



ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY PALKULAM

BUSINESS RESEARCH METHODS

UNIT III PILOT STUDY/ SAMPLING METHODS

PILOT STUDY :

It is a process of testing the questionnaire before it is finalized, the questionnaire before it is finalized, that is after the questionnaire is drafted, to decide whether it is comprehensive or not, it is used with a few respondents.

Their responses are studied to determine the need for restructuring the questionnaire, re-sequencing the questions, addition or deletion of questions, giving more instructions for filling up etc can also be decided. It will bring to light the weaknesses of the questionnaire.

Basis	Questionnaire	Schedule
Usage	Respondent himself records the answers obtained.	Researcher/ enumerator records the answers obtained.
Cost	Relatively cheaper as it is sent by mail to the targeted respondent.	Costlier, as the investigator has to be appointed, trained and meet every informant at the latter's place.
Coverage	Wide coverage possible as it can be sent to any place by post.	Relatively limited coverage as the investigator cannot be sent to every place.
	Less all the respondents, do not respond	Relatively better as the investigator guides the respondents in understanding the questions in right context.

Degree of Freedom	Not good, as the respondent answers the questions the way it understood.	Relatively better as the investigator guides the respondents in understanding the questions in right context.
Quality of response	It is not known clearly who answered the questionnaire and this in turn might affect accuracy information obtained.	It is clearly known, as the enumerator himself elicits the information so the accuracy of information is more.
Identify of respondent	It cannot be established as the respondent may reply at his convenience.	It is possible to plan the enquiry & depute the investigators accordingly & collect information within a targeted time
Time Taken for reply	It is completely absent and to that extent there is to no scope for giving any clarification to respondents.	It is absolutely possible and so the quality of response is better. The investigator can understand the questions clearly.
Personal contact	It is possible to cover a wide range of sample elements as the questionnaire is only sent by post.	This is not possible as the investigator has to personally contact each respondent. The literacy status of the respondent si not a limitation. The investigator can explain the question & obtain the response.
Sample Coverage	The respondent should be a literate and co-operative	Relatively accuracy is better in this method as the investigator can determine the accuracy on

<p>Pre-condition for use</p>	<p>It is not likely to be high, as it depends on the structure of the questionnaire itself</p>	<p>the field and adopt appropriate methods to ensure accuracy.</p> <p>No such requirements is a condition</p>
<p>Accuracy of Information</p>	<p>Questionnaire should be designed properly and made attractive to encourage the respondent to fill it.</p>	<p>There is a lot of scope for the investigator to apply observation method or interview method of data collection along with the use of schedules.</p>
<p>Presentation requirement</p>	<p>This is not possible as the questionnaire is sent to the respondent.</p>	<p>There is good scope for controlling editing and monitoring information on the field itself</p>
<p>Scope for application of other methods of data collection.</p>	<p>This is not possible as the questionnaire is filled by the respondent himself</p>	<p>If the investigator is trained and experienced then there is very little scope for bias in information content.</p>
<p>Field control & testing.</p>	<p>There is no way to test the extent of bias of the information given by the respondent.</p>	

Bias in information collected		
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Selection Of Appropriate Method Of Data Collection: -

There are various methods of data collection; as such the researcher must judiciously select the method of his own study. Nature, Scope and Object of enquiry: This constituted the most important factor affecting the choice of a particular method. The method selected should be such that it suits the type of enquiry that is to be conducted by the researcher.

Availability of Funds: Availability of funds for the research project determines to a large extent the method to be used for the collection of data. When funds at the disposal of the researcher are very limited, he will have to select a comparatively cheaper method, which may not be as efficient and effective as some other costly method.

Time Factor: Availability of time has also to be taken into account in deciding a particular method of data collection. Some method, take relatively more time whereas with others the data can be collected in a comparatively shorter duration.

Precision Required: The very important condition is the level of accuracy of the data collected. In cases of compilation of data regarding the deviation from the standard measurements in a workshop, the data should be cent % accurate. Similarly the data regarding the patient condition explained through various parameters should be very accurate.

Period of Study: A study based on historical data requires secondary data source while the study on the patient status in a hospital require primary data.

Introduction to Sampling

The way in which we select a sample of individuals to be research participants is critical. How we select participants (random sampling) will determine the population to which we may generalize our research findings. The procedure that we use for assigning participants to different treatment conditions (random assignment) will determine whether bias exists in our treatment groups (Are the groups equal on all known and unknown factors?). If we do a poor job at the sampling stage of the research process, the integrity of the entire project is at risk. If we are interested in the effect

of TV violence on children, which children are we going to observe? Where do they come from? How many? How will they be selected? These are important questions.

Distinguishing Between a Sample and a Population

Before describing sampling procedures, we need to define a few key terms. The term population means all members that meet a set of specifications or a specified criterion. For example, the population of the United States is defined as all people residing in the United States. A single member of any given population is referred to as an element. When only some elements are selected from a population, we refer to that as a sample.

Types of sampling

- 1) Probability sampling methods.
- 2) Non-probability sampling methods

Probability Sampling Methods

- Probability sampling is also called as random sampling or representative sampling.
- In probability sampling every member of the population has a known (non zero) probability of being included in the sample.
- The probabilities can be assigned to each unit of the population objectively.
- These techniques need population to be very precisely defined.
- These techniques cannot be used for the population that is too general a category found almost everywhere in the world.
- For instance if our target population is defined as college students. It means person studying at any college of the world is an element of our population.
- In this case probability sampling can be done as the population is precisely defined and limited to an infinite number of elements.

Advantages:

- This sampling technique reduces the chance of systematic errors.
- The methods minimize the chance of sampling biases.
- A better representative sample is produced using probability sampling techniques.
- Inferences drawn from sample are generalizable to the population.

Disadvantages:

- The techniques need a lot of efforts
- A lot of time is consumed.
- They are expensive.

Non-Probability Sampling Methods

- Probability sampling is also called as judgment or non-random sampling.
- Every unit of population does not get an equal chance of participation in the investigation. No random selection is made.
- The selection of the sample is made on the basis of subjective judgment of the investigator.
- These techniques need not population to be very precisely defined.
- These techniques can be used for both types of population: the population that is too general a category, and the population that is a specific category (precisely defined).
- For instance if our target population is defined as college students. It means person studying at any college of the world is an element of our population.
- It is too general a category consisting of infinite number of elements.
- Thus, non-probability techniques make it possible to take a sample of population the elements of which are infinite in number.
- Non-probability sampling is well suited for exploratory research intended to generate new ideas that will be systematically tested later.
- Probability sampling is well suited for research that is intended to develop the

Advantages:

- The techniques need less effort.
- These techniques need less time to finish up.
- They are not much costly.

Disadvantages:

- The sampling techniques are prone to encounter with systematic errors and sampling biases.
- The sample cannot be claimed to be a good representative of the population.
- Inferences drawn from sample are not generalizable to the population

Types of probability sampling methods Following methods are used for probability sampling:

1. Simple Random Sampling
2. Systematic Random Sampling
3. Stratified Random Sampling
4. Cluster Sampling
5. Multistage Sampling

Simple Random Sampling:

- In this type of sampling each and every element of the population has an equal chance of being selected in the sample.
- The population must contain a finite number of elements that can be listed or mapped.
- Every element must be mutually exclusive i.e. able to distinguish from one another and does not have any overlapping characteristics.
- The population must be homogenous i.e. every element contains same kind of characteristics that meets the described criteria of target population.

2) Systematic Random Sampling

- This type of sampling is also used for homogenous population.
- It is a bit different from simple random sampling.
- Unlike simple random sampling, there is not an equal probability of every element been included.
- In this type of sampling the elements are selected at a regular interval.
- The interval may be in terms of time, space or order. For instance, element appearing after every 30 minutes, or present at a distance of two meters, or every 5th element present on a list.
- Thus this regularity and uniformity in selection makes the sampling systematic.
- The list of elements may or may not be required before the conduction of research.
- Sometimes it is not even possible to create a list because of the nature of population. Say, if it is possible to tell who is going to visit the coffee shop today.

3) Stratified Random Sampling

- This type of sampling method is used when population is heterogeneous. i.e. every element of population does not match all the characteristics of the predefined criteria.
- Instead the elements differ from one another on a characteristic.
- So the sub groups are formed that are homogenous i.e. all the elements within a group contain the same kind of characteristics (keep in mind, those characteristics are to be taken into account that defines the target population).
- The sub groups are called as strata (single stratum).
- The topic and nature of the investigation tells on what criterion the strata are to be made
- Common criteria used for stratification are gender, age, ethnicity, socioeconomic status. However, the criteria vary greatly investigation to investigation
- This formation of strata can also be called a mini reproduction of population as each stratum consists of elements that are different from other strata's elements in some characteristics.
- For instance if an investigation is taking young adults into account, so this population may need to be divided (of course, on the basis of what the investigation is about) into sub groups like male young adults and female young adults, educated young adults and uneducated young adults, high income young adults and low income young adults etc. in this way each stratum is a different population
- The sample is selected from each stratum randomly.
- There are two techniques that are used to allocate sample from strata: proportional allocation technique and equal allocation technique.
- Using proportional allocation technique the sample size of a stratum is made proportional to the number of elements present in the stratum.
- Using equal allocation technique same number of participants is drawn from each stratum regardless of the number of elements in each stratum.

Cluster Sampling

- The group of elements residing in one geographical region is called as cluster.
- And sampling of clusters is called as cluster sampling.
- This sampling technique is used when the elements of population are spread over a wide geographical area.

- The population is divided into sub-groups called as clusters on the basis of their geographical allocation.
- Usually this division of population is similar to what the standard of division has been used yet.
- For instance population spread over a country is clustered up into cities, population spread over a city is clustered up into towns etc.
- The clusters ought to be homogenous among them on the characteristic variable of the research.
- However for being truly representative sample, the selected clusters must capture the heterogeneity of population.
- For instance if in the selection of towns only small towns are selected leaving behind the bigger towns, the sample is not going to be a true representative of the population

Multistage Sampling

- It is a sampling technique where two or more probability techniques are combined.
- It is used when the elements of population are spread over a wide geographical region and it is not possible to obtain a representative sample with only one aforementioned
- It can be described as sampling within the sample.
- The final unit or element of population which is used in investigation is obtained after sampling at several stages.