UNIT OF RESEARCH METHODOLOGY

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***Intended to Recipients of Bachelor*'s Degree**

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All levels *3 & 4* classes in *Education; SS MDS and AEMRE* Faculties.

Supporting references:

1. Donald R. Cooper, Pamela S. Schindler, 2003.*Business Research Methods.* Eighth Edition. The Mc Graw-Hill/Irwin Series.

2. Mark Saunders, Philip Lewis, Adrian Thornhill, 2009. *Research Methods for Business Students*. Fifth edition. FT Prentice Hall

Indications:

Chapters 1,2,5,6 refer to the book 1and implied sections, boxes or pages are integral parts of that book.

Chapters 3,4, 7,8,9,10, 11, 12, 13, 14 refer to the book 2 and implied sections, boxes or pages are integral parts of that book.

PART I: RESEARCH PROCESS

Chapter 1: Applying Scientific Thinking to Management Problems

1.1 Styles of thinking p 32

Research is based on thinking. Good researchers and good managers alike practice of habits of thought that reflect sound reasoning – finding correct premises, testing the connection between their facts and assumptions, making claims based on adequate evidence. Drawing supportable generalizations from limited data is the product of extending the inference process to statistical

1.1.1 Sources of knowledge

Sources of knowledge range from untested opinion to highly systematic styles of thinking.

- **Empiricism** is said "to denote observations and propositions based on sensory experience and / or derived from such experience by methods of inductive logic, including mathematics and statistics'. Empiricists attempt to describe, explain, and make predictions by relying on **information gained through observation.** This book is fundamentally concerned with empiricism – with the design of procedures to collect factual information about hypothesized relationships that can be used to decide if a particular understanding of a problem and its possible solution are collect.

- **Rationalism,** where reasoning or applying judgement is a primary source of knowledge. Rationalism differs from empiricism in that rationalists believe all knowledge can be deduced from known laws or basic truths of the nature (for example, gravity). This is claimed to be possible because underlying laws structure the world logically. From the time of Sir Francis Bacon to the present, adherents of rationalism have maintained that problems are best understood and resolved through formal logic or mathematics. Such efforts, of course, operate independently of observation and data collection.
- **Untested opinion:** people cling to untested opinion despite contrary evidence. In indoctrination programs of less enlightened organizations, it is not unusual for new employees to hear "that's the way we've always done it here'- a remark that confuses entrenchment and habit with efficiency. … Managers will find little to improve their understanding of reality from untested opinion even though human nature indicates they should de prepared to cope with its use by contemporaries when searching for solutions to management dilemmas.

1.1.2 The thought process: Reasoning p 36

- **Deduction** is a form on inference that purports to be conclusive – the conclusions necessarily follow from the reasons given. These reasons are said to *imply the conclusion* and *represent a proof*. This is a much stronger and different bond between reasons and conclusions than is found with induction. For a deduction to be correct, it must be both **true** and **valid**.
    - ✓ Premises (reasons) given for the conclusion must agree with the real world (**TRUE**)
    - ✓ The conclusions must necessarily follow from the premises (**VALID**)

A deduction is valid if it is impossible for the conclusion for to be false if the premises are true. Conclusions are not logically justified if one or more premises are untrue or argument form is invalid.

- **Induction:** inductive argument is radically different. There is no such strength of relationship between reasons and conclusions in induction. To induce is to draw a conclusion from one or more particular facts or pieces of evidence. The conclusion explains the facts, and the facts support the conclusion.
- **Combining induction and deduction:** induction and deduction are used in reasoning in a sequential manner. Johnson Dewey describes this process as **the double movement of reflective thought**. Induction occurs when we observe a fact and ask "**why is this**"?. *In answer to this question, we advance a tentative explanation* (**hypothesis**). The hypothesis is plausible if it explains the event or condition (fact) that prompted the question. *Deduction is* ***the process by which we test whether the hypothesis is capable of explaining the fact****.*

1.1.3 Reflective thought and the scientific method

Induction, deduction, observation and hypothesis can be combined in a systematic way to illustrate the scientific method. The ideas that follow, originally suggested by Dewey and other problem solving analysis, represent one approach to assessing the validity of conclusions about observable events. They are particularly appropriate for researchers whose conclusions depend on empirical data. The researcher

1. Encounters a curiosity, doubt, barrier, suspicion, or obstacle
2. Struggles to state the problem: asks questions, contemplates existing knowledge, gathers facts, and moves from an emotional to an intellectual confrontation with the problem
3. Proposes hypotheses to explain the facts that are believed to be logically related to the problem,
4. Deduces outcomes or consequences of the hypotheses: attempts to discover what happens if the results are in the opposite direction of that predicted or if the results support the expectations
5. Formulates several rival hypotheses
6. Devises and conducts a crucial empirical test with various possible outcomes, each of which selectively excludes one or more hypotheses
7. Draws a conclusion, an inductive inference, based on acceptance or rejection of the hypotheses
8. Feeds information into the original problem, modifying it according to the strength of the evidence.

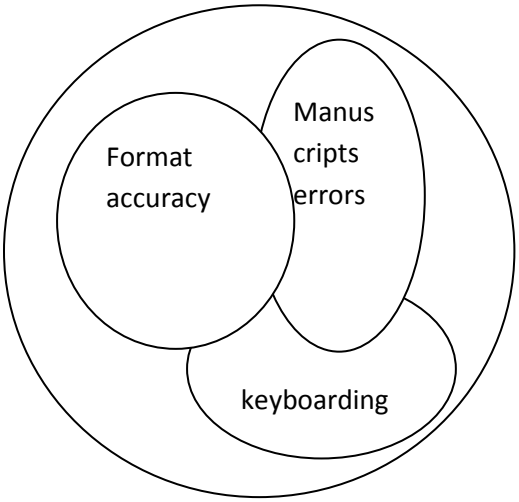
Eminent scientists who claim there is no such things as the scientific method, or if it exists, it is not revealed by what they write, caution researchers about using template-like approach. Their admonitions are well taken, and we would add that the ideas presented here are highly independent, are not sequentially fixed, and may be expanded or eliminated based on the nature of

the problem and the perspective from which one has chosen to view it. Nevertheless, beginning researchers should understand that research when conducted scientifically, is a process.

1.2 Understanding theory: components and connections

- A Concept is a generally accepted collection of meanings or characteristics associated with objects, events, situations and behaviours. Classifying and categorizing objects or that have common characteristics beyond any single observation create concepts.
- **Constructs:** as used in the social sciences, a construct is an image or idea specifically invented for a given research and / or theory-building purpose. We build constructs by combining the simpler concepts, especially when the idea or image we intend to convey is note directly subject to observation. P 43-4

Example of construct: Presentation quality construct



- **Definitions.** Confusion about the meaning of concept can destroy a research study's value without the researcher or client even knowing it. If words have different meanings to the parties involved, then they are communicating on the same wavelength. Definitions are one way to reduce this danger. Researchers must struggle with two types of definitions: ***dictionary definitions*** and operational definitions in the more familiar dictionary definitions, a concept are defined with a synonym. ***An operational definition*** is a definition stated in terms of specific testing or measurement criteria. These terms must have empirical referents (that is, we must be able to count, to measure, or in some other way gather through our senses.). Whether you use a definitional or operational definition, its purpose in research is basically the same – to provide an understanding and measurement of the concepts. We may need to provide operational definitions for only few critical concepts, but these will almost always be the definitions used to develop the relationship found in hypotheses and theories.

- **Variables**. *Scientists operate both at theoretical and empirical level*. At **the theoretical level**, ***there is a preoccupation with identifying constructs and their relations to propositions and theory***. At this level, constructs cannot, as we've said before, be observed. **At the empirical** level, ***where the propositions are converted to hypotheses and testing occurs, the scientist is likely to be dealing with variables***. In practice, the term **variable** is used as a ***synonym of a construct or the property being studied***.
  - ✓ **Independent and dependent variables**: researchers are most interested in relationships among variables. But there is something tricky about the fact that the relationship of independence and dependence is a figment of the researcher's imagination until demonstrated convincingly. Researchers hypothesize relationships of independence and dependence: they invent them, and then they try by reality testing to see if the relationships actually work out that way.
  - ✓ **Moderating variables**: in each relationship, there is at least one independent variable (IV) and dependent variable (DV). It is normally that in some way the IV **"causes"** the DV to occur. Often one uses another type of explanatory variable of value here – the **moderating variable** (MV). A moderating variable is a second independent variable that is included because it is believed to have a significant contributory or contingent effect on the originally stated IV-DV relationship. For example, one may hypothesize that the introduction of the four-day workweek (IV) will lead to higher productivity (DV), especially among younger workers (MV).
  - ✓ **Extraneous variables**: an almost infinite number of extraneous variables (EV) exists that might conceivably affect given relationship. Some can be treated as independent or moderating variables, but most must be either be assumed or excluded from the study. Fortunately, the infinite number of variables has little or no effect on a given situation. Most can be safely ignored. Others may be important, but their impact occurs in such a random fashion as to have little effect.
  - ✓ **Intervening variables (IVV):** *the intervening variable (IVV) may be defined as "the factor which theoretically affects the observed phenomenon but cannot be seen, measured, or manipulated, its effects must be inferred from the effects of the independent and moderator variables on the observed phenomenon". Example:* a promotion campaign (IV) will increase savings activities (DV), especially when free prices are offered (MV), but chiefly among smaller savers (EV-control). The results come from enhancing the motivation to save (IVV).
- **Propositions and hypotheses**. We define a proposition as ***a statement about concepts that must be judged as true or false if it refers to observable phenomenon. When a proposition is formulated for empirical testing, we call it a HYPOTHESIS. As a declarative statement, a hypothesis is of a tentative (****not define or not certain; not confident p 1480****) and conjectural (****conjecture: the development of a theory or guess based on information that is not complete p 292****) nature. Hypotheses have also been described as statements in which we assign variables to cases. A case is defined in this sense as the entity or thing the hypothesis talks about.*** The variable is the characteristic, trait, or attribute that, in the hypothesis, is imputed to the case***.***

- **A frequent problem** in research is proliferation of interesting information. The virtue of the hypothesis is that, **if taken seriously, it limits what shall be studied and what shall not**. **THE HYPOTHESIS SPECIFIES WHO SHALL BE STUDIED (MARRIED COUPLES), IN WHAT CONTEXT SHALL BE STUDIED (THEIR CONSUMER DECISION MAKING) AND WHAT SHALL BE STUDIED (THEIR INDIVIDUAL PERCEPTIONS OF THEIR ROLES)**.

Exhibit 2-6. Checklist for developing a strong hypothesis

Criteria	**Interpretation**
Adequacy for its purpose	➢ Des the hypothesis reveal the original problem condition ➢ Does the hypothesis clearly identify facts that are relevant and those that are not? ➢ Does the hypothesis state clearly the condition, size, or distribution of some variable in meaningful to the research problem (descriptive)? ➢ Does the hypothesis explain facts that gave rise to the need for explanation (explanatory)? ➢ Does the hypothesis suggest which form of research design is likely to be most appropriate? ➢ Does the hypothesis provide a framework for organizing the conclusions that result?
Testable	➢ Does the hypothesis use the acceptable techniques? ➢ Does the hypothesis require an explanation that is plausible given known physical and psychological laws? ➢ Does the hypothesis reveal consequences or derivatives that can be deduced for testing purpose? ➢ Is the hypothesis simple, requiring few conditions or assumptions?
Better than its rivals	➢ Does the hypothesis explain more facts than its rivals? ➢ Does the hypothesis explain a greater variety or scope of facts than its rivals? ➢ Is the hypothesis one that informed judges would accept as being the most likely?

Theory

A person not familiar with research uses the term theory to express the opposite of fact. One hears that professor X is too theoretical. This is incorrect picture of the relationship between facts and theory to researcher.

A **theory** is a *set of systematically interrelated concepts, definitions, and propositions that are advanced to explain and predict phenomena (facts)*.

How theory differs from hypothesis may also cause confusion. In this book, we make the general distinction that ***the difference between theory and hypothesis is degree of complexity and abstraction***. In general, theories tend to be complex, abstract, and involve multiple variables. Hypothesis, on the other hand, tend to be simple, limited-variable propositions involving concrete instances.

Theory and research it is important for researchers to recognize the pervasiveness and value of theory. Theory serves us in many useful ways:

- Theory narrows the range of facts we need to study
- Theory suggests which research approaches are likely to yield the greatest meaning
- Theory suggests a system for the researcher to impose on data in order to classify them in the most meaningful way
- Theory summarises what is known about an object of study and states the uniformities that lie beyond immediate observation
- Theory can be used to predict further facts that should be found.

Models

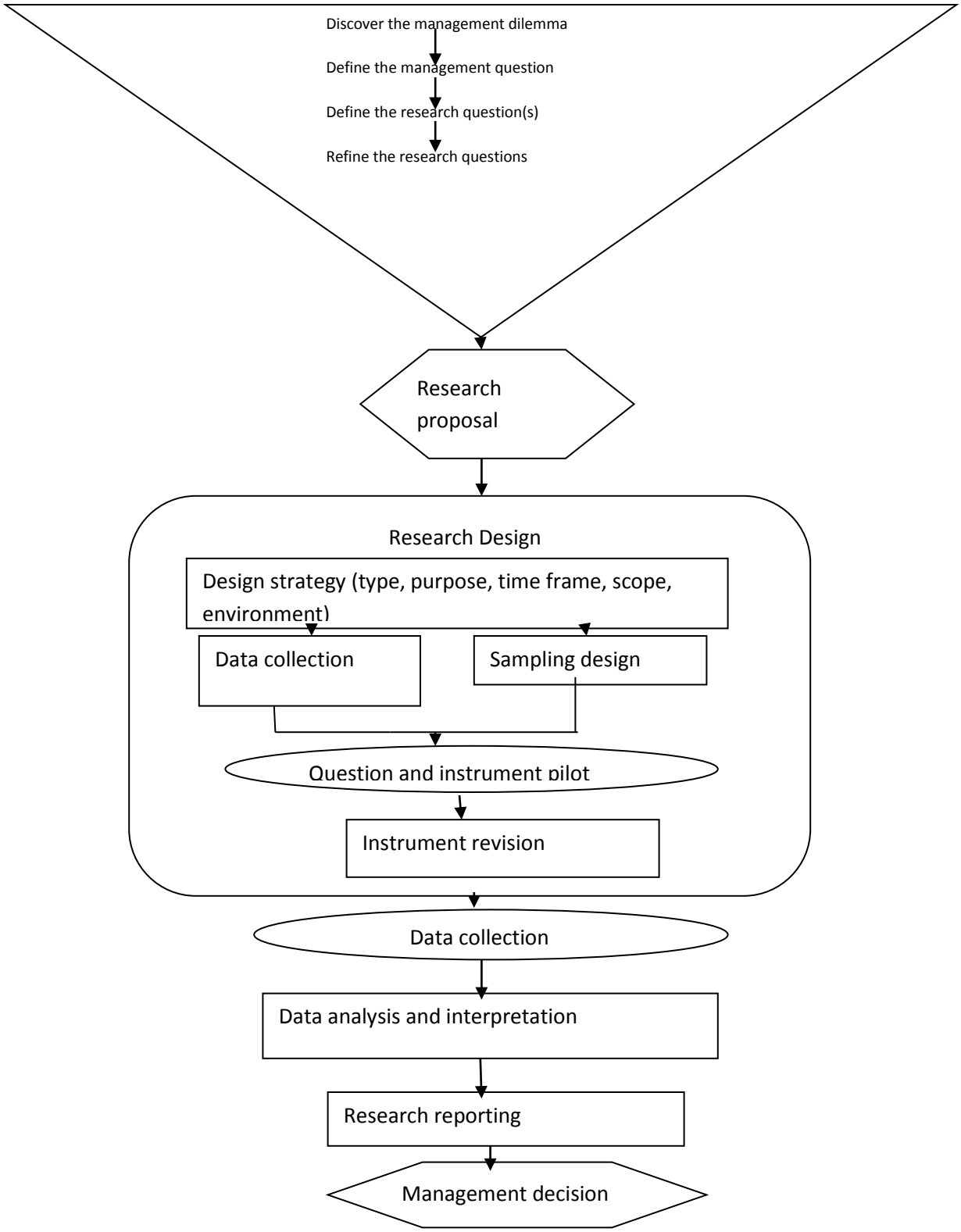
The term model is used throughout the various fields of business and allied disciplines with little agreement as to its definition. This may be because of the numerous functions, structures, and types of models that exist. However, most definitions agree that ***models represent phenomena through the use of analogy***. A **model** is defined here as a ***representation of a system that is constructed to study some aspect of that system or the system as a whole***. Models differ from theories in that theory's role is explanation whereas a model's role is representation:

> A model is not an explanation; it is only the structure and / or function of a second object or process. A model is the result of taking the structure or function of one object or process and using that as a model for the second. When the substance, either physical or conceptual, of the second object or process has been projected onto the first, a first model has been constructed.

- **Static:** represent a system at one point in time
- **Dynamic:** represent the evolution of a system over time.

Chapter 2: The Research Process

Research process

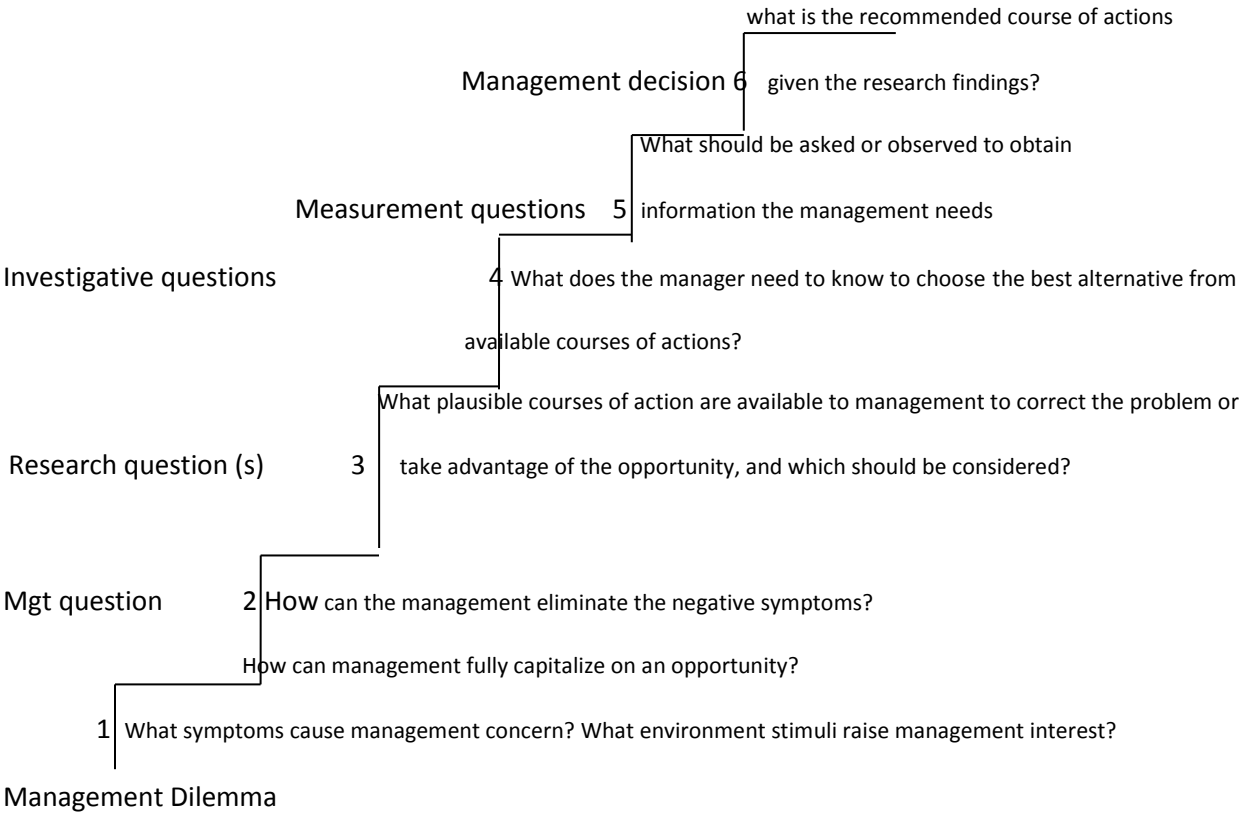


2.1 Formulating the research question

Writers usually treat the research task as a sequential process involving several clearly defined steps. No one claims that research requires completion of each step before going to the next. Recycling, circumventing, and skipping occur. Some steps are begun out of sequence, some are carried out simultaneously and some may be omitted. The research process begins much as the vignette suggests. A **management dilemma triggers the need for a decision**

In our view of the research process, the management question- its origin, selection, statement, exploration, and refinement- is the critical activity in the sequence. A familiar quotation from Albert Einstein, no less apt today than when it was written, supports this view:

Whether the researcher is involved in basic or applied research, a thorough understanding of the management question is fundamental to success in the research enterprise.



2.1.1 The management-research question hierarchy.

a) The management dilemma

The useful way to approach the research process is *to state the basic dilemma that prompts the research and then try to develop other questions by progressively breaking down the original question into more*

specific ones. You can think of the outcome of this process as **the management – research dilemma hierarchy**. The process begins at the most general level with **the management dilemma**. This is usually a symptom of an actual problem. Identifying management dilemmas is rarely difficult (unless the organization fails to track its performance factors – like sales, employee turnover, manufacturing output and defects, on-time deliveries. However, choosing one dilemma on which to focus may be difficult. Choosing incorrectly will direct valuable resources (time, manpower, money and equipement) on a path that may not provide critical decision-making information (the purpose of good research).

b) The management question

The manager must move from the management dilemma to management question to proceed with the research process. The management question restates the dilemma in question form. That (Those) question(s) is (are) in the direction of resolving the management dilemma: e.g.:

- What should be done to reduce employee turnover?
- What should be done to increase tenant residency and reduce move-outs?
- What should be done to reduce costs?

Management question categories Management questions are too numerous to list, but we can categorise them:

- Choice of purpose or objectives
- Generation and evaluation of solutions
- Troubleshooting or control solution

The first type concerns the choice of purpose or objectives (for our study). The general question is, *"what do we want to achieve?"*. At the company level the question might be, *"should we at XYZ corporation reconsider our basic corporate objectives as they concern our public image?"* More narrowly, a management question *on objectives* might ask, *"what goals XYZ should try to achieve on its next round of labour negotiations?*"

A second category of management questions concerns the generation and evaluation of solutions. The general question is, "How can we achieve the ends we seek?" research projects in this group usually deal with concrete problems that managers quickly recognize as useful. Projects can involve questions such as,

- "How can we achieve our five-year goal of doubled and net profit?"
- "What should be done to improve the CompleteCare program for MindWriter product repairs and servicing?"
- "What should be done to reduce postpurchase service complaints?"

A third class of management questions concerns the ***troubleshooting or control situation***. The problem usually involves monitoring or diagnosing various ways in which an organization is failing to achieve its

established goals. This group includes questions such as, “why does our department incur the highest costs?” and “How well is our program meeting its goals?”

No matter how the management question is defined, many research directions can be taken. A specific question can lead to many studies. Concern for MetalWorks’s company image might lead to:

- A survey among various groups to discover their attitudes toward the company
- Secondary research into what other companies are doing to polish their images
- A study to forecast expected changes in social attitudes

The nature of the management question.

The management question doesn’t specify what kind of research is to be done. This question is strictly managerial in thrust (= intention, force that an engine produces to push something forwards). It implies that the bank’s management faces the task of developing a strategy for increasing profits. *The question is broad.* “How can we improve deposits?”

- “How can we reduce costs?”

In the above investigation of opportunities, researchers would probably begin with specific books and periodicals. They would be looking only for certain aspects in this literature, such as recent developments, predictions by informed figures, about the prospects of the technology, identification of those involved in the area, accounts of successful ventures or failures by others in the field. After becoming familiar with the literature, researchers might seek interviews with scientists, engineers, and product developers who are well known in the field.

An unstructured exploration allows the researcher to develop and revise the management question and determine what is needed to secure answers to the proposed question.

c) The research question

A **research question** *is the hypothesis of choice that best states the objective of the research study*. *It is a more specific management question that must be answered. It may be more than one question, or just one*. A research process that answers this more specific question provides the manager with the information necessary to make the decision he or she is facing. It means that you have a series of alternative solutions like the following,

- Reinforce the shipping carton with rigid foam inserts (in place of the current plastic sling) to prevent damages to the laptop case during shipping
- Use conforming-expanding foam insulation in the shipping carton
- Leave the shipping carton specification as is but ship via an overnight air delivery service rather than using the current ground courier service

- Establish authorized repair facilities in major cities, so that a customer could deliver a MindWriter for repair, eliminating shipping altogether.

and you are transforming them into questions:

The choices lead to several research questions:

- Should MindWriter change the laptop shipping specifications to include rigid foam or conforming –expanding foam or stay with the current plastic sling?
- Should MindWriter change its shipping carrier from ABC Courier Service to an air transportation service?
- Should MindWriter establish metropolitan (belonging to a big city or typical of big city) repair centers to complement or replace its existing facilities?

Fine-tuning the research question. The term fine-tuning might seem to be an odd (unusual, not frequent/regular, of different type etc., not even in number, lacking its pair, not exact in number + phrases) usage for research, but it creates an image that most researchers come to recognize. Fine-tuning the question is precisely what a skillful practitioner must do after the exploration is complete. At this point, a clearer picture of the management and research questions begins to emerge. After a **preliminary review of the literature**, a brief exploratory study, or both, the project begins to crystallize in one or two ways:

1. It is apparent that the question has been answered and the process is finished
2. A question different from the one originally addressed has appeared.
3. The research question has not to be materially different, but it will have evolved in some fashion. This is not cause for discouragement. The refined question (s) will have better focus and will move the research forward with more clarity than the initially formulated question(s).

In addition to fine-tuning the original question, other research question-related activities should be addressed in this phase to enhance the direction of the project:

1. Examine the concepts and constructs to be used in the study. Are they satisfactorily defined? Have operational definitions been employed where appropriate?
2. Review the research questions with the intent of breaking them down into specific second and third level questions
3. **If hypotheses are used**, be certain they meet quality test mentioned in the preceding chapter
4. Determine what evidence must be collected to answer the various questions and hypotheses
5. Set the scope of the study by stating what is **not** a part of the research question. This will establish a boundary to separate contiguous problems from the primary objective.

When characteristics or plausible causes of the problem are well defined and the research question is clearly stated, it is possible to deduce the essential subquestions that will guide the project planning at this stage of the research process. However, if the research question is somewhat or very poorly

defined, the researcher will need further exploration and question revision to refine the original question and generate the material for constructing investigative questions.

d) Investigative questions Once the research question(s) has been selected, researcher thinking moves to more specific level, that of investigative questions. These questions reveal the specific pieces of information the manager feels he or she needs to know to answer the research question.

Investigative questions are questions the researcher must answer to satisfactorily arrive at the conclusion about the research question. *To formulate them, the researcher takes a general question and breaks it into more specific questions about which to gather data. This fractioning process can continue down through several levels of increasing specificity*. *Investigative questions should be included into the research proposal, for they guide the development of the research design.* ***They are the foundation for creating the research data instrument***.

The researcher working on the BankChoice project develops two major investigative questions for studying the market with several subquestions under each. The questions provide insight into the lack of deposit growth:

1. What is the public's position regarding financial services and their uses?
    I. What specific financial services are used
    II. How attractive are various services?
    III. What bank-specific and environmental factors influence a person's use of a particular service?
2. What is the bank's competitive position?
    I. What are the geographic patterns of our customers and those of our competitors?
    II. What demographic differences are revealed among our customers and those of our competitors?
    III. What words or phrases does the public (both customers and non customers) associate with BankChoice? With BankChoice's competitors?
    IV. How aware is the public of the bank's promotional efforts?
    V. What opinion does the public hold of the bank and its competitors?
    VI. How does growth in service compare among competing institutions?

Return again to the MindWriter situation. What does management need to know to choose among the different packaging specifications? As you develop your information needs, think broadly. In developing your list of investigative questions, include:

- Performance considerations (like the relative costs of options, the speed of packaging serviced laptops, and the conditions of test laptops packaged with different materials)
- Attitudinal issues (like perceived service quality)
- Behavioral issues (like employees' ease of use in packaging with the considered materials)

e) Measurement questions. Measurement questions should be outlined by completion of the project-planning activities but usually await pilot testing for refinement. There are two types of measurement

questions: predesigned, pretested questions, and custom-designed questions. *Predesigned questions* are questions that have been formulated and tested by previous researchers, are recorded in the literature, and may be applied literally or be adapted for the project at hand. Some studies lend themselves the use of these readily available measurements devices. This provides enhanced validity and can reduce the cost of the project. More often, however, the measurement questions should be custom tailored to the investigative questions. The resources for this task will be the collective insights from all the activities in the research project completed to this point, particularly insights from exploration. Later, during pilot testing of the data collection instrument(s), these custom-designed questions will be refined.

Measurement questions constitute the fifth level of the hierarchy. ***In surveys, measurement questions are the questions we actually ask the respondents. They appear on the questionnaire. In an observation study, measurement questions are the observations researchers must record about each subject studied***.

The assumption and facts used to structure the management-research question hierarchy set the direction of the project. *Using the hierarchy is a good way to think methodically about the various issues. Think of the hierarchy as six sequential levels moving from the general to the specific. While our approach suggests six discrete levels – concluding with the management decision – the hierarchy is actually more of a continuum. The investigative question stage, in particular, may involve several levels of questioning before it is possible to develop satisfactory measurement questions*.

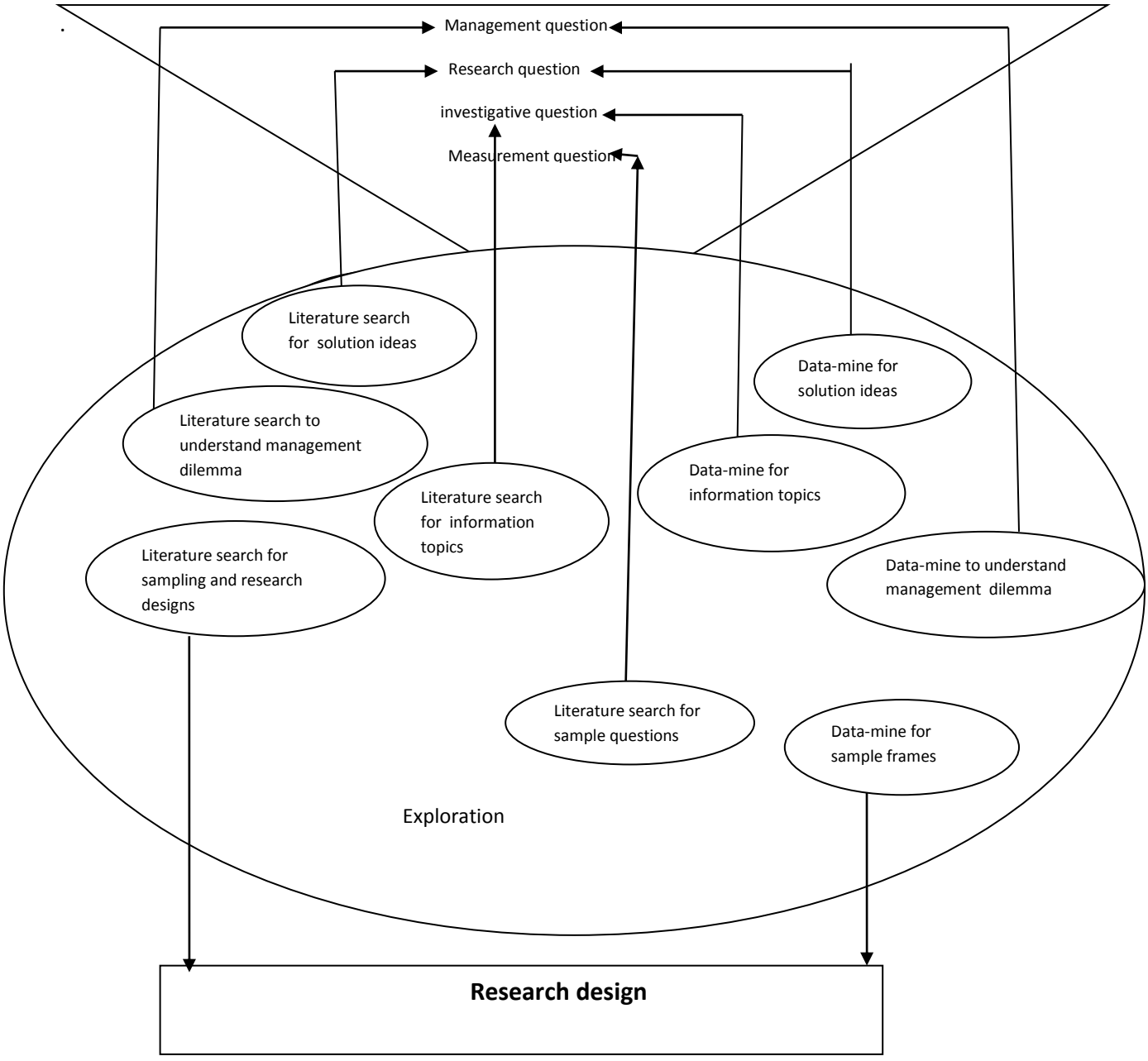
Research Process Problems

Although it is desirable for research to be thoroughly (= very much, very carefully so that nothing is missed) grounded in management decision priorities, studies can wander off (= to travel without purpose, to move away from place, stop concentrating, look for something else, talk about sth else, when path / river curves) target or be less effective than they should be.

1) The favored technique syndrome: some researchers are method-bound. They recast the management question so it is amenable to their favorite methodology- a survey for example. Others might prefer to emphasize the case study, while still others wouldn't consider either approach.
2) Company database strip-mining: the existence of a pool of information or a database can distract a manager, seemingly reducing the need for other research. …
3) Unresearchable questions: not all management questions are researchable, and not all research questions are answerable. To be researchable, a question must be one for which observation or other data collection can provide the answer. Many questions cannot be answered on the basis of information alone.
4) Ill-defined management problems: some categories of questions are so complex, value-laden (= carrying sth heavy or supporting the weight of sth heavy), and bound by constraints that they prove to be intractable to traditional forms of analysis. Politically motivated research: it is important to remember that a manager's motivations for seeking research are not always

obvious. Managers might express a genuine need for specific information on which to base a decision. This is the ideal scenario for quality research. Sometimes, however, a research study may not really be desirable but is authorized anyway, chiefly because its presence may win approval for a certain manager's pet (liked more than anything else) idea. At other times, research may find it more difficult to win the manager's support for an appropriate research design.

2.2 Exploring Information to refine research process



2.2.1 Exploratory Phase Search Strategy

As the exploration process modeled with the management- research question hierarchy suggests (exhibit above), exploration of secondary sources may be useful at any stage of hierarchy. **But most researchers find a review of secondary sources critical to moving from management question to research question**. In moving from management question to research question, the researcher uses both internal and external secondary sources. We address external sources first.

2.2.2 External sources of information

In this exploratory research phase of your project, your objective is to accomplish the following:

1. Expand your understanding of the management dilemma
2. Look for ways others have addressed and / or solved problems similar to your management dilemma or management question
3. Gather back ground information on your topic to refine the research question
4. Identify information that should be gathered to formulate investigative questions
5. Identify sources for and actual questions that might be used as measurement questions
6. Identify sources for and actual sample frame that might be used in sample design.

In most cases the exploration phase will begin with a literature search – a review of books as well articles in journals or professional literature that relate to your management dilemma. A literature search requires the use of library's online catalog and one or more bibliographic databases or indexes. **For some topics, it may be useful to consult a handbook or specialized encyclopedia first to establish a list of key terms, people, or events that have influenced your topic and also to determine what the major publications are and who the foremost authors are**. Other reference materials will be incorporated into your research strategy as needed. In general, this literature search has five steps:

1. Define your management dilemma or question
2. Consult encyclopedias, dictionaries, handbooks, and textbooks to identify key terms, people, or events relevant to your management dilemma or management question
3. Apply these key terms, people, or events in searching indexes, bibliographies, and the Web to identify specific secondary sources
4. Locate and review specific secondary sources for relevance
5. Evaluate the value of each source and its content

The result of your literature search may be a solution to the management dilemma. In such case, no further research is necessary. Often however, the management question remains unresolved, so the decision to proceed generates a research proposal (see chapter 4). The resulting proposal covers at minimum a statement of the research question and a brief description of proposed methodlogy. The proposal summarises the findings of the exploratory phase of the research, usually with a bibliography of secondary sources that have led to the decision to propose a formal research study.

a) Levels of information

As you explore your problem topic, you may consider many different types of information sources, some much more valuable than others. **Information sources are generally categorized into three levels**: (1) primary sources, (2) secondary sources, and (3) tertiary sources.

Primary sources: original work of research or raw data without interpretation or pronouncements that represent an official opinion or position. Included among the primary sources are memos, letters, complete interviews or speeches (in audio, video, or written transcript formats), laws, regulations, court decisions or standards, and most government data, including census, economic and labour data. Primary sources are always the most authoritative because the information has not been filtered or interpreted by a secondary party. Information from all the above sources will become your secondary literature supporting your original research. Internal sources of primary data would include inventory records, personnel records, purchasing requisition forms, statistical process control charts, and similar data.

Secondary sources are the interpretations of primary data. Encyclopedias, textbooks, handbooks, magazine and newspaper articles, and most newcats are considered secondary sources.

Tertiary sources may be an interpretation of a secondary source but generally are represented by indexes, bibliographies, and other findings aids (e,g., internet search engines).

b) Types of information sources

- **Indexes and bibliographies**: the mainstay (= the person or thing that something depends on in order to continue or to be successful) of any library because they help you identify and locate a single book or journal from among the millions published. The single most important bibliography in a library is its online catalog.
- **Dictionaries**: used to verify spelling or grammar usage or to define terms.
- **Ecncylopedias**: to find background or historical information on a topic or to find names or terms that can enhance your search results in other sources.
- **Handbooks**: collection of facts unique to a topic.
- **Directories**: used for finding names and addresses as well as other

c) Evaluating information sources

- Purpose: what the author is trying to accomplish
- Scope: date of publication; how much of the topic is covered and to what depth; regional, national, or international coverage; if the source is bibliographic, how comprehensive is it; if it is a bibliographical source or a directory or a bibliography, what are the criteria for inclusion. *If you don't know the scope the scope of your information sources, you may miss essential information by relying on an incomplete source.*
- Authority: the author and author's credentials should be given both in printed and electronic sources. Footnotes should be provided when appropriate. If credentials are not given, then it is

best to check a biographical sources. Credentials may include the author's educational background, his/her position, or his/her other published and reviewed works.

- Audience: it is often difficult to determine the intended audience for some web resources, ….
- Format: it may vary from source to source but in general relate to how the information is presented and how easy to find a specific piece of information.

d) Searching a bibliographic database

1. Select a database appropriate to your topic
2. Construct a search query (also called a *search statement*)
3. Save those valuable results of your research
4. Retrieve articles not available in the database
5. Supplement your results with information from web sources

Evaluating websites as information sources.

Evaluation factor	Questions to answer
Purpose	Why does the site exist?
	How evident is the purpose it is trying to convey?
	Does it achieve its purpose?
	How does its purpose affect the type and bias of information presented?
Authority	What are the credentials of the author or institution or organization sponsoring the site?
	Does the site give you a means of contacting anyone for further information?
	Who links to this site?
	If facts are supplied, where do they come from?
Scope	How old is the information?
	How often it is updated?
	Is it selective or comprehensive?
	What re the criteria for inclusion?
	If applicable, what geographic area or time period or language does it cover?
	How does the information presented compare with similar sites
	Is it a series of links only (a metasite), or is there added value?
	What information did you expect to find that was missing?
	Is the site self-contained or does it link with other websites?
Audience	Whom does the site cater to?
	What level of knowledge or experience is assumed
	How does this intended audience affect the type and bias of the information?
Format	How quickly can you find needed information?
	How is is the site to use? Is it intuitive?
	Does it load quickly?
	Is the design appealing?
	Are there navigation buttons?
	Is there a site map or search button
	Is there an easily identifiable help buttons?
	Is help helpful?

	Are page in ASCII or graphic format?
	Is the information downloadable into a spreadsheet or word-processing program, if desired?

e) Select a database: most of us select the most convenient database without regard to its scope, but considering the database contents and its limitations and criteria for inclusion at the beginning of your research will probably save your time in long run.

- ✓ A libray's online catalog is a bibliographic database that will help identify books and perhaps other media on a topic
- ✓ While Journal and periodical titles are listed in a libray's online catalog, their articles are rarely included. These articles are used for more current information or inform on very specific topic.

- ➢ Save results of search: you can cut and paste quotations, tables, and other information into your proposal without rekeying
- ➢ Retrieve articles

f) Searching the World Wide Web Information

- ➢ Select a search engine or directory
  - ✓ The types of internet sources they cover (http, telnet, usenet, ftp, etc.)
  - ✓ The way they search web pages (every word, titles or headers only?)
  - ✓ The number of pages they include in their indexes
  - ✓ The search and presentation option they offer
  - ✓ The frequency with which they are updated
- ➢ Determine your search options (AND, OR, NOT)
- ➢ Construct your search query and enter your search terms
- ➢ Save results of your search
- ➢ Supplement your information from non-web sources
- ➢ Known-item search (e.g., author or exact title)
- ➢ Who, where, and what searches

2.2.3 Internal source of information: Mining internal sources

The term of **data-mining** describes the process of discovering knowledge from data –bases in data marts (intermediate storage facilities that compile locally required information) or data warehouses (= electronic repository for databases that organizes large volumes of data into categories to facilitate retrieval, interpretation, and sorting by end-users). The purpose of data mining is to identify valid, novel, useful, and ultimately understandable patterns in data.

a) Evolution of data mining

- ✓ Pattern discovery
- ✓ Predicting trends and behaviors

b) Data – Mining techniques

- ✓ Data visualization
- ✓ Clustering: to segment a visualisation
- ✓ (Artificial) Neural networks (ANN) are collections of simple processing nodes that are connected.
- ✓ Tree models: this technique segregates data by using a hierarchy of if-then statements based on the values of the variables and creates a trre-shaped structure that represents the segregation decisions.
- ✓ Classification: uses a set of preclassified examples to develop a model that can classify the population of records at large.
- ✓ Other mining techniques. Association is the process used to recognize and understand patterns in the data. The goal is to find, across large numbers of small transactions, trends that can be used to understand and exploit natural buying patterns. E.g., market-based analysis.

c) Data-mining process

- ✓ Sample
- ✓ Explore
- ✓ Modify
- ✓ Model
- ✓ Assess

Chapter 3: Study / research design

The research design is the blueprint for fulfilling objectives and answering questions. Selecting a design may be complicated by the availability of a large variety of methods, techniques, procedures, protocols and sampling plans. For example, you may decide on a secondary data study, case study, survey, experiment, or simulation.

- If a survey is selected, should it be administered by mail, computer, telephone, the internet, or personal interview?
- Should all relevant data be collected at one time or at regular intervals?
- What kind the structure will the questionnaire or interview guide possess?
- What question wording should be employed?
- Should the responses be scaled or open-ended?
- How will reliability and validity be achieved?
- Will characteristics of interviewer influence responses to the measurement questions?
- What kind of training should the data collectors receive?
- Is a sample or a census to be taken? What types of sampling should be considered?

These questions represent only a few of the decisions that have to be made when just one method is chosen. The creative researcher actually benefits from this confusing array of options. The numerous combinations spawned by the abundance of tools may be used to construct alternative perspectives on the same problem. By creating a design using diverse methodologies, researchers are able to achieve greater insight than if they followed the most frequent method encountered in the literature or suggested by a disciplinary basis. Although it must be conceded that students or managers rarely have the resource to pursue a single problem from a multimethod, multistudy strategy, the advantages of several competing designs should be considered before settling on a final one.

The research design constitutes the blueprint for the collection, measurement, and analysis of data. It aids the scientist in the allocation of his limited resources by posing crucial choices: is the blueprint to include experiments, interviews, observations, the analysis of records, simulation, or some combination of these? Are the methods of data collection and the research situation to be highly structured? Is an intensive study of a small sample more effective than a less intensive study of a large sample? Should the analysis be primarily quantitative or qualitative? (*Reprinted with the permission of Macmillan Publishing from Social Research Strategy and tactics, 2nd ed., by Bernard S. Philips, p.93. Copyright ©1971 by Bernard S. Philips)*.

And:

Research design is a plan and structure of investigation so conceived as to obtain answers to research questions. The plan is the overall scheme or program of the research. It includes an outline of what the investigator will do from writing hypotheses and their operational implications to the final analysis of data. A structure is the framework, organization, or configuration of ….. the relations among variables of a study. A research design expresses both the structure of the research problem and the plan of investigation used to obtain empirical evidence on relations of the problem. (Fred N. Kerlinger, Foundations of Behavioral Research. 3rd ed. (New York: Holt, Rheinhart & Winston, 1986) p. 279).

These definitions differ in detail, but together they give the essentials of research design:

- The design is an activity- and time-based plan
- The design is always based on the research question
- The design guides the selection of sources and types of information
- The design is a framework for specifying the relationships among the study's variables
- The design outlines procedures for every research activity.

3.1 Research question(s)

The research process and design is based on the research question(s). The manner you define your research question(s) impact automatically the pursuit of your research. In the previous chapter, we have cleared all the process of defining the hierarchy of research question generation and this is the pre-requisite of developing this chapter.

3.2 Research Philosophies and approaches (p106)

Paradigm is a term frequently used in the social sciences, but one which can lead to confusion because it tends to have multiple meanings. The definition we use here is that a paradigm is a way of examining social phenomena from which particular understandings of these phenomena can be gained and explanations attempted.

3.2.1 Pragmatism: do you have to adopt one position?

Pragmatism argues that "the most important determinant of the epistemology, ontology and axiology you adopt is the research question"-one may be appropriate than the other for answering particular questions. Moreover, if the research question doesn't suggest unambiguously that either a positivist or interpretivist philosophy is adopted, this confirms the pragmatist's view that is perfectly possible to work with variations in your epistemology, ontology and axiology. This mirrors a theme that mixed methods, both qualitative and quantitative, and possibly highly appropriate, within one study.

3.2.2 Ontology: *what assumptions do we make about the way in which the world works*?

Ontology is concerned with nature of the reality.

a) Objectivism (p.110)

It portrays the position that the social entities exist in reality external to social actors concerned with their existence (to adopt an objectivist stance to the study of a particular aspect…).

b) Subjectivism: *understanding the meanings that individuals attach to social phenomenon (P.111)*

The subjectivist view is that social phenomenon is created from the perceptions and consequent actions of social actors. What is more, this is a continual process in that through the process of social interaction these social phenomena are in constant state of revision.

Rimenyi et *al*. (1998:35) stress the necessity "*to study the details of the situation to understand the reality or perhaps a reality working behind them". This is often associated with the term constructionnism, or social constructionnism. This follows from the interpretivist philosophy that is necessary to explore the subjective meanings motivating the actions of social actors in order for the researcher to be able to understand these actions.* These different interpretations are likely to affect their actions and the nature of their social interaction with others. In this sense, the customers you are studying not only interact with their environment, they also seek to make sense of it through their interpretations of events and the meanings that they draw from these events. In turn their own actions may be seen by others as being meaningful in the context of these socially constructed interpretations and meanings. … organisation's culture is difficult to be isolated, understood and then manipulated.

3.2.3 Epistemology: *what is acceptable knowledge in a particular field of study*? P112

a) Positivism: *working in the tradition of natural scientist. P.113*

you will prefer *'working with an observable social reality and that the end product of such research can be law-like generalizations similar to those produced by the physical and the natural scientists* (Rimenyi et *al*.1998:32). … Only phenomena that you can observe will lead to the production of credible data. To generate a research strategy to collect these data you are likely to use existing theory to develop hypothesis. These hypotheses will be tested and confirmed, in whole or part, or refuted, leading to the further development of theory which then may be tested by further research. The hypotheses developed lead to *the gathering of facts that provide the basis for subsequent hypothesis testing. … will be concerned with facts rather than impressions.*

Another important component in the positivist approach to research is that the research is undertaken, as far as possible, in a value-free way. …. The 'resources' researcher would claim to be external to the process of data collection in the sense that there is little that can be done to alter the substance of the data collected. The assumption is that the researcher is independent of and neither affects nor is affected by the subject of the research (Rimenyi et *al*.1998:38).

- **Realism:** do objects exist independently of our knowledge of their existence? P.114

The essence of realism is that what the senses show us as reality is the truth: that objects have an existence independent of the human mind. The philosophy of realism is that there is a reality quite independent of the mind. In this sense, realism is opposed to idealism, *the theory that only the mind and its contents exist*. Realism is a branch of epistemology which is similar to positivism in that it assumes a scientific approaches to development of knowledge. This meaning (and in particular the relevance of realism for business and management research) becomes clearer when two forms of realism are contrasted.

- *Direct realism p.115*

It says that what you see is what you get: what we experience through our sense portrays the world accurately.

- *Critical realism p.115*

Critical realists argue that what we experience are sensations, the images of the things in the real world, not the things directly. Critical realists point out how often our senses deceive us. ….

A simple way to think about the difference between direct and critical realism is as follows. Critical realism claims that there are two steps to experiencing the world. First, there is the thing itself and the sensations it conveys. Second, there is the mental processing that goes on sometime after that sensation meets our senses. Direct realism says that the first step is enough. ….

The critical realist, on the other hand, would recognize the importance of multi-level study (e.g at the level of the individual, the group and the organisation). Each of these levels has the capacity to change the researcher's understanding of which is being studied. This would be the consequence of the existence of a greater variety of structures, procedures and processes and the capacity that these structures, procedures and processes have to interact with one another. We, therefore, would argue that the critical realist's position that the social world is constantly changing is much more in line with the purpose of business and management research which is too often to understand the reason for phenomena as precursor to recommending change.

b) Interpretivism: *understanding differences between humans as social actors. P115-116*

Interpretivism advocates that it is necessary for the researcher to understand differences between humans in our role as social actors. This emphasizes the difference between conducting research among people rather than objects such as trucks and computers. The term 'social actors' is quite significant here. …

Crucial to the interpretivist philosophy is that the researcher has to adopt an empathetic stance. *The challenge here is to enter the social world of our research subjects and understand their world from their point of view*. Some would argue that an interpretivist perspective is higly appropriate in the case of business and management research, particularly in such field of organizational behavior, marketing and human resource management. Not only are business situations complex, they are also unique. They are function of a particular set of circumstances and individuals coming together at a specific time.

3.3.4 Axiology: *what roles do our values play in our research choices? P.116,* ***box 4.4***

Axiology is a branch of philosophy that *studies judgments about values*. …. After all, all stages in the research process you will be demonstrating your values. … choosing one topic rather than another suggests that you think one of the topic is more important. Your choice of philosophical approach is reflection of your values, as is your choice of data collection techniques. For example, to conduct a study where you place great importance on data collected through interview work suggests that you value personal interaction with your respondents more highly than their views through an anonymous questionnaire.

An interesting idea which comes from Heron's (1996) discussion of axiology is the possibility of writing your own statement of personal values in relation to the topic you are studying

	Positivism	**Realism**	**Interpretivism**	**Pragmatism**
Ontology: the researcher's views of the nature of reality or being	External, objective and independent of social actors	Is objective. Exists independently of human thoughts and beliefs or knowledge of their existence (realist), but is interpreted through social conditioning (critical realist)	Socially constructed, subjective, may change, multiple	External, multiple, view chosen to best enable answering of research question
Epistemology: the researcher's view regarding what constitutes acceptable knowledge	Only observable phenomena can provide credible data, facts. Focus on causality and like generations, reducing phenomena to simplest elements	Observable phenomena provide credible data, facts. insufficient means inaccuracies in sensations (direct realism) Alternatively, phenomena create sensations which are open to misinterpretation critical realism .focus on explaining within a context or contexts	Subjective meanings and social phenomena. Focus upon the details of situation, a reality behind these details subjective meanings motivating actions	Either or both observable phenomena and subjective meanings can provide acceptable knowledge dependent upon the research question. Focus on practical applied research integrating different perspectives to help interpret the data
Axiology: the researcher's views of the role of values in research	Research is undertaken in a value-free way, the researcher is independent of the data and maintains an objective stance	Research is value laden; the researcher is biased by world views, cultural experiences and upbringing. These will impact on the research	Research is value bound, the researcher is part of what is being researched ,cannot be separated and so will be subjective	Values play a large role in interpreting results , the researcher adopting both objective and subjective points of view
Data collection techniques most often used	Highly structured, large samples, measurement, quantitative, but can use qualitative	Methods chosen must fit the subject matter quantitative or qualitative	Small samples in-depth investigations, qualitative	Mixed or multiple method designs quantitative and qualitative

3.3 The purpose of your research.

- **Exploratory studies**

An exploratory study is a valuable means of finding out 'what is happening; to seek new insights, to ask questions and to assess phenomena in a new light' (Robson 2002:59). It is particularly useful if you wish to clarify your understanding of a problem, such as if you are unsure of the precise nature of the problem. It may well be that time is well spent on exploratory research, as it may show that research is not worth pursuing!

Three principal ways of conducting exploratory studies

- ✓ A search of the literature;
- ✓ Interviewing 'experts' in the subject
- ✓ Conducting focus group interviews

- ➢ **Descriptive studies**

The object of descriptive research is to portray an accurate profile of persons, events, or situations' (Robson 2002:59). …. It is necessary to have a clear picture of the phenomena on which you wish to collect data prior to the collection of the data.

- ➢ **Explanatory studies**

Studies that establish causal relationship may be termed explanatory research. The emphasis here is on studying a situation or a problem in order to explain the relationship between variables.

3.5 Research strategies

Each strategy can be used any of the research purposes (exploratory, descriptive and explanatory research (Yin 2003)). Some of them belong clearly to the deductive approach, others to the inductive approach. … no strategy is inherently superior or inferior to any other.

Consequently, what is important is not the label that is attached to a particular strategy, but whether it will enable you to answer your particular question (s) and meet your objectives. *Your choice of your research strategy will be guided by your research questions and objectives, the extent of existing knowledge, the amount of time and other resources you have available, as well as your own philosophical underpinnings. Finally, it must be remembered that these strategies should not be thought as being mutually exclusive*.

Strategy	**Nature of study linked to**	**Nature of philosophy or approach linked to**
Experiment (science laboratory-based research): the purpose is to study causal links, whether a change in one dependent variable produces a change in another dependent variable (Hakim 2000). Need of control group and experimental group. Improves internal validity. Involvements: - definition of a theoretical hypothesis	Exploratory and explanatory studies to answer **how** and **why** questions.	Objectivist ontologic and Positivist epistemologic philosophies and Deductive approach

-selection of samples of individuals from known populations - random allocation of samples - introduction of intervention or manipulation - measurement on a small number of dependent variables - control of other variables		
Survey : collection of a large amount of data from a sizeable population To answer who, what, where, how much, and how many questions To collect quantitative data to be analysed quantititatively	Exploratory and descriptive studies	Subjectivist and interpretist philosophies, Deductive approach, Use of questionnaire, structured observation, structured interview with standardized questions
Case study: Robson (2002:178) defines case study as 'a strategy of research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidences (number, field visits, videos, ….) Yin (2003) … within a case study, the boundaries between the phenomenon being studied and the context within which it is being studies are not clearly evident. *Completely opposite to experiment.* Answers also why, what, how, and their combination. To use and triangulate multiple sources of data ➢ **Single case**: critical case, extreme case or unique case	Exploratory and explanatory studies Data collection techniques: combination of *interviews, observation, documentary analysis and questionnaires*	Subjectivism, interpretivism, critical realism Interviews,

➢ **Multiple case**: findings in one case are occurring in other cases for need of generalizing from these findings ➢ **Holistic case**: organization as a whole case of study ➢ **Embedded case**: even though you are researching and are concerned with a single organization as a whole, if you wish to examine also a number of logical sub-units within the organization, perhaps departments or work groups, then your case will inevitably involve more than one unit of analysis. Whatever way you select these units, this would be embedded case study (p 147)		
Action research: - purpose of research> research in action - involvement with members of an organization over a matter which is of genuine concern to them - as an iterative nature of the process of diagnosing, planning, taking action and evaluating - action research should have implication beyond the immediate project; in other words, it must be clear that the results could inform other contexts => an explicit concern for the development of theory	It has explicit focus on action and particularly useful for 'how' questions	
Grounded theory: it is thought of being 'theory building' through a combination of induction and deduction	Inductive approach	
Ethnography: to describe and explain the social world the research subjects inhabit	Inductive approach	

in the way in which they would describe and explain it.		
Archival research or historical documents (p 150) It makes use of administrative records and documents as *the principal source of data*. All research that makes use of data contained in administrative records is inevitably secondary data analysis. However when these data are used in archival research strategy they are analysed because they are a product of day-to-day activities. *They are, therefore, part of reality being studied than having been originally collected as data for research purposes.* *An archival research strategy allows research questions which focus upon the past and changes over time to be answered, be they exploratory, descriptive or explanatory*. However, your ability to answer such questions will inevitably be constrained by the nature of administrative records and documents. Even where these records exist, they may not contain the precise information needed to answer your research questions or meet your objectives. Alternatively, data may be missing or you may be refused access or your data censored for confidentiality reasons. Using archival research strategy therefore necessities you establishing what data are available and designing your research to make the most of it.		

3. 6 Research approaches

…. The extent to which you are clear about the theory at the beginning of your research raises important question concerning the designing of your research project. This is whether your research would use the deductive approach, in which you develop a theory and hypothesis (es) and design a research strategy to test the hypothesis, or the inductive approach, in which you would collect data and develop theory as a result of your data analysis.

Deduction: testing theory

Deduction owes much to what would think of as scientific research. It involves the development of a theory that is subjected to a rigorous test. As such, it is the dominant research approach in the natural sciences, where laws present the basis of explanation, allow the anticipation of the phenomena, predict their occurrence and therefore permit to be controlled (Collis and Hussey 2003).

Robson (2002) lists five sequential stages through which deductive research will progress:

1. deducing a hypothesis (a testable proposition about the relationship two or more concepts or variables) from the theory;

2. expressing the hypothesis in operational terms (that is, indicating exactly how the concepts or variables are to measured), which propose a relationship between two specific concepts or variables;

3. testing this operational hypothesis (this will involve one or more of the strategies)

4. examining the specific outcome of the inquiry (it will either tend to confirm the theory or indicate the need for its modification);

5. if necessary, modify the theory in the light of the findings.

Characteristics:

- the search to explain the causal relationship between variables

- controls to allow the testing of hypotheses: any change in a given DV is function of IV rather than any other aspect

NB: in order to pursue the principle of scientific rigour, deduction dictates that the researcher should be independent of what is being observed.

- concepts need to be operationalised in a way that enables facts to be measured quantitatively

- generalization: necessary to select samples of sufficient numerical size

Induction: building theory (based on feelings, context in which particular events are occuring)

The purpose here would be to get a feel of what was going on so us to understand the nature of the problem. Your task then would be to make sense of the interview data you have collected by analyzing those data. The result of this analysis would be the formulation of a theory.

Table : Major differences between deductive and inductive approaches to research.

Deduction emphases	**Induction emphases**
Scientific principles	Gaining an understanding of the meanings humans attach to events
Moving from theory to data	A close understanding of the research context
The need to explain causal relationships between variables	The collection of qualitative data
The collection of quantitative data	A more flexible structure to permit changes of research emphasis as the research progresses
The application of controls to ensure validity of data	A realization that the researcher is part of the research process
The operationalisation of concepts to ensure clarity of definition	Less concern with the need to generalize
A highly structured approach	
Researcher independence of what is being researched	
The necessity to select samples of sufficient size in order to generalize conclusions	

3.7 Methods

Multiple methods choices: combining data collection techniques and analysis procedures (p 151 - 155)

3.7.1 Quantitative

It is predominantly used as a synonym for any **data collection technique** (such as questionnaire) or **data analysis procedures** (such as graphs or statistics) that generates or uses numerical data.

3.7.2. Qualitative

In contrast, qualitative is used predominatly as a synonym for any **data collection technique** (such as interview) or **data analysis procedures** (such as categorizing data) that generates or use non-numerical data. *Qualitative therefore can refer to data other than words, such as pictures and video clips*.

3.7.3 Considerations

Individual quantitative and qualitative techniques (collection) and procedures (analysis) do not exist in isolation (p 151).

If a use of a single data collection technique and corresponding analysis procedures, this is called ***mono method****,* or *use more than one data collection technique and analysis procedures to answer your research question(s):* ***multi methods****.* This last choice is increasingly advocated within business and management research (Curran and Blackburn 2001) ….

a) If you adopt **multi-methods** you would not mix quantitative and qualitative techniques and procedures.

*The term **multi method** refers to those combinations where more than one data collection technique is used with associated analysis techniques or procedures*, but this is restricted within either *a quantitative or qualitative world view* (Tashakkori and Teddlie 2003). Thus you must choose to collect quantitative data using for example, both questionnaires and structured observation analyzing data using statistical (quantitative) procedures; ***a multi-method quantitative study***. Alternatively, you might choose to collect qualitative data using for example, in-depth interviews and diary accounts and analyses these data using non-numerical (qualitative) procedures, ***a multi-method qualitative study***.

b) **Mixed-methods approach** is the general term for when both quantitative and qualitative data collection techniques and analysis procedures are used in a research design. Two subdivisions:

I. **Mixed method research** uses quantitative and qualitative data collection techniques and analysis procedures either at the same time (parallel) or one after the other (sequential) but doesn't combine them. It means that, although mixed method research uses both quantitative and qualitative world views at the research methods stage, ***quantitative data are analysed quantitatively, and qualitative data are analysed qualitatively***. In addition, often either quantitative or qualitative techniques and procedures predominate.

II. In contrast, **mixed model research** combines quantitative and qualitative data collection techniques and analysis procedures as well as combining quantitative and qualitative approaches at other phases of the research question generation. This means that you may take ***quantitative data and qualitatise it***, that is, ***convert it into narrative that can be analysed qualitatively***. Alternatively, you ***quantitatise your qualitative data***, ***converting it into to numerical codes so that it can be analysed statistically***.

3.8 Time horizons

- **Cross-sectional studies**

They often employ the survey strategy (Easterby-Smith et al.2008; Robson 2002). They may be seeking to describe the incidence of a phenomenon or to explain how factors are related in different organizations (**at a given point in time**). They may also use qualitative methods. Many case studies are based on interviews conducted over a short period of time.

- **Longitudinal studies**

The main strength of a longitudinal research is the capacity that it has to study change and development. Adam and Schvaneveldt (1991) point out that in observing people or events over time, the researcher is able to exercise a measure of control over variables being studied, provided that they are not affected by the research process itself.

Even with constraints *it is possible to introduce a longitudinal element to your research*. For example a massive amount of published data collected over time just waiting to be re-analysed! In longitudinal

studies the basic question is 'Has there been any change over a period of time? (Bouma and Atkin 1995:114)

3.9 Selecting samples

The basic idea of sampling is that by selecting some of the elements in a population, we may draw conclusions about the entire population. A population element is the subject on which a measurement is being taken. A population is the total collection of elements about which we wish to make some inferences.

A sample must be tested how well it represents the characteristics of the population it purports to represent. In measurement terms, the **sample must be valid**. *Validity of a sample* depends on two considerations: accuracy and precision.

- **Accuracy** is the degree to which bias is absent from the sample. The underestimators and the overestimators are balanced among the members of the sample. There is no systematic variance with an accurate sample.
- **Precision:** no sample will fully represent its population in all aspects. The precision is measured by the standard error of estimate, a type of standard deviation of the sample. The ideal sample design produces a small standard error of estimator
- **Representation:** probability sampling is based on the concept of random selection- a controlled procedure that assures that each population element is given a ***known nonzero chance of selection***. In contrast, nonprobability sampling is arbitrary (nonrandom) and subjective. Each member does not have a known nonzero chance of being included.

a) Probability sampling (known and equal chance of selection**)**

Probability sampling (or **representative sampling**) is most commonly associated with survey-based research strategies where you need to make inferences from your sample about a population to answer your research question(s) or to meet your objectives. The process of probability sampling can be divided into four stages:

1. identify suitable **sampling frame** (a complete list of all the cases in the population from which your sample will be drawn p 214) ***based on your research question(s) or objectives***
2. decide on a suitable sample size: generalizations about populations from data collected using any probability sample are based on statistical probability. The larger your sample's size the lower the likely error in generalizing to the population.

The choice of the sample size within this compromise is governed by: (p 218)

- The confidence you need to have in your data – that is, the level of certainty that the characteristics of the data collected will represent the characteristics of the total population;
- The margin of error you can tolerate – that is, the accuracy you require for any estimates made from your sample;

- The types of analyses you are going to undertake – in particular, the number of categories into which you want to subdivise your data, as many statistical techniques have a minimum threshold of data cases for each cell (e.g. chi square); and to lesser extent;
- The size of the total population from which your sample is being drawn.

Non-response is due to four interrelated problems (p 220):

- Refusal to respond
- Ineligibility to respond
- Inability to locate respondent
- Respondent located but unable to make contact

➢ Total response rate = total number of responses /(total number in sample – ineligible)

➢ Active response rate = total number of responses /{total number in sample – (ineligible+ unrecheable)}

➢ Actual sample size na= n x 100/ re%
na actual sample size
n is the minimum sample size (see table 7.1 or appendix 2) of Saunders
re% is the estimated response rate expressed as a percentage

3. select the most appropriate sampling technique and select the sample (simple random, systematic, stratified random, cluster, multi-stage)
4. check that the sample is representative of the population

NB: for a population of less than 50 cases, Henry (1990) advises against probability sampling.

(Cooper, p. 184) Steps in sampling design

➢ Relevant population: the definition of a population may be apparent from the management problem or the research question(s) but often it is not.

➢ Parameters of interests are summary descriptors (e.g., incidence proportion, mean, variance) of variables of interest in the population. Sample statistics are descriptors of the relevant variables computed from the sample data. The variables of interest in a study can be measured with various scales like nominal, ordinal, interval or ratio.

➢ Sampling frame: *it is the list of elements from which the sample is actually drawn*. Often you have to accept a sampling frame that includes people or cases beyond those in whom you are interested (p 188, last para)

➢ Type of sample: probability or nonprobability sample.

➢ Size sample needed: the sample must be large or it is not representative, a sample must bear some proportional relationship to the size of the population from which it is drawn. Some principles that influence the sample size include: the greater the dispersion or variance within the population, the larger the sample must be to provide estimation precision; the greater the desired precision of the estimate, the larger the sample must be; the narrower the interval range the larger the sample must be; the higher the confidence level in the estimate, the larger

the sample must be; the greater the number of subgroups of interest within a sample, the greater the sample size must be, as each subgroup must meet minimum sample size requirements; if the calculated sample exceed 5% of the population, sample size may be reduced without sacrificing precision.

- The cost: cost considerations influence decisions about size and type of sample and also the data collection methods. Note the effect of a $2,000 budget on sampling considerations: simple random sampling:$ 25 per interview; 80 completed interviews; geographic cluster sampling: $20 per interview; 100 completed interview; self-administered questionnaire: $12 per respondent, 167 completed instruments; telephone interviews: $10 per respondent, 200 completed interviews. (pp191-2)

1 Simple random sampling (sometimes called just random sampling)

It involves you selecting the sample at random from the sampling frame using either random number tables (appendix 3), a computer or an online random number generator, such as Research Randomizer (2008). To do this you:

1. Number each of the cases in your sampling frame with a unique number. The first case is numbered 0, the second 1 and so on.
2. Select cases using random numbers (table 7.3, appendix 3) until your actual sample size is reached

It is usual to select your first random number at random (closing your eyes and pointing with your finger is one way!) as this ensures that the set of random numbers obtained for different samples is unlikely to be the same. If you do not, you will obtain sets of numbers that random but identical. … ensure that the numbers generated are within your range (ignored and replaced) and that if a number is repeated it is ignored and replaced.

2 Systematic sampling

Systematic sampling involves you selecting the sample at regular intervals from the sampling frame. To do this you:

1. Number each of the cases in your sampling frame with a unique number. The first case is numbered 0, the second 1 and so on.
2. Select the first case using random number
3. Calculate the sampling fraction
4. Select subsequent cases systematically using the sampling fraction to determine the frequency of selection

To calculate the sampling fraction that is, the proportion of the total population that you need to select – you use the formula

Sampling selection = actual sample size/ total population. If your sampling fraction is 1/3 you need to select one in every three cases – that is, every third case from the sampling frame. The first subject is selected at random and continue to select every third subject.

3 Stratified random sampling

It is a modification of a random sampling in which you divide the population into two or more relevant and significant strata based on one or a number of attributes. In effect, your sampling frame is divided into u number of subsets. A random sample is then drawn from each of strata.

4 Cluster sampling

Cluster sampling is, on the surface, similar to stratified sampling as you need to divide the population into discrete groups prior to sampling (Henry 1990). The groups are termed clusters in this form of sampling and can be based on any naturally occurring grouping. For example, you could group your data by type of manufacturing firm or geographical area (Box 7.9).

For cluster sampling your sampling frame is the complete list of clusters rather than a complete list of individual cases within the population. You then select few clusters, normally using simple random sampling. Data are then collected from every case within the selected clusters.

5 Multi-stage sampling

Multi-stage sampling, sometimes called multi-stage cluster sampling, is a development of cluster sampling. It is normally used to overcome problems associated with a geographically dispersed population when face-to-face contact is needed or where it is expensive and time consuming to construct a sampling frame for a large geographical area. However, like cluster sampling, you can use it for any discrete group, including those that are not geographically based. The technique involves taking a series of cluster samples, each involving some form of random sampling.

6 Checking that the sample is representative.

For example, you can compare data on the age and socio-economic characteristics of respondents in a marketing survey with these characteristics of the population in that country as recorded by the latest national census of population. If there is no significant difference, then the sample is representative to these characteristics.

When working within an organization comparisons can also be made.

b) Non-probability sampling

…. *However, within business research, such as market surveys and case study research, this may be either not be possible (as you do not have a sampling frame) or appropriate to answering your research question. This means your sample must be selected some other way*. Non-probability sampling (or non-random sampling) provides a range of alternative techniques to select samples based on your subjective judgment.

…. This sample would provide you with an information rich case study in which you explore your research question(s) and gain theoretical insights.

Other research questions may not involve such statistical generalizations. To gain an understanding of how people manage their careers, you may select a sample of company chief executives. For such research your sample selection would be based on the premise that, as these people have reached executive level and have been successful in managing their own careers they are most likely to be able to offer insights from which you can build understanding.

1 Deciding on a suitable sample size.

For all non-probability sampling techniques, other than quota samples, the issue of sample size is ambiguous and, unlike probability sampling, there are no rules. Rather the logical relationship between your sample selection technique and the purpose and focus of your research is important (figure 7.5), generalizations being made to theory rather than about a population. Consequently, your sample size is dependent on your research question (s) and objectives – in particular, what you need to find out, what will have credibility and what can be done within your available resources (Patton 2002). This is particularly so where you are intending to collect qualitative data using interviews. *Although the validity, understanding and insights that you will gain from your data will be more to do with your data collection and analysis skills than with the size of your sample (Patton 2002)*, *it is possible to offer guidance as to sample size to ensure you have conducted sufficient interviews.*

In addressing this issue, many research text books simply recommend continuing to collect qualitative data, such as by conducting additional interviews, until data saturation is reached: in other words until additional data collected provides few, if any, new insights. *However, this does not answer the question, how many respondents are you likely to need in your sample? Fortunately, Guest et al. (2006) offers some guidance*. **For research where your aim is to understand commonalities within a fairly homogeneous group, 12 in-depth interviews should suffice. However, they also note that 12 interviews are unlikely to be sufficient where the sample is drawn from a heterogeneous population or the focus of the question is wide range. Given this, we would suggest that, for a general study, you should expect to undertake between 25 and 30 interviews (Creswell 2007)**. 235

2 Selecting the most appropriate sampling technique and the sample.

Having decided the likely suitable sample size, you need to select the most appropriate sampling technique to enable you to answer your research question from the range of non-probability sampling

techniques available. At one end of this range is quota sampling, which, like probability sampling, tries to represent the total population. Quota sampling has similar requirements for sample size as probabilistic sampling technique. At the other end of this range are techniques based on the need to obtain a sample as quickly as possible where you have little control over the sample cases and there is no attempt to obtain a representative sample which will allow you to generalize in a statistical sense to a population. These include convenience and self-selection sampling techniques. Purposive sampling and snowball sampling techniques lie between these extremes

1 Quota sampling

Quota sampling is entirely non random and is normally used for interview surveys. It is based on the premise that your sample will represent the population as the variability in your sample for various quota variables is the same as that in the population. Quota sampling is therefore a type of stratified sample in which selection of cases within strata is entirely non-random (Barnett 1991). To select a quota sample you:

1. Divide the population into specific groups
2. Calculate a quota for each group based on relevant and available data
3. Give each interviewer an 'assignment' which states the number of cases in each quota from which they must collect data
4. Combine the data collected by interviewers to provide the full sample. See box 7.11 can be useful for explaining how to sample in the study based on EICV3 results, basing also on district organizational chart and the core of appearance of the service in Imihigo template.

   Sample size: 2000-5000

2 Purposive sampling

Purposive or **judgmental sampling** enables you to use your judgment to select cases that will best enable you to answer your research question(s) and to meet your objectives. This form of sample is often used when working with very small samples such as in case study and when you wish to select cases that are particularly informative (Neuman 2005). Purposive sampling may also be used by *researchers adopting the grounded theory strategy*. For such research, findings from data collected from your initial sample inform the way you extend your sample into subsequent cases (section 13.8). Such samples, however, cannot be considered to be statistically representative of the total population. The logic on which you base your strategy for selecting cases for a purposive sample should be dependent on your research question(s) and objectives. Patton (2002) emphasizes this point by contrasting the need to select information-rich cases in purposive sampling with the need to be statistically representative in probability sampling.

- Extreme case or deviant sampling
- Heterogeneous or maximum variation sampling enables you to collect data to describe and to explain key themes that can be observed. Although this might appear a contradiction, as a small

sample may contain cases that are completely different, Patton (2002) argues that this is in fact a strength. Any patterns that do emerge are likely to be of particular interest and value and represent the key themes. In addition, the data collected should enable you to document uniqueness. To ensure maximum variation within a sample Patton (2002) suggests you identify your diverse characteristics (sample selection criteria) prior to selecting your sample.

- In contrast to heterogeneous sampling, **homogeneous sampling** focuses on one particular sub-group in which all the sample members are similar. This enables you to study the group in great depth.
- Critical case sampling selects critical cases on the basis they can make a point dramatically or because they are important. The focus of data collection is to understand what is happening in each critical case that logical generalizations can be made (box 7.12). Patton outlines a number of clues that suggest critical cases. These can can be summarized by the questions such as:
    - If it happens there, will it happen everywhere?
    - If they are having problems, can you be sure that everyone will have problems?
    - If they cannot understand the process, is it likely that no one will be able to understand the process?
- In contrast, typical case sampling is usually used as part of research project to provide an illustrative profile using a representative case. Such a sample enables you to provide an illustration of what is 'typical' to those who will be reading your report and may be unfamiliar with the **subject matter**. It is not intended to be definitive.

I. **Snowball sampling** (p 240)

Snowball sampling is commonly used when it is difficult to identify members of the desired population, for example people who are working while claiming unemployment benefit. You, therefore, need to:

1. Make contact with one or two cases in the population
2. Ask these cases to identify further cases
3. Ask these new cases to identify further new cases (and so on)
4. Stop when either no new cases are given or the sample is as large as is manageable.

II. Self-selection sampling

Self-sampling occurs when you allow each case, usually individuals, to identify their desire to take part in the research. You therefore:

1. Publicise your need for cases, either by advertising through appropriate media or by asking them to take part
2. Collect data from those who respond

3 Convenience sampling

Convenience sampling (or haphazard sampling) involves selecting haphazardly those cases that are easiest to obtain for your sample, such as the person interviewed at random in a shopping

centre for a television programme or the book about entrepreneurship you find at the airport (box 7.15)

3.10 The credibility of research findings

Reliability

Reliability refers to the extent to which your data collection techniques or analysis procedures will yield consistent findings. In relation to qualitative research, reliability is concerned with whether alternative researchers would reveal similar information (Easterby-Smith et al.2008; Silverman 2007) p 326 Saunders. It can be assessed by posing the following three questions (Easteby-Smith *et al.* 2008:109):

I. Will the measures yield the same results on other occasions?
II. Will similar observations be reached by other observers?
III. Is there transparency in how sense was made from the raw data?

- **Threats to reliability**

a) subject or participant error

b) Subject or participant bias

c) Observer error

d) Observer bias

Validity

Validity is concerned with whether the findings are really about what they appear to be about. Is the relationship between two variables a causal relationship?

- Threats to validity
  I. History
  II. Testing
  III. Instrumentation
  IV. Mortality : participants dropping out of studies
  V. Maturation
  VI. Ambiguity about causal direction

Generalisability: external validity

Extent to which your research results are generalisable: that is, whether your findings may be equally applicable to other research settings, such other organizations. This may be a particular worry if you are conducting case study research in one organization, or a small number of organizations. It may be important if the organization is markedly 'different' in some way.

In such cases the purpose of your research will not to produce a theory that is generalisable to all populations. Your task will be simply to try to explain what is going on in your particular research setting. It may be that you want to test the robustness of your conclusions by exposing them to other research settings in a follow-up study. In short, as long as you don't claim that your results, conclusions or theory can be generalized, there is no problem.

3.11 The ethics of research design (P 160)

The general ethical issue here is that the research design should not subject those you are researching (the research population) to embarrassment, harm or any material disadvantage.

Your research design may need to consider the extent to which you should collect data from a research population that is unaware of the fact they are the subject of research and so have not consented.

3.12 Negotiating access and research ethics

3.12.1 Strategies to gain access

I. Ensuring you are familiar with and understand the organization or group before making contact
II. Allowing yourself sufficient time
III. Using existing and developing new contacts
IV. Providing a clear account of purpose and type of access required will allow your intended participants to be aware of what will be required from them (Robson 2002)
V. Overcoming organizational concerns (amount of time or resources that will be involved in the request for access; sensitivity about the topic; confidentiality and anonymity)
VI. Highlighting possible benefits to the organization
VII. Using suitable language
VIII. Developing access incrementally
IX. Establishing credibility
X. Being open to serendipitous events

3.13.2 General ethics issues

I. Privacy of possible and actual participants
II. Voluntary nature of participation and the right to withdraw partially or completely from the process
III. Consent and possible deception of participants

IV. Maintenance of the confidentiality of data provided by individuals or identifiable participants and their anonymity

V. Reactions of participants to the way in which you seek to collect data, including embarrassment, stress, discomfort, pain and harm

VI. Effects on participants of the way you use, analyse and report your data, in particular the avoidance of embarrassment, stress, discomfort, pain and harm

VII. Behavior and objectivity of you as researcher

- Avoidance of harm (non-maleficence)
- Expression netiquette providing a number of rules or guidelines about how to act ethically when using internet, ….

Chapter 4: The Research Proposal

4. 1 Purpose of the research proposal

A proposal is an individual's or company's offer to produce a product or render a service to a potential buyer or sponsor. The purpose of the research proposal is:

1. To present the management question to be researched and relate its importance
2. To discuss the research efforts of others who have worked on related management questions
3. To suggest the data necessary for solving the management question and how the data will be gathered, treated, and interpreted.

A proposal is also known as a work plan, prospectus, outline, statement of intent, or draft plan. The proposal tells us what, why, how, where, and to whom the research will be done. It must also show the benefit of doing the research.

4.2 Structuring the research proposal

1) Executive summary

The executive summary allows a busy manager or sponsor to understand quickly the trust of the proposal. It is essentially an informative abstract, giving executives the chance to grasp the essentials of the proposal without having to read the details. The goal of the summary is to secure a positive evaluation by executive who will pass the proposal on to the staff for a full evaluation. As such, the executive summary should include brief statements of the management dilemma and management question, the research objectives / research question(s), and benefits of your approach. If the proposal is unsolicited, a brief description of your qualification is also appropriate.

2) Problem statement

This section need to convince the sponsor to continue reading the proposal. You should capture the reader's attention by stating the management dilemma, its background, its consequences, and the resulting management question. The importance of answering the management question should be emphasized here if a separate module on the importance / benefits of study is not included later in the proposal. In addition, this section should include any restrictions or areas of the management question that will not be addressed.

Problem statements too broadly defined cannot be addressed adequately in one study. It is important that the management question distinguish the primary problem from related problems clearly. Be sure your problem statement is clear without the use of idioms or clichés. After reading this section, the potential sponsor should know the management dilemma and the question, its significance, and why something should be done to change the status quo.

3) Research objectives

This module addresses the purpose of the investigation. It is here that you lay out exactly what is being planned by the proposed research. **In a descriptive study, the objective can be stated as the research question**. Recall that the research question can be further broken down into investigative questions. **If the proposal is for causal study, then the objectives can be restated as a hypothesis**. The objective module flows naturally from the problem statement, giving the sponsor specific, concrete, and achievable goals. It best to list the objectives either in order of importance or in general terms first, moving to specific terms (e.g., research question followed by underlying investigative questions). The research question(s) or hypotheses, if appropriate should be separated from the flow of the text for quick identification. The research objectives section is the basis for judging the remainder of the proposal and, ultimately, the final report. Verify the consistency of the proposal by checking to see that each objective is discussed in the research design, data analysis, and results sections.

4) Literature review

The literature review section examines recent (or historically significant) research studies, company data, or industry reports that act as a basis for the proposed study. Begin your discussion of the related literature and relevant secondary data from a comprehensive perspective, moving to more specific studies that are associated with your topic. If the problem has a historical background, begin with the earliest references. Avoid the extraneous details of the literature; do brief review of the information, not a comprehensive report. Always refer to the original source. If you find something of interest in a quotation, find the original publication and ensure you understand it. In this way, you will avoid any errors of interpretation or transcription. Emphasize the important results and conclusions of other studies, the relevant data and trends from previous research, and particular methods or designs that could be duplicated or should be avoided. Discuss how the literature applies to the study you are proposing, show the weakness or faults in design, discuss how you would avoid similar problems. **If your proposal deals with secondary data, discuss the relevance of the data and the bias or lack of bias inherent in it**. The literature review may also explain the need for the proposed work to appraise the shortcomings and / or information gaps in secondary data sources. This analysis may go beyond scrutinizing the availability or conclusion of past studies and their data, to examine the accuracy of secondary sources, the credibility of these sources, and the appropriateness of earlier studies. Close the literature review section by summarizing the important aspects of the literature and interpreting them in terms of your problem. Refine the problem as necessary in light of your findings.

5) Importance / benefits of the study

In this section you describe explicit benefits that will accrue from your study. The importance of "doing the study now" should be emphasized. Usually, this section is not more than a few paragraphs. If you find it difficult to write, then you have probably not adequately clarified the management dilemma. Return to the analysis of the problem and ensure, through additional discussions with your sponsor or your research team or by a reexamination of the literature, that you have captured the essence of the problem. This section also requires you to understand what is

most troubling to your sponsor. If it is a potential union activity, you cannot promise that an employee survey will prevent unionization. The importance/ benefits section is particularly important to the unsolicited external proposal. You must convince the sponsoring organization that your plan will meet its needs.

6) Research design

Up now you have told the sponsor what the problem is, what your study goals are and why it is important for you to do the study. The proposal has presented the study's value and benefits. The design module describes what you are going to do in technical terms. This section should include as many subsections as needed to show the phases of the project. Provide information on your proposed design for tasks such as sample selection and size, data collection method, instrumentation, procedures, and ethical requirements. When more than one way exists to approach the design, discuss the methods you have rejected and why your selected approach is superior.

7) Data analysis

A brief section on the methods used for analyzing the data is appropriate large-scale contract research project and **doctoral theses**. With small projects, the proposed data analysis would be included within the research design section. It is in this section that you describe your proposed handling of the data and the theoretical basis for using the selected techniques. The object of this section is to assure the sponsor you are following correct assumptions and using theoretically sound data analysis procedures. This module is often an arduous section to write. You can make it easier to write, read, and understand your data analysis by using sample charts and tables featuring "dummy data". The data analysis section is so important to evaluating contract research proposals that the researcher could contract an expert to review the latest techniques available for the use in particular research study and compare these to proposed techniques.

8) Nature and form of results

Upon finishing this section, the sponsor should be able to go back to the statement of the management question and research objectives and discover that each goal of the study has been covered. One should also specify the types of data to be obtained and the interpretation that will be made in the analysis. If the data are to be turned over to the sponsor for proprietary reasons, make sure this is reflected. Alternatively, if the report will go to more than one sponsor, that should be noted. This section also contains the contractual statement telling the sponsor exactly what types of information will be received. Statistical conclusions, applied findings, recommendations, action plans, models, strategic plans, and so forth are examples of forms of results.

9) Qualification of researchers
10) Budget
11) Schedule
12) Facilities and special resources

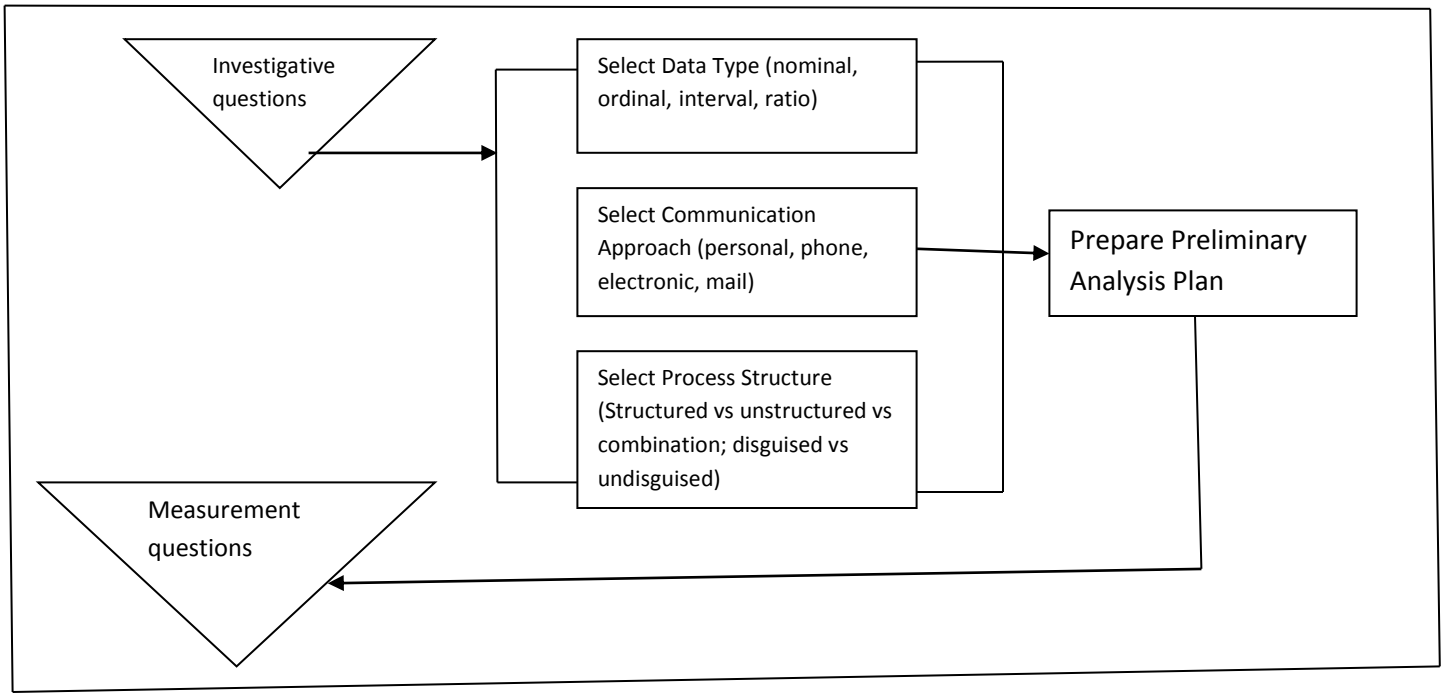
13) Project management
14) Bibliography
15) Appendixes

PART III. DATA COLLECTION DESIGN.

Chapter 4. Instruments for participant communication

4.1 Developing the instrument design strategy

- Flowchart for instrument design



4.2 Management-research question hierarchy Revisited: Phase 1

The management-research question hierarchy is the foundation of successful instrument development (exhibit above). The process of moving from the general to management dilemma to specific measurement questions goes through four question levels:

1. Management question – the dilemma, stated in question form, that the manager needs resolved
2. Research questions - the fact-based translation of the question the researcher must answer to contribute to the solution of the management question
3. Investigative questions – specific questions the researcher must answer to provide sufficient detail and coverage of the research question. Within this level, there may be several questions as the researcher moves from the general to the specific
4. Measurement questions – questions participants must answer if the researcher is to gather the needed information and resolve the management question.

Addressing the management-research question hierarchy is the first step in planning for the collection of data. Investigative questions are the core of the researcher's information needs. In

many studies, an exploration investigation helps the researcher understand all dimensions of the subject. In the Prince Corporation image study (see chapter 8), many exploratory interviews were needed to ensure all investigative topics were covered….

MindWriter "Close-up" in this section reveals the thinking that leads to the final questionnaire and shows you the direction of this chapter. Normally, once the researcher understands the connection between the investigative questions and the potential measurement questions, a strategy for the survey is the next logical step. The following are prominent among the strategic concerns.

1. ***What type of data needed to answer the management question?***
2. ***What communication approach will be used?***
3. ***Should the questions be structured, unstructured, or some combination?***
4. ***Should the questioning be undisguised or disguised. If the latter, to what degree?***

- **Type of data**: data type determines the analytical procedures that are possible during data analysis. Data should be nominal, ordinal, interval, ratio and the characteristics of each type influence the analysis (Statistical choices and hypothesis testing).
- **Communication approach**: personal interview, telephone, mail, computer or some combination of these. Decision regarding which method to use as well where to interact with the participant (at a neutral site, at sponsor's place of business, etc.) will affect the design of the instrument. In personal interviewing and computer questioning, it is possible to use graphics and other questioning tools more easily than questioning is done by mail or phone
- **Question structure**: the degree of question and response structure also must be decided on because they depend on the content and objectives of the specific questions. Questions and interview schedules (**interview schedule is an alternative term for the questionnaire used in an interview**) can range from those that have a great deal of structure to those that are essentially unstructured. Both questionnaires and interview schedules contain three types of measurement questions:
  - ✓ ***Administrative questions***: identify the participant, interviewer, interview location, and conditions. These questions are rarely asked of the participant but are necessary to study patterns within the data and identify possible error sources.
  - ✓ ***Classification questions***: are usually sociological-demographic variables that allow participants' answers to be grouped so patterns are revealed and can be studied.
  - ✓ ***Target questions*** (structured or unstructured) address the investigative questions of a specific study. The may be **structured:** they present the participants with a *fixed set of choices*, often called *closed questions*, or **unstructured**: *they do not limit responses but provide a frame of reference for participants' answers*, sometimes referred to as *open-ended questions*.
- Disguising objectives and sponsors: another consideration in communication instrument design is whether the purpose of the study should be disguised. Some degree of disguise is often in survey questionnaires, especially to shield the study's sponsor. A disguised question is designed to conceal the question's true purpose. We disguise the sponsor and the objective of a study if

the researcher believes that participants will respond differently than they would if both or either were known.

- The accepted wisdom is that often we must disguise the study's objective or sponsor or abandon the study. The decision about when to use disguised questioning may be made easier by identifying four situations where disguising the study objective is or is not an issue:
  - ✓ Willingly-shared, conscious-level information
  - ✓ Reluctant shared, conscious-level information
  - ✓ Knowable, limitedly-conscious-level information
  - ✓ Subconscious-level information

Willingly-shared, conscious-level information: when requesting this type of information either disguised or undisguised or undisguised questions may be used, but the situation rarely requires disguised techniques. Example: "Have you attended the showing of a dorein languge film in the last six months? Or see the exhibit 12-3

Reluctant shared, conscious-level information: when we ask for an opinion on some topic on which participants may hold a socially unacceptable view, we often use projective technique because participants may not give their true fellings or may give stereotyped answers. The researcher can encourage more accurate answers by phrasing the questions in a hypothetical way or by asking "how people around here feel about this topic." The assumption is that responses to these questions will indirectly reveal the participant's opinions. In Jason's high school reunion study, the objective for collecting information on classmates'love lives was not disclosed – in part that is why most people did not return the study. As the researcher, Jason surely wishes that his identity were not disclosed.

Knowable, limitedly-conscious-level information: asking about individual attitudes when participants know they hold the attitude but not have explored why they hold the attitude may encourage the use of disguised questions. A classic example is a study of government bond buying during World War II. A survey sought reasons why, among people with equal ability to buy, some bought more war bonds than others. Frequent buyers had been personally solicited to buy bonds while most infrequent buyers had not received personal solicitation. No directly why question to participants could have provided the answer to this question because participants did not know they were receiving differing solicitation approaches. Example: "What is about air travel during stormy weather that attracts you?".

Subconscious-level information. Seeking insight into the basic motivations underlying attitudes or consumption practices may or may not require disguised techniques. Projective techniques (such as sentence completion tests, and word association tests) thoroughly disguise the study objective, but they are often difficult to interpret.

Preliminary Analysis Plan

Researchers are concerned with adequate coverage of the topic and with securing the information in its most usable form. A good way to test how well the study plan meets those needs is to develop "dummy" tables that display the data one expects to secure. This serves as a check on whether the planned measurement questions meet the data needs of the research question. It also helps the

researcher determine the type of data needed for each question – a preliminary step to developing measurement questions for investigative questions.

4.3 Constructing and Refining the Measurement Questions: Phase 2

Drafting the questions begins once you develop a complete **list of investigative questions** and *decide on the collection processes to be used*. In phase 2, you draft specific measurement questions considering subject content, *the wording of each question (influenced by the degree of disguise and the need to provide operational definitions for constructs and concepts*), and response strategy (each producing a difference level data as needed for your preliminary analysis plan). In phase 3, **you must address topic and question sequencing**. We discuss these topics sequentially, although in practice the process is not orderly. For this discussion, we assume the questions are structured. The order, type, and wording of the measurement questions, the introduction, the instructions, the transitions, and the closure in a quality communication instrument should accomplish the following:

- Encourage each participant to provide accurate responses
- Encourage each participant to provide an adequate amount of information
- Discourage each participant from refusing to answer specific questions
- Discourage each participant from early discontinuation of participation
- Leave the participant with a positive attitude about survey participation

Question content

Four questions, covering numerous issues, guide the instrument designer in selecting appropriate question content:

1. Should this question be asked?
2. Is the question of proper scope and coverage?
3. Can the participant adequately answer this question, as asked?
4. Will the participant willingly answer this question, as asked?

Should this question be asked?

Issue 1: purposeful versus interesting. Question that merely produce "interesting information" cannot be justified on either economic or research grounds. Challenge each question's function. Does it contribute significant information toward answering the research question? Will its omission limit or prevent the thorough analysis of other data? Can we infer the answer from another question? A good question designer knows the value of learning more from fewer questions.

Is the question of proper scope and coverage?

Issue 2: incomplete or unfocused. We can test this content issue by asking, "will this question reveal all we need to know?". We sometimes ask participants to reveal their motivations for particular behaviors or attitudes by asking them, "why?". This simple question is inadequate to probe the range of most

causal relationships. When studying product use behavior, for example, direct two or three questions on product use to heavy-use consumer and only one question on the light user.

Questions are also inadequate if they don't provide the information you need to interpret responses fully. If you ask about the Prince Corporation's image as an employer, have you recognized that different groups of employees may have different reactions? Do you need to ask the same question about other companies so you can evaluate relative attitudes?

Issue 3: Multiple questions. Does the question request so much content that it should be broken into two or more questions? While reducing the overall number of questions In a study is highly desirable, don't try to ask double-barreled questions: two or more questions in one that the participant might need to answer differently to preserve the accuracy of the data.

Issue 4: precision. To test a question for precision, ask, "does the question ask precisely what we want and need to know?". Also common vocabulary between researcher and participant.

Can the participant answer adequately?

Issue 5: time for thought. To enable the participant to frame an answer or reasonable the the participant can determine the answer?

Issue 6: Participation at the expense of accuracy. Use filter questions to qualify a participant's knowledge.

Issue 7: presumed knowledge: the question designer should consider the participant's informayion level when determining the content and appropriateness of a question.

Issue 8: Recall and memory decay *(decay= to be gradually destroyed as a result of a natural process of change)*: people can't recall much that has happened in their past, unless it was dramatic.

Issue 9: balance (General vs specific)

Issue 10: objectivity. The ability of participants to answer adequately is also often distorted by questions whose content is biased by what is included or omitted. The question may explicitly mention only the positive or negative aspects of the topic or make unwarranted assumptions about the participant's position.

Will the participants answer willingly?

Issue 11: sensitive information. Use projective technique?

Question wording.

The difficulty of understanding long and complex sentences or involved phraseology aggravates the problem further. Our dilemma arises from the requirements of question design (the need to be explicit, to present alternatives, and to explain meanings).

When it is impossible to say which wording of a question is best, we can point out several ares that cause participant confusion and measurement error. The diligent question designer will put a given question through many revisions before it satisfies these criteria:

1. Is the question stated in terms of a shared vocabulary?
2. Does the question contain vocabulary with a single meaning?
3. Does the question contain unsupported or misleading assumptions?
4. Does the question contain unbiased wording?
5. Is the question correctly personalized?
6. Are adequate alternatives presented within the question?

Issue 12: shared vocabulary

Typical of the many problem words are ***any, could, should, fair, near, often, average,*** and ***regular***. One author recommends that after stating a question as precisely as possible, we should test each word against this checklist:

1. Does the word chosen mean what we intend?
2. Does the word have multiple meanings? If so, does the context make the intended meaning clear?
3. Does the word chosen have more than one pronunciation? Is there any word with similar pronunciation with which the chosen word might be confused?
4. Is a simpler word or phrase suggested or possible?

Shared vocabulary issues are addressed by using the following

1. Simple rather than complex words
2. Interview with content knowledge
3. Commonly known, unambiguous words
4. Precise words.

Issue 13: unsupported assumptions: unwarranted assumptions contribute to many problems wording. E.g., asking question to a single girl question of who buys clothes to her, herself or her husband!

Issue 14: Frame of Reference: inherent in word meaning problems is also the matter of a frame of reference. Each of us understands concepts, words, and expressions in light of our own experience. The U.S. Bureau of Census wanted to know how many people were in the labor market. To learn whether a person was employed it asked: “Did you do any work any work for pay or profit last week?”. The researcher erroneously assumed there would be a common frame of reference between the interviewer and participants on the meaning of work. Unfortunately, many persons viewed themselves primarily or foremost as homemakers or students. This difference in frame of reference resulted in a consistent underestimation of the number of people working in the U.S. in a subsequent version of the study, this question was replaced by two questions, the first of which sought a statement on the participant’s major activity during the week. If the participant gave a nonwork classification, he was

asked to determine if he or she had done any work for pay besides this major activity. This revisionincreased the estimate of total employment by more than 1 million people, half of them working 35 hours or more per week. The interviewer may seek to learn the frame of reference used by the participants; second, it is useful to specify the frame of reference for the participant.

Issue 15. Biased wording. Bias is the distortion of responses in one direction, word choice is often the major source.

Issue 16. Personalisation. How personalization should a question be? Should we ask , "what would ***you*** do about ….? Or should ask, "what would ***people with whom you work*** do about…. ? when either form is acceptable, we should choose that which appears to present the issues more realistically. If there doubts, then split survey versions should be used.

Issue 17. Adequate Alternatives: it is usually wise to express each alternative explicitly to avoid bias.

Response strategy

A third major decision area in question design is the degree and form of structure imposed on the participant. The various response strategies offer options that include ***unstructured response*** (or *open-ended response*) and ***structured response*** (or *closed response,* specified alternatives provided). Free responses, in turn, range from those in which the participants express themselves extensively to those in which the participants' latitude is restricted by space, layout, or instructions to choose one word or phrase, *as **in "fill-in"** question*. Closed response are categorized as **dichotomous (yes or no, male or female,), multiple choice, checklist, rating, or ranking response strategies**.

Situational determinants of response strategy choice are several and affect the decision of whether to use open-ended or closed questions. The decision is also affected by the degree to which these factors are known to the interviewer. The factors are:

- Objectives of the study
- Participant's level of information about the topic
- Degree to which participant communicates
- Participant's motivation level to share information.

Issue 18. Objective of the study: if the objective of the question is only to classify the participant on ome stated point of view, then the closed question will serve well. Assume you are interested only in whether a participant approves or disapproves of a certain corporate policy. A closed question will provide this answer. This response strategy ignores the full scope of the participant's opinion and its antecedents. If the objective is to explore a wider territory, then an open-ended question (free-response strategy) is preferable. Open-ended questions are appropriate when the objective is to discover opinions and degrees of knowledge. They are also appropriate when the interviewer seeks sources of information, dates of events, and suggestions or when probes are used to secure more information. When the topic of a question is outside the participant's experience, the open-ended question may offer the better way to learn his or her level of information. Open-ended questions also help to uncover

certainty of feelings and expression of intensity, although well-designed closed questions can do the same. Finally it may be better to use open-ended questions when the interviewer does not have a clear idea of the participant's frame of reference or level of information. Such conditions are likely to occur in exploratory research or in pilot testing. Closed questions are better when there is a clear frame of reference, the participant's level of information is predictable, and the researcher believes the participant understands the topic.

Issue 19: thoroughness of prior thought. If a participant has developed a clear opinion on the topic, a closed question does well. If an answer has not been thought out, an open-ended question may give the participant a chance to ponder a reply, then elaborates on and revise it.

Issue 20: communication skill: open-ended questions require a stronger grasp of vocabulary and a greater ability to frame response s than do closed questions.

Issue 21: Participant motivation. Experience has shown that closed questions typically require less motivation and answering them is less threatening to participants. But the response alternatives sometimes suggest which answer is appropriate, for this reason, closed questions may be biased. While open-ended question offers many advantages, *closed questions are generally preferable in large surveys*. They reduce the variability of response, make fewer demands on interviewer skills, are less costly to administer, and are much easier to code and analyze. After adequate exploration and testing, we can often develop closed questions that will perform s effectively as open-ended questions in many situations. Experimental studies suggest that closed questions are equal or superior to open-ended questions in many more applications than is commonly believed.

4.4 Drafting and refining the instrument: Phase 3

Drafting and refinement – is a multistep process.

1. Develop the participant – screening process (personal or phone interview) along with the introduction
2. Arrange the measurement question sequence:
    I. Identify topic groups
    II. Establish a logical sequence for the question groups and questions within groups
    III. Develop transitions between these groups
3. Prepare and insert instructions – for the interviewer or participant – including termination, skip direction, and probes
4. Create and insert a conclusion, including a survey disposition statement
5. Pretest specific questions and the instrument as a hole

A. Introduction and participant screening.

The introduction must supply the sample unit with the motivation to participate in the study. It must reveal enough about the forthcoming questions, usually by revealing some or all of the topics to be covered, for participants to judge their interest level and their ability to provide the desired information.

In any communication study, the introduction also reveals the amount of time participation is likely to take.

B. Measurement question sequencing

Often the content of one question (also called a **branched question**) assumes other question have been asked and answered. The psychological order of the questions is also important; question sequence can encourage or discourage commitment and promote or hinder the development of researcher-participant rapport. The design of survey questions is influenced by the need to relate each question to the others in the instrument. The basic principle used to guide sequence decisions is : the nature and needs of the participants must determine the sequence of questions and the organization of the interview schedule. Four guidelines are suggested to implement this principle:

1. The question process must quickly awaken interest and motivate the participant to participate in the interview. Put the more interesting topical target questions early.
2. The participant should not be confronted by early requests for information that might be considered personal or ego threatening. Put questions that might influence the participant to discontinue or terminate the questioning process near the end.
3. The questioning process should begin with simple items and move to the more complex, and move from the general items to the more specific (Process called **Funnel Approach**). Put taxing and challenging questions in the later in the questioning process.
4. Changes in the frame of reference should be small and should be clearly pointed out. Use transition statements (like **buffer = neutral questions**) between different topics of the target question set.

C. Instructions

Instructions to interviewer or participant attempt to ensure that all participants are treated equally, thus avoiding error into the results. Two principles form the foundation for good instructions: clarity and courtesy. Instruction language needs to be unfailingly simple and polite. Instruction topics include:

- Termination of an unqualified participant – how to terminate an interview when the participant does not correctly answer the screen or filter questions?
- Termination of a discontinued interview – how to conclude an interview when the participant decides to discontinue?
- Skip directions – instructions for moving between topic sections of an instrument when movement is dependent on the answer to specific questions or when branched questions are used.
- Disposition instructions – telling the respondent to a self- administered instrument the disposition of the completed questionnaire.

D. Conclusion

The role of the conclusion is to leave the participant with the impression that his or her involvement has been valuable. Subsequent researchers may need this individual to participate in new studies. If every interviewer or instrument expresses appreciation for participation, cooperation in subsequent studies is more likely.

E**. Overcoming instrument problems**

There is no substitute for a thorough understanding of question wording, question content, and sequencing issues. However, the researcher can do several things to help improve survey results, among them:

- Build rapport with the participant
- Redesign the questioning process
- Explore alternative response strategies
- Use methods other than surveying to secure the data
- Pretest all the survey elements.

F. **The value of pretesting (design – test – revise process)**

- Participant interest
- Meaning
- Question transformation
- Continuity and flow
- Question sequence
- Skip instructions
- Variability
- Length and timing: timing each question and section.

G. Pretesting options

- Researcher pretesting
- Participant pretesting
- Collaborative pretests (the researcher alerts participants to their involvement in a preliminary test of the questionnaire)
- Noncollaborative pretests (the researcher doesn't inform the participants that the activity is a pretest).

Chapter 5: Measurement (221-40)

5.1 Measurement in research is assigning numbers to empirical events in compliance with a set of rules. This definition implies that measurement is a three-part process:

1. Selecting observable empirical events
2. Developing a set of mapping rules: a scheme for assigning numbers or symbols to represent aspects of the event being measured
3. Applying the mapping rule(s) to each observation of that event.

The goal of measurement- indeed the goal of "assigning numbers to empirical events in compliance with a set of rules" is to provide the highest quality, lower error data for testing hypotheses.

5.2 What is measured?

Variables being studied in research may be classified as objects or as properties. Objects include the things of ordinary experience, such as tables, people, books , automobiles. Objects also include things that are not as concrete, such as genes, attitudes, neutrons, and peer-group pressures.

Properties are the characteristics of those objects. A person's physical property may be stated in terms of weight, height, and posture. Psychological properties include attitudes and intelligence. Social properties may include leadership ability, class affiliation, or status. These and many other properties of an individual can be measured in a research study.

In a literal sense, researchers do not measure either objects or properties. They measure the indicants of the properties or indicants of the properties of the object.

5.3 Data types.

In measuring, one devises some mapping rule and then translates the observations of the property indicants using this rule. Mapping rules have four characteristics:

1. Classification: numbers are used to group or sort responses. No order exists.
2. Order: numbers are ordered. One number is greater than an, less than or equal to an other number
3. Distance: differences between numbers are ordered. The difference between any pair of numbers is greater than, less than, or equal to the difference between any other pair of numbers.
4. Origin: the number series has a unique origin indicated by the number zero.

Combinations of these characteristics of classification, order, distance, and origin provide four widely used classification of measurement scales: (1) nominal, (2) ordinal, (3) interval, and (4) ratio.

- **Nominal data:** in business and social science research, nominal data are probably more widely collected than any other. *With nominal data, you are collecting information on a variable that naturally or by design can be grouped into two or more categories that are mutually exclusive*

*and **collectively exhaustive***. If data were collected from the performing artists at the White Ice Compound, each artist could be classified by whether he or she stayed the summer or departed early. Every performer would fit into one of the two groups within the variable ***'duration of employment'***. The counting of members of each group is the only possible arithmetic operation when a nominal scale is employed. If we use numerical symbols within our mapping rule to identify categories, *these numbers are recognized as labels only and have no quantitative value*! Nominal classification may consist of any number of separate groups if the groups are mutually exclusive and collectively exhaustive. Nominal scales have are the least powerful of the four data types. They suggest no order or distance relationship and have no arithmetic origin. Probably not very useful in causal studies! Perhaps indicated in exploratory studies (own comments)? Ok proved. While nominal data are weak, they are still useful. If no other scale can be used, one can almost always classify one set of properties into a set of equivalent classes. *Nominal measures are especially in exploratory work where the objective is to uncover (= to find out about sth that has been hidden or kept secret) relationships rather than secure precise measurements*. This data type is also widely used in survey and other ex post facto research when data are classified by major subgroups of the population. Classifications such as participants' marital status, gender, political persuasion, and exposure to a certain experience abound.

- **Ordinal data** include characteristics of the nominal scale plus an indicator of order. Ordinal data are possible if the transitivity postulate is fulfilled. This postulate states: if *a* is greater than *b and b* greater than *c,* then *a is* greater than *c. The use of an ordinal scale implies a statement of "greater than", or " less than". While ordinal measurement speaks of "greater than" and "less than" measurements, **other descriptors** may be used –"superior to", "happier than", "poorer than" or "above". Like a rubber yardstick,* it can stretch varying amounts at different places along its length. *Thus, the real difference between ranks 1 and 2 on happiness scale may be more or less than the difference between ranks 2 and 3. (possible inequality in intervals).*
- **Interval data** have the power of nominal and ordinal plus one additional strength: they incorporate the concept of equality of interval (the distance between 1 and 2 equals the distance between 2 and 3). Calendar time is such a scale. For example, the elapsed time between 3 and 6 AM equals the time between 4 and 7 AM. One cannot say, however, 6 AM twice as late as 3 AM because **"zero time" is an arbitrary origin**.
- **Ratio data** incorporate all of the powers of the previous data types plus the provision for for absolute zero or origin. Ratio data represent the actual amounts of a variable. Measures of physical dimensions such as weight, height, distance, and areas are examples.

Sources of measurement differences

The ideal study should be designed and controlled for precise and unambiguous measurement of the variables. Since 100 percent control is unattainable, error does occur. Much potential error is systematic (results from a bias) while the remainder is random (occurs erratically). One authority has pointed out several sources from which measured differences can come.

Assume you are conducting an ex post facto study of the residents of a major city. The study concerns the Prince Corporation, a large manufacturer with its headquarters and several major plants located in the city. The objective of the study is to discover the public's opinions about the company and the origin of any generally held adverse opinions. Ideally, any variation of scores among the participants would reflect true differences in their opinions about the company. Attitudes toward the firm as an employer, as an ecologically sensitive organization, or as a progressive corporate citizen would be accurately expressed. However, four major error sources may contaminate the results: (1) the participant, (2) the situation, (3) the measurer, and (4) the data collection instrument.

- **Error sources**
  - ✓ **The participant**: stable characteristics of the participants (employment status, ethnic group membership, social class, and nearness to plants). The skilled researcher will anticipate many of these dimensions, adjusting the design to eliminate, neutralize, or otherwise deal with them. However, even the skilled researcher may not be as aware of less obvious dimensions. .. participants may be reluctant to express strong negative (or positive) feelings, express feelings they perceive as different from those of others, or they may have little knowledge about Prince but be reluctant to admit ignorance. This reluctance can lead to an interview of **"guesses".** Participants may also suffer fro temporary factors like fatigue, boredom, anxiety, or other distractions, these limit the ability to respond accurately and fully. Hunger, impatience, or general variations in mood may also have an impact.
  - ✓ **Situational factors** the potential problem areas are legion (= a large group or number of people). Any condition that places a strain on the interview or measurement session can have serious effects on the interviewer-participant rapport. If another person is present, that person can distort responses by joining in, by distracting, or by merely being present. If the participants believe anonymity is not ensured, they may be reluctant to express certain feelings. Curbside or intercept interviews are unlikely to elicit elaborate responses, while in-home interviews more often do.
  - ✓ **The measurer**: the interviewer can distort responses by rewording, paraphrasing, or reordering questions. Stereotypes in appearance and action introduce bias. Inflections of voices and conscious or unconscious prompting with smiles, nods, and so forth may encourage or discourage certain replies. Careless mechanical processing – checking of the wrong response or failure to record full replies – will obviously distort findings. In the data analysis stage, incorrect coding, careless tabulation, and faulty statistical calculation may introduce further errors.
  - ✓ The instrument a defective instrument can cause distortion in two major ways. First, it can be too confusing and ambiguous. The use of complex words and syntax beyond participant comprehension is typical. Leading questions, ambiguous meanings, mechanical defects (inadequate space for replies, response choice omissions, and poor printing), and multiple questions suggest the range of problems. A more elusive type of instrument deficiency is poor selection from the universe of content items. Seldom does the instrument explore all the potentially important issues. The Prince Corporation

study might treat company image in areas of employment and ecology but omit the company management's civic leadership, its support of local education programs, or its position on minority issues. Even if the general issues are studied, the question may not cover enough aspects of each area of concern. While we might study the Prince Corporation's image as an employer in terms of salary and wage scales, promotion opportunities, and work stability, perhaps such topics as working conditions, company management relations with organized labor, and retirement and other benefit programs should also be included.

The characteristics of sound measurement

What are the characteristics of a good measurement tool? An intuitive answer to this question is that the tool should be an accurate counter or indicator of what we are interested in measuring. In addition, it should easy and efficient to use. ***The following three major criteria for evaluating a measurement:***

- **Validity**

  Many forms of validity are mentioned in the research literature, and the number grows as we expand the concern for more scientific measurement**. This text features two major forms: external and internal validity.** The external validity of research findings refers to the data's ability to be generalized across persons, settings, and times. ***Internal validity is further limited to the ability of a research instrument to measure what is purported to measure***. **Does the instrument really measure what its designer claims it does?. Validity** in this context is the extent to which the differences found with a measuring tool reflect true differences among participants being tested. We want the measurement tool to be sensitive to all the nuances of meaning in variable and to changes in nuances of meaning in all times. The difficulty in meeting the test of validity is that usually one does not know what the true differences are. Without direct knowledge of the dimension being studied, you must face the question, "how can one discover validity without confirming knowledge?". A quick answer is to seek other relevant evidence that confirms that confirms the answers found with the measurement device, but this leads to a second question, "What constitutes relevant evidence?" there is no quick answer this time. What is relevant depends on the nature of the research problem and the researcher's judgement. One way to approach this question is to organize the answer according to measure-relevant types. One widely accepted classification consists of three major forms of validity: (1) content validity, (2) criterion-related validity, (3) construct validity.

  - ✓ **Content validity** of a measuring instrument (the composite of measurement scale) is the extent to which it provides adequate coverage of investigative question guiding the study. If the instrument contains a representative sample of the universe of subject matter of interest, then content validity is good. To evaluate the content validity of an instrument, one must first agree on what elements constitute adequate coverage. In the Prince Corporation study*, one must decide what knowledge, attitudes, and opinions are relevant positions on these topics*. In the White Ice study, *Jason must first determine what factors are influencing employee satisfaction before determining if published indexes can be of value*. **IF THE DATA COLLECTION INSTRUMENT ADEQUATELY COVERS**

THE TOPICS THAT HAVE BEEN DEFINED AS THE RELEVANT DIMENSIONS, WE CONCLUDE THE INSTRUMENT HAS GOOD CONTENT VALIDITY. Determination of content validity is judgemental and can be approached in several ways. *First, the designer may determine it through a careful definition of the topic of concern, the items to be scaled, and the scales to be used. This logical process is often intuitive and unique to each research designer. A second way to determine content validity is to use a panel of persons to judge how well the instrument meets the standards. A panel independently assesses the test items for a performance test. It judges each item to be essential, useful but not essential or not necessary in assessing performance of a relevant behavior. The "essential" responses on each item from each panelist are evaluated by a content validity ratio, and those meeting statistical significance value are retained. In both informal judgement and in this systematic process, "content validity is primarily concerned with inferences about test construction rather than inferences test scores*.

It is important to define **content** too narrowly. If you were to secure superficial expressions of opinion in the Prince Corporation public opinion survey, it would not have adequate content coverage. The research should delve into the process by which these opinions came about. How did the participants come to feel, as they do, and what is the intensity of feeling? The same would be true of Mindwriter,s evaluation of service quality and satisfaction. It is not enough to know a customer is dissatisfied. The manager charged with enhancing or correcting the program needs to know what processes, employees, parts, and time sequences within the CompleteCare program have led to that dissatisfaction.

- ✓ **Criterion-related validity** reflects the success of measures used for prediction or estimation. You may want to predict an outcome or estimate the existence of a current behavior or condition. These are predictive and concurrent validity respectively. They differ only in a time perspective. An opinion questionnaire that correctly forecasts the outcome of the union election has predictive validity. An observational method that correctly categorises families by current income class has a concurrent validity. While these examples appear to have simple and unambiguous validity criteria, we may find it difficult to secure this figure. Thus while the criterion is conceptually clear, it may be unavailable. In other cases they may be several criteria, none of which is completely satisfactory. Consider again the problem of judging success among the sales force at SalesPro. A researcher may want to develop a pre-employment that will predict sales success. There may be several possible criteria , none of which individually tells the full story. Total sales per salesperson may not adequately reflect territory market potential, competitive conditions, or different profitability rates of various products. One might rely on sales manager's overall evaluation, but how unbiased and accurate are those impressions? The researcher must ensure that the validity criterion used itself is "valid". One source suggests that any criterion measure must be judged in terms of four qualities: (1) relevance, (2) freedom from bias, (3) reliability, (4) availability. (Thorndike and Hagen, *Measurement and evaluation*, p.168).

A **criterion is relevant** if it is ***defined and scored in the terms we judge to the proper measures of a salesperson success***. *If you believe sales success is adequately measured by* dollar sales volume achieved per year, then it is **the relevant criterion**. If you believe success *should include a high level penetration of large accounts*, then **sales volume alone is not fully relevant**. **IN MAKING DECISION, YOU MUST RELY ON YOUR JUDGEMENT IN DECIDING WHAT PARTIAL CRITERIA ARE APPROPRIATE INDICANTS OF SALESPERSON SUCCESS**.

Freedom from bias is attained when the criterion gives each salesperson an equal opportunity to score well. (in our study, each technocrat has an equal opportunity to present and to defend his results as so to answer subsequent questions). The sales criterion would be biased if it did not show adjustments for differences in territory and competitive conditions.

A reliable criterion is stable or reproducible. An erratic criterion (e.g., using monthly sales, which is highly variable from month to month) can hardly be considered a reliable standard by which to judge performance on a sales employment test. Yet if an unreliable criterion is the only one available, it is often chosen for the study's purpose. In such a case, it is possible to use **correction for attenuation** formula that lets you see what the correlation between the test and the criterion would be if they were made perfectly reliable.

Finally, the information specified by the criterion must be **available**. If it is not,available, how much will it cost and how difficult will it be to secure? The amount of money and effort that should be spent on development of a criterion depends on the importance of the problem for which the test is used. Once there test and criterion scores, they must be compared in some way. **THE USUAL APPROACH IS TO CORRELATE THEM**. For example, you must correlate test scores of 40 new salespeople with first-year sales achievements adjusted to reflect differences in territorial selling conditions.

Construct validity. One may also wish to measure or infer the presence of abstract characteristics for which no empirical validation seems possible. Attitudes scales and aptitude and personality tests generally concern concepts that fall in this category. Although this situation is much more difficult, some assurance is still needed that the measurement has an acceptable degree of validity. In attempting to evaluate construct validity, we consider both the theory and the measuring instrument being used. If we were interested in measuring the effect of ceremony on organizational culture, the way in which "ceremony" was operationally defined would would have to correspond to an empirically grounded theory. Once assured, that the construct was meangful in a theoretical sense, we would next investigate the adequacy of the instrument. If a known measure of ceremony in organizational culture was available, we might correlate the results obtained using this measure with those derived from our new instrument. Such an approach would provide us with preliminary indications of **convergent** validity. If Jason were to develop a work innovation index for artistic personnel at White Ice and, when compared, the results revealed the same indication as a predeveloped, established index, Jason's instrument would have convergent validity. Similarly,if Jason

and Myra developed an instrument to measure satisfaction with CompleteCare program and the derived measure could be confirmed with a standardized customer satisfaction measure, convergent validity would exist. Returning to our example above, another method of validating the ceremony construct would be to separate it from other constructs in the theory or related theories. To the extent that ceremony could be separated form stories or symbols, we would we wpuld have completed the first steps toward discriminant validity. Established statistical tools such as factor analysis and multitrait-multimethod analysis help determine the construct adequacy of a measuring device. In the Prince Corporation study, you may be interested in securing a judgement of "how good a citizen" the corporation is. Variations in participant ratings may be drastically affected if substantial differences exist among the participants regarding what constitutes proper corporate citizenship. One participant may believe that any company is an economic organization designed to make profits for its stockholders. She sees relatively little role for corporations in the wide-ranging social issues of the day. At the other end of the continuum, another participant views the corporation as a leader in solving social problems, even at the cost of profits. Both of these participants might understand Prince's role in the community but judge it quite differently in light of their differing views about what its role should be. If these differing views were held, you would theorize that other information about these participants would be logically compatible with their judgements. You might expect the first participant to oppose high corporate taxes, to be critical of increased involvement of government in family affairs, and to believe that a corporation's major responsibility is to its stockholders. The second participant would be more likely to favor high corporate income taxes, to opt for more governmental involvement in daily life, and to believe tht a corporation's major responsibility is a social one. Participants may not be consistent on all questions because the measurement may be crude and the theory may be deficient. When hypothesized tests do not confirm the measurement scale, you are faced a two-sided question: is you measurement instrument invalid, or your theory invalid? These answers require more information or the exercise of judgement. We discuss the three forms of validity separately, but they are interrelated, both theoretically and operationally. Predictive validity is important for a test designed to predict employee success. In developing such a test, you would probably first postulate the factors (constructs) that provide the basis for useful prediction. For example, you would advance a theory about the variable in employee success – an area for construct validity. Finally, in developing the specific items for inclusion in the success prediction test, you would be concerned with how well the specific items sample the full range of each construct (a matter of content validity).

In the corporate image study for the Prince Corporation, both content and construct validity considerations have been discussed , but what about criterion-related validity? The criteria are less obvious than in the employee success prediction, but judgement will be made of the quality of evidence about the company's image. The criteria used may be both subjective –does the evidence agree with what we believe? – and objective – does the evidence agree with other research findings?

- **Reliability**

  Reliability means many things to many people, but in most contexts the notion of consistency emerge. A measure is reliable to the degree that it supplies **consistent results**. Reliability is a necessary contributor to validity but is not a sufficient condition for validity. The relationship between reliability and validity can be simply illustrated with the use of a bathroom scale. If the scale measures your weight correctly (using a concurrent criterion such as a scale known to be accurate), then it is both reliable and valid. If it consistently overweighs you by six pounds, then the scale is reliable but not valid. If the scale measures erratically from time to time, it is not reliable and therefore cannot be valid. So, if a measurement is not valid, it hardly matters if it is reliable – because it doesn't measure what the designer needs to measure in order to solve the research problem. In this context, reliability is not as valuable as validity, but it is much easier to assess. Reliability is concerned with estimates of the degree to which a measurement is free of random or unstable error. Reliable instruments can be used with confidence that transient and situational factors are not interfering. Reliable instruments are robust; they work well at different times under different conditions. **This distinction of time and condition is the basis for frequently used perspectives on reliability – stability, equivalence, and internal consistency**.

  - ✓ **Stability** a measure is said to possess stability if you can secure consistent results with repeated measurements of the same person with the same instrument. An observational procedure is stable if it gives the same reading on a particular person when repeated one or more times. It is often possible to repeat observations on a subject and to compare them for consistency. When there is much time between measurements, there is a chance for situational factors to change, thereby affecting the observations. The change would appear incorrectly as a drop in the reliability of the measurement process. **Stability measurement in survey situations is more difficult and less easily executed than in observational studies. While you can observe a certain action repeatedly, you usually can resurvey only once**. This leads to a test-retest arrangement – with comparisons between the two tests to learn how reliable they are. Some of the difficulties that can occur in the test-retest methodology and cause a downward bias in stability include:
    - Time delays between measurements – leads to situational factor changes (also a problem in observation studies)
    - Insufficient time between measurements – permits the participant to remember previous answers and repeat them, resulting in biased reliability indicators
    - Participant's discernment of disguised purpose – may introduce bias if the participant holds opinions related to the purpose but not assessed with current measurement questions
    - Topic sensitivity – occurs when the participant seeks to learn more about the topic or form new and different opinions before the retest

- Introduction of extraneous moderating variables between measurements – may result in change in the participant's opinions from factors unrelated to the research.

A suggested remedy is to extend the interval between test and retest (from two weeks to a month). While this may help, the researcher must be alert to the chance an outside factor will contaminate the measurement and distort the stability score. Consequently, stability measurement through the test-retest approach has limited applications. More interest has centered on equivalence.

✓ Equivalence a second perspective on reliability considers how much error may be introduced by different investigators (in observation) or different samples of items being studied (in questioning or scales). Thus , while stability is concerned with personal and situational fluctuations from one time to another, equivalence is concerned with variations at one point in time among observers and samples of items. A good way to test for the equivalence of measurements by different observers is to compare their scoring of the same event. In studies where a consensus among experts or observers is required, the similarities of the judge's perceptions is sometimes questioned. How does a panel of supervisors render a judgement on merit raises, a new product's packaging, or future business trend? ***Interrater reliability*** may be used in these cases to correlate the observations or scores of the judges and render an index of how consistent their ratings are. In Olympic figure skating, a judge's relative positioning of skaters (by establishing a rank or order for each judge and comparing each judge's ordering for all skaters) is a means of measurement equivalence. **The major interest with equivalence is typically not how participants differ from item to item but how well a given set of items will categorize individuals**. There may be many differences in response between two samples of items, but if a person is classified the same way by each test, then the test have good equivalence. One tests for item sample equivalence by using alternative or parallel forms of the same test administered to the same persons simultaneously. The results of the two tests are then correlated. Under this condition, the length of the testing process is likely to affect subjects' responses through fatigue, and the inferred reliability of the parallel form will be reduced accordingly. Some measurement theories recommend an interval between the two tests to compensate for this problem. This approach called delayed equivalent forms, is a composite of test-retest and the equivalence method. As in test retest, one would administer form X followed by form Y to half examinees and form Y followed by X form to prevent "order of presentation" effects. The researcher can include only a limited number of measurement questions in an instrument. This limitation implies that a sample of measurement questions from a content domain has been chosen and another sample producing similar number will need to be drawn for the second instrument. It is frequently difficult to create this second set. Yet if the pool is initially large enough, the items may be randomly selected

for each instrument. Even with more sophisticated procedures used by publishers of standardized tests, it is rare to find fully equivalent and interchangeable questions.

- ✓ **Internal consistency**. A third approach to reliability uses only one administration of an instrument or test to assess the internal consistency. Or homogeneity among the items. The split-half technique can be used when the measuring tool has many similar questions or statements to which the subject has to respond. The instrument is administered and the results are separated by item into even and odd numbers or into randomly selected halves. When the two halves are correlated, if the results of the correlation are high, the instrument is said to have high reliability in an internal consistency sense. The high correlation tells us there is similarity (or homogeneity) among the items. The potential for incorrect inferences about high internal consistency exists when the test contains many items – which inflates the correlation index.

  The Spearman-Brown correction formula is used to adjust for the effect of test length and to estimate reliability of the whole test. A problem with this approach is that the way the test is split may influence the internal consistency coefficient. To remedy this, other indexes are used to secure reliability estimates without splitting the test's items. The Kuder-Richardson Formula 20 (KR20) and Cronbach's coefficient Alpha are two frequently used examples. Cronbach's alpha has the most utility for multi-item scales at the interval level of measurement. The KR20 is the method from which was generalized and is used to estimate reliability for dichotomous items (Exhibit 8-6).
- ✓ **Improving reliability**. The researcher can improve reliability by choosing among the following:
  - Minimize external sources of variation
  - Standardize conditions under which measurement occurs
  - Improve investigator consistency by using only well-trained, supervised, and motivated persons to conduct the research
  - Broaden the sample of measurement questions used by adding similar questions to the data collection instrument or adding more observers or occasions to an observational study
  - Improve internal consistency of an instrument by excluding data from analysis drawn from measurement questions eliciting extreme responses. This approach requires the assumption that a high total scores reflects high performance and low total score, low performance. One selects the extreme scores – say, the top 20% and bottom 20% - for individual analysis. By this process, you can distinguish those items that differentiate high and low scorers. Items that have little discriminatory power can then be dropped from the test.

- ➢ **Practicability**. The scientific requirements of a project call for the measurement process to be reliable and valid, while the operational requirements call for it to be practical. Practicality has been defined as ***economy, convenience, and interpretability***. While this definition refers to the development of educational and psychological tests, it is meaningful of business measurement as well.

- ✓ **Economy** . some trade-off usually occurs between the ideal research project and the budget. Instrument length is one area where economic pressures dominate. More items give more reliability , but in the interest of limiting the interview or observation time (and therefore costs), we hold down the number of measurement questions. The choice of data collection method is also often dictated by economic factors. The rising cost of personal interviewing led to an increased use of long-distance telephone surveys and subsequently to the current rise in online surveys. In standardized tests, the cost of test materials alone can be such a significant expense that it encourages multiple reuse. Add to this the need for fast and economical scoring, and we see why computer scoring and scanning are attractive.
- ✓ **Convenience**. A measuring device passes the convenience test if it is easy to administer. A questionnaire with set of detailed but clear instructions, with examples, is easier to complete correctly than one that lacks these features. In a well-prepared study, it is not uncommon for the interviewer instructions to be several times longer than the interview questions. Naturally, the more complex the concepts, the greater is the need for clear and complete instructions. We can also make the instrument easier to administer by giving close attention to its design and layout. Crowding of material, poor reproductions of illustrations, and carryover of items from one page to the next make completion of the instrument more difficult.
- ✓ **Interpretability**. This aspect of practicability is relevant when persons other than the test designers must interpret the results. It is usually but not exclusively an issue with standardized tests. In such cases, the designer of the data collection instrument provides several key pieces of information to make interpretation possible:
    - A statement of functions the test was designed to measure and the procedures by which it was developed
    - Detailed instructions for administration
    - Scoring keys and instructions
    - Norms for appropriate reference groups
    - Evidence about reliability
    - Evidence regarding the intercorrelations of subscores
    - Evidence regarding the relationships of the test to the other measures
    - Guides for test use.

Chapter 6: Measurement Scales p. 248/Cooper

6.1 Scaling is a "procedure for the assignment of numbers (or other symbols) to a property of objects in order to impart some of the characteristics of numbers to the properties in question."

What is scaled? Procedurally, ***we assign numbers to indicants of the properties of objects.*** If you want to measure the temperature of the air, you know that a property of a temperature is that its variation leads to an expansion or contraction of mercury. A glass tube with mercury provides an indicant of temperature change by rise or fall of the mercury in the tube. In another context, you might devise a scale to measure the durability (property) of paint. you secure a machine with attached scrub brush that applies a predetermined amount of pressure as it scrubs. You then count the number of brush strokes that it takes to wear through 10-mil thickness of paint. The scrub count is the indicant of the paint's durability. Or you may want to judge a person's supervisory capacity (property) by asking peer group to rate that person on various questions (indicants) that you create.

6.2 Scale selection

Scaling may be viewed in several ways , but here we cover those approaches that are of greatest value for management research. Selection or construction of a measurement scale requires decisions in six key areas:

1. Study objective: researchers face two general study objectives:
    - To measure certain characteristics of the participants who complete the study
    - To use participants as judges of the objects or indicants presented to them

    Assume you have been contracted by the City of Miro Beach to conduct a study supposedly of voters' approval of one or more regulatory programs. In the first study, your scale would measure the voters' political orientation as conservative or liberal. You might combine each person's answers to form an indicator of that political orientation. The emphasis in this first study objective is on measuring attitudinal differences among people. With the second study objective, you might use the same data but in this case you are truly interested in how satisfied people are with different governmental programs. In this study objective, your true interest is in the differences in the acceptance level of one or more regulatory programs.

2. Response form: measurement scales are of three types: *rating, ranking, and categorizing*.
    - **A rating scale** is used when participants score an object or indicant without making a direct comparison to another object or attitude. For example, they may be asked to evaluate the styling of a new automobile on a five-point rating scale. (choose 1 to five accordingly)
    - **Ranking scales** constrain the study participant to make comparisons among two or more indicants or objects. (to choose, or to order=arrange)
    - **Categorization** asks participants to put themselves or property indicants in groups or categories

3. Degree of preference: measurement scales may involve preference or nonpreference evaluation. In the former, each participant is asked to choose the objects he or she favors or the solution he or she would prefer. In the latter, participants are asked to judge which object has more of some characteristic or which solution takes the most resources, without reflecting any personal preference toward objects or solutions.
4. Data properties: measurement scales also may be viewed in terms of the data generated properties by each scale. Data are classified as nominal, ordinal, interval, or ratio.
5. Number of dimensions: measurement scales are either unidimensional or multidimensional. With a unidimensional scale, one seeks to measure only one attribute of the participant. Multidimensional scaling recognizes that an object might be better described in an attribute space of n dimensions rather than on unidimensional continuum. The employee promotability might be better expressed by three distinct dimensions – managerial performance, technical performance and teamwork
6. **Scale construction**: we can classify measurement scales by the methods used to build them:
    - ✓ Arbitrary: a scale is custom-designed to mesure a property or indicant. The y measure the concepts for which they have been designed, but the researcher has no advance evidence of a particular scale's validity and reliability. Nevertheless, researches commonly choose this construction approach
    - ✓ Consensus: Judges evaluate the items to be included based on topical relevance and lack of ambiguity
    - ✓ Item analysis: measurement scales are tested with a sample of participants. After administering the test, a total score is calculated for each scale. Individual items (a scale or a part of scale) are then analyzed to determine which best discriminate between persons or objects with high total scores and low total scores.
    - ✓ Cumulative: scales are chosen for their conformity to a ranking of items with ascending and descending discriminatory power. The endorsement of item that represents an extreme position results in the endorsement of all items of less extreme positions.
    - ✓ Factoring: scales are constructed from intercorrelations of items from other studies.

6.3 Response methods

A manager may be asked his or her views concerning an employee. The response is, "a good machinist", "a troublemaker", "a union activist", "reliable", or "a fast worker with a poor record of attendance". These answers, because they represent such different frames of reference for evaluating the worker and thus lack comparability, would be of limited value to the researcher. *Two approaches improve the usefulness of such replies. First, various properties may be separated and participant asked to judge each specific facet. Here, the researcher would substitute several distinct questions for a single one. Second, the research can replace the free-response reply with structuring devices. To quantify dimension that are essentially qualitative, rating or ranking scales are used*.

- **Rating scales**

One uses rating scales to judge properties of objects without reference to other similar objects. These ratings may be in such forms as “like-dislike”, “approve-indifferent-disapprove”, or other classifications using even more categories.

- ✓ **Number of scale points**. There is little conclusive support for choosing a three-points scale over scales with five or more points. Some researchers think that more points on a rating scale provide an opportunity for greater sensitivity of measurement and extraction of variances. The most widely used range from three to seven points, but it does not seem to make much difference which number is used – with two exceptions. First, a larger number of scale points is needed to produce accuracy when using single-dimension versus multiple-dimension scales. Second, in cross-cultural measurement, the culture may condition participants to a standard metric -10- point scale in Italy, for example.
- ✓ **Alternative scales**.
  - The **simple category scale** (*also called dichotomous scale*) offers two mutually exclusive response choices. Yes or No but they could just as easily be important or unimportant, or agree and disagree, or another set of discrete categories had the questions been different. This response strategy is particularly useful for demographic questions or where a dichotomous response is adequate. *This scale generates nominal data*
  - When there are multiple options for the rater but only one answer is sought, the **multiple choice, single-single response scale** (also called a checklist) allows the rater to select one or several alternatives. *This scale generates nominal data*.
  - **The Likert scale** is the most frequently used variation of the *summated rating scale*. Summated scales consist of statements that express either a favorable or unfavorable attitude toward the object of interest. The participant is asked to agree or disagree with each statement. Each response is given a numerical score to reflect its degree of attitudinal favorableness, and the scores may be totaled to measure the participant’s attitude. (P 253)
  - **The semantic differential** scale measures the psychological meanings of an attitude object. Mangers use this scale for brand image and other marketing studies of institutional images, political issues and personalities, and organizational studies. It is based on the proposition that an object can have several dimensions of connotative meaning. The meanings are located in multidimensional property space, **called semantic space**. The method consists of a set of bipolar rating scales, usually with seven points, by which one or more participants rate one or more concepts on each scale item. See exhibit 9-1 before last example. The semantic differential has several advantages. It produces interval data. It is an efficient and easy way to secure attitudes from a large sample. These attitudes may be measured in both direction and intensity. The total set of responses provides a comprehensive picture of the meaning of an object and a measure of the subject doing the rating. It is a standardized

technique that is easily repeated but escapes many problems of response distortion found with more direct methods.

- **Numerical scales** have equal intervals that separate their numerical scale points. The verbal anchors serve as the labels for the extreme points. Numerical scales are often 5-point scales, but may have 7 or 10 points.
- **The multiple rating list scale** is similar to the numerical scale but differs in two ways: (1) it accepts circled response from the rater, and (2) the layout allows the visualization of the results. The advantage is that a mental map of the participant's evaluation is evident to both the rater and the researcher. *This scale produces interval data*.
- **The stapel scale** is used as an alternative to the semantic differential, especially when it is difficult to find bipolar adjectives that match the investigative question**.**
- **The graphic rating scale** was created to enable researchers to discern fine differences. Theoretically, an infinite number of rating is possible if the participant is sophisticated enough to differentiate and record them. The participant checks his /her response at any point along the continuum. Usually, the score is a measure of length (millimeters) from either end of point. The results are usually treated as ***interval data***. The difficulty in coding is coding and analysis. This response strategy requires more time than scales with predetermined categories. Other graphic rating scales use pictures, icons, or other visuals to communicate with the rater and represent a variety of data types. Graphic scales are often used with children, whose more limited vocabulary prevents the use of scales anchored with words.

✓ Errors to avoid with rating scales.

- **Leniency**. The leniency error occurs when a participant is either an "easy rate" or a "hard rater". The latter is an error of *negative leniency*. Raters are inclined to score higher people whom they know well and with whom they are ego involved. There is also the opposite - where the acquaintances are rated lower because one is aware of the tendency toward positive leniency and attempt to counteract it. A way to deal with positive leniency is to design the rating scale to anticipate it. An example might be an asymmetrical scale that has only one unfavorable descriptive term and four favorable terms (poor-fair-good-very good-excellent). The scale designer expects that the mean ratings will be near "good" and that there will be a symmetrical distribution about that point.
- **Central tendency**. Raters are reluctant to give extreme judgements, and this fact accounts for the error of central tendency. This is often seen when the rater does not know the object or property being studied. To counteract this type of error try the following:
    - Adjust the strength of descriptive adjectives
    - Space the intermediate descriptive phrases farther apart

- Provide smaller differences in meaning between the steps near the ends of the scale than between the steps near the center
- Use more points in the scale.

- **Halo**. The halo effect is the systematic bias that the rate introduces by carrying over a generalized impression of the subject from one rating to another. You expect the student who does well on the first question of an examination to do well on the second. You conclude a report is good because you like its form, or you believe someone is intelligent because you agree with him or her. Halo is pervasive (= spread through through whole of sth and becoming a very obvious feature of it) error. It is especially difficult to avoid when the property being studied not clearly defined, not easily observed, not is frequently discussed, involves reactions with others, or is a trait at a time for all subjects or to have one trait per page. Rating scales are widely used in management research and generally deserve their popularity. The results obtained with careful use compare favorably with other methods.

➢ **Ranking scales**

In ranking scales, the subject directly compares two or more objects and makes choices among them. Frequently, the participant is asked to select one as the "best" or the most "preferred". When there are only two choices, this approach is satisfactory, but it often results in "ties" when more than to choices are found. Fir example, assume participants are asked to to select the most preferred among three or more models of a product. In response, 40 percent choose model A, 30 percent chose model B, and 30 percent choose model C. Which is the preferred model? The analyst would be taking a risk to suggest that A is most preferred. Perhaps that interpretation is correct, but 60 percent of the participants chose some model other than A. perhaps all B and C would place A last, preferring B or C to it. This ambiguity can be avoided by using some techniques described in this section.

✓ Using **paired-comparison scale**, the participant can express attitudes unambiguously by choosing between two objects. If n is the number of objects, the total possible comparisons are (n)(n-1)/2. If n=4, possible comparisons are 4x3/2 = 12
This comparison yields ***ordinal data***. Ideal: Not more than 10 stimuli

✓ The **forced ranking scale** e.g.(data are ordinal).
"rank the radar detection features in your order of preference. Place the number 1 next to the most preferred, 2 by the second choice, and so forth
----- user programming
----- cordless capacity
----- small size
----- long-range warming
----- minimal false alarms
Not exceeding more than 10 stimuli.

✓ **Comparative scale** (to compare a new method with the familiar standard). Data are ordinal data even some researchers think to treat them as interval. E.g.,
"Compared to your previous mutual fund's performance, the new one is"

Superior		about the same		inferior
-------	--------	------	--------	----------
1	2	3	4	5

- ✓ **Method of successive intervals** is sometimes used to sort the items (usually one per card) into piles or groups representing a succession of values. From the sort, an interval scale can then be developed.

Measurement scale construction (p 260)

- **Arbitrary scaling:** collecting several items that we believe are unambiguous and appropriate to a given topic. Some are chosen for inclusion in the instrument.
  For example, the components of a company's image.
  How do you regard (Company X's) reputation?
  1. As a place to work Bad ----- ----- ----- ----- ----- Good
  2. As a sponsor of civic projects Bad ----- ----- ----- ----- -----Good
  3. For ecological concern Bad ----- ----- ----- ----- ----- Good
  4. As an employer Bad ----- ----- ----- ----- ----- -Good

We might score each of these from 1 to 5, depending to the degree of favorableness report. Based on a total of these four items, each company would receive from 4 to 20 points from each participant. These data may be analyzed from a participant-centered point of view.

- **Consensus scaling** requires items to be selected by a panel of judges and then evaluated on (1) relevance to the topic area, (2) potential for ambiguity, and (3) the level of attitude they present.
- **Item analysis scaling** is aprocedure for evaluating an item based on how well it discriminates between those persons whose total score is high and those whose total core is low. The most popular scale using this approach is the summated or Likert Scale.
- **Cumulative scaling.** Total scores on cumulative scales have the same meaning. Given a person's total score, , it is possible to estimate which items were answered positively and negatively. A pioneering scale of this type was the scalogram. Scalogram analysis is a procedure for determining whether a set of items forms a unidimensional scale.
- **Factor scales include a variety of techniques that have been developed to address two problems:** (1) how to deal with the universe of content that is multidimensional and (2) how to uncover underlying dimensions that have not been identified by exploratory research. These techniques are designed to intercorrelate items so their degree of interdependence may be detected. There are many approaches that the advanced student will want to explore, such as latent structure analysis (of which scalogram is a special case), factor analysis, cluster analysis, and metric and nonmetric multidimensional scaling.

PART IV: DATA COLLECTION

Chapter 7. Using secondary data p 256/ Saunders

There is possibility of reanalyzing data that have already been collected for some purpose. Such data are known as secondary data.

They include both raw and published summaries. Most organizations collect and store a variety of data to support their operations: for example, payrolls details, copies of letters, minutes of meetings and accounts of sales of goods and services.

7.1 Documentary secondary data

- Used within **archival research strategy**
- They include materials like: notices, correspondence (including emails), minutes of meetings, reports to shareholders, diaries, transcripts of speeches and administrative and public records.
- Written documents can also include books, journal and magazine articles and newspapers.
- they may also include non-written materials such as voice and video recordings, pictures, films and televisions programmes (Robson 2002), DVDs, CD-ROMs as well as organisations' databases.

These data can be both analysed quantitatively and qualitatively. ***In addition, they can be used to help to triangulate findings based on other data, such written documents and primary data collected through observation, interviews or questionnaires*** (Chap 9, 10 and 11).

For your research project, the documentary sources you have available will depend on whether you have been granted access to an organisation's records as well as on your success in locating library, data archive and commercial sources. Access to an organisation's data will depend on gatekeepers within that organization (section 6.3). *In our experience, those research projects that make use of documentary secondary data often do so as part of a within-company action research or a case study of a particular organization*.

7.2 Survey-based secondary data

It refers to data collected using a survey strategy, usually by questionnaires (chap 11) that have already been analysed for their own purpose.

Survey-based secondary data will have been collected through one of three distinct sub-types of survey strategy: census (obligatory participation), continous/regular surveys = repeated at regular intervals (EICV, EDHS, ..) or ad hoc surveys.

When using these data you need to check when they were collected, as it takes at least a year for publication to occur! Survey secondary data may be available in sufficient detail to provide the main data set from which to answer your research question(s) and to meet your objectives. Alternatively, they may be the only way in which you can obtain the required data. … we have found that for most business and management research involving secondary data you are likely to find all the data you require from one source. Rather, your research project is likely to involve detective work in which you build your own multiple-source of data set using different data items from a variety of secondary data sources perhaps linking these to primary data you have

collected yourself (box 8.2). Like all detective work, finding data that help to answer a research question or meet an objective is immensely satisfying.

7.3. Multiple-source secondary data

They can be based entirely on document or on survey secondary data, or can be amalgam (combination of two or more substances or materials) of the two. *{The results obtained are being compared to target fixed in main development policy, surveys, and other sources}. The key factor is that different data have been combined to form another data set prior to your accessing the data.*

Method of use:

1. To extract and combine selected comparable variables from a number of surveys or from the same survey that has been repeated from a number of times to provide a **time series of data**. ***This is one of the few ways in which you will be able to get data over a long period to undertake a longitudinal study***.
2. Other ways of obtaining time-series data are to use a series of company documents such as appointment letters or public administrative records, to create your own longitudinal data set.
3. *Data can also be compiled for the same population over time using a series of 'snapshots' to* ***form cohort studies***. Such studies are relatively rare, owing to the difficulty of maintaining contact of the cohort from year to year

7.4 Evaluating secondary data sources p 272

Secondary data must be viewed with some cautions as any primary data you collect. You need to be sure that:

- They will enable you to answer your research question(s) and to meet your objectives
- The benefits associated with their use will be greater than the costs
- You will be allowed access to the data

Secondary sources that appear relevant at first may not on closer examination, be appropriate to your research question(s) or objectives. It is therefore important to evaluate the suitability of secondary sources for your research.

Stewart and Kamins (1993) argue that, if you are using secondary data, you are at an advantage compared with researchers using primary data. Because data already exist, you can evaluate them prior to use.

7.4.1 Overall suitability p 273 *(you evaluate used instruments as if you were examining those you have to use if you start your own study!)*

1) Measurement validity

One of the most important criteria for the suitability of any data set is measurement validity. Secondary data that fail to provide with the information that you need to answer your research question(s) or meet your objectives will result in invalid answers (Kervin 1999). Often when you are using secondary data you will find that the measures used do not quite match those you need (Jacob 1994).

Unfortunately, there are no clear solutions to problems of measurement invalidity. All you can do is try to evaluate the extent of the data's validity and make your own decision. A common way of doing this is to examine how other researchers have coped with this problem for similar secondary data in a similar context. If they found that, the measures, while not exact, were suitable, then you can be more certain that they will be suitable for research question(s) and objectives. If they had problems, then you may be able to incorporate their suggestions as to how to overcome them. Your literature search (3.4 and 3.5) will probably have identified other such studies already.

{In our study, we should examine the scoring policy used, intervals used to scored, determination of scores and other possible discussions around}

2) Coverage and unmeasured variables

The other important *suitability criterion is coverage*. You need to be sure that the secondary data cover the population about which you need data, for the time you need, and contain data variables that will enable you to answer your research question(s) and to meet your objectives. For all secondary data sets coverage will be concerned two issues:

- Ensuring that unwanted data are or can be excluded
- Ensuring that sufficient data remain for analyses to be undertaken once unwanted data have been excluded (Hakim 2000).

When analyzing secondary survey data, you will need to exclude those data that are not relevant to your research question(s) or objectives. Service companies, for example, need to be excluded if you are only concerned with manufacturing companies. However, in doing this it may be that insufficient data remain for you to undertake the quantitative analysis you require (sections 12.4 and 12.5). For documentary sources, you will need to ensure that the data contained relate to the population identified in your research. For example, check that the minutes are of board meetings and that they cover the required time period. Where you intend to undertake a longitudinal study, you also need to ensure that the data are available for the entire period in which you are interested.

Some secondary data sets, in particular those collected using a survey strategy, may not include variables you have identified as necessary for your analysis. These are termed **unmeasured variables**. *Their absence may not be particularly important if you are undertaking descriptive research*. However, it

could drastically affect the outcome of explanatory research as a potentially important variable has been excluded.

7.4.2 Precise suitability p 274

- Reliability and validity (also find section 5.6, pp 156-7)

The reliability and validity (section 5.6) you ascribe to secondary data are functions of the method by which the data were collected and the source. You can make a quick assessment of these by looking at the source of data. Dochartaig (2002) and others refer to this assessing *the authority or reputation* of the source. Survey data from large , well-known organizations such as those found in Mintel and Key Note market research reports are likely to be reliable and trustworthy. Their continued existence of these organizations is dependent on the credibility of their data. Consequently, their procedures of collecting and compiling the data are likely to be thought through and accurate. Survey data from Government organizations are also likely to be reliable, although they may not always be perceived as such (Box 8.7). However, you will probably find the validity of documentary data such as organisations' records more difficult to assess. While organizations may argue that their records are reliable, there are often inconsistencies and inaccuracies. *You, therefore, need also to examine the method by which the data were collected and try to ascertain the precision needed by the original (primary) use*r.

- documents via internet: *to discover the person or organization responsible for the data* and to be able to obtain additional information through which you can assess the reliability of the source.

- data in printed publications: this is reasonably straightforward (section 3.6)

- secondary data obtained via internet: it may be more difficult

For all secondary data, a detailed assessment of the validity and reliability will involve you in assessment of the method(s) used to collect data (Dale *et al.* 1988). These may be provided by hyperlinks for internet-based data sets. Alternatively, they may be discussed in the methodology section of an associated report. Your assessment will involve looking at who were responsible for collection or recordings the information and the context in which the data were collected. From this, you should gain some feeling regarding the likelihood of potential errors or biases. In addition, you need to look at the process by which the data were selected and collected or recorded. Where sampling has been used to select cases (usually as a part of a survey strategy), the sampling procedure and the associated sampling error and response rates (section 7.2) will give clues to validity, secondary data collected through a survey with a high response rate are also likely to be more reliable than from that with a low response rate. However, commercial providers of high-quality, reliable data sets may be unwilling to disclose details about how data were collected. This is particularly the case where these organizations see the methodology as important to their competitive advantage.

For some documentary sources, such as diaries, transcripts of interviews or meetings, it is unlikely that there will be a formal methodology describing how the data were collected. The reliability of those data will therefore be difficult to assess, although you may be able to discover the context in which the data were collected. For example, letters, emails, memos contain no formal obligations to the writer to give a full accurate portrayal of events. Rather they are written from a personal point of view and expected the recipient to be aware of the context (Denscombe 2007). This means that these data are more likely to be useful as a source of the writer's perceptions and views than as an objective account of reality. The fact that you didn't collect and were not present when these data were collected will also affect your analyses*. Dale et al. (1988) argue that full analyses* ***in-depth interview data require an understanding derived from participating in social interactions that cannot be fully recorded on tape or by transcript****.*

Where data have been compiled, as in a report, you need to pay careful attention to how these data were analysed and how the results were reported. Where percentages or proportions are used without actually giving the totals on which these figures are based, you need to examine the data very carefully. For example, s 50 per cent increase in the number of clients from two to three for a small company may be of less relevance than the 20 per cent increase in the number of clients from 1000 to 1200 for a larger company in the same market! Similarly, where quotations appear to be used selectively without other supporting evidence you should beware, as the data may be unreliable. Remember the further away you are from the original data, the more difficult it will be to judge their quality (Patzer 1996).

- **Measurement bias p 277**

  Measurement bias can occur for two reasons (Kervin 1999):

  - Deliberate or intentional distortion of data
  - Changes in the way data are collected

  Deliberate distortion occurs when data are recorded inaccurately on purpose, and is most *common for secondary data sources such as organizational records*. Other distortions may be deliberate but not intended for any advantage. Employees keeping time diaries might record only the approximate time spent on duties rather than accounting precisely for ever minute. People responding to a structured interview (questionnaire) might adjust their responses in structured interview to please interviewer, etc.

  Unfortunately, measurement bias resulting from deliberate distortion is difficult to detect. While we believe that you should adopt a neutral stance about the possibility of bias, you still need to look at the pressures on the original source that might have biased the data. For written documents such as minutes, reports and memos the intended target audience may suggest possible bias. Therefore where possible you will need to triangulate the findings with other independent sources referred to as a cross-check verification (Patzer 1996). Where data from two or more independent sources suggest similar conclusions, you can have more confidence that the data on which they are based are not distorted. Conversely, where data suggest different conclusions you need to be more wary of the results. *Changes in the way in which data*

were collected can also introduce changes in measurement bias. *Provided that the method of collecting data remains constant in terms of the people collecting it and the procedures used, the measurement biases should remain constant.*

3) Costs and benefits p 278

Kervin argues that the final criterion for assessing secondary data is a comparison of the costs (time and financial resources) of acquiring them with the benefits they will bring.

…. Benefits from data can be assessed in terms of the extent to which they will enable you to answer your research question (s) and meet your objectives. (p 279).

Chapter 8: collecting primary data through observation. P 288

Observation involves: systematic observation, recording, description, analysis, and interpretation of people's behaviour.

Participant observation: qualitative and emphasizes on discovering the meanings that people attach to their actions. The researcher attempts to participate fully in the lives and activities of subjects and thus becomes a member of their group, organization or community. This enables researchers to share their experiences by not merely observing what is happening but also feeling it (Gill and Johnson 2002:144).

- ✓ **Complete participant: the researcher attempts to become a member of the group in which you are performing research. You don't reveal your true purpose to the group members**. P 293
- ✓ **Complete observer**: you don't reveal the purpose of your activity to those you are observing. You don't take part in the activities of the group. p294
- ✓ **Observer as participant**: identity as researcher is revealed and clear to all concerned and without taking part in the activities in the same way as the real candidates. P 294
- ✓ **Participant as observer:** you reveal your identity as researcher. Both you and the subjects are aware of the facts that it is a fieldwork relationship (Akroyd and Hughes 1992). You are particularly interested to get the trust of the group (analytic reflection on the process in which they are involved). P 294
  - ❖ **Factors that will determine the choice of participant role p 295**
    - The purpose of your research: a research question about developing an understanding of a phenomenon about which the research subjects would be naturally defensive is one that lends itself to the complete observation role.
    - The time you have to devote to your research
    - The degree to which you feel suited to participant observation
    - Organizational access
    - Ethical considerations
  - ❖ *Data collection and analysis in participant observation p 296*
    - *Primary observations are those where you would note what happened or what was said at the time. Keeping a diary is a good way of doing this.*
    - *Secondary observations are statements by observers of what happened or was said. This necessarily involves those observers' interpretations*
    - *Experiential data are those data on your perceptions and feelings as you experience the process you are researching*.

- **Data collection**: p 296 as participant observer, formal set-piece interviewing is unlikely to take place, such 'interviewing' as does take place is likely to be informal discussion. It will be part of overall approach of asking questions that should be adopted in this research method. These questions are of two types (Robson 2002): first, to informants to clarify the situation you have observed and second, to yourself to clarify the situation and the accounts given of the situation. The data you have may well be classed as 'descriptive observation and narrative account'. In descriptive observation you may concentrate on observing the physical setting, the key participants and their activities, particular events and their sequence and the attendant processes and emotions involved. This description may be the basis for your writing of narrative account in much the same way as an investigative journalist would write one. However, Robson (2002) makes the point forcefully that the researcher must go much further than the journalist. Your job as the researcher is to go on and develop a framework of theory that will help you to understand the research setting you are studying. Golden role: recording must take place on the same day as the fieldwork in order that you do not forget valuable data.
- **Data analysis p 297**
  You should bear in mind that in participant observation research your data collection and analysis activity may be part of the same process (simultaneously)

➢ **Structured observation**: quantitative and is more concerned with the frequency of those actions. P 300. More detached stance and your concern would be in quantifying behavior. *As such, structured observation may form only a part of your data collection approach because its function is to tell you how often things happen rather than why they happen*.

✓ 'Off-the-shelf' coding schedule p 306 Box 10

Chapter 10. Collecting primary data using semi-structured, in-depth and group interviews

An interview is a purposeful discussion between to or more people (Kahn and Canell 1957) p 318

10.1 Types of interview and their link to the purpose of research and research strategy.

I. Structured interviews: use questionnaires based on predetermined and standardized or **identical set** of questions. And we refer to them as **Interviewer-administered questionnaires**. As structured interviews are used to collect quantifiable data, they are referred to as "quantitative research interviews".

II. By comparison, semi-structured and in-depth (unstructured)interviews are "non- standardized". These are often referred to as "qualitative research interviews" (King 2004).

Semi-structured interviews: the researcher will have a list of themes and questions to be covered, although these may vary from interview to interview. This means that you may omit some questions in particular interviews, given a specific organizational context that is encountered in relation to the research topic. The order of questions may also be varied depending on the flow of the conversation. *On the other hand, additional questions may be required to explore your research question and objectives given the nature of events within particular organizations. The nature of the questions and the ensuing discussion mean that data will be recorded by audio-recording the conversation or perhaps note taking*.

III. Unstructured interviews referred to as "in-depth interviews" (p 321): they are informal. The interviewee is given the opportunity to talk freely about events, behavior and beliefs in relation to the topic area, so that this type of interview is sometimes called 'non-directive'. It has been labeled as an informant interview since it is the interviewee's perceptions that guide the conduct of interview. In comparison, a participant (or respondent) interview is one where the interviewer directs the interview and the interviewee responds to the questions of the researcher (Easterby-Smith at al. 2008; Ghauri and GrØhaug 2005; Robson 2002). We can differentiate between types related to the nature of interaction between the researcher and those who participate in the process. Interviews may be conducted by on one – to – one basis, between you and single participant. Such interviews are most commonly conducted by meeting your participant 'face to face', but there may be some situations where you conduct an interview by telephone or electronically via the internet ~~or an organization's intranet~~. There may be other situations where you conduct a semi-structured or in-depth interview on a group basis, where you meet a small number of participants to explore an aspect of your research through a group discussion that you facilitate.

Interviews						
Standardised	Non – standardized					
Interviewer – administered questionnaires	One to one			One to many		
	Face – to face interviews *With districts technocrats*	Telephone interviews *when asking data from other Gvt agencies for triangulation*	Internet and intranet – mediated (electronic) interviews : *while requiring data from agencies*	Group interviews *When asking various participants what they know about*	Internet and intranet – mediated (electronic) group interviews	
				Focus group	Focus groups	

Appropriateness of strategy to nature of study

a) In an exploratory study, in-depth interviews can be very helpful to 'find out what is happening {and} to seek new insights' (Robson 2002:59). Semi-structured interviews may also be used in relation to an exploratory study.
b) In descriptive studies, structured interviews can be used as a means to identify patterns.
c) In an explanatory study, semi-structured interviews may be used in order to understand the relationships between variables, such as those revealed from a descriptive study. Structured interviews may also be used in relation to an explanatory study, in a statistical sense.

	Exploratory	Descriptive	Explanatory
Structured		Vv	V
Semi-structured	V		Vv
Unstructured	Vv		

Vv= more frequent, v= less frequent

Your research may incorporate more than one type of interview (multiple methods). As part of a survey strategy, for example, you may decide to use in-depth or semi-structured interviews initially to help to identify the questions that should be asked in a questionnaire administered as a structured interview. The data that you gather from such exploratory interviews will be used to explore and explain themes that have emerged from the use of questionnaire (Tashokkori and Teddlie 1998). In addition to the use of multiple methods, different types of interview questions may be used within one interview: 'one section of an interview may ask common set of factual questions …. While in an other section a semi-structured qualitative approach may be used to explore [responses]' (Healey and Rawlinson 1994:130). Increasingly authors also emphasise how semi-structured and in-depth interviews may also be used as a part of **mixed methods research**, *such as a means to validate findings from questionnaires (Bryman 2006). We can see, therefore, that various types of interview have a number of potentially valuable uses in terms of*

undertaking your research project. The key point for you to consider is the consistency between your research question and objectives, the strategy you will employ and the methods of data collection you will use – their fitness for purpose. P 323

When to use non-standardised (qualitative) interviews? (as method of data collection)

1. Purpose of research: exploratory study, or a study that includes an explanatory element, it is likely that you will include non-standardised (qualitative) research interviews in your design (Cooper and Schindler 2008). Similarly, an explanatory study is also likely to include interviews in order for the researcher to be able to infer causal relationships between variables. Where is necessary for you to understand the reasons for the decisions that your research participants have taken, or to understand the reason for their attitudes and opinions, you are likely to conduct a ***qualitative interview***. *Semi-structured and in-depth interviews provide you with the opportunity to 'probe' answers, where you want your interviewees to explain, or build on, their reponses. This important when you adopt interpretivist epistemology*, *where you will be concerned with to understand the meanings that participants ascribe to various phenomena. Interviewees may use words or ideas in a particular way, and the opportunity to probe these meanings will add significance and depth to data you obtain*. They are significant for your understanding, and which help you to address your research question and objectives, or indeed help you to formulate such a question. Interviews also afford each interviewee an apportunity to hear themselves 'thinking aloud' about things they may not have previously thought about. The result should be that you are able to collect a rich and detailed set of data. However, you need to be aware that the manners in which you interact with your interviewees and ask questions will impact on the data you collect (Silverman 2007).
2. Significance of establishing personal contact: managers are likely to agree to be interviewed rather than complete questionnaire so do many participants bcs they take this opportunity to deliver **their sensitive and confidential information** to someone they have never met. Very reluctant to spent time in completing explanatory answers by writing. The use of personal interview may therefore achieve a high rate of response rate than using questionnaires. Healey (1991:206) also makes the point that 'the interviewer …. Has control over who answers the questions' in comparison with questionnaire, which may be passed from one person to another.
3. The nature of the data collection questions: an interview will undoubtedly be the most advantageous approach to attempt to obtain data in the following circumstances (Easterby-Smith et al. 2008; Jankowicz 2005):
    - ✓ Where there are a large number of questions to be answered;
    - ✓ Where the questions are either complex or open-ended;
    - ✓ Where the order and logic of questioning may need to be varied

A semi-structured or in-depth interview will be the most appropriate two latter types of situation

4. Length of time required and completeness of the purpose: …. The time needed for the participant to complete the questionnaire may mean that an interview is in any case the best or the only alternative. The interview is held at negotiated time and in general when the interviewee will be under least pressure. For some, it is arranged for lunch. If you expect to conduct an event skillfully an interview is more likely to achieve this than the use of a self-administered or interviewer- administered questionnaire. Where your participant does not provide an answer to a particular question or questions in a non-standardised interview, you should be able to form some indication of why a response could not be provided. This may even lead you to modify the question or to compose another where this would be appropriate. While there are a number of situations favouring the use of non-standardised (qualitative) interviews, you still need to decide whether or not to use these types of interview to collect your data and, of equal importance, to justify your choice. Silverman emphasizes that your choice should depend on what is the best way to answer your research question referring to a discussion by Speer (2002, cited in Silverman 2007:57) as an illustration '… if you are studying gender … you should be wary of basing your research on interviews where participants are asked to comment on gender issues … you are much likely to gather reliable data by studying how people actually do gender in everyday environments, e.g. in meetings, email messages, etc'.

Checklist to decide whether to use semi-structured or in-depth interviews.

- ✓ Does the purpose of your research suggest you using semi-structured/ or in-depth interviews?
- ✓ Will it help to seek personal contact in terms of gaining access to participants and their data?
- ✓ Are your data collection questions large in number, complex or open-ended?
- ✓ Will there be a need to vary the order and logic of questioning?
- ✓ Will it help to be able to probe interviewees' responses to build on or seek explanation of their answers?
- ✓ Will the data collection process with each individual involve a relatively lengthy period?

Data quality issues and preparing for the interview.

- ➢ Data quality issues.

A number of data quality issues can be identified in relation to the use of semi-structured and in-depth interviews, related to:

- Reliability

- Forms of bias
- Validity and generalisability

Reliability.

The lack of standardization in such interviews may lead to concern of reliability. In relation to qualitative research*, reliability is concerned with whether alternative researchers would reveal similar information (Easterby-Smith et al. 2008; Silverman 2007).* The concern of reliability in these types of interview is also related to interviewer bias. This is where the comments, tone or non-verbal behavior of the interviewer create bias in the way that interviewees respond to the questions being asked. This may be where you attempt to impose your own beliefs and frame of reference through the questions that you ask. It is also possible you will demonstrate bias in the way you interpret responses (Easterby-Smith *et al.* 2008). Where you are unable to develop the trust of the interviewee, or perhaps where your credibility is seen to be lacking, the value of the information given may also be limited, raising doubts about its validity and reliability.

Related to this is interviewee or response bias. This type of bias may be caused by perceptions about the interviewer, as referred above, or in relation to perceived interviewer bias. However, the cause of this bias is not necessarily linked to any perception related to the interviewer taking part in an interview is an intrusive process. This is especially true in the case of in-depth or semi-structured interviews, where your aim will be to explore events or to seek explanations. The interviewee may, in principle, be willing to participate but nevertheless be sensitive to the unstructured exploration of certain themes. Interviewees may therefore choose not to reveal and discuss an aspect of the topic that you wish to explore, because this would lead to probing questions that would intrude on sensitive information that they don't wish, or are not empowered, to discuss with you (to adapt heterogeneous maximum variation based on the multi level in the organization?). The outcome of this may be that the interviewee provides a partial 'picture' of the situation that casts him / herself in a 'socially desirable' role, or the organization for which they work in a positive or negative fashion.

Bias may also result from the nature of the individuals or organizational participants who agree to be interviewed (Box 10.4). *The time-consuming requirements of the interview process may result in a reduction in willingness to take part on the behalf of some of those to whom you would like to talk. This may bias your sample from whom data are collected (2002). This is an issue that you will need to consider carefully and attempt to overcome through the approach taken to sampling (sections 7.2 and 7.3)*.

There is also likely to be an issue about the generalisability of the findings from qualitatively based interview studies, although the validity of such studies in not raised as an issue. if we consider validity first, this refers to the extent to which the researcher gains access to the participant intended from the language that was used by this person. The high level of validity that is possible in relation to non-standardised (qualitative) interviews that are conducted carefully is due to the questions being able to be clarified, meanings of responses probed and topics discussed from a variety of angles.

However, qualitative research using semi-structured or in-depth interviews will not be able to be used to make statistical generalizations about the entire population (whatever this may be in the context of the research topic) where this is based on a small and unrepresentative number of cases. This is often the situation when adopting a cases study strategy (Yin 2003).

Overcoming data quality issues

i. **Reliability**: one response to the issue of reliability is the findings from using non-standardised research methods are not necessarily intended to be repeatable since they reflect reality at the time they were collected, in a situation which may be subject to change (Marshall and Rossman 1999). The assumption behind this type of research is that circumstances to be explored are complex and dynamic. The value of using non-standardised interview is derived from the flexibility that you may use to explore the complexity of the topic. Therefore, an attempt to ensure that qualitative, non-standardised research could be replicated by other researchers would not be realistic or feasible without undermining the strength of this type of research. Marshall and Rossman (1999) suggest that researchers using a qualitative, non-standardised approach need to make this clear- perhaps to transform an aspect perceived to be a weakness by some into a strength based on realistic assumptions about the ability to replicate research findings. However, they suggest that where you use this approach you should make and retain notes relating to your research design, the reasons underpinning the choice of strategy and methods and data obtained. This will be referred to by other researchers in order to understand the process that you used and your findings and, where appropriate, to enable them to reanalyse the data you collected. The use of non-standardised interviews shouldnot lead to a lack of rigor in relation to research process – if anything, greater rigour is required to overcome the views of those who may be wedded to the value of quantitative research to the exclusion of any other approach.

ii. **Preparation.** Like all research methods, the key to a successful interview is careful preparation. When using non-structured interviews **the five Ps are useful mantra (= a sound, word or phrase that is continuously repeated as a prayer, used in Hindu and Buddhist religious practices to help so mediate; sth repeated again and again)**: **PRIOR PLANNING PREVENTS POOR PLANNING**. In particular, we believe it is critical that you plan precisely how you are going to demonstrate your credibility and obtain the confidence of the interviewees. (p 328)

- ✓ **Level of knowledge**: you need to be **knowledgeable** about the research topic and organizational context in which the interview is to take place. In addition to your literature review, a prior search in your university library may reveal journal articles written by senior employees of the organization that is participating in your research. *There may also be other material about the organization, and this is particularly likely to be found on the internet, in the 'trade press' and the quality newspapers. It may be appropriate to look at company reports and other publications, or financial data relating to the organization. The ability to draw to his type of information in the interview should help to demonstrate your credibility, assess the accuracy of responses and encourage the interviewee to offer a more detailed account of the topic under discussion. As you*

undertake a number of interviews, you will also be able to draw on the initial analysis that you make of data previously collected.

- ✓ **Level of information supplied to the interviewee**: *credibility may also be promoted through the supply of relevant information to participants before the interview. Providing participants with a list of the interview themes before the event, where this is appropriate, should help. The list of themes (Boxes 10.1 and 10.5) should also promote validity and reliability by enabling the interviewee to consider the information being requested and allowing them the opportunity to assemble supporting organizational documentation from their files. We can testify to this approach and the value of allowing participants to prepare themselves for the discussion in which they are to engage*. Access to organizational documentation also allows for triangulation of the data provided (sections 8.2 and 8.3). … interview themes may be derived from the literature that you read, the theories that you consider, your experience of a particular topic, common sense, discussions with coworkers, fellow students, tutors and research participants, or a combination of these approaches. You will need to have some idea of the theme or themes that you wish to discuss with your participants even if you intend to commence with exploratory, in-depth interviews as part of grounded theory to your research project. … when creating your guide, you need to try to ensure that the order of questions is likely to be logical to your participants and that the language you use will be comprehensive.
- ✓ **Appropriateness of location**: your should choose the place for your interviews with regard to your personal safety and thinking to the impact it will have to your participants and the responses they are likely to give. … Mark recalls an interview in a room outside which building work was taking place.
- ✓ **Appropriateness of the researcher's appearance at the interview**: Robson (2002) advises researchers to adopt similar style of dress to those to be interviewed.
- ✓ **Nature of the opening comments to be made when the interview commences**: .. it is your responsibility to shape the start of the discussion.
- ✓ **Approach to questioning**: to reduce the scope of bias and increase the reliability of information obtained. Your questions need to be phrased clearly, so that the interviewee can understand them, and you should ask them of neutral tone of voice: use of open questions, words probing questions, avoiding long questions, avoid interviewer's bias, avoid too many theoretical concepts or jargon, questions grounded in the real-life of participants. Critical incident technique is expected: an activity or event where the consequences were so clear that the participant has a definite idea regarding the effects (Keaveney 1995) saunders p 332. Healey and Rawlinson (1994:138) suggest that 'it I usually best to leave sensitive questions until near the end of an interview because this allows a greater time for the participant to build up trust and confidence in the researchers'.
- ✓ **Nature and impact of the interviewer's behavior during the course of the interview**. Appropriate behavior by the researcher should also reduce the scope for bias during the interview.

- ✓ **Demonstration of attentive listening skills**: the purpose of a semi-structured or in-depth interview will be to understand the participant's explanations and meanings. This type of interaction will not be typical of many of the conversations that you normally engage in, where those involved often compete to speak rather than concentrate on listening. You therefore need to recognize that different skills will be emphasized in this look-out for signals and to spend the time needed to listen and build understanding deliberately holding back our own thoughts, which would divert or compete with the other's. It will be necessary for you to explore and probe explanations and meanings, but you must also provide the interviewee with reasonable time to develop their responses, and you must avoid projecting your own views (Easterby-Smith et al.2003, Ghauri and Grønhaug 2005, Robson 2002).
- ✓ **Scope to test understanding**: you may test your understanding by summarizing an explanation provided by the interviewee. This will allow the interviewee to 'evaluate the adequacy of the interpretation and correct where necessary' (Healey and Rawlinson 1994: 138). This can be a powerful tool for avoiding biased or incomplete interpretation. It may also act as a means to explore and probe the interviewee's response further. In addition to this opportunity to test understanding at the interview, you may also ask the interviewee to read through the factual account that you produce of the interview. Where the interviewee is prepared to undertake this, it will provide a further opportunity for you to test your understanding and for the interviewee to add any further points of relevance that may not previously have been apparent.
- ✓ **Approach to recording data**: as well as audio-recording your interview, we believe it is important to also make notes as the interview progresses, this provides another way for you to show that your participant's responses are important for you. If possible, immediately after the interview has taken place you should compile a full record of your interview (Robson 2002), including contextual data. … in addition to your notes from actual interview, you should also record the following **contextual data**:
  - The location of the interview (e.g. the organization, place)
  - The data and time
  - The setting of interview (e.g. was the room quite or noisy, could you overheard, were you interrupted?)
  - Background information about the participant (e.g. role, post title, gender)
  - You immediately impression of how well (or badly) the interview went (e.g. was the participant reticent, where there aspects about which you felt you did not obtain answers in sufficient depth?)
- ✓ **Cultural differences and bias**: As a final note to this particular discussion, we need to recognize that it is often difficult to attempt to control bias in all cases. … for example, misinterpretation of responses because of cultural differences between the interviewee and the interviewer (Marshall and Rossman 1999).

Generalisability: p 335 saunders. …. even described as an issue in previous sections. Some arguments: … the first of these relates to the situation where a single case study is used because of unstructured

nature of the research. Bryman (1988:90) states that *'within a case study a wide range of different people and activities are invariably examined so that the contrast with survey samples is not acute as it appears at first glance'*. *The single case study may in fact encompass a number of settings, where for example it involves a study in large organization with sites across the country, or even around the world* ***{in our study, the sites were replaced by different staffmembers at different levels and were multiple embedded case study which enables to reduce ….]***. By contrast, Bryman (1998) points out that many research projects adopting a survey strategy use samples restricted to one particular locality. *A well-completed and rigorous case study is thus more likely to be useful in other contexts than one that lacks such rigour*. The second argument with the approach that questions the generalisability of qualitative research or case study is related to **the significance** (=the importance that sth has bcs it affects other things; (2) the meaning of sth, usually a special meaning or a meaning that is not obvious**) of this type of research to theoretical propositions** (Bryman 1988; Yin 2003). *Where you are able to relate your research project to existing theory you will be in a position to demonstrate that your findings will have a broader theoretical significance than the case or cases that form the basis of your work (Marshall and Rossman 1999). It will clearly be up to you to establish this relationship to existing theory in order to be able to demonstrate the broader significance of your case study findings. This relationship will allow your study to test the applicability of existing theory to the settings that you are examining and where this is found wanting to suggest why. It will also allow theoretical propositions to be advanced that can then be tested in another context*. However, as Bryman (1988) points out, this also has implications for the relationship between theory and research, since the identification of existing theory and its application will be necessary before the researcher embarks on the collection of data.

Interviewing competence p 336 saunders

There are several areas where you need to develop and demonstrate competence in relation to the conduct of semi-structured and in-depth research interview. These areas are:

I. Opening the interview
II. Using appropriate language
III. Questioning: even in an in-depth, interview as well as in a semi-structured one, you will need to consider your approach to asking questions

- **Open questions** *will allow participants to define and describe a situation or event*. An open question is designed to encourage the interviewee to provide an extensive and developmental answer, and may be used to reveal attitudes or obtain facts (Grummitt 1980). It encourages the interviewee to reply as they wish. An open question is likely to start with, or include, one of the following words: 'what', 'how', or 'why'.
- **Probing questions:** *they can be used to explore responses that are of significance to the research topic*. They may wonder like open questions but request particular focus or direction. 'how would you evaluate the success of this new marketing strategy?', 'why did you choose a compulsory method to make redundancies?', what external factors caused the corporate strategy change?' these questions may be prefaced with for example: 'that's interesting', …. 'Tell me'. Probing questions may also be asked to seek an explanation where you don't understand the interviewee's meaning or where the

response doesn't reveal the reasoning involved: 'what do you mean by "pumping" as a means to help to secure volunteers for redundancy?' the use of reflection of statement may help to probe a theme: 'why don't you think that ….?'

- **Specific and close questions:** used to obtain specific information or to confirm a fact or an opinion: 'how many people responded to the customer survey'? in phrasing questions, remember that you should avoid using leading or proposing types of questions in order to control any bias that may result from their use.

IV. Listening:
V. Testing and summarizing understanding
VI. Recognizing and dealing with difficult participants
VII. Recording data

Managing logistical and resources issues p 342

a) Logistical and resources issues
   - Interviewing is a time-consuming process (1 to 2 hours) compared to questionnaire filling in but question of response rate, understanding the meaning or reality behind, types of interviewees like managers who like more interview
   - Costly when you have to travel to various location but this can be minimized by cluster sampling, or using internet, self-administered or telephone questionnaires. The choice of method, purpose , research question and objectives…. Will determine the strategy.
   - Number of interviews to be arranged within a given period
   - Time required to compose notes and/or transcribe audio-recordings
   - Initial analysis of the data collected
b) Managing logistical and resources issues
   - Time willingly to be ½ to 1, 1 to 2 hours but negotiable
   - To arrange two or more shorter interviews in order to explore a topic thoroughly: to allow participants to reflect on themes raised and questions being asked
   - A number of interviews per day to enable you to make note and write up information, audio-recording, and conduct your initial analysis. Phil found that 3 interviews per day in this type of study was enough
   - Avoiding making frequent interruptions but need to cover the themes and questions indicated and probe responses in the time available (Ghauri and Grøhaug 2005)

Group interviews and focus groups (p 343)

- When the interviewer asks questions to a group of participants
- We use **group interview** as a general term to describe all non-standardised interviews conducted with two or more people. In contrast, the term **focus group** *is used to refer to those group interviews where the topic is defined clearly and precisely and there is a focus on enabling and recording interactive discussion between participants* (Carson *et al.* 2001). *{In our study, each technocrats was asked what is in relation with what he does permanently}.*

- Typically group interviews (and focus groups) *involve between four and eight participants, or perhaps 12, the precise number depending upon the nature of the participants, the topic and the skill of the interviewer*. Inevitably, the more complex the subject matter the smaller the number of interviewees. *Participants are normally chosen using non-probability sampling, often with a specific purpose in mind. For many group interviews this purpose is because you feel that you can learn a great deal from these individuals*. Kruegger and Casey (2000:25) refer to such participants as being '**information rich'**.
- If you are thinking about using group interviews, or specifically focus groups, considerations of the following issues may help:

✓ Where your research project (or part of it) occurs within an organization the request to participate in a group interview may be received by individuals as an instruction rather than allowing them a choice about whether to take part. A care in wording to be used in request and in introducing to the group to provide clear assurance about confidentiality.

✓ Once your sample have been selected, participants should be grouped so as not to inhibit individuals possible contributions. Inhibitions may be related to lack of trust, to perceptions about the status differences, or because of the dominance of certain individuals. *The nature and selection of each group will affect the first two elements. We would advise series of horizontal slices within an organization so that, within each group, participants have similar status and similar work experiences. Using a vertical slice would introduce perceptions about status differences and variations in work experience). In this way, group interviews can be conducted at a number of levels within an organization*. {*This is a solution to what we have been carrying in our study and justifies the sampling strategy of heterogeneous purposive sampling (or maximum variation sampling*)}. A reference may be made about the nature of the group to provide reassurance, and you may consider asking people to introduce themselves by their first name only without referring to their exact job.

✓ Where one or two people dominate the discussion, you should seek to reduce their contributions carefully and to bring others in.

✓ Ensure participants understand each other's contributions and develop accurate understanding of points being developed

✓ Consider the location and setting for a group interview

✓ Kruegger and Casey (2000) suggest to undertake 3 or 4 group interview with any one type of participants. If after the third or the fourth group interview you are no longer receiving new information, this means that you have heard the full range of ideas and reached the saturation.

- The demands of conducting all types of group interviews, including focus groups, and the potential wealth of ideas that may flow from them mean that it is likely to be difficult to manage the process and note key points at the same time. *We have managed to overcome this in two ways: by audio-recording the group interviews or using two interviewers. Where two interviewers are used, one person facilitate the discussion and the other person makes notes. We*

*would recommend that you **use two interviewers** even if you are audio-recording the group interview as it will allow one interviewer to concentrate fully on managing the process whilst the other ensures that the data are recorded. Where you can not audio-record the group interview, you will need to write up any notes immediately afterwards so as not to lose the data.* As with one-to-one interviews, your research will benefit from the making of notes about the nature of the interactions that occur in the group interviews that you conduct. *We would not advise you to undertake more than one group interview in a day on your own because of the danger of losing or confusing data*.

Group interviews

- Ensure all participants have the opportunity to state their points of view, answer your question and data are captured.
- This type of interviews can range from being highly structured to unstructured, although it tends to be relatively unstructured and fairly free-flowing (Zikmund 2000) in terms of breadth and depth of the topics
- The onus will be firmly placed on you to explain its purpose, to encourage participants to relax, and to initiate their comments and, with focus groups, detailed discussion
- Balance between the provision of answers to your questions and their free discussion provided revealed data give important insights.
- (Disadvantages)Thus once you have opened the interview (box 10.9) and the discussion established, it will need to be managed carefully. Group interactions may leads to a highly productive discussion as interviewees respond to your questions and evaluate points made by the group. **However as your opportunity to develop an individual level of rapport with each participant will not be present (compared with one-to-one interview**), there may also emerge a group effect where certain participants effectively try to dominate the interview whilst others may feel inhibited. This may result in some participants publicly agreeing with the views of others, whilst privately disagreeing. As a consequence of reported consensus may, in reality, be a view that nobody wholly endorses and nobody disagrees with (Stokes and Bergin 2006). At the same time the task of trying to encourage involvement by all group members and of maintaining the interview's exploratory purpose. High level of skill required to conduct.
- Distinct advantages: several participants make point to breadth of points of view and are evaluated by the group; possibility of responding or generating a number of ideas helping to explore or explain the concepts; to interview a large group of participants that may establish the reliability of data; help to identify key themes that may infor consequent parts of data collection.

FOCUS GROUP (p 347)

A focus group, sometimes called a 'focus group interview', is a group interview that focuses clearly upon a particular issue, product, service or topic and encompasses the need for interactive discussion amongst participants (Carson et al. 2001), This means that, in comparison with other forms of group interview, individual group members' interactions and responses are both encouraged and more closely

controlled to maintain the focus. Participants are selected because they have certain characteristics in common that relate to the topic being discussed and they are encouraged to discuss and share their points of view without any pressure to reach consensus (Kruegger and Casey 2000). These discussions are conducted several times, with similar participants, to enable trends and patterns to be identified when the data collected are analysed.

If you are running a focus group, you will probably be referred to as the '**moderator'** or '**facilitator'**. These labels emphasise the dual role of the person running the focus group, namely to:

- Keep the group within the boundaries of the topic being discussed;
- Generate interest in the topic and encourage discussion, whilst at the same time not leading the group towards certain opinions.

Where focus groups are being used this likely to be associated with a high level of interviewer-led structure and intervention to facilitate discussion than were group interviews are being used. The size of groups may also be related to the topic. Thus, a focus group designed to obtain views about a product range (Box 10.18) is likely to be large than a group interview that explores a topic related to a more emotionally involved construct, such as attitudes to performance-related pay or the way in which employees rate their treatment by management. You may also choose to design smaller groups as you seek to develop your competence in relation to the use of this interviewing technique to collect qualitative data.

Telephone, internet – and intranet-mediated interviews

Telephone interviews

Advantages

- Potential advantages associated with access, speed and lower costs
- To make contact with participants with whom it is impractical to conduct face- to –face interview due to 'long-distance'.
- Appropriate to conduct a short, follow-up telephone interview to clarify the meaning of some data, where you have already undertaken a face-to-face interview

Disadvantages

- No personal contact thus impossible to explore the participant's responses (trust?)
- No possibilities to ask sensitive questions
- Issue of reduced reliability
- Not easier to control the pace of a telephone interview
- Difficult of making notes reason why it is recommended to use audio-recording
- Difficult to catch visual cues
- Difficult to witness the non-verbal behavior of your participant
- Difficult to develop more complex questions Ethical issues difficult to gain access

Internet- and intranet-mediated interviewing: see for telephone

- Electronic interviews refer to interviews held both in real time using the internet and organisations'intranets as well as those that are, in effect, undertaken off-line. the interview can be undertaken in real time (synchronous) or offline (asynchronous)

Advantages

- For population geographically dispersed
- Software recording automatically as they are typed thus removing problems associated with audio-recording and transcription such as cost, accuracy and participants' apprehension
- Web conferencing software can be used for synchronous (real time) and asynchronous one-to-one and group interviews.
- Internet forums and e-mails can be used for asynchronous interviews
- Chat room is an online forum operating in synchronous mode.
- A forum is usually deals only with one topic and personal exchanges are discouraged. Forums are commonly referred to as web forums, message boards, discussion boards, discussion forums, discussion groups and bulletin boards. Although forums do not allow people to edit each other's messages, there is usually a moderator or forum administrator who typically is responsible for netiquette (sections 6.4 and 11.5) and has the ability to edit, delete or modify any content.
- An e-mail interview consist of a series of emails each containing a small number of questions rather than one email containing a series of questions (Morgan and Symon 2004), although this is really an internet- or intranet-mediated questionnaire.

CHAPTER 11 COLLECTING PRIMARY DATA USING QUESTIONNAIRES

11.1 Definition

A questionnaire is a general term to include all techniques of data collection in which each person is asked to respond to the same questions in a pre-determined order (de Vaus 2002).

The design of your questionnaire will affect the response rate and the reliability and validity of data collected. Response rate, validity and reliability can be maximized by?

- careful design of individual questions
- clear and pleasing layout of the questionnaire
- lucid explanation of the purpose of the questionnaire
- pilot testing
- carefully planned and executed administration.

11. 2 Overview of questionnaire techniques

a) When to use questionnaires?

Questionnaires are usually not particularly good for exploratory or other research that requires large numbers of open-ended questions. They work best with standardized questions that you can be confident will be interpreted the same way by all respondents (Robson 2002)

b) Types of questionnaire

Questionnaire				
Self-administered			**Interviewer-administered**	
Internet and intranet-mediated questionnaires	Postal questionnaires	Delivery and collection questionnaire	Telephone questionnaire	Structured interview (sometimes known as interview schedules)

c) The choice of questionnaire

The choice will be influenced by a variety of factors related to your research question(s) and objective(s), and in particular the:

- characteristics of the respondents from whom you wish to collect data
- importance of reaching a particular person as respondent
- importance of respondent's answers not being contaminated or distorted
- size of sample you require for your analysis, taking into account the likely response rate
- types of question you need to ask to collect your data

Your choice of questionnaire will also be affected by the resources you have available, and in particular,

- time available to complete the data collection
- financial implications of data collection and entry
- ease of automating data

11.3 Deciding what data need to be collected

a) Research design requirements

Unlike in-depth and semi-structured interviews, the questions you ask in questionnaires need to be defined precisely prior to data collection. The questionnaire offers only one chance to collect the data, as it is often difficult to identify respondents or to return to collect additional information.

You, therefore, will need to have:

- ❖ reviewed the literature carefully
- ❖ discussed your ideas with colleagues, your project tutor and other interested parties.

b) Types of variables

- **Opinion**: record how respondents feel about sth or record what respondents do or are.
- **behavior**: data on what people (or their organisations) did in the past, do now or will do in the future.
- **attribute:** Data on respondents' characteristics

c) Ensuring that essential data are collected

3) Decide whether the main outcome or your research is descriptive or explanatory
4) sub-divide each research question or objective into more specific investigative questions about which you need to gather data
5) repeat the second stage if you feel that the investigative questions are not sufficiently precise
6) identify the variable about which you will need to collect data to answer each investigative question
7) establish the level of detail required from the data for each variable
8) Develop measurement questions to capture the data at the level of data required for each variable

Summary:

Data requirements table

Research question/objective			
Type of research			
Investigative question	Variable (s)required	Detail in which data measured	Check measurement questions included in questionnaire

Example

Research question/objective: To establish customers' attitudes to the outside smoking area at restaurants and bars			
Type of research: predominantly descriptive, although wish to examine differences between restaurants and bars, and between different groups of customers			
Investigative question	**Variable (s)required**	**Detail in which data measured**	**Check measurement questions included in questionnaire V**
Do customers feel they should have an outside smoking area at restaurants and bars as a right?	Opinion of customer on restaurants providing an outside smoking area as a right	Feel… Very strongly Quite strongly …. (separate questions for restaurants and bars)	V
How representative are the responses of customers (attributes)?	Age of customer Gender of Customer Job	 Male, female Higher managerial, lower managerial, professional, small employee	V

11.4 Designing the questionnaire

The internal validity and reliability of the data you collect and the response rate you achieve depend, to a large extent, on the design of your questions, the structure of your questionnaire, and the rigour of your pilot testing.

a) Assessing validity

- internal validity: ability of your questionnaire to measure what you intend to measure.
- content validity: extent to which the measurement device, provides adequate coverage of the investigative questions.
- criterion-related validity, sometimes known as predictive validity is concerned with the ability of the measures (questions) to make accurate prediction. (antonym: concurrent)

- Construct validity: extent to which your measurement questions actually measure the presence of those constructs such as attitude scales, aptitude and personality tests and the like and can be thought of as answering the question: how well can you generalize from your measurement questions to your constructs?

b) Testing for reliability:

- Test re-test: correlating data collected with those from the same questionnaire collected under as near equivalent conditions as possible. the questionnaire therefore needs to be administered twice to respondents, and no longer the time interval between the two questionnaires
- internal consistency: correlating the responses to each question in the questionnaire with those to other questions in the questionnaire
- alternative form: comparing responses to alternative forms of the same question or group of questions (check questions).

c) **Designing individual questions**

Researchers do one of the three things:

- adopt questions used in other questionnaires
- adapt questions used in other questionnaires
- develop their own questions

Initially we need only consider the type and wording of individual questions rather than the order in which they appear on the form.

Most types of questionnaire include a combination of open and closed questions.

- **Open questions**, sometimes referred to as **open-ended questions**, allow respondents to give answers in their own way. Used widely in in-depth and semi-structured interview. (when you are unsure of the response, such as in exploratory research). The responses to open questions are extremely time-consuming to code, for this reason, it is usually advisable keep their use to a minimum.
  e.g: Please, list up to three things you like about your job.
  1. ……
  2. ……
  3. …….
- **Closed questions** referred to as **closed-ended questions** or **forced-choice questions**, provide a number of alternative answers from which the respondent is instructed to choose.
  Six types of closed questions:
  1) **list questions:** offer the respondent a list of responses, any of which they can choose
  2) **category questions:** each respondent's answer can fit only one category
  3) **ranking questions:** to place things in rank order

4) **rating questions:** to collect opinion data. Like agree, tend to agree, tend to disagree, disagree; you choose one.
5) **quantity questions**: the response to questions is number, which gives the amount of characteristics.
6) **matrix questions:** or a grid of questions enables to record the responses to two or more similar questions at the same time.

e.g: Matrix questionnaire

	To a large extent	To a quite large extent	To some extent	To a quite small extent	To a small extent	Not all
a. do they treat you with dignity?						
b. Do they treat you with respect?						
c. are they at least as honest with bad news as good news in their communications with you?						

- Question wording

The wording of each question will need careful consideration to ensure that the responses are valid- that is, measure what you think they do.

- Translating questions into other languages

Attention should be paid to:

- ✓ lexical meaning- the precise meaning of individual word (e.g. the French word chaud can be translated into two concepts in English and German, 'warm' and 'hot').
- ✓ idiomatic meaning
- ✓ experiential meaning
- ✓ grammar and syntax- the correct use of language, including the ordering of words and phrases to create well-formed sentences (e.g. in Japanese the ordering is quite different from the English or Dutch, as verbs are at the end of sentences).

d. Question coding

If you plan to analyse your data by computer, they will need to be coded prior to entry. For quantity questions, actual numbers can be used as codes. For most closed questions, you should be able to add

codes to responses categories. These can be printed on the questionnaire, thereby pre-coding the question and removing the need to code after data collection

e.g.

Is the service you receive?	Excellent	Good	Reasonable	Poor	Awful
(please circle Ɵ the number)	5	4	3	2	1
Is the service you receive?	Excellent	Good	Reasonable	Poor	Awful
(please tick the box)	☐5	☐4	☐3	☐ 2	☐ 1

e. Constructing the questionnaire

- The order and flow of questions: you will need to add instructions, sometimes to include filter questions
- The layout of the questionnaire: to make reading and filling in responses easy, to keep both the visual appearance of the questionnaire and the wording of each question simple (Dillman 2007)

f. Explaining the purpose of the questionnaire

- The covering letter
- Introducing the questionnaire: at the start of your questionnaire you need to explain clearly and concisely why you want the respondent to complete the survey. Dillman (2007) argues that, to achieve as high response rate as possible, this should be done on the first page of the questionnaire in addition to the covering letter. He suggests that in addition to a summary of the main messages in the covering letter, you include:
  - a clear unbiased banner or title, which conveys the topic of the questionnaire and makes it sound interesting;
  - a subtitle, which conveys the research nature of the topic (optional)
  - a neutral graphic illustration or logo to add interest and to set the questionnaire apart (self-administered questionnaire)
- Closing the questionnaire
  At the end of your questionnaire you need to explain clearly what you want the respondent for completing the questionnaire, and providing

PART V. DATA ANALYSIS

Chapter 12. Analysing qualitative data

Qualitative data refers to all non-numeric data or data that have not been quantified and can be a product of research strategies. They include both deductive and inductive approaches.

---- ***while it may be possible to make some use of diagrams and statistics at this stage, such as frequence of occurrence of certain categories of data (sections 12.3 and 12.4), the way in which you are likely to analyse the qualitative data that you collect is through the creation of a conceptual framework (p 483-4)***. **This may be formulated before, during or after data collection.**

12.1 Preparing your data for analysis

- Transcribing qualitative data : audio-recorded data have to be reproduced as a (word-processed) written account using the actual words. As an interview, you would not be interested only in what participants said, but in the way they said it as well. This means that the task of transcribing audio-recorded interviews is likely to be time consuming as you will need not only to record exactly what was said by whom, but also to ry to give an indication of the tone in which it was said and the participants' non –verbal communications
- Using electronic textual data including scanned documents (email interviews, electronic versions of documents including organizational emails, blogs and web-based reports)

- The interactive nature of the process: data collection, data analysis and development and verification of propositions are very much an interrelated and interactive set of processes. Analysis occurs during the collection of data as well as after it (Kvale 1996). This analysis helps to shape the direction of data collection, especially where you are following a more inductive, grounded approach (section 13.7). as propositions emerge from your data, or if you commence your data collection with a theoretical framework or propositions already worked out (section 13.8), you will seek to test these as you compare them against the cases in your study (Erlandson et al. 1993; Glaser and Strauss 1967). The key point here is the relative flexibility that this process permits you. The interactive nature of data collection and analysis allows you to recognize important themes, patterns and relationships as you collect data: in other words, to allow these to emerge from the process of data collection and analysis. As a result you will be able to re-categorise your existing data to see whether data exist in cases where you intend to conduct your research (Strauss and Corbin 2008). The concurrent process of data collection and analysis also has implications for the way in which you will need to manage your time and organize your data and related documentation. It will be necessary to arrange interviews or observations with enough space between them to allow yourself sufficient time to word process a transcript or set of notes, and to analyse this before proceeding to your next data collection session. Where you conduct small number of interviews in one day, you will need time during the evening to undertake

some initial analysis on these before carrying out further interviews. You may also be able to find a little time between interviews to carry out a cursory (quick and not thorough) level of analysis. As part of this, we have found it extremely helpful to listen to audio-recordings of interviews we have undertaken while travelling to and from the university. However, there is a clear limit to the value of continuing interviews or observations without properly analyzing in the manner described earlier.

12.2 Approaches to qualitative analysis p 489

In our discussion of research approaches in section 4.3 we highlited how it was possible to approach data collection and analysis from either a deductive or an inductive perspective. Where you commence your research project using a deductive approach you will seek to use existing theory to shape the approach that you adopt to the qualitative research process and to aspects of data analysis. Where you commence your research project using an inductive approach you will seek to build up a theory that is adequately grounded in your data.

1) **Using a deductive approach**

Yin (2003) suggests that where you made use of existing theory to formulate your research question and objectives, you may also use the theoretical propositions that helped you to do this as a means to devise a framework to help you to organize and direct your data analysis. There is a debate about this approach as applied to qualitative analysis. Bryman (1988:81) sums up the argument against it as follows:

'***The prior specification of a theory tends to be disfavoured because of the possibilitiy of introducing premature closure on the issues to be investigated, as well as the possibility of the theoretical constructs departing excessively from the views of participants in a social setting'***.

If this occurs when you use a theoretical framework to design and analyse your research, you will clearly need to adapt your approach (see the example of Phil who commenced his deductive approach in the commencement and has been obliged to adapt because he was not getting sufficient data to answer his research question and objective Box 13.4 p 489). Even though you may incorporate an inductive approach in your research, commencing your work from a theoretical perspective may have certain advantages. It will link your work into existing body of knowledge in your subject area, help you to get started and provide you with an initial analytical framework. To devise a theoretical or descriptive framework you need to identify the main variables, components, themes and issues in your research project and the predicted or presumed relationships between them (Yin 2003). A descriptive framework will rely more on your prior experience and what you expect to occur, although it is of course possible to develop an explanatory framework based on a mixture of theory and your own expectations. You will use this framework as a means to start and direct the analysis of your data.

2) Using an inductive approach

The alternative to the deductive approach is to start to collect data and then explore them to see which themes or issues to follow up and concentrate on (e.g. Glaser and Strauss 1967; Schatzman and Strauss 1973, Strauss and Corbin 2008; Yin 2003). Yin (2003) believes that inductive approach may be a difficult strategy to follow and may not lead to success for someone who is inexperienced researcher. This is likely to be the case where you simply go ahead and collect data without examining them to assess which themes are emerging from the data as you progress. Where you commence data collection with this type of approach- related initially to an exploratory purpose- you will need to analyse the data as you collect them and develop conceptual framework to guide your subsequent work. This is also referred to as a grounded approach because of the nature of the theory or explanation that emerges as a result of the research process. In this approach:

- ✓ You do not commence such a study with a clear defined theoretical framework;
- ✓ Instead you identify relationships between your data and develop questions and hypotheses or propositions to test these;
- ✓ Theory emerges from the process of data collection and analysis.

You will, however, still need to commence this type of approach with a clear research purpose. To use an inductive approach successively may involve a lengthy period of time and prove to resource intensive. It is also likely that this approach will combine some elements of a deductive approach as you seek to develop a theoretical position and then test its applicability through subsequent data collection and analysis. Consequently, while you may commence with either an inductive or a deductive approach, in practice your research is likely to combine elements of both.

12.3 Types of qualitative analysis processes

The features of qualitative data outlined in table 13.1 indicate its diverse nature. To add to this, or because of it, there is no standardized procedure for analysing such data. Despite this, it is still possible to group data into three main processes:

- ✓ Summarizing (condensing) data of meaning
- ✓ Categorizing (grouping) of meaning
- ✓ Structuring (ordering) of meaning using narrative.

All these can be used on their own, or in combination, to support interpretation of your data.

Some procedures can be used deductively, the data categories and codes to analyse data being derived from theory and following a predetermined analytical framework. Other procedures can commence inductively, without predetermined, or a priori, categories and codes to direct analysis. These means of differentiating qualitative analysis procedures, while not comprehensive, are shown as three dimensions in figure 13.1.

These means to differentiate qualitative analysis may themselves be problematic when used to map some analytic strategies or procedures. For example, grounded theory analysis procedures (discussed in section 13.7) may be more or less structured and proceduralised dependent upon the precise grounded theory strategy adopted. However, in general terms the use of these three dimensions will allow you to compare different qualitative analysis procedures more easily. Care also needs to be taken in relation to any action that results from a consideration of these dimensions. For example, the use of a procedure that relies on your interpretation should not be seen as implying less analytical rigour (Coffey And Atkinson 1996, Tesch 1990). These three dimensions should not therefore be used to indicate higher quality at one end of a continuum. Before outlining a number of reasonably distinct ways of analyzing qualitative data using inductive or deductive approaches, we discuss the three types of process listed earlier- summarizing, categorizing and structuring using narrative. We also consider the use of analytic aids such summaries, self memos and researcher's diary. Together these processes and aids allow you to interact with your qualitative data in order to:

1. Comprehend them
2. Integrate related data drawn from different transcripts and notes
3. Identify key themes or patterns from them for further exploration
4. Develop/ or test theories based on these apparent patterns or relationships
5. Draw and verify conclusions (Kvale 1996, Miles and Huberman 1994).

Summarising data

After you have written up your notes, or produced a transcript, of an interview or observation session, you can also produce a summary of the key points that emerge from undertaking this activity. This summary **will compress long statements into briefer statements into which the main sense of what has been said or observed is rephrased in few words** (Kvale 1996). Through summarizing you will become conversant with the principal themes that have emerged from the interview or observation and how you would like to explore these further in forthcoming data collection sessions. You may be able to identify apparent relationships between themes that you wish to note down so that you can return to these to seek to establish their validity. *It will also be useful to make some comments about the person(s) you interviewed or observed, the setting in which this occurred and whether anything occurred during the interview or observation that might have affected the nature of the data that you collected (Box 13.5).*

Once you have produced a summary of key points that emerge from the interview or observation and its context, you should attach a copy of the set of your written-up notes or transcripts for further reference (Robson 2002).

Qualitative data such as organizational documentation may also be summarized. These data may be an important source in their own right(e.g. using minutes of meetings, internal reports, briefings, planning documents and schedules), or you may use such documentation as a means of triangulation other data that you collect. ***Where you use any sort of documentation it is helpful to produce a summary that, in***

addition to providing a list of the key points it contains, also describes the purpose of the document, how it relates to your work and why it is significant. This type of summary may be useful when you undertake further analysis if you want to refer to source of data (that is, the document) as well as the way in which your categorical data have been categorized into their component parts.

Categorizing data

It involves two activities: developing categories and, subsequently, attaching these categories to meaningful chunks of data. Through doing this you will begin to recognize relationships and further develop the categories you are using to facilitate this. You will also develop and test propositions, thereby enabling you to draw conclusions as well as analyse quantitatively.

Deriving categories

Categories may be derived from your data or your theoretical framework (sections 13.4, 13.6 and 13.8) and are, in effect, codes or labels that you will use to group your data. They provide you with emergent structure that is relevant to your research project to organize and analyse further. ***Your identification of categories will be guided by the purpose of your research question and objectives.*** Another, for example, may derive different categories from the same data (Dey 1993). It is not that one researcher is right and the other wrong; rather they are interpreting the data differently. Strauss and Corbin (2008) suggest that there are three main sources to derive names for these categories:

- ✓ You derive terms that emerge from your data;
- ✓ They are based on the actual terms used by your participants ('in vivo codes'); or
- ✓ They are derived from terms used in existing theory and literature.

The categories that you devise need to be part of a coherent set so that they provide you with a well structured, analytical framework to pursue your analysis. Dey (1993:96-7) states that 'categories must have two aspects – **they must be meaningful**- full in relation to the data – and an external aspect- they must be meaningful in relation to other categories. *Categories you develop initially, especially where you use an inductive, grounded approach, are likely to be essentially descriptive. As your analysis develops you will develop a more hierarchical approach to the categorization of your data, whereby some category codes or labels will be developed and used to indicate emerging analytical linkages between, and interpretation of, the data* (King 2004, Strauss and Corbin 2008).

'Unitising' data

Unitising data will be to attach relevant **'bits'** or **'chunks'** of your data, which we will refer to as 'units' of data, to the appropriate category or categories that you have devised. *A unit of data may be a number of words, a line of a transcript, a sentence, a number of sentences, a complete paragraph, or some other chunk of textual data that fits the category* (box 13.6). You may use CAQDAS to help you to process data or you may use a manual approach. *When you use the manual approach, you can label a unit of data with the appropriate category (ies) of your transcript or set of notes (Box 13.6). This may be then copied, cut and stuck onto a data card, or otherwise transferred, and filed so that you end up with piles of*

related units of data. When doing this, it is essential to label each unit of data carefully so that you know its precise source (section 13.3). An alternative is to index categories by recording precisely where they occur in your transcripts or notes (e.g interview 7, page 2, line 16) on cards headed with particular category labels (Easteby-smith et al.2008). Undertaking this stage of the analytic process means that you are engaging in a *selective process guided by the purpose of your research*, which has the effect of *reducing and rearranging your data into a more manageable and comprehensive form*. One way of achieving this reduction and rearrangement of your data, depending on the suitability of the data, is to use one or more of the analytical techniques described by Miles and Huberman (1994). These include a range of different matrices, charts, graphs, and networks to use as a means to arrange and display your data. Use of these may allow you to recognize emergent patterns in your data that will provide you with an indication about how to further your data collection. ***This approach is considered in more detail in section 13.8.***

Recognising relationships and develop categories

Generating categories and reorganizing your data according to them, or designing a suitable matrix and placing the data gathered within its cells, means that you are engaging in the process of analyzing your data (Dey 1993; Miles and Huberman 1994; Yin 2003). This analysis will continue as you search for key themes and patterns or relationships in your rearranged data. This may lead you to revise your categories and continue to rearrange your data as you search for meaning in your data set. *You may decide to 'subdivide or integrate categories as ways of refining or focusing {your} analysis'* (Dey 1993:95). There may be practical reasons for seeking to divide or join your initial categories. Some categories, for example, may attract large numbers of units of data and prove to be too broard for further analysis without being subdivided. You may also gain new insights within existing categories that suggest new ones. *Because of this, we would strongly recommend you to keep an up-to-date definition of each of the categories you are using, so that you can maintain consistency when assigning these units of data as you continue to undertake interviews or observations (Miles and Huberman 1994)*. Subsequently you will continue to generate a more hierarchical approach to the categorization and coding of your data as you move towards the generation of an explanation for the research questions and objectives that form the focus of your research.

Developing testable propositions

*As you seek to reveal patterns within your data and to recognize relationships between categories, you will be able to develop testable propositions (box 13.8). The appearance of an apparent relationship or connection between categories will need to be tested if you are to be able to conclude that there is an actual relationship. However, while this is sometimes referred to as 'testing a hypothesis'**, it is not the same as the statistical hypothesis or significance testing (Section 12.5). It is important to test the propositions that emerge inductively from the data by seeking alternative explanations and negative examples that do not confirm the pattern or relationship being tested. Alternative explanations frequently exist, and only by testing the propositions that you identify will be able to move towards formulating valid conclusions and explanatory theory, even a simple one (Miles and Huberman 1994),*** *Dey (1993:48) points out that 'the association of one variable with another is not sufficient ground for*

inferring a causal or any other connection between them'. The existence of an intervening variable may offer a more valid explanation of an association that is apparent in your data (box 13.9).

By rigorously testing your propositions against your data, looking for alternative explanations and seeking to explain why negative cases occur, you will be able to move towards the development of valid and well-grounded conclusions. The validity of your conclusions will be verified by their ability to withstand alternative explanations and the nature of negative cases. This important aspect of analysis is considered in sections 13.7 and 13.8.

Quantifying your qualitative data

There may be occasions when you decide to quantify some of your qualitative data. This is likely to be the case when you wish to count the frequency of certain events, or of particular reasons that have been given, or in relation to specific references to a phenomenon. These frequencies can be displayed using a table or diagram (section 12.3) and can usually be produced using CAQDAS program and exported directly to your processor.

This approach to describing and presenting your data will provide you with a very useful supplement to the principle means of analyzing your qualitative discussed above. It may also enable you to undertake other quantitative analyses such as those in sections 12.4 and 12.6. however, it is indeed a supplementary means of achieving this, and there is clearly only limited purpose in collecting qualitative data if you intend to ignore the nature and value of these data by reducing most of them to a simplified form.

Structuring data using narrative

While categorizing involves the fragmentation of qualitative data to further the process of analysis, some researchers consider the fragmentation of data to be inappropriate. They advocate that researchers should retain the integrity of the data they collect and commence analysis using verbatim transcripts or complete sets of notes that are produced. Examples of this include phenomenological research (Moustakas 1994) and the life history approach (Musson 2004). Such research is based on individual's accounts of their experiences and the ways in which they explain these through their subjective interpretations and relates them to constructions of of the social world in which they live. This type of analysis commences inductively, and needs to remain sensitive to the social constructions and meanings of those who participate in the research.

The primary method to collect data used in narrative approaches is through in-depth interviews. As a part of the interview process, it is likely that participants will provide accounts that, at least in part, take the form of narratives, or stories. You may also deliberately seek to encourage this by asking participants to provide responses in this form. A narrative is broadly defined as an account of an **experience** that is told in a sequenced way , indicating a flow of related events that, taken together, are significant to the narrator and which convey meaning to the researcher (Coffey and Atkinson 1996). It follows that understanding and meaning are likely to be promoted through analysing data in their originally told form rather by seeking to fragment them through a process of developing categories and

coding. This is not to say that such accounts cannot be subjected to this type of analysis (categorisation). Rather, narrative structuring ensures that the data are organized both temporally and with regard to the social or organizational contexts of the research participant (Kvale 1996). **This form of analysis focuses upon the stories told during interviews**, working on their structures and plots.

Alternatively, narrative analysis can be used to create a coherent story from data collected during an interview. Narrative analysis therefore allows the nature of the participants'engagement, the actions that they took, the consequences of these and the relationship events that followed to be retained within the narrative flow of account without losing the significance of the social or organizational context within which these events occurred.

Narrative structuring, as a story with a beginning, middle and end, usually follows a perceptible structure. Coffey and Atkinson (1996) draw on previous research to outline the structural elements that are often present in narratives. These broadly take the following form:

- What the story is about
- What happened, to whom, whereabouts and why?
- The consequences that arose from this
- The significance of these events
- The final outcome.

Coffey and Atkinson (1996) point out that these elements may not occur in the order listed and may also recur in a given narrative. Whilst structuring using narrative may reduce the amount of interview text, it may also expand it as the narrative of what happened is developed (Kvale 1996).

12.4 Analytical aids

In addition to transcribing your audio-recording or notes, and assigning units of data to appropriate categories, it will also help your analysis if you make record of additional contextual

- Interim summaries

As your analysis progresses you may wish to write an interim summary of your progress to date. This outlines:

- ✓ What you have found so far
- ✓ What level of confidence you have in your findings and conclusions to date
- ✓ What you need to do in order to improve the quality of your data and / or to seek to substantiate your apparent conclusions, or to seek alternative explanations
- ✓ How you will seek to achieve the needs identified by the above interim analysis.

This can become a working document to which you make continued reference as your research project continues to make progress (Robson 2002)

- Self memos

Self-memos allow you to record ideas that occur to you about any aspect of your research, as you think of them. Where you omit to record any idea, as it occurs to you it may well be forgotten. The occasions when you are likely to want to write a memo include:

- ✓ When you are writing up interview or observation notes, or producing a transcript of this event
- ✓ When you are constructing a narrative
- ✓ When you are categorizing these data
- ✓ As you continue to categorise and analyse these data
- ✓ When you engage in writing your research project

Self-memos vary in length from a few words to one or more pages. They can be written as simple notes – they don't need to be set formally.

- ➢ Researcher's diary

  An alternative approach to recording your ideas about you research is to keep a researcher's diary. You may of course keep such a diary alongside the creation of self-memos. Its purpose will be similar to the creation of self-memos: to record your reflection on these and to act as an aide-memoire to your intentions about the direction of your research. However, its chronological format may help you to identify the development of certain ideas (such as data categories, propositions or hypotheses) and the way in which your research ideas developed, as well as providing an approach that suits the way in which you like to think (Riley 1996).

12.5 Deductively based analytical procedures

Yin's (2003) preference for devising theoretical propositions prior to data collection as a means to analyse data emphasizes a number of specific analytical procedures.

1. Pattern matching

Pattern matching involves predicting a pattern of outcomes based on theoretical propositions to explain what you expect to find. Using this approach, you will need to develop a conceptual or analytical framework, utilizing existing theory, and subsequently test the adequacy of the framework as a means to explain your findings. ***If the pattern of your data matches that which has been predicted through the conceptual framework you will have found an explanation, where possible threats to validity of your conclusions can be discounted***. There are two variations to this procedure dependent upon the nature of the variables being considered.

The first variation is associated with a set of ***dependent variables*** where you suggest the likely outcomes arising from another, **independent variable**. For example, *based on theoretical propositions drawn from appropriate literature* you specify a number of related outcomes (dependant variables) that you expect to find as a result of the implementation of a particular change management programme (independent variable) in an organization where you intend to

undertake research. *Having specified these expected outcomes, you then engage in the process of data collection and analysis*. Where your predicted outcomes are found, it is likely that your theoretically based explanation is appropriate to explain your findings. If, however, you reveal one or more outcomes that have not been predicted by your explanation, you will need to seek an alternative one (Yin 2003).

The second variation is associated with variables that are independent of each other. In this case you would identify a number of alternative explanations to explain the pattern of outcomes that you expect to find (box 13.11, opposite). As a consequence, only one of these predicted outcomes may be valid. In other words, if one explanation is found to explain your findings then the others may be discarded. Where you find a match of between one of these predicted explanations and the pattern of your outcomes you will have evidence to suggest that this is indeed an explanation for your findings. Further evidence that this is a correct explanation will flow from finding the same pattern of outcomes in other similar cases (Yin 2003).

2. Explanation building

Another pattern matching procedure, which Yin (2003) refers to as a special type, involves an attempt to build an explanation while collecting data and analyzing them, rather than testing a predicted explanation as set out above. Yin (2003) recognizes that this procedure, which he labels explanation building, appears similar to grounded theory (and analytic induction) (section 13.8). However, unlike these, **explanation building is designed to test a theoretical proposition, albeit in iterative manner, rather than to generate theory inductively (section 13.8)**. Yin states that his **hypothesis-testing approach *is related to explanatory case studies***, while the **hypothesis-generating approach** developed by Glaser and Strauss (1967) *is relevant for exploratory studies*. The explanation-building procedure uses the following stages (Yin 2003):

1) Devise a **theoretically based proposition**, which you will then seek to test
2) Undertake data collection through an initial case study in order to be able to compare the findings from this in relation to this theoretically based proposition
3) Where necessary, amend the theoretically based proposition in the light of the findings from the initial case study
4) Undertake a further round of data collection in order to compare the findings from this in relation to the revised proposition
5) Where necessary, further amend the revised proposition in the light of the findings from the second case study
6) Undertake further iterations of this process until a satisfactory explanation is derived.

12.6 Impact of deductive approach on the analysis process

In relation to pattern matching and explanation building, you will still be able to follow the general processes outlined earlier for analyzing qualitative data (Section 13.5) with some modification. First, you will be in position to commence your data collection with a well-defined research question and objectives, and clear framework and propositions, derived from the theory that you have used. Second, with regard to sampling (section 7.3), you will be in a position to identify the number and type of organizations which you want to gain access in order to undertake data collection. However, non-probability sampling should not be used as an excuse for adopting a less than rigorous approach to selecting sufficient cases to test the propositions that have been advanced and to answer your research questions and meet your objectives. Third, the literature that you used and the theory within it will shape the data collection questions that you wish to ask those who participate in your research project (section 3.2). It is also to be expected that the categories for analysis will emerge from the nature of your interview questions.

Therefore, you will be able to commence data collection with an initial set of categories derived from your theoretical propositions / hypotheses and conceptual framework, linked to your research questions and objectives (Miles and Huberman 1994).

Of course, these categories may be subject to change, depending on their appropriateness for the data that your participants provide (Dey 1993). However, where your predicted theoretical explanations appear to fit the data being revealed, your predetermined categories may prove to be useful, subject to some revision and development (Miles and Huberman 1994).

Your use of this deductive approach will also provide you with key themes and patterns to search for in your data. For example, as you carry out your research and conduct analysis through attaching units of data to categories, and examine these for emergent patterns, your analysis will be guided by the theoretical propositions and explanations with which you commenced. Your propositions will still need to be tested with rigour – associated with the thoroughness with which you carry out this analytical process and by seeking negative examples and alternative explanations that do not conform the pattern or association being tested for.

The use of predicted explanations should mean that the pathway to an answer to your research question and objectives is reasonably defined. The extent to which this is the case will depend on two factors:

- *Your level of thoroughness in using existing theory to define clearly the theoretical propositions and conceptual framework that will guide your research project;*
- *The appropriateness of these theoretical propositions and the conceptual framework for the data that you reveal.*

The use of deductive approach is underpinned by the need to specify theoretical propositions before the commencement of data collection and its analysis. Even in explanation building a theoretically based proposition is suggested initially, although this may be revised through the iterative stages of the process involved. The general processes types outlined earlier for analyzing qualitative data will be useful to you

in carrying out these deductive analytical procedures. In particular, the stages of the process related to summarizing and categorizing are likely to be more useful where the focus of the summary or of the categories is, at least initially, derived from existing theory.

12.7 Inductively based analytical procedures

This section outlines and briefly discusses a number of inductively based analytical procedures to analyse qualitative data. These are:

- Data display
- Template analysis
- Analytic induction
- Grounded theory
- Discourse analysis
- Narrative analysis

In practice, however, a number of these analytical procedures combine inductive and deductive approaches to analyse qualitative data, as we discussed.

There may be good reasons for adopting an inductive approach to your research project and the analysis of the data that are revealed.

First, as we discussed in section 13.4, you may commence an exploratory project seekingto generate the direction for future work

Second, *the scope of your research may be constrained by adopting restrictive theoretical propositions that do not reflect your participants' point of views and experience (Bryman 1988).* In this case the use of theoretically based approach to qualitative analysis would prove to be inadequate. The use of an inductive approach in such a case should *allow a good 'fit'to develop between the social reality of the research participants and the theory that emerge – it will be 'grounded' in that reality*. *This relationship should also mean that those who participated in the research process would understand any theory that emerges*.

Third, the theory may be used *to suggest the subsequent, appropriate action to be taken because it is specifically derived from the events and circumstances of the setting in which the research was conducted.*

Finally, the theory's generalisability may also be tested in other contexts (e.g. Glaser and Strauss 1967; Strauss and Corbin 2008).

You should not, however, use an inductive approach as a means of avoiding a proper level of preparation before commencing your research project. Researchers who use such an approach do not start to research a subject area without a competent level of knowledge about that area. Their research commences with a clear defined research question and objectives, even though this may be altered by the nature that they collect. For example, Hodson (1991, cited in Erlandson *et al.* 1993) reported that his

initial purpose was focused on organizational sabotage, although the research process led him to develop and to seek to verify the hyopothesis related to more subtle forms of non-cooperation with an employer. *The avoidance of predetermined theoretical basis in this type of approach is related to the desire to search for and recognize meanings in the data and to understand the social context and perceptions of your research participants.* It is not to avoid the burden of producing these before the process of data collection! You will need to compare your explanations with existing theory once these emerged. The use of an inductive approach may also involve you in a lengthy period of data collection and concurrent analysis in order to analyse a theme adequately or to derive a well-grounded theory. Strauss and Corbin (2008) suggest that this type of approach may take months to complete. *This an important consideration if, like many of our students, your research project is time constrained by submission date*.

- Data display and analysis

The data display and analysis approach is based on the work of Miles and Huberman (1994), whose book focuses on the process of 'doing analysis'. For them, the process of analysis consists of the three concurrent sub-processes:

- ✓ Data reduction
- ✓ Data display
- ✓ Drawing and verifying conclusions

As part of the process, **data reduction** *includes summarising and simplifying the data collected and / or selectively focusing on some parts of this data*. *The aim of this process is transform the data and to condense it*. Miles and Huberman outline a number of methods for summarizing data, some of which we have already referred to in section 13.5.

These include the production of interview or observation summaries, document summaries, coding and categorizing data and perhaps constructing a narrative.

Data display involves organizing and assembling your data into summary diagrammatic or visual displays. Miles and Huberman describe a number of ways of displaying data, and refer to two main families of data display: matrices and networks. *Matrices are naturally tabular in form, with defined columns and rows, where data are entered selectively into the appropriate cell of such a matrix*. A network is a collection of nodes or boxes that are joined or linked by lines, perhaps with arrows to indicate relationships (box 13.12). The boxes or nodes contain brief descriptions or labels to indicate variables or key points from the data. Miles and Huberman (1994) believe that there are a number of advantages associated with using these forms of data display. Qualitative data collection tends to produce hours of audio-recorded interviews or extensive piles of notes (box 13.16 p 512). Once these have been transcribed or word-processed, they are generally referred to as 'extended text'. Extended text is considered an unreduced form of display that is difficult to analyse because it is both extensive and poorly ordered. Based on the logic that 'you know what you display', the analysis of data and the drawing of conclusions from these will be helped by using matrices, networks or other visual

forms to display reduced or selected data drawn from your extended text. Miles and Huberman argue that these forms of display are relatively easy to generate, can be developed to fit your data specifically, and will help you to develop your analytical thinking as you work through several iterations to develop a visual form that represents your data well.

Recognising relationships and patterns in the data, as well as drawing conclusions and verifying these, are helped by the use of data displays. A display allows you to make comparisons between the elements of the data and to identify any relationships, key themes, patterns and trends that may be evident. These will be worthy of further exploration and analysis. In this way, the use of data displays can help you to interpret your data and to draw meaning from it. As illustrated in box 13.12 some CAQDAS package including ATLAS.ti™ allow you to represent your data graphically (Lewins and Silver 2006).

Use of data display and analysis can provide you with an appropriate set of procedures to analyse your qualitative data, or alternatively one or more techniques that Miles and Huberman outline may be useful as part of your approach to analyzing this type of data. They describe the analysis of qualitative data as an interactive process, and in this sense their approach includes many aspects of analysis that complement the generic process outlined in section 13.5. Their approach is a systematic and structured one, and **they recognize that the procedures they outline are often associated with a fairly high level of formalization (box 13.13 overleaf**). However, unlike grounded theory, the exact procedures to be followed within their framework of data reduction, display and conclusion drawing and verification are not specified. Miles and Huberman refer to their work as a 'sourcebook'a and as such they offer a number of possible techniques that may be appropriate within their overall approach. If you intend to use this book we suggest you take care in identifying what is useful for you in the context of your own research question and objectives.

Data display and analysis is suited to an inductive strategy to analyse qualitative data, although it is also compatible with a more deductive strategy. Miles and Huberman's (1994) book is useful for both for its overall discussion of the analysis of qualitative data and in relation to the many suggestions relating to particular aspects of, and techniques for, the successful conduct of this process.

Template analysis

This section is based on the work of King (2004). He describes and discusses a procedure to analyse qualitative data known as template analysis. A **template** *is essentially a list of codes or categories that represent the themes revealed from the data that have been collected*. *Like the data display approach just discussed, template analysis combines a deductive approach to qualitative analysis in the sense that codes can be predetermined and the amended or added to as data are being collected and analysed*. King (2004) provides a number of ways of differentiating template analysis from procedures in a grounded strategy, which he says it resembles. ***Grounded theory, as we discuss later in this section, does not permit the prior***

specification of any codes to analyse data, holding as it does to a more purely inductive analytical approach as far as is practically possible. Grounded theory is also more structured than template analysis, specifying a set of procedures that must be used (Strauss and Corbin 2008). In this sense King (2004) comments that grounded theory is much more prescriptive whilst template analysis is similar to the data display and analysis approach in that it offers a more flexible route to analysis, which would allow you to amend its use to the needs of your own research project.

Like general approach to categorizing data outlined earlier in section 13.5, template analysis involved developing categories and attaching these to units of data. Data are coded and analysed to identify and explore themes, patterns and relationhips. The template approach allows codes and categories to be shown hierarchically to help this analytical process. In box 13.14 a hierarchical relationship is shown between the codes listed, there being (in this example) three levels of codes and greater depth of analysis being indicated by the lower-level codes shown towards the right hand side of the template, codes are also grouped together in levels 2 and 3 to show how higher order codes are constituted. As data collection proceeds, your template will be subject to revision as a part of the process of qualitative analysis. The process of analyzing interview transcripts or observation notes will lead to some of the codes being revised and even changes to their place or level in the template hierarchy. This process will also involve unitizing data according to the list of codes currently in use. Where you consider introducing a new codes or altering existing code in the template, you will need to verify this action and explore its implications in relation to your previous coding activity. This is usually more straightforward using CAQDAS (Lewins and Silver 2006). As part of this, it is helpful to use self-memos to remind you later of the reasons for these changes.

King (2004) outlines four ways in which a template may be revised:

- Insertion of a new code into the hierarchy as the result of a relevant issue being identified through data collection for which there is no existing code;
- Deletion of a code from the hierarchy if it is not needed;
- Changing the scope of a code, that is altering its level within the hierarchy;
- Reclassifying a code to different hierarchy.

The issue or theme indicated by lower-order code may assume a greater importance than expected once data collection and analysis occurs. For example, in box 13.14, the third-level code ‘featues’ may prove to be for greater importance in relation to the research project and therefore require to be reclassified as a level 1 code category.

Equally, the analytical relevance of some higher-order codes may be restricted in practice so that they are reclassified at a lower level as a subset of another higher-order code. A template may also be modified when a code originally included as a sub-category of one higher-order code is reclassified as a sub-category of another as you begin to immerse yourself in your transcript more fully.

The template may continue to be revised until all of the data collected have been coded and analysed carefully. *It will therefore serve as an analytical procedure through which to devise an initial conceptual framework that will be subsequently revised and then finalized as a means to represent and to explore key themes and relationships in your data. Using a template will also help you to select key themes to explore and to identify emergent issues that arise through the process of data collection and analysis that you may not have intended to focus on as you commenced your research project (King 2004)*.

Analytic induction

Analytic induction is an inductive version of the explanation building procedure (Yin 2003). Johnson (2004:165) defines **analytic induction** as *'the intensive examination of a strategically selected number of cases so as to empirically establish the causes of a specific phenomenon'*. As an inductively led approach to analyse qualitative data, **it therefore commences with a less defined explanation of the phenomenon to be explored, which is not derived from existing theory**. This explanation (sometimes termed a proposition***) is then tested through a case study that is selected purposively*** (section 7.3) to allow the phenomenon to be explored. Given the loosely defined nature of the explanation it is likely either that the explanation will need to be redefined or that the scope of the phenomenon to be explained will need to be narrowed. Adopting one of these courses of action leads to a redefinition (of a phenomenon or its explanation) and the need to explore a second case study that will also be selected purposively, where the explanation appears to be confirmed, you may either cease the data collection on the basis you believe that you have found a valid explanation or seek to test the explanation in other purposively selected cases to see whether it is still valid. Where the explanation is not adequate, it will again be necessary to revise it and to test this in the context of another purposively selected case. This process may continue until a refined explanation is generated that reasonably explains the phenomenon in relevant cases where you collected and analysed data.

As inductive and incremental way of collecting and analyzing data qualitatively this process has the capability of leading to the development of well-grounded explanations. In this way, analytic induction encourages the collection of data that are through and rich based on the explored actions and meanings of those who participate in this process, whether through in-depth interviews or observation, or some combination of these methods. However, it has been evaluated in different ways in relation to the nature of the explanations that are likely to be produced. On the one hand, it has been claimed that thorough and rigorous use of analytic induction may lead to unassailable explanations where all negative cases are either accounted for by the final revised explanation or excluded by redefining the phenomenon being studied (Johnson 2004; Kidder 1981). On the other hand, analytic induction has been criticized because it seeks to find an explanation for the necessary conditions that exist in cases where a phenomenon occurs, whereas there may well be other cases the same conditions exist but the phenomenon does not occur. For example, an explanation may be developed to explain the conditions that exist in cases where organizational theft occurs, whereas there are likely to be

other cases where the same conditions apply but where such theft may or may not occur. In this way, it would also be necessary to study a range of cases where such conditions apply, having identified these, to find out whether the phenomenon (theft) also exists in all or only some of these cases (Johnson 2004). Such an approach is likely to be highly time consuming and resource intensive and therefore perhaps suitable only for major research projects.

Grounded theory

Grounded theory has already been outlined briefly as a strategy in section 5.3. Within this strategy specific analysis procedures are used to build an explanation or to generate a theory around the core or central theme that emerges from your data. Some prominent advocates of grounded theory state fairly precise procedures to be followed in relation to each stages of categorizing data process that was outlined in general terms in section 13.5. in this way, the grounded theory of Strauss and Corbin (2008) is structured and systematic, with set procedures to follow each stage of analysis. Where you do not pay particular attention to the nature of the procedures outlined for grounded theory, you may not produce a research report that is sufficiently rigorous to substantiate the explanation or theory that you are seeking to advance.

In the grounded theory of Strauss and Corbin (2008) the disaggregation of data into units is called **'open coding**', the process of recognizing relationships between categories is referred to as '**axial coding'** , and the integration of categories to produce a theory is labeled **'selective coding'**. Within the grounded theory, choices of cases through which to gather data and refine concepts are termed '**theoretical sampling'** (Glaser and Strauss 1967; Strauss and Corbin 2008). ***In this way, sampling is purposive where critical cases are chosen to further the development of concepts and categories and to explore relationships between these to develop a theory. Underpinning this is the process of 'constantly comparing***' *the data being collected with the concepts and categories being used, so as to aid the process of developing an emerging theory that will be thoroughly grounded in that data. Theoretical sampling continues until 'theoretical saturation' is reached*. This occurs when data collection ceases to reveal new data that are relevant to a category, where categories have become well developed and understood and relationships between categories have been verified (Strauss and Corbin 2008).

- **Open coding**: open coding is similar to the unitization and categorization procedures. The data that they collect will be disaggregated into conceptual units and provided with a label. The same label or name will be given to similar units of data. ***However, because this research process commences without an explicit basis in existing theory, the result may be the creation of a multitude of conceptual labels related to the lower level of focus a structure with which you commence your research (box 13.15***). The emphasis in this grounded theory approach will be to derive meanings from the subjects and settings being studied. In section 13.5 we stated that a unit of data might relate to a few words, a line, a sentence or number of sentences, or a paragraph. The need to understand meanings and to generate categories encompass these in a grounded theory approach is likely to lead you to conduct your earlier analysis by looking at smaller than larger units of data. The resulting multitude of code labels will therefore need to be compared and placed into broader, related groupings or categories. This will allow you to

produce a more manageable and focused research project and to develop the analytical process. Strauss and Corbin (2008) suggest that there are three main sources to derive names for these categories: y*ou utilize terms that emerge from your data; they are based on actual terms used by your participants* (‘***in vivo’*** codes); or they come from terms used in existing theory and literature. However, Strauss and Corbin counsel against names being derived from the existing theory and literature in a grounded approach. This is because their use in the written account of your research may lead readers to interpret these to their prior understanding of such theoretical concepts rather than the particular meaning now being placed on such terms. The categorization that you derive from your data will indicate significant themes and issues and help you to consider where data collection should be focused in the future. In the conjunction with this, it will also help you to develop sharper focus in relation to your research question. The nature of this research approach will inevitably mean that your initial research question be broadly focused, although still within manageable exploratory confines. As you develop narrower focus through this process, you will be able to refine and limit the scope of your research question (Strauss and Corbin 2008).

- **Axial coding**: this stage refers to the process of looking for relationships between the categories of data that have emerged from open coding. It indicates a process of theoretical development. As relationships between categories are recognized, they are rearranged into a hierarchical from, with emergence of subcategories. The essence of this approach is to explore and explain a phenomenon (the subject of your research project, or one of them) by identifying what is happening and why, the environmental factors that affect this (such as economic, technological, political, legal, social and cultural ones), how it is being managed within the context being examined, and what the outcomes are of the action that has been taken. Clearly, there will be a relationship between these aspects, or categories, and the purpose of your analysis will be to explain this. Once these relationships have been recognized, you will then seek to verify them against actual data that you have collected. Strauss and Corbin (2008) recommend that you undertake this by formulating questions or statements, which can then be phrased as hypotheses to test these apparent relationships. *As you undertake this process you will be looking for evidence that support these ‘hypotheses’ and for negative cases that will demonstrate variations from these relationships*.

- **Selective coding:** Strauss and Corbin (2008) suggest that after a lengthy period of data collection, which may take several months, you will have developed a number of principal categories and related sub categories. The stage that follows is called ‘selective coding’. This is intended to identify one of these principal categories, which becomes known as the central or core category, in order to relate the other categories to this with the intention of integrating the research and developing a grounded theory (Strauss and Corbin 2008). In the previous stage the emphasis was placed on recognizing the relationships between categories and their subcategories. In this stage, the emphasis is placed on recognizing and developing the relationships between the principal categories that have emerged from this grounded theory.

- **Implications of using grounded theory:** a number of implications have emerged from this brief outline of the main procedures involved in the use of grounded theory. These may be summed up by saying that the use of a grounded theory strategy will involve you in processes that wiil be time consuming, intensive and reflective. Before you commit yourself to this strategy, you will need to consider the time that you have to conduct our research, the level of competence you will need, your access to data, and the logistical implication of immersing yourself in such an intensive approach to research (box 13.16, overleaf). There may be a concern that little significance will emerge at the end of the research process, and this will be an important aspect for you to consider when determining the focus of your research if you use a grounded theory and the prescribed analysis procedures.

Discourse analysis

- ✓ Discourse analysis is a general term that covers an extremely wide variety of approaches to the analysis of language in its own right and is concerned **with how and why** individual's language is used by individuals in specific social contexts. In particular, it explores how language (discourse) in the form of talk and text both constructs and simultaneously reproduces and / or changes the social world rather than using it as a means to reveal the social world as a phenomenon (Philips and Hardy 2002). The focus is therefore on identifying how this reproduction or change occurs. Given these concerns, you will not be surprised that researchers using discourse analysis usually adopts **subjectivist ontology** (section 4.2). In choosing discourse analysis approach, you would explore the use of language in specific contexts such as holiday brochures to construct a **social reality** of package holiday or the minutes of meetings to reflect the meaning of the meeting from the perspective of the chairperson. Although there are many forms of discourse analysis (Dick, 2004), within this subsection we concern ourselves with one, **critical discourse analysis**. The data that are analysed in critical discourse analysis are texts but can be, as discussed in section13.3, collected from a wide variety of sources. Within this, Dick (2004) argues that for some research it is useful to identify specific contexts such as the career identities of graduates or the resistance to diversity initiatives in a particular type of organization. Interview data are transcribed in full prior to analysis and, as the focus is content, Dick (2004) advises that there is no need to indicate pause or overlaps between speakers (box 13.2 earlier). She also suggests that it may be possible to use data sampling rather than transcribe and analyse entire interviews (Table 13.2). Once data have been collected, **they can be analysed qualitatively, using the procedures outlined in section 13.5, through a three-dimensional analytical frame work {**Summarizing (condensing) data of meaning, Categorizing (grouping) of meaning, Structuring (ordering) of meaning using narrative**}**. This analyses each discourse from the perspective of its being (Figure 13.2):
    - **Text**: concern with how text is constructed, what is trying to achieve (assert, persuade, justify, etc), and how it achieves its aims.

- Discursive practice: examines the context of text production, enables the types of interpretation that might be made of the text or parts of the text to be inferred.
- Social practice: examines propositions in text and the extent these are challenged or likely to be challenged, where propositions are unlikely to be challenged these are the dominant discourse

In its final dimension, social practice, that is likely to reveal where discourses are multiple and contradictory. The extent to which the text defends a particular position provides a clear indication as the degree to which that position is contested. Where positions are challenged or defended vigorously with the text, these are examples of hegemonic struggle where two or more ideologies compete for dominance. Discourse analysis, therefore, focuses on understanding how language is used to construct and change aspects of the world. **This means it encourages you not to accept your research data at face value**. Its main disadvantages are that it is time consuming and requires considerable experience before you feel comfortable with the process. In addition, it is a contentious method which is subject to much debate (Dick 2004).

Narrative analysis.

Depending on the nature of your research question and objectives, the data collection methods used and the data that are reproduced, narrative may be suitable for you to use. It may be used either as the principal means to analyse your qualitative data, or as complementary means. In this way, narrative analysis may be used as a means to explore linkages, relationships and socially constructed explanations that naturally occur within narrative accounts, where fragmentation of these into categories and themes would therefore be rendered necessary. The structural elements that are present in narratives may also help you to analyse each narrative account and perhaps to compare the course of events in different narratives where there is likely to be some analytical benefit in comparing these.

Stories and story telling have become more frequently used in recent years in organizational research although they are still in their infancy (Gabriel and Griffiths 2004). Stories have been defined as narratives which have both plots and characters and generate emotion in the story teller and their audience using elaboration and poetic licence (Gabriel 2000). For data collected as stories through, for example, semi or unstructured interviews, requirements for accuracy are often less important than the points that are made and what these points symbolize, and how they illuminate particular issues such as organizational politics, culture and change (Gabriel and Griffiths 2004). Consequently, whilst such narratives may not always present facts, they provide meaning to the facts.

Chapter 13. Data preparation and description

A. Data preparation (editing, coding, and data entry)

13.1 Editing (*making a book or a document ready to be published by correcting the mistakes and making other changes*)

Editing detects errors and omissions, corrects then when possible, and certifies that minimum data quality standards have been achieved. The editor's purpose is to guarantee that data are:

- Accurate
- Consistent with intent of the question and other information in the survey
- Uniformly entered
- Arranged to simplify coding and tabulation

The editor's responsibility is to decide which of the responses is both consistent with the intent of the question or other information in the survey and most accurate for this individual respondent.

13.2 Coding (P 456)

Coding involves assigning numbers or other symbols to answers so the responses can be grouped into a limited number of classes or categories. The classifying of data into limited categories sacrifices some data detail but is necessary for efficient analysis.

Coding helps the researcher to reduce several thousand replies to a few categories containing the critical information needed for analysis. In coding, categories are the partitioning of a set ; and categorization is the process of using rules to partition a body of data.

- **Coding rules**: four rules guide the establishment of category sets. The categories should be:
  - *Appropriate to the research problem and purpose*: categories must provide the best partitioning of data for testing hypotheses and showing relationships.
  - Exhaustive: to specified responses, add "other" to be more exhaustive. The set of categories may fully capture all the information in the data.
  - Mutual exclusive: this standard is met when a specific answer can be placed in one and only one cell in a category set.
  - Derived from one classification principle (single dimension): every class in the category set is defined in terms of **one** concept.
- **Codebook construction**. A codebook, or coding scheme, contains each variable in the study and specifies the application of coding rules to the variable. It is used by researcher or research staff as a guide to make data entry less prone to error and more efficient. It is also the definitive source for locating the position of variables in the data file during analysis. In many statistical programs, the coding scheme is integral to the data file. Most codebooks – computerized or not – contain the question number, variable name, location of the variable's code on the input medium, descriptors for the response options, and whether the variable is alpha or numeric.

Example of a sample codebook of questionnaire items.

Question	Variable number	Code description	Variable name
----- -----	1 2	Record number Respondent number	RECNUM RESID
2	3	Gender 1= Male 2= Female 9= Missing	GENDER
3	4	Own-rent 1= own 2= rent 3= provided 9= missing	HOUSING
4	5	2 digit birth year 99 = missing	BIRTH

- **Coding closed questions**

The responses to closed questions include scaled items and others for which answers can be anticipated. When codes are established early in the research process, it is possible to pre-code the questionnaire. **Pre-coding** is particularly helpful for data entry because it makes the intermediate step of completing a coding sheet unnecessary. The data are accessible directly from the questionnaire. A respondent, interviewer, field supervisor, or researcher (depending on the data collection method) is able to assign an appropriate numerical response on the instrument by checking, circling, or printing it in the proper coding location.

Exhibit 15-2 sample questionnaire items.

1. What is the zip code of your residence? ---------- 2. What is the year of your birth? 19 _____
3. Gender (1) Male indicate your choice by number ⟶ --- (2) Female
4. What is your marital status (1) Married (2) widow (er) indicate your choice by number ⟶ --- (3) divorced (4) separated (5) never married
6. What prompted you to purchase your most life license insurance policy? ---------- ---------- ---------- ----------

- **Coding open-ended questions**: using open-ended responses include the need to measure sensitive or disapproved behavior, discover salience, or encourage natural modes of expression. …. After preliminary evaluation, response categories were created for that item. Although most responses could be accounted for by the derived categories, an "other" category was established to meet the coding rule of exhaustiveness.
- Exhibit 15-1 sample codebook of questionnaire items.

Question	Variable number	Code description	Variable name
----- -----	1 2	Record number Respondent number	RECNUM RESID
2	3	Gender 1= Male 2= Female 9= Missing	GENDER
3	4	Own-rent 1= own 2= rent 3= provided 9= missing	HOUSING
4	5	2 digit birth year 99 = missing	BIRTH
6	Reason for purchase 1= mentioned 2= not mentioned		
	8 bought home 9 Birth of child 10. Death of relatives or friend …… 21. Other		HOME BIRTHCHD DEATH OTHER

- **Using content analysis for open questions**.

  Content analysis uses the semantic content or the what aspect of a message. Its breadth makes it flexible and wide-ranging tool that may be used as a methodology or as a problem-specific technique.

  Content analysis has been described as research technique for the objectives, systematic, and quantitative description of the manifest content of a communication." Because this definition is sometimes confused with simply counting obvious messages aspects such as words or attributes, more recent interpretations have broadened the definition to include latent as well as manifest content, symbolic meaning of messages, and qualitative analysis.

  Content analysis follows a systematic process, starting with the selection of a unitization scheme. The unit may be syntactical, referential, propositional, or thematic

- ✓ **Syntactical: units** are illustrated by words, which are the smallest and most reliable units
- ✓ **Referential units** may be objects, events, persons, and so forth to which an expression refers. An advertiser may refer to a product as a "classic", a "power performer", or "ranked first in safety" – each denoting the same object.
- ✓ **Propositional units** use several frameworks. One might show the relationships among the actor, the mode of acting, and the object – for example, "subscribers (actors) to this periodical save {mode of acting} $15 {object of the action} over the single issue rate."
- ✓ **Thematic units are** higher-level abstractions inferred from their connection to a unique structure or pattern in the content. A response to a question about working conditions may reflect a temporal theme: the past ("how good thinks used to be here") the present ("the need to talk with management now before production gets worse") or the future (" employee expectations to be involved in planning and goal setting").
- ✓ Other aspects of the content analysis methodology include:
  - ❖ Selection of recording and coding instruction
  - ❖ Development of recording and coding instructions
  - ❖ Data reduction
  - ❖ Inference about the context
  - ❖ Statistical analysis

Content analysis **guards against selective perception of the content**, provides for the rigorous application of reliability and validity criteria, and is amenable to computerization.

The data to be content-analyzed include materials of interest to management researchers: books, chapters, historical documents, speeches, interviews, advertisements, promotional brochures, group interactions, paragraphs, and words. Any recorded activity with its own syntax and semantic is subject to measurement and analysis. Thus, content analysis may be used to analyse written, audio, or video data from experiments, observations, and secondary data studies.

Let's look at an informal application of content analysis to a problematic open question. In this example, which we are processing without linguistics software technology, suppose employees in the assembly operation of a unionized manufacturing firm are asked, "How can management – employee relationships be improved?" a sample of the responses yield the following:

- o Management should treat the worker with more respect
- o Managers should stop trying to speed up the assembly line
- o Working conditions in the shop are terrible. Managers should correct them
- o The foreman should be fired. He is unfair in his treatment of workers
- o Managers should form management-worker councils in the departments to iron out problems and improve relations
- o Management should stop trying to undermine union leadership
- o Management should accept the union's latest proposals on new work rules.

The first step in analysis requires that the units developed reflect the objectives for which the data were collected. The research question is concerned with ***learning what the assemblers think is the locus of responsibility for improving company-employee relations***. The categories selected are key words and **referential** units. The first pass through the data produces a few general categories (exhibit 15-3). These categories are **mutually exclusive** and **contain only one concept dimension**. The use of **"other"** makes the category set **exhaustive**. If the sample suggested that many respondents identified the need for action by the public, government, or regulatory bodies, then including all of them in "other" would ignore much of the richness of the data. Since responses to this type of question often suggest specific actions, the second evaluation of the data uses **propositional** units. This identifies action objects and the actors previously discovered. If we used only the set of categories in exhibit 15-3, the analysis would omit a considerable amount of information. The second analysis produces ***categories for action planning***:

- Human relations
- Production processes
- Working conditions
- Other action areas
- No action area identified.

How can we categorise a response suggesting a combined management-production process? Exhibit 15-4 illustrates a combination of alternatives. By taking the categories of the first list with the areas, it is possible to get an accurate frequency count of the joint classification possibilities for this question. Using available software, the researcher can spend much less time coding open ended responses and capturing categories. Software also eliminates high cost of sending responses to outside coding firms. What would take a coding staff several days may now be done in a few hours.

"Don't Know" Responses (DK)

The don't know responses (DK) responses presents special problems for data preparation. When DK responses group is small, it is not troublesome. But there are times when it is of major concern, and it may even be the most frequent response received. Does this mean the question that elicited this response is useless? The answer is, "it all depends." Most DK fall into two categories. First, there is the legitimate DK response when the respondent doesn't know the answer. This response meets our research objectives, we expect DK responses and consider them useful.

In second situation, a DK reply illustrates the researcher's failure to get the appropriate information. Consider the illustrative questions:

1. Who developed the Managerial Grid concept? (level of information often not had)
2. Do you believe the new president's fiscal policy is sound? (Has the respondent made a judgment about it?) two questions were legitimate : first, awareness test, then securing the judgement on fiscal policy.
3. Do you like your present job? ()

4. Which of the various brand of chewing gum do you believe has the best quality?
5. How often each year do you go to the movie?

In these 3 last questions, it is the failure of the questioning process. E.g., question 4, it would have been asked “this is too important to talk about.” Question 5 refers to calculations about a topic to which they may attach little importance.

Dealing with undesired DK responses.

The best way of dealing with undesired DK answers is to design better questions at the beginning. Researchers should identify the questions for which a DK response is unsatisfactory and design around it. Good interviewer-respondent rapport; recognize quickly evasive DK response and repeat the question otherwise or probe for a more definite answer.

If the editor finds many DK answers, he has to estimate the allocation of DK answers from other data in the questionnaire.

There several ways to handle DK responses in the tabulation. If there only a few, it doesn’t make much difference how they are handled, but they will be probably kept as a separate category

Another way to treat DK responses is to assume they occur almost randomly. Using this approach, we distribute them among the other answers in the same ratio that the other answers occur. This assumes that those who reply DK are proportionally distributed among all of the the group studied. This can be achieved either by prorating the DK responses or excluding or DK replies from the tabulation.

Chapter 14. Exploring, Displaying, and Examining Data

14.1 Exploratory Data Analysis (EDA)

Exploratory Data Analysis (EDA) is a data analysis perspective (= a way of thinking about sth; a way of judging how good, bad, important etc; view of a large area; a method of showing distance in a picture by making far away objects smaller) an a set of techniques. In exploratory data analysis, the data guide the choice of analysis – or a revision of the planned analysis – rather than the analysis presuming to overlay (= to cover the surface of sth with an thin layer of substance, especially for decoration) its structure on the data without the benefit of the analyst's scrutiny. The flexibility to respond to the patterns revealed by successive iterations in the discovery process is an important attribute of this approach. By comparison, **confirmatory data analysis** (CDA) occupies a position closer to classical inference (= an opinion you form about something that is based on information you already have) in its use of significance and confidence. But confirmatory analysis may also differ from traditional practices by using information from a closely related data set or by validating findings through the gathering and analyzing of new data.

One authority has compared exploratory data analysis to the role of police detectives and other investigators and confirmatory analysis to that of judges and the judicial system. The former are involved in search for clues (= object or fact that someone discovers that helps them solve a crime or mystery) and evidence; the latter are pre-occupied by with evaluating the strength of what is found. Exploratory data analysis is the first step in the search of evidence, without which confirmatory analysis has nothing to evaluate. Consistent with this analogy, EDA shares commonality with exploratory designs, not formalized ones. Because it doesn't follow a rigid structure, it is free to take many paths in unraveling (= understanding sth complicated by thinking about it for a long time) the mysteries in the data – to sift the unpredictable from the predictable.

A major contribution of exploratory approach lies in the emphasis on visual representations and graphical techniques over summary statistics. Summary statistics, as you will see momentarily, may obscure, conceal (=prevent so from seeing or knowing your feeling), or even misrepresent the underlying structure of the data. When numerical data are used exclusively and accepted without inspection, the selection of confirmatory models may be precipitous, and based on flawed (=with mistake)assumptions. Consequently, it may produce erroneous conclusions. For these reasons, data analysis should begin with visual inspection. After that, it is not only possible but also desirable to cycle between exploratory and confirmatory approaches.

- **Frequency Tables, Bar Charts (graphic representation and visualization), and Pie Charts (graphic representation and visualisation)**

Several techniques for displaying data are now new to EDA. They are essential to any examination of the data. For example a frequency table is a simple device for arraying data. An example is presented in exhibit 16-2. It arrays data by assigned numerical values, with columns for percent, percent adjusted for missing values and cumulative percent. Sector, the nominal variable that describes the business

classifications or markets of sampled corporations, provides the observations for this table. Although there are 100 observations, the small number of categories makes the variables easily tabled. The same data are presented in exhibit 16-3 using a bar chart and a pie chart. The values and percentages are more readily understood in this graphic format and visualization of the sector categories and their relative size is improved.

When the variable of interest is measured on an interval-ratio scale and is one of many potential values, these techniques are not particularly informative. Exhibit 16-4 is a condensed frequency table of the highest total return to investors measured in percentages of the top 48 companies in this category taken from the Fortune 500. Only 2 values 59.9 and 66, have a frequency greater than 1. Thus, the primary contribution of this table is an ordered list of values. If the table were converted to a bar chart, it would have 48 bars of equal length and two bars with two occurrences. And bar charts do not reserve spaces for values where no observations occur within the range. Constructing a pie chart for this variable would also be pointless.

Histograms

The histogram is a conventional solution for the display of interval-ratio data. Histograms are used when it is possible to group the variable's values into intervals. Histograms are constructed with bars (or asterisks that represent data values) where each value occupies an equal amount of areas within the enclosed area. Data analysts find histograms useful for (1) displaying all intervals in a distribution, even those without observed values, and (2) examining the shape of the distribution for skewness, kurtosis, and the modal pattern. When looking at a histogram, one might ask: is there a single hump (a mode) are subgroups identifiable when multiple modes are present? Are struggling data values detached fro the central concentration?

Stem – and – leaf displays

The stem – and – leaf displays is an EDA technique that is closely related to the histogram. It shares some of its features but offers several unique advantages. It is easy to construct by hand for small samples or may be produced by computer programs. In contrast to histograms, which lose information by grouping data values into intervals, the stem – and – leaf presents actual data values that can be inspected directly without the use of enclosed bars or asterisks as the representation medium. This feature reveals the distribution of values within the interval and preserves their rank order finding the median, quartiles, and other summary statistics. It also eases linking a specific observation back to the data file and to the subject that produced it.

Visualization is the second advantage of stem – and – leaf displays. The range of values is apparent at a glance, and both shape and spread impressions are immediate. Patterns in data – such as gaps where no values exist, areas where values are clustered, or outlying values that differ from the main body of data – are easily observed.

In order to develop a stem - and – leaf display for data in exhibit 16-4, the first digits of each data item are arranged to the left of a vertical line. Next, we pass through the return to investor percentages in

the order they were recorded and place the last digit for each item (the unit position, 1.0) to the right of the vertical line. Note that the digit to the right of the decimal point is ignored. The last digit for each item is placed on the horizontal row corresponding to its first digit (s). now it is a simple matter to rank-order the digits in each row, creating the stem – and – leaf display shown in Exhibit 16-6.

Each line or row in this display is referred to as a stem, and each piece of information on the stem is called a leaf.

Boxplots

The boxplot, or box-and- whisker plot is another technique used frequently in exploratory data analysis. A boxplot reduces the detail of the stem – and – leaf display and provides a different visual image of the distribution's location, spread, shape, tail, length and outliers. Boxplots are extension of five-numbers summary of a distribution. This summary consists of the median, upper and lower quartiles, and the largest and smallest observations. The median and quartiles are used because they are particularly **resistant statistics**. ***Resistance*** is a characteristic that "provides insensitivity to localized misbehavior in data."

KEY NOTES:

RESEARCH PROPOSAL DESIGN/ GENERAL WRITE UP/GENERAL DISSERTATION

NB: This is a general guide especially for the big works like doctorate dissertation. For Bachelor's and

Master's degree, try to follow it. To you, it is possible not to have parts; a part should equal a chapter, and a chapter be a paragraph or a section.

It is also possible to use a simplified Research proposal, but having in mind that you will use this when doing a final write up of the work. At least for research proposal, you will complete the structure up to chapter 9, section 1.

RESEARCH PROPOSAL DESIGN/ GENERAL WRITE UP/GENERAL DISSERTATION

PART I: BACKGROUND

Chapter 1. General introduction

1.1. Introduction

- The title of the study you are undertaking and some reasons
- The context into which you undertake this study
- What you expect to find as solution

1.2. Problem statement

- The situation
- Why the situation is problematic
- Why you find this important to be researched (management dilemma). If not researched

and solution found, the situation will persist and worsens.

- What should be researched and enables to find out the solution (Management question)

1.3. Research objectives

1.3.1 General objective

- It is the answer to the management question or to what should be researched and enables to find out the solution

1.3.2 Specific objectives

 There are the solutions to the research questions (the solution to each research question constitute the specific research objective)

1.4. Research design

1.4.1 Research questions

 Provisional solutions into interrogative form because they have to be searched through the population to get a validation or to be considered in other manners. The number of research questions depends on how you think that if you find adequate solutions to them, you will be able to answer to the management question

1.4.2 Research hypotheses

 There are provisional solutions formulated into affirmative form. They restate the research questions but confirming that they are adequate solutions. They are, in general, equal to the number of research questions

1.4.3 Research methodology

 You precise the nature of the study (quantitative, qualitative, or both(multi-methods or mixed-methods), purpose: exploratory? descriptive? explanatory?; strategy: case study? Experiment? Survey? ,…)

 You make a summary of the methodology detailed in the chapter of methodology

1.4.4 Data collection design

 Precise if data are collected with secondary data (archival), with observation, Interviews, or questionnaire; for each techniques precise the strategy for example if the data are collected with group or focus group or one-to-one, using a guide (if interview) or questionnaire

1.4.5 Data analysis design

 Quantitative methods? (graphs, polygons, bars, chart, parametric and non-parametric tests, laboratory tests, ….)

 Qualitative methods(grouping, summarizing and structuring for meaning; visualization, discourse analysis, content analysis?, ….)

 Using software? Which? E.g.: SPSS, GenStat, …

1.4.6 Expected results

1.5. Significance of the study

1.6. Scope of the study (what will it include, what is not included (Field), in what time horizons, in what geographical area, etc..)

1.7. Constraints

1.8. Study structuring (content of each chapter)

Chapter II. Description of the area of study (the readers of your work are worldwide-spread, they need to know the exact location of your study)

2.1 General geographic information or location

- Precise the continent
- Precise the country and its main characteristics
- Precise the region or province and its main characteristics
- Precise the district/zone and its main characteristics
- Precise the sector or county and its main characteristics
- Precise the organisation or area where you carry out your research,
- Visualise all these above on appropriate maps

2.2 Describe the organisation or area where you carry out your research.

- Its main characteristics,
- detail now its (specific) caracteristics related to the study
- Position now your study vis-a- vis its specific characteristics
- Try to point out its (study) significance

Part II: Literature survey

Note: you can develop many chapters if you judge it necessary, especially if your topic is related to many fields corresponding to your research questions. In fact, literature review (and data-mining) will concentrate on management dilemma; management question, research questions; investigative and measurement questions or vice-versa, because a deep literature review will enable you to refine your instrument for data collection: research questions will be split into investigative questions on the basis of the information found into the literature (and data-mining); also, each investigative question will be divided into measurement questions; that are found into a questionnaire or interview/observation guide or schedule. A good literature

review avoids an erratic construction of data collection instrument.

Chapter 3: General literature

3.1 Definition of key concepts

3.2 Literature applied to each research question. (you may note that you can develop many chapters related to those research questions if you judge it necessary).

Chapter 4: Empirical literature

This chapter reviews all the works (researches ,theses, journals, articles, …) done in the frame of yourresearch topic. The review is in a critical manner, showing the objectives, the methodology and main findings ; but in pointing out their completion , you try to show why and where you think your topic seems to have or shows gaps or is not completely tackled, reason why you judge necessary to undertake this study.

Chapter 5: Conceptual and theoretical framework of the study

5.1 Study variables

5.2 Conceptual and theoretical framework

5.3 Theories guiding the relations between Independent Variables (IV) and Dependent Variables (DV)

PART 3. Methods

Chapter 6: Research design

Section 1: The research question hierarchy (remind the research structure from management dilemma to research questions, include objectives and hypotheses).

Section 2: Research philosophies

Section 3: Research purpose

Section 4: Research strategies

Section 5: Research approaches

Section 6: Research methods

Section 7: Time horizons

Section 8: Sampling

Chapter 7: Data collection design

Section 1: Data collection methods and techniques

Section 2: Instrumentation and measurement

 what tool/instrument will it be used to collect data, how is it build: the structure has to be based on research questions, and each research question will be decomposed into investigative questions, each investigative question into measurement questions;

 nature of data to be gathered by each measurement question: nominal? Ordinal? Interval? Ratio?. This means that you have to have the detailed instrument to be used to know what nature of the data to be gathered by measurement question)

Section 3: Gaining access to data:

 This is very important. If you don't get data you cannot do your research. You have to demonstrate your strategies to get them. You describe here how you are willing to get data. Is it easy? What are the relations or links to be established? What are the difficulties and how you will overcome them?

Chapter 8 Ethical considerations (as consequences of your research philosophies into practice)

Part IV: Focus and contribution

Chapter 9: Results

Section 1: Data presentation and analysis (by research question or hypothesis)

Section 2: Results discussion (by research question or hypothesis)

Section 3: Findings credibility (reliability, validity, generalisability)

Section 4: Theory or Construct or model generated by your study

Chapter 10: Conclusion

Section 1: Summary

 Summarise the key findings / key results of the study by research question or hypothesis

Section 2: Contribution

 What did these results generate?

 Why that can be applied?

 How this can be applied?

- How reliable is it?

Section 3: Emerging issues and suggestions for future research (Recommendations)

References

Appendices