Chapter 6
Sampling in Research

Never Mujere
University of Zimbabwe, Zimbabwe

ABSTRACT

Research is aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts or practical application of such new or revised theories or laws. A sample provides needed information about the population quickly. However, there is no guarantee that any sample will be precisely representative of the population from which it comes. It is cheaper to observe a part rather than the whole. This chapter is a discussion on sampling in research and it is mainly designed to equip researchers with knowledge of the general issues to consider when sampling. The purpose of sampling in research, dangers of sampling and how to minimize them, types of sampling and guides for deciding the sample size are discussed. For a clear flow of ideas, a few definitions of the terms used are given. They highlight the types and methods of sampling, sampling errors and discusses techniques of sample size determination. Different types of sampling technique, how to carry them out, and their advantages and disadvantages are also introduced.

INTRODUCTION

Scientific research is important to search or investigate exhaustively (Berinstein, 2003). However, populations about which inferences must be made are maybe quite large, costly or inaccessible to reach. This makes it physically impossible to conduct a census. In such cases, selecting a representative sample may be the only way to get the information required about the population. Researchers may choose from a variety of sampling methods (Salant & Dillman, (1994). Choice of the sampling method to be used depends on research goals and whether or not the researcher wants to generalize the findings from the sample. It is vital to be aware of possible errors due to the sample method chosen so that the study is regarded as valid. This is a literature review of what sampling is, how to create a sample, and highlights the advantages and disadvantages or limitations of the sampling techniques.

DOI: 10.4018/978-1-5225-0007-0.ch006

BACKGROUND

To understand population characteristics, it is important to select a sample. Sampling is an important component of any piece of research because of the significant impact that it can have on the quality of research findings. The main reasons for sampling to obtain a sample rather than a complete enumeration (a census) of the population are; economy, timeliness, the large size of many populations, inaccessibility of some of the population and destructiveness of the observation accuracy. To draw conclusions about populations from samples, we use inferential statistics which enables us to determine a population`s characteristics by directly observing only a portion or sample of the population. Taking a sample requires fewer resources than a census.

When the researcher is interested in the entire population (i.e signifies the units that we are interested in studying), it is vital to take a census. It is often impractical and sometimes undesirable to try and study the entire population due to resources constraints such as time (Salant & Dillman, 1994; Frey et al., 2000). Therefore, we choose to study just a sample of the population. A sample consists of only those units (e.g., students) from the population of interest.

SAMPLING

A sample is group of people, objects or items that are taken from a large population for a measurement. The sample should be representative of the population to ensure that we can generalize the findings from the research sample to the population as a whole. (Jopnes, 1955; Salant & Dillman, 1994). Sampling is the act, process, or technique of selecting a suitable sample, or a representative part of a population for the purpose of determining parameters or characteristics of the whole population. In sampling, population units such as people (e.g. students enrolled at a university or studying a particular course), cases (i.e., recruitment agencies, organizations, institutions, countries, etc.) and pieces of data (e.g. customer transactions at a particular supermarket, university applications in a country) are selected. To draw conclusions about populations from samples, one must use inferential statistics, to enable us to determine a population's characteristics by directly observing only a portion (or sample) of the population.

Purpose of Sampling

A sample is needed as it may not be practical and almost never economical to conduct a census of whole population because (Leyman, 1983; Lohr, 1999):

1. The large size of many populations.
2. The time factor- a sample may provide needed information quickly.
3. Inaccessibility (associated with cost or time or just access) of some of the population e.g. prisoners, people with severe mental illness, disaster survivors etc.
4. Destructiveness of the observation e.g. to determine the quality of a fuse and whether it is defective, it must be destroyed. Therefore if you tested all the fuses, all would be destroyed.
5. Accuracy and sampling i.e. a sample may be more accurate than a sloppily conducted census.