

Unit: 4 Design questionnaire, Data preparation, Report writing.

4.1 Design questionnaire

Definition of Questionnaire

A questionnaire is a research instrument consisting of a series of questions for the purpose of gathering information from respondents. Questionnaires can be thought of as a kind of written interview. They can be carried out face to face, by telephone, computer or post.

Questionnaire construction process

1. Determine the specific data / information needed.
2. Determine types survey method
3. Evaluate the question content.
4. Decide question format (Types of question)
5. Determine the wording of question
6. Determine question order & sequence in questionnaire
7. Determine physical characteristics of form
8. Pretest, Revise & Final draft

Step 1. Determine the specific data / information needed.

Which can be collected by

1. Statement of research purpose
2. List of information to be measured.

1. Statement of research purpose: It is directly related to research problem, so before preparing questionnaire objective of research should be clear.

2. List of Information to be measured:

It include which kind of information is required for measurement such as , 1. Basic information, 2. Identification information, 3. Classification information.

1. Basic information:

Such information are directly concerned with research problem, **example To study the attitude of students towards use of internet**, where we try to understand usage frequency of internet, purpose of usage, application used, etc, as a basic information, another **example** for study **buying behavior**, we need to collect basic information such as question of pre purchase, purchase & post purchase behavior.

2. Identification information:

Such information are helpful in finding out identity of respondent, such as Name, contact no, Email ID, etc.

3. Classification information :

Such information are helpful in classifying the information in different category such as socio-economic & demographic characteristics such as Age, Gender, Income, Occupation, Religion, Education, Region, etc.

Step 2. Determine the types of survey method.

Personal survey

Telephonic survey

E-mail survey

Post mail survey

1. Personal Survey

A survey conducted face-to-face with the respondent. The interviewer asks questions directly and records answers. It allows for detailed responses and personal observation.

2. Telephonic Survey

A survey done over a phone call with the respondent. The interviewer reads questions and notes answers during the call. It is faster than personal surveys but lacks visual cues.

3. E-mail Survey

A survey sent to respondents through email. They fill it out and submit it online or by reply mail. It is cost-effective and useful for tech-savvy users.

4. Post Mail Survey

A physical questionnaire sent by postal service. Respondents fill it and return it by mail. It is slow but can reach people without internet access.

Step 3. Evaluate the question content:

For the purpose of getting information from the respondents, it is necessary for researcher to design questions that is viable. Therefore, the potential questions asked are to be evaluated. The criteria for evaluating question contents can be evaluated.

1. **"Does the respondent understand the questions?"**
Respondent

2. "Does the respondent have necessary information to answer the question?"

3. "Will the respondent provide necessary information?"

Here, 1 & 2 questions are concern with

"Problem of inability of respondents" & questions 3 is concern with **"Unwillingness of respondents to give response"**.

"Problem of inability of respondents": it is arise because of given reason.

1. Lack of knowledge :

Ex. It is highly unlikely that senior citizen knows about internet services like instant messages, chatting, FTP. You should not ask such types of questions to him.

Ex. You cannot ask question about investment decision in financial instruments, tax planning to housewife.

2. Lack of recall: respondent does not remember certain matters.

Ex. "In last 6 month, how many times you went outside to eat?"

3. Cannot form the answer

Ex. "Describe the vision of your life"?

Another reason could be when questions are out of context.

"Unwillingness of respondents to give response"

Reasons:

1. When questions which are purely personal, sensitive & their secrets are challenged.
2. When questions which are much analytical & required too much mental efforts.

Ex. What is your monthly avg. Consumption of milk per member?

not proper Instead of this you can ask 2 questions:

1. What is your monthly consumption of milk?
2. No. Of family member: When questions which are out of context questions.

Step 4) Decide Question format (Types of Question)

There are basically 2 types of question:

1. Open ended question
 - Feedback question
2. Close-ended question
 - Dichotomous questions
 - multiple choice questions
 - Single choice question
 - Declarative question
 - Rating question
 - Ranking Question

1. Open ended question:

It is unstructured one, provide freedom to the respondents to reply with their own words & ideas.

Example:

1. Feedback question?

2. Your Opinion about current condition of a country

objective.

Open ended questions are also useful to start a depth interview.

here are certain problems:

It become difficult for interviewer to write down the respondents answer

There are the chances to miss some vital information contained in the respondent's answer.

It is extremely difficult to compress lengthy answer in a meaningful manner.

2. Close-ended question:

It is structured one with 2 or more alternative responses from which respondent can choose.

They contain standardized answers

Advantages

They are simple to administer & easy to analyze. As alternative responses are mentioned with reference to study. the chances of securing relevant answers are better.

Disadvantages :

Respondent has no freedom to give answer in his word.

The respondent may be led to select a response, even when he has no knowledge of it.

Types of close ended questions:

- Dichotomous Questions
- Multiple choice question
- Single choice question
- Déclarative Question
- Rating Scale Question
- Ranking question

1. Dichotomous questions: A dichotomous question can be answered in one of the 2 alternatives

Ex. "Do you own a laptop?" Yes/No

2. Single choice question

This question contain only one alternative for answer

Ex. "Who is the current (2025) brand ambassador of MRF tire?"

- A. Sachin
- B. Virat
- C. Dhoni
- D. Rohit

3. Multiple choice question

These question contain more than 2 alternative:

Ex. "Out of following services of internet, tick mark those services, which u have used?"

Blog News Chatting E-mail

Instant Messages FTP Web Browsing
Other(Specify)

4. A declarative question is a type of multiple choice question in which a series of statements about given subject is given.

Ex. Which of the following statement best describes your company's philosophy?

Statement -1 Make a lot of profit only

Statement -2 Make a lot of profit with customer satisfaction

Statement -3 Make a lot of profit with customer satisfaction & social welfare

5. Rating Scale question : Rating scale question is generally used to measure attitude of respondent towards particular subject.

Ex. Rate the Samsung mobile brand for various features (1=worst 5= Best)

Price

Durability

Camera

Battery life

Ram/Rom

6. Ranking question.

Ex. Rank the following mobile company for camera result on 1 to 5 (1 is best 5 is for worst)

Apple

Samsung

Vivo

Oppo

1 Plus

Step 5. Determine the wording of question

At the time of preparing questionnaire, researchers have given guide lines as to how wording should be done. These guidelines are:

- 1. Use Simple words**
- 2. Avoid lengthy question**
- 3. Be specific as far as possible**
- 4. Avoid double-barrel question**
- 5. Avoid leading question**
- 6. Avoid loading question**
- 7. Use words in proper context**

1. Use Simple words

Wording of question should be so simple that even a general people can also-understand easily.

Ex. "Are you satisfy with **distribution network** of SUMUL milk? -

incorrect for housewife."

Instead of this

"How many times you have faced the problem of **non-availability** of

SUMUL Milk in last month?"

2. Avoid lengthy question :

Question asked should be short.

Ex. "Date of Birth" or DOB is better than "when you were born?" Ex.
"Length of Experience" is better than Experience if any

3. Be specific as far as possible : (avoid ambiguous question)

Question should be specific. Precise & to the point.

Ex. What kind of Car you own? - Not proper question

Here "KIND" makes confusion. There are several possible answer on brand model, body style, type, fuel specification.

Ex. Are you interested in small house? - not proper question

Here what does the word "interested" means "to own?" or "to hire?" 1BHK, 2BHK

& what does the word "small house?"

4. Avoid double-barrel question :

Question contains 2 or more different ideas or references.

Ex. "Do you think Jeevaraj Tea is tasty & refreshing?" Y/N - not proper question.

here 2 questions are hidden in one. In fact 2 separate questions are to be asked

"Do you think Jeevaraj Tea is tasty ? Y/N"

"Do you think Jeevaraj Tea is refreshing?" Y/N

5. Avoid leading question : Leading question is one in which a response is suggested or

Ex. Do you think the online exam is better than offline ?

Ex, Don't you think the RM lecture is boring?

6.Avoid loading question

A loaded question has more subtle bias than leading question. Such kind of questions contains words which are emotionally colored & suggests an automatic feeling of approval or disapproval.

Ex. "Mahatma Gandhi has always advocated religious harmony.

Do you think that we should maintain religious harmony

Ex. Good student has never opposed to do any work which is assigned by teacher.

Don't you think that we should complete the work which is assigned by our teacher

7. Use words in proper context:

English is a deceptive language. It is because a word has different meaning in different context & subject. Ex. Word 'Insult'.

The word 'insult' has different meaning for general man & man of medicine & surgery. In medical science the word 'insult' is the 'damage caused. That is why, researcher concern should be who is the respondent

Step 6. Determine the question order & sequence in questionnaire

In questionnaire, it is necessary to maintain 2 way sequence.

A. Overall sequence among topical area

B. Intra sequence : within topical area Overall sequence among topical area

A. For maintaining overall sequence, following points should be considered.

(1) Simple & brief question should keep in beginning. Lengthy & exhaustive questions should keep at last. So interviewer can generate interest.

Ex. In study of buying behavior of soft drink, the questions related to advertisement, brand ambassador, media preferences, channel preferences are generally preferred by individual.

Ex. In study of students attitude towards use of internet, questions related to services of internet. Usages of internet are interesting

(2) Questionnaire start with private, sensitive & secrete questions is also dangerous. The respondent will refuse answer.

B. Intra sequence: within topical area

It includes

(1)Funnel sequence

(2)Inverted funnel sequence

1) Funnel sequence: it is from most general questions gradually focusing down to some specific & restricted questions.



(2)Inverted funnel sequence

Inverted funnel sequence involve asking specific topic question, than gradually focusing on more general question.



Step 7. Determine physical characteristics of from

1. Appealing physical features:

Here, quality of paper, typographic and printing process have greater influence. If the questionnaire makes first physical impression, it motivates the respondent.

2 . Clear & uncluttered:

The questionnaire should be laid out in a way that guarantees clarity & uncluttered. Many times, the re searcher, in an attempt to save space & reduce the pages & hence the cost; it is wrong cheap is costly. The response rate is influenced.

3. Provide sufficient space for answer:

In case of open-ended questions, leave enough space or lines for the respondent to record his answer. Generally more the space more the information.

4. Questionnaire should not be bulky:

The questionnaire should be design to give appearance that it is short & small as possible. To attain this, at times, it is useful to publish the questionnaire as a book- let rather than stapling a large no. Of pages together.

5. Instructions:

In question sheet below the title of questionnaire, a brief statement of the objective of study, the confidentiality of data, & instructions relating to answering the questions may be provided.

6. Margin: one each margin on the left side of the sheet & one-half inch left-side margin should conform to the type of binding used.

7. Indentation:

Indentation refers to the space or margin left at the beginning of a line or section to visually separate and organize the content of the questionnaire form.

Purpose in a Form:

To improve readability and layout.

To differentiate main questions from sub-questions or response options.

To create a clean and structured appearance of the form.

Sample Questionnaire with Indentation

Q1. What is your age group?

Below 18

18 – 25

26 – 35

Above 35

Q2. How often do you use social media?

Daily

2–3 times a week

Rarely

Never

8. Vote of thanks:

A final note or comment of thanks for the co operation of respondent should be included at the end of the questionnaire.

Step 8 . Pretest, revise & final draft:

Once the questionnaire is ready, it should be pre-tested. Pre-testing of questionnaire implies that it is tried out on a few respondents & their reaction to the questionnaire is observed. It helps the researcher decide whether any changes in the questions content or the wording of questions are called on if so, specific changes that are desirable can also be ascertained.

Importance of pre-testing

1. Errors can be rectified.
2. Can easily understand possible questions from respondent.
3. Easy to understand their difficulties.

4. Save time, cost and energy.

4.2 Data preparation

Process of Data preparation

1. **Editing data**
2. **Coding of data**
3. **Transcribing of data**
4. **Data cleaning**
5. **Tabulation**
6. **Graphical presentation of data**
7. **Statistical adjustment of data**
8. **Selection of data analysis strategy**

1. **Editing data**

Data editing is defined as the process involving the review and adjustment of collected survey data. Data editing helps define guidelines that will reduce potential bias and ensure consistent estimates leading to a clear analysis of the data.

The purpose is to control the quality of the collected data. Data editing can be performed manually, with the assistance of a computer or a combination of both.

There are two stages of editing

1. **Field editing**

Field editing is defined as the process of completely reviewing the collected data and editing the records based on the needs in the correct way.

The main purpose of field editing is to control the quality of the existing data.

Example: Blank page on an interview form.

2. Central office / Inhouse editing

In the in-house editing, they investigate the results of the obtained data and perform the coding functions and editing.

Best example: If age is not indicated, then the respondent will be called to ensure the information.

Objectives of Editing

1. Completeness

2. Accuracy

3. Uniformity

2. Coding of data

It is the process of classifying the answer into meaningful categories, the symbol or number used to indicate these categories are called code. This process is necessary for computerized data processing.

Coding involves two step process

1. Establishing category

2. Assigning data / code to category

Example:

Q.1 Do you have internet plan?

Yes No (Category)
1 0 (Code)

Q.2 Problem you have faced in internet connection?

Problem-1 Problem-2 Problem-3 Problem-4 (Category)
1 2 3 4 (Code)

3. Transcribing of data

Transcribing of data involve process of transferring computerized data from questionnaire to computer system either manually or through device like scanner or USB.

The process of transcribing is easy & effective if survey is conducted CAPI (Computer Assisted Personal Interview) or CATI (Computer Assisted Telephonic Interview)

4. Data cleaning

Data cleaning is the process of preparing data for analysis by removing or modifying data that is incorrect, incomplete, irrelevant, duplicated, or improperly formatted.

This data is usually not necessary or helpful when it comes to analyzing data because it may hinder the process or provide inaccurate results. There are several methods for cleaning data depending on how it is stored along with the answers being sought. For one, data cleaning includes more actions than removing data, such as **fixing spelling, correcting mistakes such as empty fields, missing codes, and identifying duplicate data points.**

Example of Data cleaning

Q.1 Name : Suresh Shah

Gender : Female

Q.2 Designation: Branch manager Kotak bank

Q.3 Salary: 3000/-

Q.4 Rank the following services of bank on 1 to 5 scale

(Where value other than 1 to 5 or missing needs to be corrected.)

5. Tabulation

Tabulation comprises of sorting of data into different category and counting number of case in each, if one variable is involved in tabulation its called univariate or single variable, where two or more variable are involved in tabulation is called multivariate tabulation.

1.Univariate tabulation

A one-way tabulation is a popular tool for performing exploratory data analysis. This kind of tabulation counts observed value instances within a dataset by one set of category values.

Mode of Transportation	Number of Respondents	Percentage (%)
Car	30	30%
Bike	25	25%
Public Transport	35	35%
Walking	10	10%
Total	100	100%

2. Multivariate tabulation

Multivariate tabulation refers to the process of organizing and presenting data in a table format that shows the relationship between three or more variables at the same time.

Gender	Age Group	Car	Bike	Public Transport	Walking	Total
Male	18–25	10	12	8	0	30
Male	26–35	8	5	7	0	20
Female	18–25	6	4	10	2	22
Female	26–35	6	4	10	2	22
Other	Any	0	0	0	6	6
Total		30	25	35	10	100

3. Higher order tabulation:

Tables are those which provide information about a large number of inter related questions. Higher order tables may be of four-way, five-way, six-way etc. Such kind of tables is called manifold tables.

Gender	Age Group	Education Level	Instagram	Facebook	YouTube	Others	Total
Male	18–25	Undergraduate	15	5	10	0	30
Male	26–35	Postgraduate	5	10	8	2	25
Female	18–25	Undergraduate	10	6	12	2	30
Female	26–35	Postgraduate	4	6	3	2	15
Total			34	27	33	6	100

4. Machine tabulation

In case of large scale survey, where collected data from population is large in size than manual tabulation will be time consuming & difficult, where different machine & equipment can be used for the purpose of tabulation.

6. Graphical presentation of data:

Graphical Representation is a way of analyzing numerical data. It exhibits the relation between data, ideas, information and concepts in a diagram. It is easy to understand and it is one of the most important learning strategies. It always depends on the type of information in a particular domain. There are different types of graphical representation.

7. Statistical adjustment of data

Statistical adjustment of data refers to the process of modifying raw data to correct errors, handle missing values, or remove biases, so that the data becomes more accurate, reliable, and meaningful for analysis.

8. Selection of data analysis strategy

This step involves choosing the most suitable **method or technique** to analyze the collected and processed data, based on the **research objectives, type of data, and hypothesis**.

Strategy Type	Examples
Descriptive	Mean, median, mode, percentages
Inferential	t-test, ANOVA, chi-square, regression
Exploratory	Factor analysis, cluster analysis
Predictive	Correlation, regression, forecasting

4.4 Various types of Research report

A research report is: – a written document or oral presentation based on a written document that communicates the purpose, scope, objective(s), hypotheses, methodology, findings, limitations and finally, recommendations of a research project to others.

1. Classification on the basis of Audience

- Technical Report: suitable for a target audience of researchers, research managers or other people familiar with and interested in the technicalities such as research design, sampling methods, statistical details etc.,
- Popular Report: suitable for: a more general audience, interested mainly in the research findings as it is non-technical in nature. – The writing style is designed to facilitate easy and rapid reading and understanding of the research findings and recommendations.

2. Formal or Informal Research Reports:

- Formal reports are carefully structured; they stress objectivity and organization, contain much detail, and are written in a style that tends to eliminate such elements as personal pronouns.
- Informal reports are usually short messages with natural, casual use of language. The internal memorandum can generally be described as an informal report

3. Informational or Analytical Research Reports:

- Informational reports (annual reports, monthly financial reports, and reports on personnel absenteeism) carry objective information from one area of an organization to another.
- Analytical reports (scientific research, feasibility reports, and real-estate appraisals) present attempts to solve problems

4. Internal or External Research Reports:

- Internal reports travel within the organization, generally prepared by internal expert.
- External reports, such as annual reports of companies, are prepared for distribution outside the organization. Generally prepared by external expert.

5. Functional Research Reports:

This classification includes accounting reports, marketing reports, financial reports, and a variety of other reports that take their designation from the ultimate use of the report. Almost all reports could be included in most of these categories. And a single report could be included in several classifications.

4.4.2 Content and Format of a Research Report

A well-structured **research report** follows a standard format that ensures clarity, completeness, and professionalism. Below is the **typical content and format** used in academic and professional research:

1. Preliminary Pages (Front Matter):

- **Title Page:** Title of the report, author’s name, institution, date.
- **Certificate/Declaration:** Statement of originality by researcher.
- **Acknowledgement:** Thanking contributors and supporters.
- **Table of Contents:** List of headings/subheadings with page numbers.
- **List of Tables & Figures:** If applicable.
- **Abstract/Executive Summary:** Brief summary of the research (200–300 words).

2. Main Body of the Report:

Section	Details
1. Introduction	Background, need for the study, objectives, scope, limitations, significance
2. Literature Review	Summary of past research/studies related to the topic
3. Research Methodology	Research design, data collection methods, sampling, tools used
4. Data Analysis & Interpretation	Presentation of data (tables/graphs) with analysis & explanation
5. Findings	Key results from the data analysis
6. Conclusions	What the research has revealed or proved
7. Recommendations	Practical suggestions based on findings

3. End Matter (Back Pages):

- **Bibliography / References:** List of all sources cited in the report.
- **Appendices:** Additional materials like questionnaires, raw data, charts, etc.