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Research Methods Workshop

(Workshop / Session 7)

Sample Collection

Trawsnewid Addysg; Trawsnewid Bywydau
Transforming Education; Transforming Lives



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Last session - Negotiating Access and Ethics

- be aware of issues associated with gaining traditional and internet-mediated access
- be able to evaluate a range of strategies that help you to gain access to organizations and to individual participants
- be aware of the importance of research ethics and the need to act ethically
- be aware of the principles of data protection and data

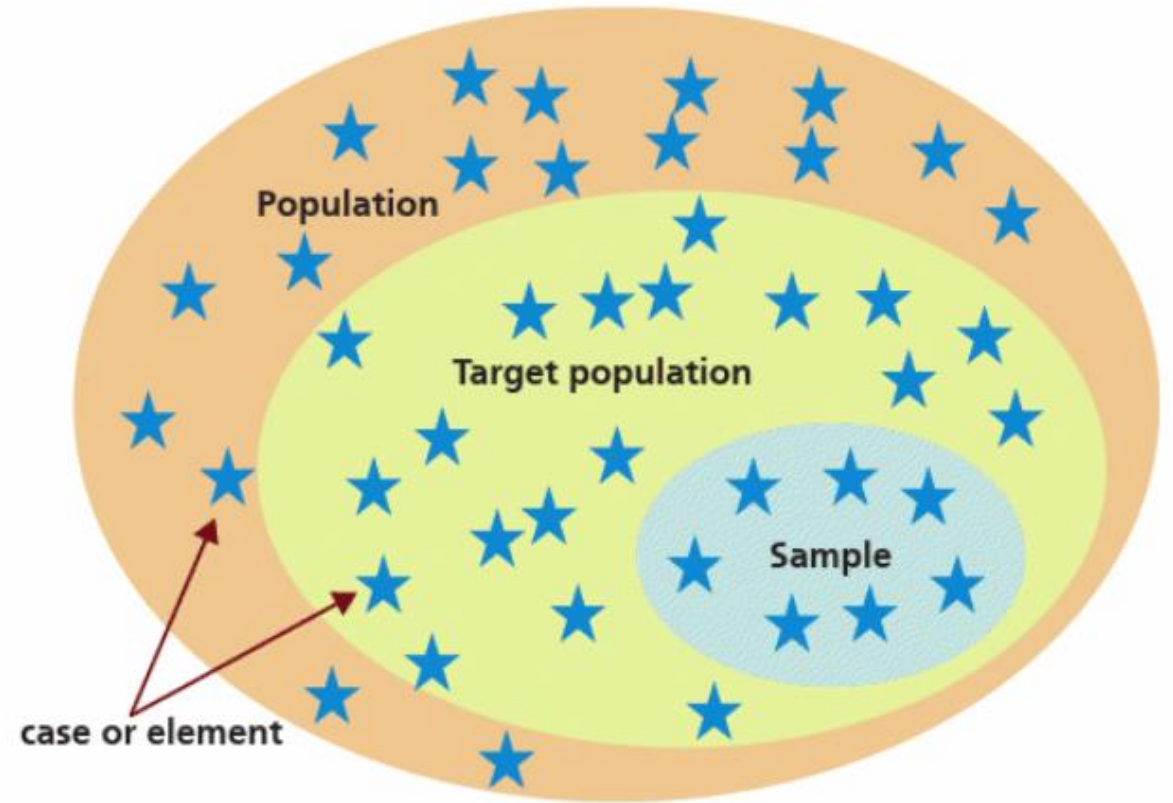
management

This session's **Aims**

- understand the need to select samples 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 choose and use appropriate sampling techniques for a variety of research scenarios and justify your choices
- be able to assess the representativeness of the sample selected

What is Sampling?

- You need to be aware to which degree your research is generalisable
- You need to define your target population (the group of objectives you aim to draw conclusions for)
- Most of the time, it is not possible to collect and analyse data from every possible element of your target population (constrained resources)
- You need to reduce the amount of data by selecting a sample
- You need to know how to select a sample, and be aware of potential biases



Four Important Steps

- 1. Identify a suitable sampling frame based on your research questions**
- 2. Decide on a suitable sample size**
- 3. Select the most appropriate sampling technique and select the sample**
- 4. Check how representative the sample is**

PROBABILITY SAMPLING (ALLOWS FOR STATISTICAL INFERENCES)

1. Identify a suitable sampling frame based on your research questions

- Define target population (e.g. all MBA students of the University of Greenwich)
- Get access to a complete list of all elements in the target population
- Ensure that the list is as correct as possible, be aware that such lists are often limited
- Always keep in mind that you can only draw generalisable conclusion for your defined target population

2. Decide on a suitable sample size

- **The sample size is governed by**
- The confidence you need to have in the representativeness of your data
- The margin of error that you are willing to tolerate
- The type of analysis you are going to undertake
- The size of the target population

The Law of Larger Numbers

- Sample Size
 - =
- $(n \times 100) / \text{re}\%$
- $\text{Re}\% \sim 35$

Target population	Margin of error			
	5%	3%	2%	1%
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	132	168	185	196
250	151	203	226	244
300	168	234	267	291
400	196	291	343	384
500	217	340	414	475
750	254	440	571	696
1 000	278	516	706	906
2 000	322	696	1091	1655
5 000	357	879	1622	3288
10 000	370	964	1936	4899
100 000	383	1056	2345	8762
1 000 000	384	1066	2395	9513
10 000 000	384	1067	2400	9595

3. Select the most appropriate sampling technique and select the sample

- **Simple random**
- **Systematic random**
- **Stratified random**
- **Cluster**

Simple Random

- Give each element on your list a unique number
- Use a number generator (excel) to randomly pick numbers
- Continue until you have reached the required sample size
- Survey the chosen elements

Systematic Random

- Sort the list based on a specific factor (e.g. age, name)
- Give each element on your list a unique ORDERED number
- Use a number generator (excel / dice) to randomly pick ONE number (e.g. between 1 and 6)
- Use this number to pick the elements (e.g. every 3rd element)
- Continue until you have reached the required sample size
- Survey the chosen elements

Stratified Random

- Split target population into groups based on a specific variable (e.g. gender)
- Create a list of elements for each group
- Give each element on each list a unique number
- Use a number generator (excel) to randomly pick numbers
- Continue until you have reached the required sample size for each group
- Survey the chosen elements

Cluster

- Choose a cluster variable (e.g. geographical area) and give each cluster a unique number
- Use a number generator (excel) to randomly pick clusters
- Create a list of elements for each chosen cluster and give each element on each list a unique number
- Use a number generator (excel) to randomly pick numbers
- Continue until you have reached the required sample size for each cluster
- Survey the chosen elements

4. Check how representative the sample is

- You need to provide statistics about the response rate.
 - **response rate**
 - **=**
 - ***number of responses / sample size***
- You need to be aware of non-response bias.
- You need to statistically compare the characteristics of your sample (e.g. age) with the characteristics of the target population – aim for non-significant differences.

NON-PROBABILITY SAMPLING (DOES NOT ALLOW FOR STATISTICAL INFERENCES)

1. Identify a suitable sampling frame based on your research questions

- Define target population (e.g. all MBA students of UWTSO)
- You do NOT need to get access to a complete list of all elements in the target population
- As you can NOT select your sample randomly, it requires a greater element of subjective judgment and detailed explanation

2. Decide on a suitable sample size

- There is no defined rule for how large the sample size should be
- You usually collect data until the point of 'data saturation'
- Again, it requires a greater element of subjective judgment and detailed explanation
- As a rule of thumb, aim for a minimum 15 qualitative interviews, or 100 survey participants (30 per group of interest)

3. Select the most appropriate sampling technique and select the sample

- **Quota sampling**
- **Purposive sampling**
- **Extreme case sampling**
- **Heterogenous sampling**
- **Homogenous sampling**
- **Typical case sampling**

Quota Sampling

- divide your target population into groups based on your conceptual framework (e.g. Gender groups and education back ground)
- calculate quota per group (at least 30 per group)
- collect data until quota for each group has been reached

Purposive Sampling 1

- You need to select participants based on your conceptual framework that will best enable you to answer your research questions
- You need to very carefully explain WHY you have selected the participants

Purposive Sampling 2

Expert sampling - interview participants with expert knowledge

Extreme case sampling - interview extreme cases (e.g. established CEO and newly hired interns)

Heterogenous sampling - interview participants with diverse characteristic to maximize variation (e.g. intern, assistant, associate, senior associate, junior partner, senior partner, and CEO)

Purposive Sampling 3

Homogenous Sampling - interview participants with similar characteristics to be able to focus in depth on their 'hidden' differences (e.g. only interview senior partners)

Typical case sampling - interview participants with average characteristics

4. Check how representative the sample is

- Be aware that your sample does not statistically represent your target population
- Hence, you cannot statistically generalise your results
- Highlight this fact as a limitation in your conclusion

Final Points to highlight

- You need to take notes about all steps and decisions, as you need to write about them in your methodology chapter
- Probability sampling and quota sampling are more suitable for quantitative research
- Purposive sampling is more suitable for qualitative research
- Have a look at the decision trees on page 306 and 316 of the textbook to get more information about when to use which sampling technique

Research Activity

Have a look at page 330 of Saunders et al. (2019). Go through the step and select the most appropriate sampling technique and sample size for your research.

Write down an overview of your case, the original population, and sample (size) with appropriate justifications: why and how you have selected your sample? and discuss with your tutor and classmates.