

# Chapter 5

## Research Methods

### LEARNING OUTCOMES

After studying this chapter, you should be able to

1. Define surveys and explain their advantages
2. Describe the type of information that may be gathered in a survey
3. Identify sources of error in survey research
4. Distinguish among the various categories of surveys
5. Discuss the importance of survey research to total quality management programs

### Basic Definitions for surveys

Survey: a research technique in which information (primary data) is gathered from a sample of people to make generalizations.

Primary data: data gathered and assembled specifically for the project at hand.

Sample of the survey: respondents who are asked to provide information, assuming that they can represent (possess same features with) a target population.

### Selecting a Sample

Basic Definitions for sampling

Target population: the group about which the researcher wishes to draw conclusions and make generalizations

Random sampling: selecting a sample from a larger target population where each respondent is chosen entirely by chance and each member of the population has a known, but possibly non-equal, chance of being included in the sample.

### Basic Definitions for data collection

Surveys ask respondents (who are the subjects of the research) questions by use of a questionnaire.

Respondent: The person who provides information (primary data) by answering a questionnaire or an interviewer's questions. 2

Questionnaire: a list of structured questions designed by the researchers for the purpose of codifying and analyzing the respondents' answers scientifically.

Advantages of Surveys: Quick, Inexpensive, Efficient, Accurate, Flexible way of gathering information.

### **Errors in Surveys**

2.1. Random Sampling Error

2.2. Systematic Error (sample bias)

2.2.1. Respondent error

- \* Nonresponse bias

- \* Response bias

2.2.2. Administrative error

- \* Data processing error

- \* Sample selection error

- \* Interviewer error

- \* Interviewer cheating

### **Categories of Survey Errors**

#### **Random Sampling Error**

Even if randomly selected, samples may possess different characteristics than the target population (the likelihood of bias is reduced but still exists)

This is a statistical fluctuation due to chance variation.

Then, an important difference occurs between the findings obtained from this sample and the findings obtained from a possible census of the whole target population.

Consider the hypothetical case in which a study sample could be increased until it was infinitely large; chance variation of the mean, or random error, would be reduced toward zero. These are random errors.

Systematic errors would not be diminished by increasing sample size.

#### **Systematic Error**

Systematic error results from some mistake(s) done in the design and/or execution of the research.

All types of error -except random sampling error, are included in this definition,

Sample bias: a persistent tendency for the results of a sample to deviate in one direction from the true value of the population parameter.

Sample bias can arise when the intended sample does not adequately reflect the spectrum of characteristics in the target population.

### **Non response Error**

Nonrespondents: in almost every survey information from a small or large portion of the sample cannot be collected. These are those people who refuse to respond, or who can not be contacted (not-at-homes)

Self-selection bias: only those people who are interested strongly with topic of the survey may respond while those who are still within the same sample but indeferent or afraid avoid participating.

This leads to the over-representation of some extreme positions, but under-representation of others.

### **Response Bias**

A bias that occurs when respondents tend to answer questions with a certain inclination of viewpoint that consciously (deliberate falsification) or unconsciously (unconscious misinterpretation) misrepresents the truth.

### **Types of Response Bias**

#### **Administrative Error**

Data processing error: incorrect data entry, computer programming, or other procedural errors during the analysis stage.

Sample selection error: improper sample design (e.g. based on incomplete databases) or sampling procedure execution (e.g. executed in daytime while most of the target population are working)

Interviewer error: mistakes done by the interviewer (e.g. taking wrong or incomplete notes about the answers of the respondents.

Interviewer cheating: filling in fake or false answers indeed not given by the respondents.