UNIVERSITY OF LIVERPOOL

Management School

Key Concept
Overview

Sampling Techniques

KMGT 714

Data Driven Marketing Research and Analysis

Week 4

Key Concept
Sampling Techniques

In order to design a sample that represents the population, marketing researchers need to address three central questions. Firstly, the researcher needs to ascertain 'who' is to be included in the sample (the *sample unit*). Whilst this may seem to be a simple question, nonetheless, the researcher needs to be sure that those who have been chosen for a sample are able to provide the data and information required. The next question to be answered refers to how many people need to be sampled (the *sample size*). Remember that taking a sample is a method of enabling a researcher to draw inferences about a population. Therefore, it stands to reason that the larger the sample size, the more accurate the inferences about a population may be. Finally, the researcher needs to be able to choose how the sample is chosen (the *sample procedure*).

As this week continues the focus on quantitative research methods for marketing research, sampling techniques can be divided into two broad types, 1) probability sampling and 2) non-probability sampling. Probability sampling is a technique used where each member of the population has a known chance of being included in the sample. Non-probability sampling is used when either the population is unknown, or when resource constraints mean that population sampling is not possible. More detail on probability and non-probability methods is provided later in this overview.

The sampling process

Figure 1 depicts the sampling process that is required in order to ensure that the sample chosen represents the views of the greater population.
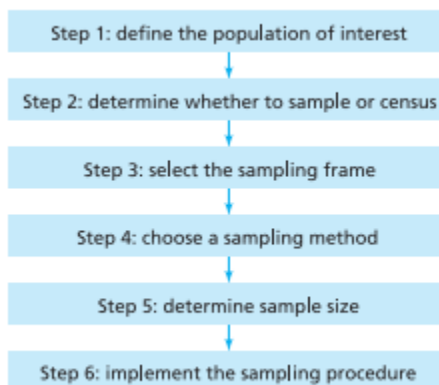

Figure 1: Six Steps Sampling Process
(Source: Wilson, 2011, p.196)

As the diagram shows, sampling requires a step-by-step approach to ensure that the data and information from a sample meets the needs of the marketing research project. It may seem obvious, but the first stage in the sampling process entails an identification of the population that is to be the focus of the research. In other words, the researcher needs to be able to ascertain who s/he wants to examine.

Depending on the population size, the researcher must then decide whether or not to ask questions of the entire population (a census) or from a segment of the population (a sample). The size of the population as

well as the resources of the marketing researcher will determine if a census or sample is the selected method at this stage.

An important consideration is the sampling frame. Quite simply, a sampling frame is a list of the population that is of interest to the researcher. This sampling frame could be found in a database, a directory, or any file that records the details of the population that is of interest to the marketing researcher. Recalling the example of Coca Cola's launch of 'new' Coke in the 1980s, it is reasonable to suggest that it may have been difficult to get a list of all the Coke drinkers worldwide; and, at times, determining the nature and scale of a population can be problematic.

Sampling methods

In many cases, it is neither practical nor feasible to gain the views of a population through a census. However, the marketing researcher still needs to be able to ascertain information on the population. In order to get around these resource constraints, researchers employ sampling techniques. For reasons or parsimony, these techniques are classified into two types; probability sampling and non-probability sampling.

Probability sampling

Remember that sampling is used in order to derive inferences about a population in a resource efficient manner. The objective of sampling is to inform the researcher about the population. Probability sampling is a technique that ensures that each element of a population has a known probability of being in that sample. Table 1 outlines and explains common probability sampling techniques.

Simple Random Sampling	In this method, every member of the population has a known and equal chance of selection for the sample.
Stratified Random Sampling	In this method, the population is divided into groups, and a random sample is drawn from each group.
Cluster Sampling	In this method, the population has already been divided into groups and random sampling is applied to these groups.

Table 1: Common Probability Sampling Techniques

Non probability sampling

Table 2 shows a number of non-probability sampling techniques.Convenience Sampling	As the title suggests, with Convenience Sampling subjects are selected depending on their accessibility to the researcher.
Snowball Sampling	Snowball Sampling is a technique that relies on the initial subjects assisting the researcher to generate additional respondents. This method is used whenever members of a population are unknown. Unfortunately, snowball sampling can result in bias. It also reduces the likelihood that the sample will be representative of the population.
Quota Sampling	In Quota Sampling the choice of respondents is left to the researcher. In quota sampling, not everyone has an equal chance of being selected. The researcher determines the quotas of the population based on a small number of criteria. People who have been stopped on the street by a researcher because they fit a demographic profile are likely to have been the subject of quota sampling.

Table 2: Non-Probability Sampling Techniques

Determining the sample size

For researchers, determining the sample size is often a trade-off between the cost of sampling and the accuracy of inference that can be drawn on a population. In other words, increasing the sample size may lead to a reduction in sampling error. Therefore, the budget the researcher has at his/her disposal can determine the sample size.

However, there are a number of techniques that can be applied in order to determine the preferred sample size. These are addressed in detail in chapter 8 of the Wilson (2011) textbook. In order to calculate the sample size, three criteria need to be considered. Firstly, the level of precision, or sampling error, needs to be determined. This will allow the researcher to define the range in which the true value of the population is estimated to be. Secondly, the researcher will set a confidence level which is based on the Central Limit Theorem. For example, if a 95% confidence level is selected, then the researcher can be 95% confident that the samples chosen will have the population value in them. Finally, the researcher needs to assess the degree of variability. As a general rule, the more heterogeneous a population, the larger the sample size required. On the other hand, the less variable (i.e. homogeneous) a population is, the smaller the sample size.

Sampling and the internet

There is no doubt that the internet provides marketing researchers with a resource that can enable them to collect data from populations in an effective and efficient manner.

There are a number of ways by which sampling can occur using the internet. Uncontrolled Instrument Distribution involves posting a research instrument (such as a survey) on the web for anyone to complete. These surveys are uncontrolled because access to them is unlimited, and respondents can fill in the questionnaire as many times as they wish. Yet, as a research tool, the internet allows researchers to access populations otherwise previously inaccessible due to the nature of the research involved. For example, in 1997, Coomber was able to survey drug dealers to ascertain how widespread the practice of dangerous drug dilution was internationally. In this case, it is fair to assume that Coomber was unable to construct a sampling frame.

The internet can also be used for systematic sampling. Using this method, for example, every 'nth' visitor is sampled for research purposes. In 2003, a survey conducted using this method suggested that Arnold Schwarzenegger would win the 2003 California Gubernatorial Recall Election (Brady et al., 2004).

Another method of Internet sampling available to organisations is a volunteer panel. Organisations can recruit volunteers through advertising. Once recruited, the volunteers can take part in the research in a virtual manner or engage with the researcher using real time VOIP.

The examples discussed are considered to be non-probability sampling methods. Using the internet does not exclude the use of probability sampling methods. If an organisation has access to a membership database, then probability sampling techniques, using email (for example), can be employed. An example of this would be an organisation surveying its employees.

When using the internet to conduct research, it is important to remember that not everyone has access to the internet. A researcher must appreciate that certain populations, such as those living in rural areas, those aged over 65 and those in lower incomes, are underrepresented among internet users and those with high-speed internet access.

References

Brady, S., Stapleton, C. & Bouffard, J. (2004) '2003 national census test: response mode analysis', US Census Bureau Internal Memorandum.

Wilson, A.M. (2011) *Marketing research: an integrated approach*. 3rd ed. [Electronic Book]. Harlow: Financial Times/Prentice Hall.