

Study Notes on Quantitative Research & Methods



Quantitative methods are the backbone of quantitative research. Quantitative research is a kind of strategy pertaining to research that broadly focuses on the quantification of collection & analysis of data. It is formed from a deductive approach wherein emphasis is put on the testing of theory, shaped by positivist and/or empiricist philosophies. It is associated with the natural, formal, applied & social sciences. It promotes some sort of objective empirical investigation of observable phenomena around one to test & understand relationships.

Moving ahead towards the methods deployed, quantitative research is done through a wide range of quantifying techniques and methods, reflecting on its broad utilization as a research strategy that differs across academic disciplines. The core objective of quantitative research is to simply deploy and employ mathematical models, theories and hypotheses pertaining to phenomena. Quantitative data is any data that is in numerical form, say, for example; percentage, statistics etc. Quantitative research is used indispensably in:

- Economics
- Demography
- Sociology
- Psychology
- Marketing
- Gender Studies etc.

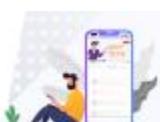
Use of Statistics

Statistics is the most widely used branch of mathematics in quantitative research outside of the physical sciences and it also finds applications within the physical sciences, say, for example, in statistical mechanics. Such methods are also used extensively within the fields such as social sciences, biology and economics. Research using statistical methods starts with collection of data, based on the theory or hypothesis. In general, a large sample of data is collected – which would require verification, initial validation and proper recording before the analysis can take place.

Empirical relationships, associations, and correlations etc are also frequently studied by using some form of general linear model or non-linear model or by use of factor analysis. Also, a fundamental principle in quantitative research is that correlation doesn't necessarily imply causation, although some individuals such as Clive Granger suggest that a series of correlations may possibly imply a certain degree of causation.

Measurement

The views regarding the role of measurement in quantitative research are somewhat divergent and conflicting. It is often regarded as to be only a means by which observations are expressed numerically to investigate causal relations or associations. However, it has also been argued numerous times that the concept of measurement plays a more important role in quantitative research.



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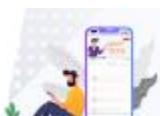
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As put sophisticatedly by American philosopher Thomas Kuhn, who argued that the results can prove to be strange and eccentric in case of quantitative research. He has sophisticatedly put forward that:

In case measurement departs from theory, it is very probable to yield mere numbers and their very neutrality tends to make them particularly sterile and dumb as a source of remedial suggestions.

Relationship with qualitative methods:

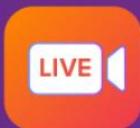
In most sciences, say for that matter, physical or biological sciences, it is uncontroversial to use either quantitative or qualitative methods and each is deemed to be used when appropriate. However, in social sciences, the use of one over the other can often be controversial. Hence, a more apt solution, which combines both qualitative and quantitative data is the mixed-methods research which is being deployed globally by large corporations and government organisations.



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