Lecture 4

Dr. Rafiq Mansoor

Sampling Design

Chapter 4

Sampling Design

* **CENSUS AND SAMPLE SURVEY**
* **STEPS IN SAMPLE DESIGN**

(i) Type of universe:

(ii) Sampling unit:.

Sampling unit may be a geographical one such as state, district, village, etc., or a construction unit such as house, flat, etc., or it may be a social unit such as family, club, school, etc.

(iii) Source list:

It is also known as 'sampling frame' from which sample is to be drawn. It contains the names of all items of a universe (in case of finite universe only).

Sampling Design

iv) Size of sample:

This refers to the number of items to be selected from the universe to constitute a sample.

(v) Parameters of interest:

the specific population parameters which are of interest. For instance, we may be interested in estimating the proportion of persons with some characteristic in the .

(vi) Budgetary constraint: Cost considerations, from practical point of view, have a major impact upon decisions relating to not only the size of the sample but also to the type of sample.

(vii) Sampling procedure: Finally, the researcher must decide the type of sample he will use i.e., he must decide about the technique to be used in selecting the items for the sample.

* ***Sampling errors are the random variations in the sample estimates around the true population parameters.***

  Since they occur *randomly* and are equally likely to be in either direction, their nature happens to be of compensatory type and the expected value of such errors happens to be equal to zero.

  Sampling error *decreases* with the *increase in the size of the sample*, and it happens to be of a smaller magnitude in case of homogeneous population.

DIFFERENT TYPES OF SAMPLE DESIGNS

Sample designs are basically of two types viz., non-probability sampling and probability sampling.

1. ***Non-probability sampling*** **: deliberate sampling, purposive sampling and judgment sampling; 'non-random'; *Quota* sampling.**
2. ***Probability sampling*** **: 'random sampling' or 'chance sampling'. Under this sampling design, every item of the universe has an equal chance of inclusion in the sample. Lottery method**

CHART SHOWING BASIC SAMPLING DESIGNS

Element selection technique	Representation basis: Probability sampling	Representation basis: Non-probability sampling
Unrestricted sampling	Simple random sampling	Haphazard sampling or convenience sampling
Restricted sampling	Complex random sampling (such as cluster sampling, systematic sampling, stratified sampling etc.)	Purposive sampling (such as quota sampling, judgement sampling)

Fig. 4.1

HOW TO SELECT A RANDOM SAMPLE ?

1. Simple cases: slip of paper; random number tables; dice
2. COMPLEX RANDOM SAMPLING DESIGNS

(i) Systematic sampling:

(ii) Stratified sampling

(iii) Cluster sampling: :

(iv) Area sampling:

(v) Multi-stage sampling:

(vi) Sampling with probability proportional to size:

(vii) Sequential sampling:

Measurement and Scaling Techniques

Chapter 5

Measurement and Scaling Techniques

* **MEASUREMENT IN RESEARCH,**
* **In our daily life we are said to measure when we use some *yardstick* to determine weight, height, or some other feature of a physical object.**

MEASUREMENT SCALES

* From what has been stated above, we can write that scales of measurement can be considered in terms of their mathematical properties.
* The most widely used classification of measurement scales are

(*a*) *Nominal scale*;

System of assigning number symbols to events in order to label them. *ex-post-facto* research

(b) *Ordinal scale*;

The lowest level of the ordered scale that is commonly used is the ordinal scale. qualitative phenomena.

(c) *Interval scale:*

The Fahrenheit scale is an example.

(d) *Ratio scale:*

Ratio scale represents the actual amounts of variables. Measures of physical dimensions such as weight, height, distance, etc. are examples.

Scale Classification Bases

(a) Subject orientation:

to measure characteristics of the respondent.

(b) Response form:

classify the scales as categorical and comparative. Categorical scales

(c) Degree of subjectivity:

With this basis the scale data may be based on whether we measure subjective personal preferences or simply make non-preference

(d) Scale properties:

Considering scale properties, one may classify the scales as nominal, ordinal, interval and ratio scales.

(e) Number of dimensions:

In respect of this basis, scales can be classified as 'one-dimensional' and 'multidimensional' scales.

(f) *Scale construction techniques:*

Following are the five main techniques by which scales can be developed.

(i) ***Arbitrary* approach:**

It is an approach where scale is developed on ad hoc basis. This is the most widely used approach.

(ii) ***Consensus* approach:**

Here a panel of judges evaluate the items chosen for inclusion in the instrument in terms of whether they are relevant to the topic area and unambiguous in implication.

Scale Construction Techniques

(iii) Item analysis approach:

Under it a number of individual items are developed into a test which is given to a group of respondents. After administering the test, the total scores are calculated for every one. Individual items are then analyzed to determine which items discriminate between persons or objects with high total scores and those with low scores.

(iv) Cumulative scales are chosen on the basis of their conforming to some ranking of items with ascending and descending discriminating power. For instance, in such a scale the endorsement of an item representing an extreme position should also result in the endorsement of all items indicating a less extreme position.

(v) Factor scales may be constructed on the basis of inter correlations of items which indicate that a common factor accounts for the relationship between items. This relationship is typically measured through factor analysis method.

Table 5.2: Different Scales for Measuring Attitudes of People

Name of the scale construction approach	*Name of the scale developed*
1. Arbitrary approach	Arbitrary scales
2. Consensus scale approach	Differential scales (such as Thurstone Differential scale)
3. Item analysis approach	Summated scales (such as Likert Scale)
4. Cumulative scale approach	Cumulative scales (such as Guttman's Scalogram)
5. Factor analysis approach	Factor scales (such as Osgood's Semantic Differential, Multi-dimensional Scaling, etc.)