Chapter 7

GATHERING DATA
Aims

• Discuss how to plan and run a successful data gathering program.

• Enable you to plan and run an interview.

• Enable you to design a simple questionnaire.

• Enable you to plan and carry out an observation.
Five key issues

1. Setting goals
   • Decide how to analyze data once collected

2. Identifying participants
   • Decide who to gather data from

3. Relationship with participants
   • Clear and professional
   • Informed consent when appropriate

4. Triangulation
   • Look at data from more than one perspective
   • Collect more than one type of data, e.g. qualitative from experiments and qualitative from interviews

5. Pilot studies
   • Small trial of main study
Data recording

• Notes, audio, video, photographs can be used individually or in combination:
  – Notes plus photographs
  – Audio plus photographs
  – Video

• Different challenges and advantages with each combination
Interviews

• Unstructured - are not directed by a script. Rich but not replicable.

• Structured - are tightly scripted, often like a questionnaire. Replicable but may lack richness.

• Semi-structured - guided by a script but interesting issues can be explored in more depth. Can provide a good balance between richness and replicability.

• Focus groups – a group interview
Interview questions

• Two types:
  – ‘closed questions’ have a predetermined answer format, e.g. ‘yes’ or ‘no’
  – ‘open questions’ do not have a predetermined format

• Closed questions are easier to analyze

• Avoid:
  – Long questions
  – Compound sentences - split them into two
  – Jargon and language that the interviewee may not understand
  – Leading questions that make assumptions e.g. why do you like …?
  – Unconscious biases e.g. gender stereotypes
Running the interview

• *Introduction* – introduce yourself, explain the goals of the interview, reassure about the ethical issues, ask to record, present the informed consent form.

• *Warm-up* – make first questions easy and non-threatening.

• *Main body* – present questions in a logical order

• *A cool-off period* – include a few easy questions to defuse tension at the end

• *Closure* – thank interviewee, signal the end, eg. switch recorder off.
Enriching the interview process

• Props - devices for prompting interviewee, e.g. use a prototype, scenario
Questionnaires

• Questions can be closed or open
• Closed questions are easier to analyze, and may be distributed and analyzed by computer
• Can be administered to large populations
• Disseminated by paper, email and the web
• Sampling can be a problem when the size of a population is unknown as is common online evaluation

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Questionnaire design

• The impact of a question can be influenced by question order.

• You may need different versions of the questionnaire for different populations.

• Provide clear instructions on how to complete the questionnaire.

• Strike a balance between using white space and keeping the questionnaire compact.

• Avoid very long questionnaires

• Decide on whether phrases will all be positive, all negative or mixed.
Question and response format

• ‘Yes’ and ‘No’ checkboxes
• Checkboxes that offer many options
• Rating scales
  – Likert scales
  – semantic scales
  – 3, 5, 7 or more points
• Open-ended responses
Semantic Scale

Clear |__|__|__|__|__|__|__| Confusing
Dull  |__|__|__|__|__|__|__| Colorful
Exciting |__|__|__|__|__|__|__| Boring
Annoying |__|__|__|__|__|__|__| Pleasing
Helpful  |__|__|__|__|__|__|__| Unhelpful
Poor |__|__|__|__|__|__|__| Well designed
Encouraging a good response

- Make sure purpose of study is clear
- Promise anonymity
- Ensure questionnaire is well designed
- Offer a short version for those who do not have time to complete a long questionnaire
- If mailed, include a stamped addressed envelope
- Follow-up with emails, phone calls, letters
- Provide an incentive
- 40% response rate is good, 20% is often acceptable
Advantages of online questionnaires

- Relatively easy and quick to distribute
- Responses are usually received quickly
- No copying and postage costs
- Data can be collected in database for analysis
- Time required for data analysis is reduced
- Errors can be corrected easily
Example of an online questionnaire

Figure 7.8 An excerpt from a web-based questionnaire showing check boxes, radio buttons, and pull-down menus
Problems with online questionnaires

- Sampling is problematic if population size is unknown
- Preventing individuals from responding more than once can be a problem
- Link to survey may be inappropriately shared with others
- Individuals have also been known to change questions in email questionnaires
Observation

• Direct observation in the field
  – Structuring frameworks
  – Degree of participation (insider or outsider)
  – Ethnography

• Direct observation in controlled environments

• Indirect observation: tracking users’ activities
  – Diaries
  – Interaction logging
  – Video and photographs collected remotely by drones or other equipment
Observation

Figure 7.9  Mars Exploration Rover

Source: Reproduced by permission of NASA Jet Propulsion Laboratory (NASA-JPL).
Structuring frameworks to guide observation

• Three easy-to-remember parts:
  – The person: Who?
  – The place: Where?
  – The thing: What?

• A more detailed framework (Robson, 2014):
  – Space: What is the physical space like and how is it laid out?
  – Actors: What are the names and relevant details of the people involved?
  – Activities: What are the actors doing and why?
Structuring frameworks (con’t)

• A more detailed framework (Robson, 2014):
  – Objects: What physical objects are present, such as furniture
  – Acts: What are specific individual actions?
  – Events: Is what you observe part of a special event?
  – Time: What is the sequence of events?
  – Goals: What are the actors trying to accomplish?
  – Feelings: What is the mood of the group and of individuals?
Planning and conducting observation in the field

• Decide on how involved you will be: passive observer to active participant

• How to gain acceptance

• How to handle sensitive topics, e.g. culture, private spaces, etc.

• How to collect the data:
  – What data to collect
  – What equipment to use
  – When to stop observing
Ethnography (1)

- Ethnography is a philosophy with a set of techniques that include participant observation and interviews.
- Debate about differences between participant observation and ethnography.
- Ethnographers immerse themselves in the culture they study.
- A researcher’s degree of participation can vary along a scale from ‘outside’ to ‘inside’.
- Analyzing video and data logs can be time-consuming.
- Collections of comments, incidents, and artifacts are made.
Ethnography (2)

- Co-operation of people being observed is required
- Informants are useful
- Data analysis is continuous
- Interpretivist technique
- Questions get refined as understanding grows
- Reports usually contain examples
Ethnography (2)

Figure 7.10  (a) The situation before MERboard; (b) A scientist using MERboard to present information

Online Ethnography

• Virtual, Online, Netnography

• Online and offline activity

• Interaction online differs from face-to-face

• Virtual worlds have a persistence that physical worlds do not have

• Ethical considerations and presentation of results are different
Observations and materials that might be collected (Crabtree, 2007)

- Activity or job descriptions.
- Rules and procedures that govern particular activities.
- Descriptions of activities observed.
- Recordings of the talk taking place between parties.
- Informal interviews with participants explaining the detail of observed activities.
- Diagrams of the physical layout, including the position of artifacts.
- Other information collected when observing activities:
  - Photographs of artifacts (documents, diagrams, forms, computers, etc.)
  - Videos of artifacts.
  - Copies or descriptions of artifacts.
  - Workflow diagrams showing the sequential order of tasks.
  - Process maps showing connections between activities.
Observation in a controlled environment

• Direct observation
  – Think aloud techniques

• Indirect observation – tracking users’ activities
  – Diaries
  – Interaction logs
  – Web analytics

• Video, audio, photos, notes are used to capture data in both types of observations
Web analytics

• A system of tools and techniques for optimizing web usage by:
  – Measuring,
  – Collecting,
  – Analyzing, and
  – Reporting web data

• Typically focus on the number of web visitors and page views.
A section of Google analytics dashboard for id-book.com

Figure 7.14 Segments of the Google Analytics dashboard for id-book.com in September
Choosing and combining techniques

• Depends on the:
  – Focus of the study
  – Participants involved
  – Nature of the technique(s)
  – Resources available
  – Time available
Summary

• Data gathering sessions should have clear goals.
• An informed consent may be needed.
• Five key issues of data gathering are: goals, choosing participants, triangulation, participant relationship, pilot.
• Data may be recorded using handwritten notes, audio or video recording, a camera, or any combination of these.
• Interviews may be structured, semi-structured or unstructured
• Focus groups are group interviews
• Questionnaires may be on paper, online or telephone
• Observation may be direct or indirect, in the field or in controlled settings.
• Techniques can be combined depending on the study focus, participants, nature of technique, available resources and time.