and outcomes) in a set, patterns of complex conjunctural causation can be identified without taking recourse to statistical testing. Therefore, QCA is applied where there are only insufficient numbers of cases for statistical testing. Further, the logic of QCA comes close to statistical (regression) analysis, but remains qualitative and case-based. In other words, this method allows the researcher to analyse a larger number of cases without losing the opportunity to study each individual case to a certain depth. Depending on the *scores* assigned to the conditions and the outcome of individual cases during the configuration process, existing patterns between cases can be uncovered in greater detail compared to large-N studies. Regarding the value of QCA to analyse the development of renewables, this can be of great advantage, since there is not enough cases for a statistical analysis (only a handful of countries actively promotes the use of renewables). Further, based on the outcomes of the configuration process, the method enables the structured analysis of a great deal of empirical material on the different conditions (e.g. different policies, natural endowment, economic support instruments, administrative measures etc.).

1. *The afternoon peak power consumption is threatening to overburden power grids of Norwegian cities. In an attempt to lower the power surge, the government is considering information campaigns to inform citizens that the operation of a number of power guzzling appliances and things can be postponed until later in the evening/night, e.g., laundry equipment, dishwashers, water heaters, electric vehicle recharging etc..*

*To test the efficiency and efficacy of one such campaign, the government has decided to launch a massive, one-week information campaign including a multitude of media in Stavanger, and then compare the aggregated power use in Stavanger to Bergen for the month following the campaign.*

1. *Discuss the validity of the findings of such a study.*
2. *Include a section where you suggest what you think would be the most efficient improvements to the design of the study.*

The main source for a good answer to a) and b) is the standard Cook & Campbell “threaths list”:

* History
* Maturation
* Testing
	+ Pre-test effects
		- Direct test effects
			* Learning
			* Reactive test effect
		- Interactive test effects (sensitivisation)
	+ Effect of the test situation (surroundings, persons etc..)
* Measurement error
* Regression towards the mean
* Sample/ assignment to experimental and control groups:
	+ Groups may be different on Y
	+ Groups may respond differently to X
* Mortality (of specific units)

b) In addition to the suggestions following from the list above, obvious remedies would include

* To consider unbundling the information campaign to learn more about differential effects of the components.
* to look at the time series of the consumption patterns and compare within and across the two cities.
* to consider the choice of the sample
	+ are the two cities an OK sample?
	+ Could more cities/areas/// be included?