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Learning points

- Understand the need for sampling in business and management research
- Be aware of a range of probability and non-probability sampling techniques and the possible need to combine techniques within a research project
- Be able to select appropriate sampling techniques for a variety of research scenarios and be able to justify their selection
- Be able to use a range of sampling techniques
- Be able to assess the representativeness of respondents
- Be able to apply the knowledge, skills and understanding gained to your own research project
6.1 Introduction

- Sampling techniques provide a range of methods that enable you to reduce the amount of data you need to collect by considering only data from a subgroup rather than all possible cases or elements.
- Techniques for selecting samples are very important.
- The full set of cases from which a sample is taken is called the population.
6.1 Introduction

- The need to sample
  - It would be impracticable for you to survey the entire population
  - Your budget constraints prevent you from surveying the entire population
  - Your time constraints prevent you from surveying the entire population
  - You have collected all the data but need the results quickly
6.1 Introduction

- An overview of sampling techniques
  - Probability or representative sampling
  - Non-probability or judgemental sampling
6.2 Probability sampling

- The process of probability sampling:
  - Identify a suitable sampling frame based on your research question or objectives.
  - Decide on a suitable sample size.
  - Select the most appropriate sampling technique and select the sample.
  - Check that the sample is representative of the population.
6.2 Probability sampling

- Identifying a suitable sampling frame
  - The sampling frame for any probability sample is a complete list of all the cases in the population from which your sample will be drawn.
  - The completeness of your sampling frame is very important. An incomplete or inaccurate list means that some cases will have been excluded and so it will be impossible for every case in the population to have a chance of selection.
  - It is important to ensure that the sampling frame is unbiased, current and accurate.
6.2 Probability sampling

- Deciding on a suitable sample size
  - Generalisations about populations from data collected using any probability sample are based on probability. The larger your sample’s size the lower the likely error in generalising to the population.
  - The final sample size is almost always a matter of judgement as well as calculation.
  - Researchers normally work to a 95 percent level of certainty.
6.2 Probability sampling

- Deciding on a suitable sample size
  - The confidence you need to have in your data
  - The margin of error that you can tolerate
  - The types of analyses you are going to undertake
  - The size of the total population from which your sample is being drawn
6.2 Probability sampling

- The importance of a high response rate
  - A perfect representative sample is one that exactly represents the population from which it is taken.
  - In reality, you are likely to have non-responses. Non-respondents are different from the rest of the population because they have refused to be involved in your research for whatever reason. In addition, any non-responses will necessitate extra respondents being found to reach the required sample size, thereby increasing the cost of your survey.
6.2 Probability sampling

- The importance of a high response rate
  - Non-response is due to four inter-related problems:
    - Refusal to respond
    - Ineligibility to respond
    - Inability to locate respondent
    - Respondent located but unable to make contact
6.2 Probability sampling

- The importance of a high response rate

\[
\text{total\_response\_rate} = \frac{\text{total\_number\_of\_responses}}{\text{total\_number\_in\_sample} - \text{ineligible}}
\]

\[
\text{active\_response\_rate} = \frac{\text{total\_number\_of\_responses}}{\text{total\_number\_in\_sample} - (\text{ineligible} + \text{unreachable})}
\]
6.2 Probability sampling

- Estimating response rates and actual sample size required

\[ n^a = \frac{n \times 100}{re\%} \]
6.2 Probability sampling

- Selecting the most appropriate sampling technique and the sample
  - Simple random
  - Systematic
  - Stratified random
  - Cluster
  - Multi-stage
6.2 Probability sampling

- **Simple random sampling**
  - It involves you selecting the sample at random from the sampling frame using either random number tables or a computer:
    - Number each of the cases in your sampling frame with a unique number. The first case is numbered 0, the second 1 and so on.
    - Select cases using random numbers until your actual sample size is reached.
6.2 Probability sampling

- Systematic sampling
  - It involves you selecting the sample at regular intervals from the sampling frame.
    - Number each of the cases in your sampling frame with a unique number. The first case is numbered 0, the second 1 and so on.
    - Select the first case using a random number.
    - Calculate the sampling fraction.
    - Select subsequent cases systematically using the sampling fraction to determine the frequency of selection.
6.2 Probability sampling

- **Stratified random sampling**
  - It is a modification of random sampling in which you divide the population into two or more relevant and significant strata based on one or a number of attributes.
    - Choose the stratification variable or variables.
    - Divide the sampling frame into the discrete strata.
    - Number each of the cases within each stratum with a unique number, as discussed earlier.
    - Select your sample using either simple random or systematic sampling, as discussed earlier.
6.2 Probability sampling

- Cluster sampling
  - Your sampling frame is the complete list of clusters rather than a complete list of individual cases within the population. You then select a few clusters, normally suing simple random sampling. Data are then collected from every case within the selected clusters.
    - Choose the cluster grouping for your sampling frame.
    - Number each of the clusters with a unique number. The first cluster 0, the second 1, and so on.
    - Select your sampling using some form of random sampling as discussed earlier.
6.2 Probability sampling

- Multi-stage sampling
  - A development of cluster sampling.
    - See figure 6.4 in page 168
  - Because multi-stage sampling relies on a series of different sampling frames you need to ensure that they are all appropriate and available.
6.2 Probability sampling

- Checking the sample is representative
  - Often it is possible to compare data you collect from your sample with data from another source for the population.
  - If there is no statistically significant difference then the sample is representative with respect to these characteristics.
  - You could use Kolmogorov-Smirnov one sample test.
6.3 Non-probability sampling

- Quota
- Purposive
  - Extreme case
  - Heterogeneous
  - Homogeneous
  - Critical case
  - Typical case
- Snowball
- Self-selection
- convenience
6.3 Non-probability sampling

- Quota sampling
  - It is based on the premise that your sample will represent the population as the variability in your sample for various quota variables is the same as that in the population.
  - Divide the population into specific groups.
  - Calculate a quota for each group based on relevant and available data.
  - Give each interviewer an assignment, which states the number of cases in each quota from which they must collect data.
  - Combine the data collected by interviewers to provide the full sample.

Quota sampling
6.3 Non-probability sampling

- **Quota sampling**
  - Quota sampling is normally used for large populations.
  - Calculations of quotas are based on relevant and available data and are usually relative to the proportions in which they occur in the population.
  - Your choice of quota is dependent on two main factors:
    - Usefulness as a means of stratifying the data.
    - Ability to overcome likely variations between groups in their availability for interview.
6.3 Non-probability sampling

- **Purposive sampling**
  - Purposive or judgemental sampling enables you to use your judgement to select cases that will best enable you to answer your question and the meet your objectives. This form of sample is often used when working with very small samples such as in case study research and when you wish to select cases that are particularly informative.
6.3 Non-probability sampling

- **Purposive sampling**
  - Such samples cannot be considered to be statistically representative of the total population.
  - the logic on which base your strategy for selecting cases for a purposive sample should be dependent on your research question and objectives.
6.3 Non-probability sampling

- Purposive sampling
  - *Extreme case* or deviant sampling focuses on unusual or special cases on the basis that the data collected about these unusual or extreme outcomes will enable you to learn the most and to answer your research question and to meet your objectives most effectively. This is often based on the premise that findings from extreme cases will be relevant in understanding or explaining more typical cases.
6.3 Non-probability sampling

- Purposive sampling
  - *Heterogeneous or maximum variation* sampling enables you to collect data to describe and explain the key themes that can be observed. In addition, the data collected should enable you to document uniqueness. To ensure maximum variation within a sample, it is suggested that you identify your diverse characteristics (sample selection criteria) prior to selecting your sample.
6.3 Non-probability sampling

- **Purposive sampling**
  - *Homogeneous* sampling focuses on one particular subgroup in which all the sample members are similar. This enables you to study the group in great depth.
6.3 Non-probability sampling

- Purposive sampling
  - *Critical case* sampling selects critical cases on the basis that they can make a point dramatically or because they are important. The focus of data collection is to understand what is happening in each critical case so that logical generalizations can be made.
6.3 Non-probability sampling

- Purposive sampling
  - *Typical case* sampling is usually used as part of a research project to provide an illustrative profile using a representative case. Such a sample enables you to provide an illustration of that is “typical” to those who will be reading your research report and may be unfamiliar with the subject matter. It is not intended to be definitive.
6.3 Non-probability sampling

- Snowball sampling
  - It is commonly used when it is difficult to identify members of the desired population, for example people who are working while claiming unemployment benefit.
    - Make contact with one or two cases in the population.
    - Ask these cases to identify further cases.
    - Ask these new cases to identify further new cases (and so on).
    - Stop when either no new cases are given or the sample is as large as is manageable.
6.3 Non-probability sampling

- Self-selection sampling
  - It occurs when you allow a case, usually an individual, to identify their desire to take part in the research.
    - Publicise your need for cases, either by advertising through appropriate media or by asking them to take part in.
    - Collect data from those who respond.
6.3 Non-probability sampling

- Convenience or haphazard sampling
  - It involves selecting haphazardly those cases that are easiest to obtain for your sampling, such as the person interviewed at random in a shopping center for a television programme.
  - The sample selection process is continued until your required sample size has been reached.
  - Often the sample is intended to represent the total population.
6.4 Summary

- Your choice of sampling techniques is dependent on the feasibility and sensibility of collecting data to answer your research question and to address your objectives form the entire population.
- Factors such as the confidence that is needed in the findings, accuracy required and likely categories for analyses will affect the size of the sample that needs to be collected.
6.4 Summary

- Sample size and the technique used are also influenced by the availability of resources, in particular financial support and time available to select the sample and to collect, enter into a computer and analyse the data.
- Probability sampling techniques all necessitate some form of sampling frame, so they are often more time consuming than non-probability techniques.
6.4 Summary

- Non-probability sampling techniques also provide you with the opportunity to select your sample purposively and to reach difficult-to-identify members of the population.
- For many research projects you will need to use a combination of different sampling techniques.
- All your choices will be dependent on your ability to gain access to organizations. The considerations summarized earlier must therefore be tempered with an understanding of what is practically possible.
The End

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THANK YOU!

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