Data Collection Tools – Steps in developing a survey

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Outline

• Key terminology
• Planning a survey
• Sampling
• Construction of a questionnaire
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Key Terminology

• Survey
• Questionnaire
• Population
• Sample
• Data Analysis
• Coding

Key terminology

Survey:
A data collection technique designed to collect standard information from a large number of subjects. Surveys may include polls, mailed/online questionnaires, telephone interviews, or face-to-face interviews.

Questionnaire:
A printed form containing a set of questions for gathering information.
Key terminology

• **Data Analysis**
The process of applying statistical and logical techniques to systematically describe, summarise, and compare data.

• **Coding**
The process of converting information obtained on a subject or unit into coded values (typically numeric) for the purpose of data storage, management, and analysis. E.g. the gender of the respondent may be coded "1" for female and "2" for male.

Key terminology

• **Population:**
The total number of individuals or objects being analysed or evaluated.

• **Sample**
A subset of the population. Elements are selected intentionally as a representation of the population being studied.
Planning a survey

• Planning involves the decision on:
  - what topic is to be examined;
  - what population is to be studied;
  - what methods/tools to be used for:
    • collecting data
    • analysing data
  - types of available resources.

Planning a survey

• The choice of method depends on the following:
  – Nature of the population;
  – Nature of information sought;
  – Complexity and length of the questionnaires;
    and
  – Financial and other resources.
Sampling

Population and sample

• **Population**: is a complete set of people or objects or events which all have at least one characteristic in common, and must be defined specifically and unambiguously. E.g.
  – All hearing-impaired primary school pupils in Tasmania.
Population and sample

• For example: if we are studying health and well-being of Asian migrant children, we must define the “population” of immigrant children:
  – people of what ages are “children”?
  – people from what countries are considered “Asian migrants”?
  – how is “migration” defined? from one’s place of birth or from a former place of residence, and so on.

Sample:

• **Sample:** any part of the “population” regardless it is representative of the population or not. However, it is important to have a *representative* sample.

• **Sampling:** to select a sample from the defined population of interest in the survey.
Population and sample

Population: All Asian migrants in Tasmania.
Sample: Some migrants from Vietnam, Thailand, Malaysia, China, Laos, Indonesia, Cambodia etc.

Sample size

- The larger the sample, the better.
- Garry and Airasian (2003, p193):
  - Population <100, survey the entire population.
  - Population size ~ 500, 50% of the population should be sampled.
  - Population size ~1500, 20% should be sampled.
  - Beyond a certain point (at about 5000 units or more), the population size is almost irrelevant, and a sample size of 400 should be adequate.

- Formula and sample size calculators.
Sources of bias in sampling

- Under coverage
- Non response
- Don't know, haven't decided
- Untruthful answers
- Ignorance
- People who don't remember
- Timing
- Wording of questions

Response rate

- The ratio of number of people who answered the survey divided by the total number of people included in the sample, e.g.
  – if 1,000 surveys are sent and 257 were successfully completed and returned, then the response rate is 25.7 %.
- The higher the response rate the more reliable the results from the sample.
- The important principle for obtaining a high response rate is to maximise the rewards or benefits to the participants.
Ethics issue

• If your survey focuses and reports on personal information about participants you should first gain their consent to do so.
• Participants should understand what you’re doing with them in the survey and how any information associated with them will be reported.
• You should clearly convey terms of confidentiality regarding access to survey results.
• They should have the right to participate or not. Have participants review and sign an informed consent form before any survey.

Activity One

• Choose a sample/population for your own survey.
• Identify sources of bias from the given examples or from your research topic.
• List the approaches/strategies for maximising response rate.
Construction of a questionnaire

Determine the questions to be asked

- What information you need to know;
- What questions should be used;
- Respondents’ ability to answer your questions;
- Respondents’ willingness to answer the questions; and
- Determine in advance how you code the responses.
Question types

• Closed items: offers respondents a limited range of specific choices, allowing for reliable data and easy analysis. E.g.
  – Which of the following best describes the benefit you gained from the fitness program that you attended?
    □ Lost weight          □ Feel better
    □ Improved muscle tone □ Made new friends
    □ Improved health conditions

Question types

• Open-ended items: allow respondents to answer in their own words. This is ideal for an exploratory study or when the sample size is small. E.g.
  – How could the health services in this community be improved?
  – Do you have any comments about your health insurance?
Question types

• **Scale items**: provide a graded series of responses from which respondents chooses one. Likert Scale is the most common scaled-response format, e.g.
  – How would you rate your general health (circle one)?
    1 excellent   4 very poor
    2 good       5 don't know
    3 poor

Wording of questions

• Use short and simple sentences: As a rule of thumb, most sentences should contain one or two clauses.

• Ask for only one piece of information at a time (i.e. avoid double barrel question).
  ☺Do you think Australians should eat less *and* exercise more?
  ☺Do you think Australians should eat less?
  ☺Do you think Australians should exercise more?
Wording of questions

• Avoid negative or double negative sentence.
  – Aren’t you against smoking?
  – It is not professional not to accept foreign patients.

• Avoid ambiguity, confusion, and vagueness: make your questions brief and clear
  ☹ Visiting doctors can be a nuisance.
  ☹ When nurses meet patients, they are reluctant to talk.

Wording of questions

• Avoid insensitive questions.
  – Do you agree that what Asian doctors care most is to get as much money as possible?

• Avoid false premises or presuppositions.
  – Have you stopped beating your children?

• Avoid unnecessary or unfamiliar abbreviations.
  – Did you have a MRSA problem from your last hospital visit?
Activity Two

• Choose your own or the default topic and construct:
  – 2 open-ended questions
  – 2 closed questions
  – 1 question on Likert scale (views)
  – 1 question on scale on behaviour
• Discuss as a group the advantages and disadvantages of each type of questions
• Identify common traps in the given questionnaire.

Order of questions

• Be careful not to include so many questions that participants are discouraged to respond.
• Try to motivate participants to complete the questionnaire (e.g. start with fact-based questions and then go to opinion-based questions; use a variety of question formats).
• Group questions into sections.
• Keep open-ended questions to a minimum and position towards the end of the section/ questionnaire.
Pilot your questionnaire

- Detect any flaws in the questions and correct these prior to the actual survey.
- Be able to perform a trial analysis on pilot samples and test analysis.
- Test your questionnaire on a small group of participants.
- Make amendments that help to maximise the response rate and minimise error rate on answers.

Questionnaire layout

- **KISS**: Keep It Simple and Short
- It should be clear, easy to read and have clear instructions and guidance.
- We normally prepare an Information Sheet together with the Questionnaire or List of Interview Questions.
- It is important to keep a consistent style, group questions according to their themes and avoid double barrel questions.
Activity three

• Examine the provided questionnaires and give your comments about their content and layout design.
• Give your suggestions to improve these questionnaires.

Carrying out the survey
Carrying out the survey

• Create a survey cover sheet that provides the respondents with an introduction to the purpose of the survey, and information on how their individual answers will be used.
• Identify a convenient time to administer the survey and allow respondents enough time to complete it.
• Use follow-up cards or letters.

Carrying out the survey

• Provide non-English speakers a questionnaire in their native language, where possible.
• Use prepaid envelopes for returning the completed questionnaires.
• A suggested deadline can be helpful.
• Use personally typed or written letters with official letterhead.
Processing collected data

Processing data

- The main task of data processing is the data **coding**, **entry** and **checking**.
- Some available statistical analysis packages are SPSS, SAS, STRATA, etc.
- Data can be either entered directly or imported from other packages such as Excel or Access.
- Data is held on the computer in a data table (spreadsheet) where each row represents a specific respondent and their data.
Processing data

• Suggestion to ease coding and input:
  – It is not a good idea to ask the respondents to place the mark or tick over the number they select.
  – Avoid alphabetic coding where possible.
  – Open-ended questions can be done by other qualitative data analysis tools (e.g. Nvivo).
  – Column numbers (variables) should be located on the right-hand side of the page.

Other Issues

• Anonymity and confidentiality
  – An anonymous study: nobody can identify who provided the data on a completed survey.
  – A confidential study: interviewers know who has responded to each questionnaire and promises not to reveal this information.
  – Use other identifiers (such as numbers) on the questionnaires instead of using names or asking the subjects to fill in the names.
Other Issues

• Validity and reliability
  – The most common type of validity is content validity.
  – Factors that influence the validity of the questionnaire:
    • The importance of the topic to the respondents
    • Protection of the respondent’s anonymity.
  – Reliability may be checked by building some redundancy into the instruments.

Conclusion

• Survey is a common research method and requires a lot of planning to generate meaningful and reliable data.
• The sampling method used is important in determining the validity and reliability of the results.
• Questionnaires are a usual means to collect data in surveys and should always be tested on a small group before being used in the actual survey.
• A well designed questionnaire contributes to a higher response rate.
• The data analysis methods will be influenced by the amount of data, question structure, level of measurement and the intended use of the information.
References


