

Overview of Research Methods, Instruments and Data Analysis in Social

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Conducting research requires proper planning and involves systematic steps. One of the steps is choosing the appropriate research methods. The research methods chosen need to be able to collect the types of data that will answer the research objectives or research questions. There are three methods to collect data which are a qualitative method to collect qualitative data, a quantitative method to collect quantitative data and mixed methods (a combination of qualitative and quantitative methods) to collect both types of data which are qualitative and quantitative data.

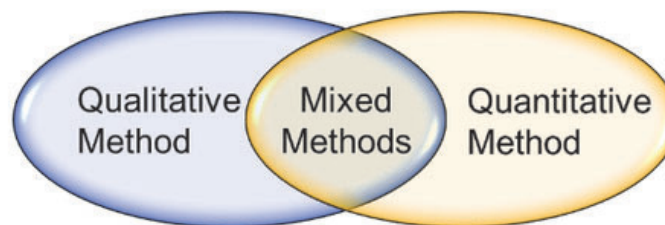


Figure 1 Research methods

For a qualitative method, several common instruments are used, such as surveys using open-ended questionnaires, interviews and observations. As for interviews, researchers can opt for one-to-one interviews or focus group interviews. A focus group interview may consist of four to eight participants (Creswell, 2014) or six to ten participants (Gawlik, 2018). The data collected can be analysed by using a thematic approach. The analysis can be conducted manually or by using certain applications such as NVIVO (<https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home/>) or ATLAS.ti (<https://atlasti.com/>).

For quantitative data collection, two common instruments employed in social science research surveys using closed ended questionnaires are tests and quasi-experiments. The data collected can be analysed using types of analysis: (1) descriptive statistics and/ or (2) inferential statistics. Descriptive statistics are used to summarise the characteristics of a data set in terms of central tendency by using percentages, means, mode, and median and measure dispersion by using range, standard deviation, quartile deviation and variance. The results of the analysis are presented in charts, graphs and tables. Inferential statistics are used for estimation of parameters and testing of hypotheses.

Some examples of analyses for inferential statistics are correlation tests, regressions, t-tests and ANNOVA. When conducting any analysis for inferential statistics, certain assumptions need to be followed. There are several websites that can be referred to for understanding statistical analysis such as:

1. <https://www.socscistatistics.com/>
2. <https://onlinestatbook.com/>
3. <https://ezspss.com/>

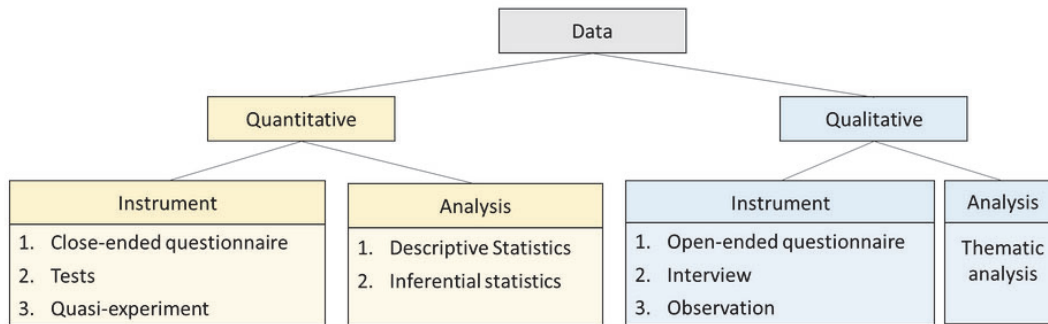


Figure 2 Instruments and data analysis

For mixed methods, the instruments used are like mentioned above. However, researchers need to select the research design for mixed methods. Mixed methods research design is a set of procedures collecting, analysing, and “mixing” both quantitative and qualitative methods in a study to understand a research problem (Creswell & Plano, 2015, p. 489). The following are nine mixed methods research designs according to the research purpose (Creswell & Plano, 2015, p. 391):

1. **Convergent Parallel** - to develop a complete and valid understanding
2. **Sequential Explanatory** - to explain the mechanisms or reasons behind quantitative results
3. **Sequential Exploratory** - to test or generalize qualitative findings
4. **Embedded Experiment** - to enhance a quantitative experimental study by including a secondary qualitative component to explore the procedures or process of the experiment
5. **Embedded Case Study** - to enhance a qualitative case study by including a secondary quantitative component to enrich the interpretation of the case
6. **Concurrent Conversion** - to identify quantitative relationships among variables that include at least one variable that is a quantification of qualitative findings
7. **Concurrent Multilevel** - to examine multiple levels (e.g., students, teachers, principals, and districts)
8. **Multiphase** - to conduct a program of studies aimed at achieving an overall objective such as developing and evaluating a program
9. **Transformative** - to conduct research that empowers individuals and advocates for social justice.

It is crucial to have a clear understanding and knowledge in research methods, instruments and data analysis. Choosing the inappropriate methods, instruments and data analysis may waste researchers' resources in completing their research.

References

Creswell, J. W. (2014). *Research Design: qualitative, quantitative, and mixed methods approaches* (4th ed.). California: SAGE Publications Inc.

Gawlik, K. (2018). Focus group interviews. In *Qualitative methodologies in organization studies* (pp. 97-126). Palgrave Macmillan, Cham.

Plano Clark, V. L., & Creswell, J. W. (2015). *Understanding research: A consumer's guide*.