DATA GATHERING FOR INFORMATION SYSTEMS DEVELOPMENT

Lecture Objectives

• to be aware of various methods for data gathering ("fact-finding") in respect of information system development

• to understand the usefulness and suitability of various data gathering methods for particular problem situations

Data gathering in systems development

Data gathering is a major task of systems analysis.

Systems analysis involves:
• Understanding and describing how the current system functions
• Determining what users would like their new system to do (user requirements)

Necessary for system analysts to collect information about current and future situations, problems, opportunities, constraints
What data to gather?

• The business or organisation:
  • Data about the nature of the business and its market and business environment
  • Data about business goals and objectives that dictate what and how work is done
  • Data about organisational structure: major functions, departments etc
  • Data about major business subsystems and how they interact
  • Data about business policies and guidelines

What data to gather?

• Users of the system:
  • Roles and responsibilities
  • Reporting structures
  • Job specifications and actual tasks performed
  • Information needed to do their jobs
  • Formal and informal communication and workflow channels
What data to gather?

- The existing system:
  - Data about tasks and workflow: functions, processes, sequence of processes, methods and procedures, inputs, outputs
  - Data about the data (definition, volumes, size etc.)
  - Data about interactions with other systems
  - Data about work volumes and processing cycles
  - Data about performance standards and criteria
  - Data about control mechanisms: e.g. security, accuracy
  - Data about problems: e.g. efficiency, information

What data to gather?

- The new system:
  - Data about system requirements: a need or desire to be met by a proposed system
  - Data about both functional requirements (processes and functionality) and non-functional requirements (security, performance, service etc.)
  - Data about constraints e.g. existing technology
  - Data about interactions with other systems
  - Data about relationship to existing system/s

Sources of data

- Users and other stakeholders
- Documents about the system
- Documents about the organisation
- Documents and data used within the existing system
- Transactions within existing system
- External sources
Sources of data

- Users
  - System sponsor/owner: overall project objectives
  - Managers: high level, broad view of existing system and requirements
  - End-users: detailed, operational level view of existing system and requirements
  - Technical staff: technology capabilities, limitations etc.
- External stakeholders: e.g. customers

Sources of data

- Documents about the system and organisation:
  - Organisation charts
  - Policy manuals
  - Business reports: financial, annual etc.
  - Jobs, procedure, operations manuals
  - Training manuals
  - Existing system documentation
  - Internal reports relating to the system

Sources of data

- Documents and data used within the existing system:
  - Files, databases, programs, forms, reports
  - Informal: Memos, bulletin boards, files
- External sources:
  - Other organisations’ systems
  - Hardware & software vendors
  - Business & industry publications
What data gathering methods?

- Interviews
- Questionnaires
- Observation
- Sampling documents and transactions
- Research and site visits

Interviews

- Generally the most important and widely-used method for data gathering
- May be formal/structured (specific questions) or informal/unstructured (general goal or purpose)
- Need an interview strategy for the entire interviewing process
- Need an interview plan or guide for each interview

The interview strategy

- Establish general objectives and guidelines for the entire interviewing process:
  - e.g. information to be obtained, sources, formats, documenting, analysis
- Identify the users to interview:
  - Ensure all key people are included
The interview strategy

• Determine the sequence of interviews:
• Co–ordinate the interviewing process:
  • Compare results, select follow ups etc.
• Need individual interview plans
• Need to consider:
  Who has the information you need?
  Where to conduct the interview?
  When is the best time to interview?
  How should the interview progress?

The individual interview

• Before the interview:
  • Arrange time and place, necessary materials, inform interviewee of interview purpose
  • Conduct the interview
• After the interview:
  • Write an interview report
  • Review this with the interviewee at a follow up interview

The interview structure

• Preliminaries:
  • Introduction, purpose, environment and procedures e.g. permission to tape
  • “Body”:
    • Define what you already believe to be true and confirm this, explore points & issues further, new areas (questions)
  • Conclusion:
    • Summarise and confirm your findings
    • Schedule a follow up interview
The interview plan

- Interview plans:
  - Decide on interview structure
  - Determine content of questions
  - Decide on question types

- See Whitten et al (2001), Figure 6.5 pp 233 for a sample interview guide.

Interviews: types of questions

- Closed: how many transactions per day?
  - Limits available responses
- Open: tell me about …
  - Leaves options open for interviewee
- Probe: tell me more about the problem with the …
  - To clarify and expand
- Mirror: From what you said, I understand that…
  - To confirm what was said etc.

Interviews: types of questions

- Avoid long, complex, or double-barrelled questions:
  - what decisions are made during this process and how do you make them?
- Avoid leading questions:
  - you don’t need the customer number on this report, do you?
- Avoid loaded questions:
  - when did you first discover the mistake?
  - i.e. how long have you known and done nothing?
### Interviews: advantages
- obtain extensive, complex detailed information
- get insights and opinions
- discover informal procedures
- flexible e.g. explore issues further or new issues
- establish rapport with interviewee and understand their attitudes
- reveal the ‘politics’ of the system environment
- information is revealed both by the spoken word and by the interviewee’s body language
- guaranteed response

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### Interviews: Disadvantages
- Time-consuming
- Costly
- Danger of bias
- More difficult to tabulate and analyse results e.g. to obtain an overall picture
- Success in interviewing depends on the inter-personal skills of the interviewer

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### References