Smart, Creative and Entrepreneurial

CCA220-Analisis dan Perancangan system Informasi

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Chapter 5
Information Gathering: Unobtrusive Methods

Systems Analysis and Design
Kendall & Kendall
Sixth Edition

Major Topics

- Sampling
- Quantitative document analysis
- Qualitative document analysis
- Observation
- STROBE
- Applying STROBE

Sampling

- Sampling is a process of systematically selecting representative elements of a population.

- Involves two key decisions:
  - Which of the key documents and Web sites should be sampled.
  - Which people should be interviewed or sent questionnaires.

Need for Sampling

The reasons systems analysts do sampling are:

- Reducing costs.
- Speeding up the data-gathering process.
- Improving effectiveness.
- Reducing data-gathering bias.

Sampling Design Steps

To design a good sample, a systems analyst needs to follow four steps:

- Determining the data to be collected or described.
- Determining the population to be sampled.
- Choosing the type of sample.
- Deciding on the sample size.

Sample Size

The sample size decision should be made according to the specific conditions under which a systems analysts works with such as:

- Sampling data on attributes.
- Sampling data on variables.
- Sampling qualitative data.

Types of Sampling

- The four types of sampling are:
  - Convenience.
  - Purposive.
  - Simple random.
  - Complex random.

Convenience Sampling

- Unrestricted, nonprobability samples
- Easy to arrange
- Most unreliable

Purposive Sampling

- Based on judgment
- Analyst chooses group of individuals to sample
- Based on criteria
- Nonprobability sample
- Moderately reliable

Simple Random Sampling

- Based on a numbered list of the population
- Each person or document has an equal chance of being selected

Complex Random Sampling

- The three forms are:
  - Systematic sampling.
  - Stratified sampling.
  - Cluster sampling.

Systematic Sampling

- Simplest method of probability sampling
- Choose every *k*th person on a list
- Not good if the list is ordered

Stratified Sampling

Stratification is the process of :

- Identifying subpopulations or strata
- Selecting objects or people for sampling from the subpopulation
- Compensating for a disproportionate number of employees from a certain group
- Selecting different methods to collect data from different subgroups.
- Most important to the systems analyst

Cluster Sampling

- Select group of documents or people to study.
- Select typical groups that represent the remaining ones.

Deciding Sample Size for Attribute Data

Steps to determine sample size are:

- Determine the attribute to sample.

- Locate the database or reports where the attribute is found.

- Examine the attribute and estimate p, the proportion of the population having the attribute.

Deciding Sample Size for Attribute Data

Steps to determine sample size (continued)

- Make the subjective decision regarding the acceptable interval estimate, *i*

- Choose the confidence level and look up the confidence coefficient (*z* value) in a table

- Calculate σ_p, the standard error of the proportion as follows:

$$\sigma_p = \frac{i}{z}$$

Deciding Sample Size for Attribute Data

Steps to determine sample size (continued)

- Determine the necessary sample size, n, using the following formula:

$$n = \frac{p(1-p)}{\sigma_p^2} + 1$$

Confidence Level Table

99%	2.58
98%	2.33
97%	2.17
96%	2.05
95%	1.96
90%	1.65
80%	1.28
50%	.67

Hard Data

In addition to sampling, investigation of hard data is another effective method for systems analysts to gather information.

Obtaining Hard Data

Hard data can be obtained by:

- Analyzing quantitative documents such as records used for decision making.

- Performance reports.

- Records.

- Data capture forms.

- Ecommerce and other transactions.

Qualitative Documents

Examine qualitative documents for the following:

- Key or guiding metaphors.
- Insiders vs. outsiders mentality.
- What is considered good vs. evil.
- Graphics, logos, and icons in common areas or Web pages.
- A sense of humor.

Analyzing Qualitative Documents

Qualitative documents include:

- Memos.
- Signs on bulletin boards.
- Corporate Web sites.
- Manuals.
- Policy handbooks.

Observation

- Observation provides insight on what organizational members actually do.
- See firsthand the relationships that exist between decision makers and other organizational members.

Analyst's Playscript

- Involves observing the decision-makers behavior and recording their actions using a series of action verbs
- Examples:
  - Talking.
  - Sampling.
  - Corresponding.
  - Deciding.

STROBE

STRuctured **OB**servation of the **E**nvironment-- a technique for observing the decision maker's environment

STROBE Elements

Analyzes seven environmental elements:

- Office location.
- Desk placement.
- Stationary equipment.
- Props.
- External information sources.
- Office lighting and color.
- Clothing worn by decision makers.

Office Location

- Accessible offices
  - Main corridors, open door
  - Major traffic flow area
  - Increase interaction frequency and informal messages
- Inaccessible offices
 - May view the organization differently
  - Drift apart from others in objectives

Desk Placement

- Visitors in a tight space, back to wall, large expanse behind desk
  - Indicates maximum power position
- Desk facing the wall, chair at side
  - Encourages participation
  - Equal exchanges
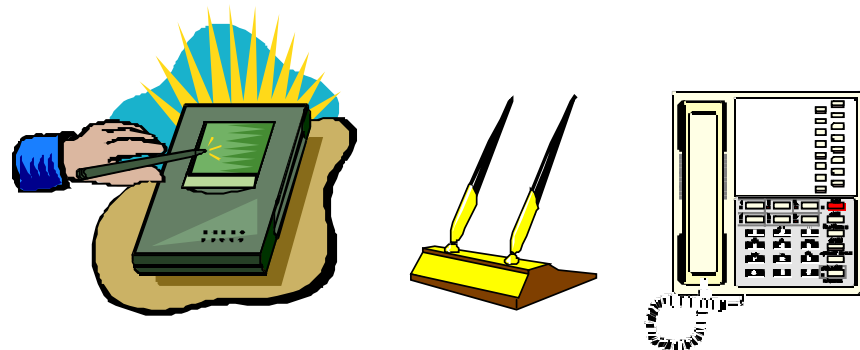
Stationary Office Equipment

File cabinets and bookshelves:

- If not present, person stores few items of information personally.
- If an abundance, person stores and values information.
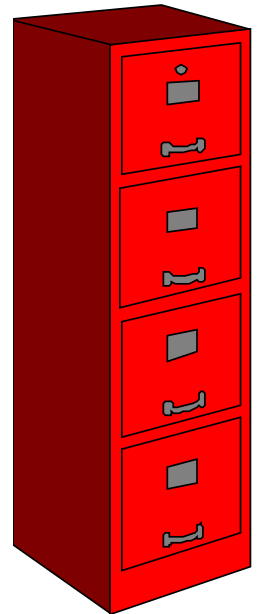
Props

- Calculators
- Personal computers
- Pens, pencils, and rulers
- If present, person processes data personally

External Information Sources

- Trade journals or newspapers indicate the person values outside information.

- Company reports, memos, policy handbooks indicate the person values internal information.
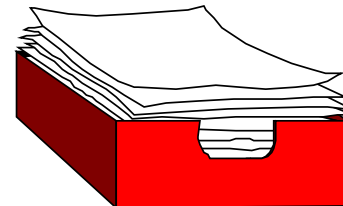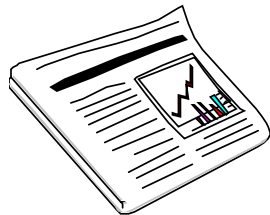
Office Lighting and Color

- Warm, incandescent lighting indicates:
  - A tendency toward more personal communication.
  - More informal communication.
- Brightly lit, bright colors indicate:
  - More formal communications (memos, reports).

Clothing

- Male
  - Formal two piece suit - maximum authority
  - Casual dressing (sport jacket/slacks) - more participative decision making
- Female
  - Skirted suit - maximum authority

Anecdotal List with Symbols

- The five symbols used to evaluate how observation of the elements of STROBE compared with interview results are:
  - A checkmark, the narrative is confirmed.
  - An "X" means the narrative is reversed.
  - An oval or eye-shaped symbol serves as a cue to look further.
  - A square means observation modifies the narrative.
  - A circle means narrative is supplemented by observation.