CHAPTER 5

Theoretical framework and hypothesis development

LEARNING OBJECTIVES

After completing Chapter 5, you should be able to:

1. Discuss the need for a theoretical framework in deductive research.
2. Describe four main types of variables and identify and label variables associated with any given situation.
3. Develop a theoretical framework that includes all the relevant components.
4. Develop a set of hypotheses to be tested.
5. Demonstrate awareness of the role of the manager in the development of a theoretical framework.

INTRODUCTION

After a critical review of the literature you may be ready to develop a theoretical framework. A theoretical framework is the foundation of hypothetico-*deductive* research as it is the basis of the hypotheses that you will develop. Indeed, the development of a theoretical framework is crucial in *deductive, theory-testing, causal* research (but *not* in exploratory or descriptive research where one does not develop a theoretical framework to develop and test hypotheses).

This chapter highlights the importance of theory development in deductive research and explains how theory is developed. The chapter starts with a definition of a theoretical framework followed by a discussion on the need for a theoretical framework. It explains that a theoretical framework involves the identification of a network of relationships among variables considered important to the problem. Different types of variables on hypotheses development are reviewed at the end of this chapter.

As you proceed through this chapter, in various places you are instructed to work through certain exercises. Doing them at that time, before reading further, will help you in becoming adept at formulating theoretical frameworks in a logical manner without getting confused.

THE NEED FOR A THEORETICAL FRAMEWORK

A **theoretical framework** represents your beliefs on *how* certain phenomena (or variables or concepts) are related to each other (a model) and an explanation of *why* you believe that these variables are associated with each other (a theory). Both the model and the theory flow logically from the documentation of previous research in the problem area. Integrating your logical beliefs with published research, taking into consideration the boundaries and constraints governing the situation, is pivotal in developing a scientific basis for investigating the research problem.

The process of building a theoretical framework includes:

1. Introducing definitions of the concepts or variables in your model.
2. Developing a conceptual model that provides a descriptive representation of your theory.
3. Coming up with a theory that provides an explanation for relationships between the variables in your model.

From the theoretical framework, then, testable hypotheses can be developed to examine whether your theory is valid or not. The hypothesized relationships can thereafter be tested through appropriate statistical analyses. Hence, the entire *deductive* research project rests on the basis of the theoretical framework. Even if testable hypotheses are not necessarily generated (as in some applied research projects), developing a good theoretical framework is central to examining the problem under investigation.

Since a theoretical framework involves the identification of the network of relationships among the variables considered important to the study of any given problem situation, it is essential to understand what a variable means and what the different types of variables are.

VARIABLES

A **variable** is anything that can take on differing or varying values. The values can differ at various times for the same object or person, or at the same time for different objects or persons. Examples of variables are production units, absenteeism, and motivation.

EXAMPLE

Production units: One worker in the manufacturing department may produce one widget per minute, a second might produce two per minute, a third might produce five per minute. It is also possible that the same member might produce one widget the first minute and five the next minute. In both cases, the number of widgets produced has taken on different values, and is therefore a variable.

Absenteeism: Today, three members in the sales department may be absent; tomorrow, six members may not show up for work; the day after, there may be no one absent. The value can thus theoretically range from "zero" to "all" being absent, on the absenteeism variable.

Motivation: The levels of motivation of members to learn in the class or in a work team might take on varying values ranging from "very low" to "very high." An individual's motivation to learn from different classes or in different work teams might also take on differing values. Now, how one *measures* the level of motivation is an entirely different matter. The factor called motivation has to be reduced from its level of abstraction and operationalized in such a way that it becomes measurable. We will discuss this in Chapter 11.

Four main types of variables are discussed in this chapter[1]:

1. The dependent variable (also known as the criterion variable).
2. The independent variable (also known as the predictor variable).
3. The moderating variable.
4. The mediating variable.

Each of these variables can be discrete (e.g., male/female) or continuous (e.g., the age of an individual). Associated scale levels of variables are discussed in Chapter 12.

Dependent variable

The **dependent variable** is the variable of primary interest to the researcher. The researcher's goal is to understand and describe the dependent variable, or to explain its variability, or predict it. In other words, it is the main variable that lends itself for investigation as a viable factor. Through the analysis of the dependent variable (i.e., finding what variables influence it), it is possible to find answers or solutions to the problem. For this purpose, the researcher will be interested in quantifying and measuring the dependent variable, as well as the other variables that influence this variable.

EXAMPLE

A manager is concerned that the sales of a new product, introduced after test marketing it, do not meet with his expectations. The dependent variable here is "sales." Since the sales of the product can vary – they can be low, medium, or high – it is a variable; since sales is the main focus of interest to the manager, it is the dependent variable.

A basic researcher is interested in investigating the debt-to-equity ratio of manufacturing companies in southern Germany. Here, the dependent variable is the ratio of debt to equity.

A vice president is concerned that the employees are not loyal to the organization and, in fact, seem to switch their loyalty to other institutions. The dependent variable in this case is "organizational loyalty." Here again, there is variance found in the levels of organizational loyalty of employees. The vice president might want to know what accounts for the variance in the loyalty of organizational members with a view to controlling it. If he finds that increased pay levels would ensure their loyalty and retention, he can then offer inducement to employees by way of pay rises, which will help control the variability in organizational loyalty and keep them in the organization.

It is possible to have more than one dependent variable in a study. For example, there is always a tussle between quality and volume of output, low-cost production and customer satisfaction, and so on. In such cases, the manager is interested to know the factors that influence all the dependent variables of interest and how some of them might differ in regard to different dependent variables. These investigations may call for multivariate statistical analyses.

Now do Exercise 5.1 and Exercise 5.2.

[1]Extraneous variables that confound cause-and-effect relationships are discussed in Chapter 10 on Experimental Designs.

EXERCISE 5.1

Research in behavioral finance has shown that overconfidence can cause investors to underreact to new information.
What is the dependent variable in this case?

EXERCISE 5.2

A marketing manager believes that limiting the availability of a product increases product desirability.
What is the dependent variable here?

Independent variable

It is generally conjectured that an **independent variable** is one that influences the dependent variable in either a positive or negative way. That is, when the independent variable is present, the dependent variable is also present, and with each unit of increase in the independent variable, there is an increase or decrease in the dependent variable. In other words, the variance in the dependent variable is accounted for by the independent variable. To establish that a change in the independent variable *causes* a change in the dependent variable, *all four* of the following conditions should be met:

1. The independent and the dependent variable should covary: in other words, a change in the dependent variable should be associated with a change in the independent variable.
2. The independent variable (the presumed causal factor) should precede the dependent variable. In other words, there must be a time sequence in which the two occur: the cause must occur before the effect.
3. No other factor should be a possible cause of the change in the dependent variable. Hence, the researcher should *control for* the effects of other variables.
4. A logical explanation (a theory) is needed and it must explain why the independent variable affects the dependent variable.

Because of the time sequence condition, experimental designs, described in Chapter 10, are often used to establish causal relationships.

EXAMPLE

Research studies indicate that successful new product development has an influence on the stock market price of the company. That is, the more successful the new product turns out to be, the higher will be the stock market price of that firm. Therefore, the "success of the new product" is the *independent variable*, and "stock market price" the *dependent variable*. The degree of perceived success of the new product developed will explain the variance in the stock market price of the company. This relationship and the labeling of the variables are illustrated in Figure 5.1.

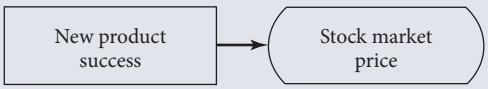

FIGURE 5.1

Diagram of the relationship between the independent variable (new product success) and the dependent variable (stock market price)

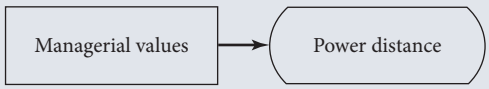

FIGURE 5.2

Diagram of the relationship between the independent variable (managerial values) and the dependent variable (power distance)

Cross-cultural research indicates that managerial values govern the power distance between superiors and subordinates. Here, power distance (i.e., egalitarian interactions between the boss and the employee, versus the high-power superior in limited interaction with the low-power subordinate) is the subject of interest and hence the dependent variable. Managerial values that explain the variance in power distance comprise the independent variable. This relationship is illustrated in Figure 5.2.

Now do Exercise 5.3 and Exercise 5.4. List the variables in these two exercises individually, and label them as dependent or independent, explaining why they are so labeled. Create diagrams to illustrate the relationships.

EXERCISE 5.3

An investor believes that more information increases the accuracy of his forecasts.

EXERCISE 5.4

A marketing manager believes that selecting physically attractive spokespersons and models to endorse their products increases the persuasiveness of a message.

Moderating variable

Visit the companion website at **www.wiley.com/college/sekaran** for **Author Video: The moderating variable**.

The **moderating variable** is one that has a strong *contingent* effect on the independent variable–dependent variable relationship. That is, the presence of a third variable (the moderating variable) modifies the original relationship between the independent and the dependent variables. This becomes clear through the following examples.

EXAMPLE

It has been found that there is a relationship between the availability of reference manuals that manufacturing employees have access to and the product rejects. That is, when workers follow the procedures laid down in the manual, they are able to manufacture products that are flawless. This relationship is illustrated in Figure 5.3(a). Although this relationship can be said to hold true generally for all workers, it is nevertheless contingent on the inclination or urge of the employees to look in the manual every time a new procedure is to be adopted. In other words, only those who have the interest and urge to refer to the manual every time a new process is adopted will produce flawless products. Others who do not consult the manual will not benefit and will continue to produce defective products. This influence of the attributes of the worker on the relationship between the independent and the dependent variables can be illustrated as shown in Figure 5.3(b).

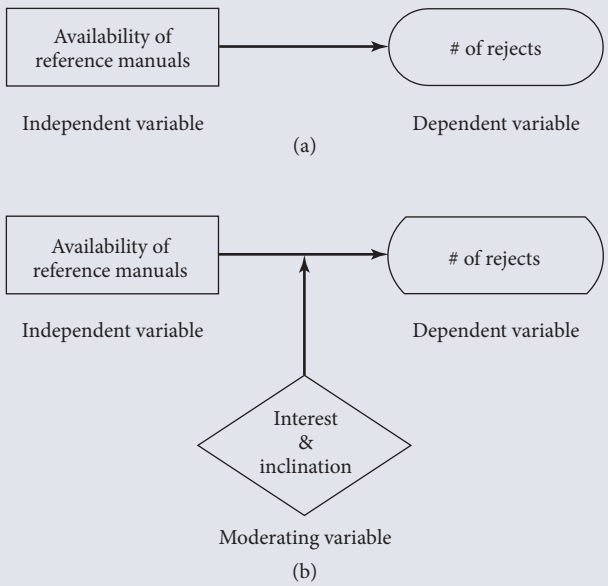

FIGURE 5.3

(a) Diagram of the relationship between the independent variable (availability of reference manuals) and the dependent variable (rejects); (b) diagram of the relationship between the independent variable (availability of reference materials) and the dependent variable (rejects) as moderated by the moderating variable (interest and inclination)

As in the above case, whenever the relationship between the independent variable and the dependent variable becomes contingent or dependent on another variable, we say that the third variable has a moderating effect on the independent variable–dependent variable relationship. The variable that moderates the relationship is known as the moderating variable.

EXAMPLE

Let us take another example of a moderating variable. A prevalent theory is that the diversity of the workforce (comprising people of different ethnic origins, races, and nationalities) contributes more to organizational effectiveness because each group brings its own special expertise and skills to the workplace. This synergy can be exploited, however, only if managers know how to harness the special talents of the diverse work group; otherwise they will remain untapped. In the above scenario, organizational effectiveness is the dependent variable, which is positively influenced by workforce diversity – the independent variable. However, to harness the potential, managers must know how to encourage and coordinate the talents of the various groups to make things work. If not, the synergy will not be tapped. In other words, the effective utilization of different talents, perspectives, and eclectic problem-solving capabilities for enhanced organizational effectiveness is contingent on the skill of the managers in acting as catalysts. This managerial expertise then becomes the moderating variable. These relationships can be depicted as in Figure 5.4.

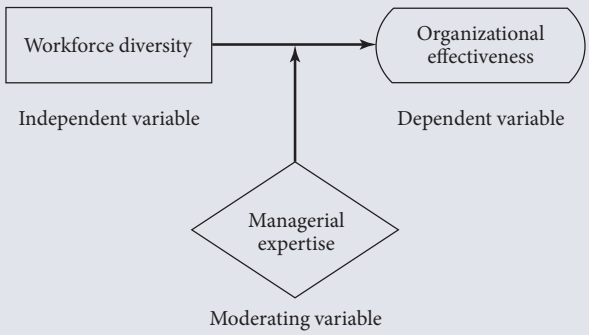

FIGURE 5.4

Diagram of the relationship among the three variables: workforce diversity, organizational effectiveness, and managerial expertise

The distinction between an independent variable and a moderating variable

At times, confusion is likely to arise as to when a variable is to be treated as an independent variable and when it becomes a moderating variable. For instance, there may be two situations as follows:

1. A research study indicates that the better the quality of the training programs in an organization and the greater the growth needs of the employees (i.e., where the need to develop and grow on the job is strong), the greater is their willingness to learn new ways of doing things.
2. Another research study indicates that the willingness of the employees to learn new ways of doing things is *not* influenced by the quality of the training programs offered by the organizations to *all* people without any distinction. Only those with high growth needs seem to have the yearning to learn to do new things through specialized training.

In the above two situations, we have the same three variables. In the first case, the training programs and growth need strength are the independent variables that influence employees' willingness to learn, this latter being the dependent variable. In the second case, however, the quality of the training program is the independent variable, and while the dependent variable remains the same, growth need strength becomes a moderating variable. In other words, only those with high growth needs show a greater willingness and adaptability to learn to do new things when the quality of the training program is improved. Thus, the relationship between the independent and dependent variables has now become contingent on the existence of a moderator.

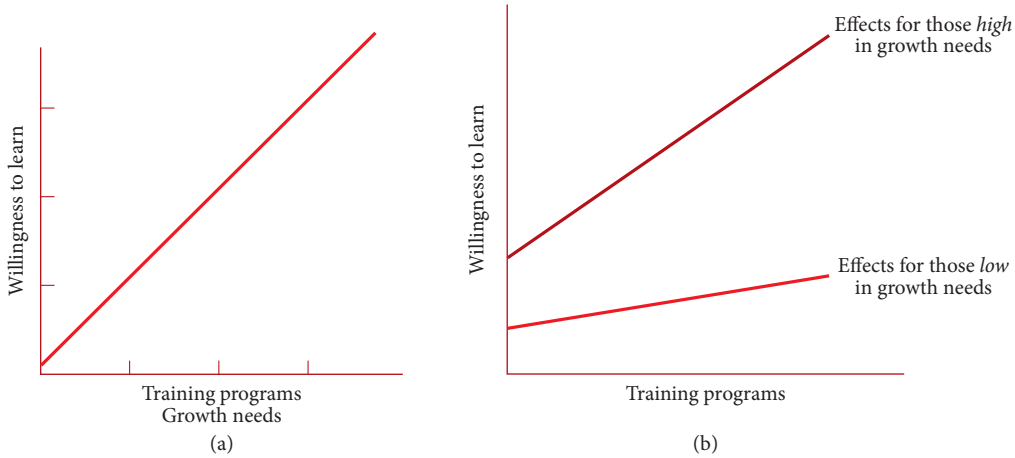

FIGURE 5.5

(a) Illustration of the influence of independent variables on the dependent variable when no moderating variable operates in the situation; (b) illustration of the influence of independent variables on the dependent variable when a moderating variable is operating in the situation

The above illustration makes it clear that even though the variables used are the same, the decision as to whether to label them dependent, independent, or moderating depends on how they affect one another. The differences between the effects of the independent and the moderating variables may be visually depicted as in Figures 5.5(a) and 5.5(b). Note the steep incline of the top line and the relative flatness of the bottom line in Figure 5.5(b).

Now do Exercise 5.5 and Exercise 5.6. List and label the variables in these two exercises and explain and illustrate by means of diagrams the relationships among the variables.

EXERCISE 5.5

A manager finds that off-the-job classroom training has a great impact on the productivity of the employees in her department. However, she also observes that employees over 60 years of age do not seem to derive much benefit and do not improve with such training.

EXERCISE 5.6

A manager of an insurance company finds that "fear appeals" in commercials are positively associated with consumers' behavioral intentions to insure their house. This effect is particularly strong for people with a high inherent level of anxiety.

Mediating variable

Visit the companion website at **www.wiley.com/college/sekaran** for **Author Video: The mediating variable**.

A **mediating variable** (or **intervening variable**) is one that surfaces between the time the independent variables start operating to influence the dependent variable and the time their impact is felt on it. There is thus a temporal quality or time dimension to the mediating variable. In other words, bringing a mediating variable into play helps you to model a *process*. The mediating variable surfaces as a function of the independent variable(s) operating in any situation, and helps to conceptualize and explain the influence of the independent variable(s) on the dependent variable. The following example illustrates this point.

EXAMPLE

In the previous example, where the independent variable (workforce diversity) influences the dependent variable (organizational effectiveness), the mediating variable that surfaces as a function of the diversity in the workforce is "creative synergy." This creative synergy results from a multiethnic, multiracial, and multinational (i.e., diverse) workforce interacting and bringing together their multifaceted expertise in problem solving. This helps us to understand how organizational effectiveness can result from having diversity in the workforce. Note that creative synergy, the mediating variable, surfaces at time t_2, as a function of workforce diversity, which was in place at time t_1, to bring about organizational effectiveness in time t_3. The mediating variable of creative synergy helps us to conceptualize and understand how workforce diversity brings about organizational effectiveness. The dynamics of these relationships are illustrated in Figure 5.6.

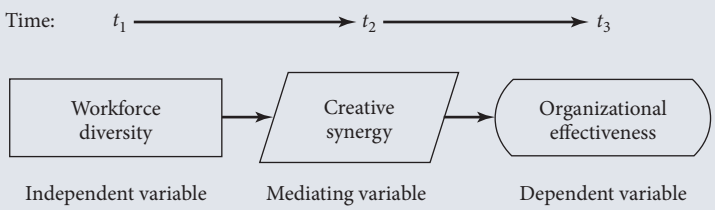

FIGURE 5.6

Diagram of the relationship among the independent, mediating, and dependent variables

It would be interesting to see how the inclusion of the moderating variable, "managerial expertise" in the foregoing example, would change the model or affect the relationships. The new set of relationships that would emerge in the presence of the moderator is depicted in Figure 5.7. As can be seen, managerial expertise moderates the relationship between workforce diversity and creative synergy. In other words, creative synergy will not

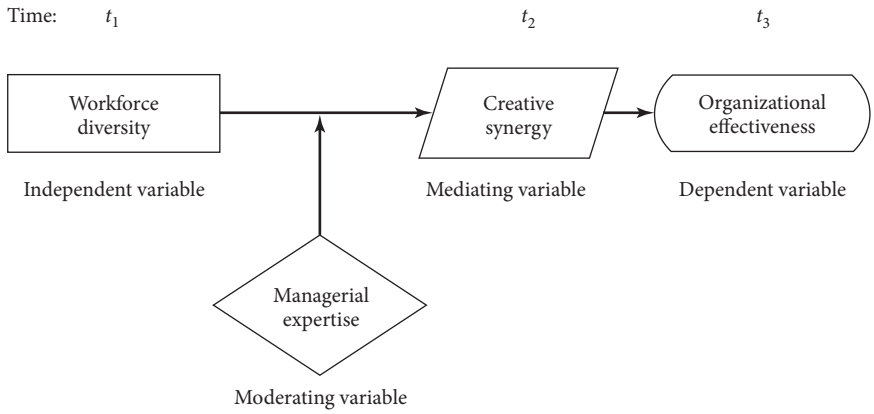

FIGURE 5.7

Diagram of the relationship among the independent, mediating, moderating, and dependent variables

result from the multifaceted problem-solving skills of the diverse workforce unless the manager is capable of harnessing that synergy by creatively coordinating the different skills. If the manager lacks the expertise to perform this role, then no matter how many different problem-solving skills the diverse workforce might have, synergy will just not surface. Instead of functioning effectively, the organization might just remain static, or even deteriorate.

It is now easy to see what the differences are among an independent variable, a mediating variable, and a moderating variable. The **independent variable** helps to *explain* the variance in the dependent variable; the **mediating variable** *surfaces at time* t_2 as a function of the independent variable, which also helps us to conceptualize the relationship between the independent and dependent variables; and the **moderating variable** has a *contingent effect* on the relationship between two variables. To put it differently, while the independent variable explains the variance in the dependent variable, the mediating variable does not add to the variance already explained by the independent variable, whereas the moderating variable has an interaction effect with the independent variable in explaining the variance. That is, unless the moderating variable is present, the theorized relationship between the other two variables considered will not hold.

Whether a variable is an independent variable, a dependent variable, a mediating variable, or a moderating variable should be determined by a careful reading of the dynamics operating in any given situation. For instance, a variable such as motivation to work could be a dependent variable, an independent variable, a mediating variable, or a moderating variable, depending on the theoretical model that is being advanced.

Now do Exercise 5.7, Exercise 5.8, and Exercise 5.9.

EXERCISE 5.7

Make up three different situations in which motivation to work would be an independent variable, a mediating variable, and a moderating variable.

EXERCISE 5.8

Failure to follow accounting principles causes immense confusion, which in turn creates a number of problems for the organization. Those with vast experience in bookkeeping, however, are able to avert the problems by taking timely corrective action. List and label the variables in this situation, explain the relationships among the variables, and illustrate these by means of diagrams.

EXERCISE 5.9

A store manager observes that the morale of employees in her supermarket is low. She thinks that if their working conditions are improved, pay scales raised, and the vacation benefits made more attractive, the morale will be boosted. She doubts, however, if an increase in pay scales would raise the morale of all employees. Her conjecture is that those who have supplemental incomes will just not be "turned on" by higher pay, and only those without side incomes will be happy with increased pay, with a resultant boost in morale. List and label the variables in this situation. Explain the relationships among the variables and illustrate them by means of diagrams. What might be the problem statement or problem definition for the situation?

HOW THEORY IS GENERATED

Having examined the different kinds of variables that can operate in a situation and how the relationships among these can be established, it is now possible to see how we can develop the theoretical framework for our research.

The theoretical framework is the foundation on which the entire deductive research project is based. It is a logically developed, described, and elaborated network of associations among the variables deemed relevant to the problem situation and identified through such processes as interviews, observations, and literature review. Experience and intuition also guide the development of the theoretical framework.

It becomes evident at this stage that, to arrive at good solutions to the problem, one should first correctly identify the problem, and then the variables that contribute to it. The importance of doing a thorough literature review and conducting exploratory and inductive research now becomes clear. After identifying the appropriate variables, the next step is to elaborate the network of associations among the variables, so that relevant hypotheses can be developed and subsequently tested. Based on the results of hypothesis testing (which indicate whether or not the hypotheses have been supported), the extent to which the problem can be solved becomes evident. The theoretical framework is thus an important step in the research process.

The relationship between the literature review and the theoretical framework is that the former provides a solid foundation for developing the latter. That is, the literature review identifies the variables that might be important, as determined by previous research findings. This, in addition to other logical connections that can be conceptualized, forms the basis for the theoretical model. The theoretical framework represents and elaborates the relationships among the variables, explains the theory underlying these relations, and describes the nature and direction of the relationships. Just as the literature review sets the stage for a good theoretical framework, this in turn provides the logical base for developing testable hypotheses.

The components of the theoretical framework

A good theoretical framework identifies and defines the important variables in the situation that are relevant to the problem and subsequently describes and explains the interconnections among these variables. The relationships among the independent variables, the dependent variable(s), and, if applicable, the moderating and mediating variables are elaborated. Should there be any moderating variable(s), it is important to explain how and what specific relationships they moderate. An explanation of why they operate as moderators should also be offered. If there are any mediating variables, a discussion on how or why they are treated as mediating variables is necessary. Any interrelationships among the independent variables themselves, or among the dependent variables themselves (in case there are two or more dependent variables), should also be clearly spelled out and adequately explained. Note that a good theoretical framework is not necessarily a complex framework.

Earlier in this chapter, we have already explained that there are three basic features that should be incorporated in any theoretical framework:

1. The variables considered relevant to the study should be clearly defined.
2. A conceptual model that describes the relationships between the variables in the model should be given.
3. There should be a clear explanation of why we expect these relationships to exist.

It is not always easy to come up with generally agreed-upon *definitions* of the relevant variables. More often than not, there are many definitions available in the literature (for instance, there are literally dozens of definitions of "brand image," "customer satisfaction," and "service quality" available in the marketing literature). Still, well-chosen guiding definitions of concepts are needed, because they will help you to provide an explanation for the relationships between the variables in your model. What's more, they will also serve as a basis for the operationalization or measurement of your concepts in the data collection stage of the research process. Hence, you will have to choose a useful definition from the literature (do not use dictionary definitions, they are usually too general). It is also important that you explain why you have chosen a particular definition as your guiding definition.

A *conceptual model* helps you to structure your discussion of the literature. A conceptual model describes your ideas about how the concepts (variables) in your model are related to each other. A schematic diagram of the conceptual model helps the reader to visualize the theorized relationships between the variables in your model and thus to obtain a quick idea about how you think that the management problem can be solved. Hence, conceptual models are often expressed in this form. However, relationships between variables can also be adequately expressed in words. Both a schematic diagram of the conceptual model and a description of the relationships between the variables in words should be given, so that the reader can see and easily comprehend the theorized relationships. This facilitates and stimulates discussion about the relationships between the variables in your model. It is therefore important that your model is based on a sound theory.

A theory or a clear explanation for the relationships in your model is the last component of the theoretical framework. A theory attempts to explain relationships between the variables in your model: an explanation should be provided for all the important relationships that are theorized to exist among the variables. If the nature and direction of the relationships can be theorized on the basis of the findings of previous research and/or your own ideas on the subject, then there should also be an indication as to whether the relationships should be positive or negative and linear or nonlinear. From the theoretical framework, then, testable hypotheses can be developed to examine whether the theory formulated is valid or not.

Note that you do not necessarily have to "invent" a new theory every time you are undertaking a research project. In an applied research context you apply existing theories to a specific context. This means that arguments can be drawn from previous research. However, in a basic research context you will make some contribution to existing theories and models. In such a case, it is not (always) possible to use existing theories or explanations for relationships between variables. As a result, you will have to rely on your own insights and ideas.

Now do Exercise 5.10.

EXERCISE 5.10

Avatars are virtual characters that can be used as representatives of a company that is using the Internet as a distribution channel. For instance, avatars can be used as shopping assistants, website guides, or as identification figures. A manager of an online company believes that avatar-mediated communication will have a positive effect on satisfaction with her company and on purchase intentions of consumers, because avatars enhance the value of information provided on the website and increase the pleasure of the shopping experience. She also believes that the positive effect of the perceived information value on satisfaction with the company and purchase intentions is stronger when customers are highly involved. Develop a theoretical framework for this situation after stating what the problem definition of the researcher would be in this case.

HYPOTHESIS DEVELOPMENT

Once we have identified the important variables in a situation and established the relationships among them through logical reasoning in the theoretical framework, we are in a position to test whether the relationships that have been theorized do, in fact, hold true. By testing these relationships scientifically through appropriate statistical analyses, or through negative case analysis in qualitative research (described later in the chapter), we are able to obtain reliable information on what kinds of relationships exist among the variables operating in the problem situation. The results of these tests offer us some clues as to what could be changed in the situation to solve the problem. Formulating such testable statements is called *hypothesis development*.

Definition of a hypothesis

A **hypothesis** can be defined as a tentative, yet testable, statement, which predicts what you expect to find in your empirical data. Hypotheses are derived from the theory on which your conceptual model is based and are often relational in nature. Along these lines, hypotheses can be defined as logically conjectured relationships between two or more variables expressed in the form of testable statements. By testing the hypotheses and confirming the conjectured relationships, it is expected that solutions can be found to correct the problem encountered.

EXAMPLE

Several testable statements or hypotheses can be drawn from the example depicted in Figure 5.4. One of them might be:

> ***Workforce diversity has a positive effect on organizational effectiveness.***

The above is a testable statement. By measuring the extent of workforce diversity and organizational effectiveness, we can statistically examine the relationship between these two variables to see if there is a significant (positive) correlation between the two. If we do find this to be the case, then the hypothesis is substantiated. If a significant correlation is not found, then the hypothesis has not been substantiated. By convention in the social sciences, to call a relationship "statistically significant," we should be confident that 95 times out of 100 the observed relationship will hold true. There should be only a 5% chance that the relationship will not be detected.

Statement of hypotheses: formats

If–then statements

As already stated, a hypothesis can be defined as a testable statement of the relationship among variables. A hypothesis can also test whether there are differences between two groups (or among several groups) with respect to any variable or variables. To examine whether or not the conjectured relationships or differences exist, these hypotheses can be set either as propositions or in the form of *if–then statements*. The two formats can be seen in the following two examples.

Young women will be more likely to express dissatisfaction with their body weight, when they are more frequently exposed to images of thin models in advertisements.

If young women are more frequently exposed to images of thin models in advertisements, then they will be more likely to express dissatisfaction with their body weight.

Directional and nondirectional hypotheses

If, in stating the relationship between two variables or comparing two groups, terms such as *positive*, *negative*, *more than*, *less than*, and the like are used, then these are **directional hypotheses** because the direction of the relationship between the variables (positive/negative) is indicated, as in the first example below, or the nature of the difference between two groups on a variable (more than/less than) is postulated, as in the second example.

The greater the stress experienced in the job, the lower the job satisfaction of employees.

Women are more motivated than men.

On the other hand, **nondirectional hypotheses** are those that do postulate a relationship or difference, but offer no indication of the direction of these relationships or differences. In other words, though it may be conjectured that there is a significant relationship between two variables, we may not be able to say whether the relationship is positive or negative, as in the first example below. Likewise, even if we can conjecture that there will be differences between two groups on a particular variable, we may not be able to say which group will be more and which less on that variable, as in the second example.

There is a relation between arousal-seeking tendency and consumer preferences for complex product designs.

There is a difference between the work ethic values of American and Asian employees.

Nondirectional hypotheses are formulated either because the relationships or differences have never been explored, and hence there is no basis for indicating the direction, or because there have been conflicting findings in previous research studies on the variables. In some studies a positive relationship might have been found, while in others a negative relationship might have been traced. Hence, the current researcher might only be able to hypothesize that there is a significant relationship, but the direction may not be clear. In such cases, the hypotheses can be stated nondirectionally. Note that in the first example there is no clue as to whether

arousal-seeking tendency and preferences for complex product designs are positively or negatively correlated, and in the second example we do not know whether the work ethic values are stronger in Americans or in Asians. However, it would have been possible to state that arousal-seeking tendency and preferences for complex product designs are positively correlated, since previous research has indicated such a relationship. Whenever the direction of the relationship is known, it is better to develop directional hypotheses for reasons that will become clear in our discussions in a later chapter.

Null and alternate hypotheses

The hypothetico-deductive method requires that hypotheses are falsifiable: they must be written in such a way that other researchers can show them to be false. For this reason, hypotheses are sometimes accompanied by null hypotheses. A **null hypothesis** (H_0) is a hypothesis set up to be rejected in order to support an alternate hypothesis, labeled H_A. When used, the null hypothesis is presumed true until statistical evidence, in the form of a hypothesis test, indicates otherwise. For instance, the null hypothesis may state that advertising does not affect sales, or that women and men buy equal amounts of shoes. In more general terms, the null hypothesis may state that the correlation between two variables is equal to zero or that the difference in the means of two groups in the population is equal to zero (or some other *definite* number). Typically, the null statement is expressed in terms of there being no (*significant*) relationship between two variables or no (*significant*) difference between two groups. The **alternate hypothesis**, which is the opposite of the null, is a statement expressing a relationship between two variables or indicating differences between groups.

To explain further, in setting up the null hypothesis, we are stating that there is no difference between what we might find in the population characteristics (i.e., the total group we are interested in knowing something about) and the sample we are studying (i.e., a limited number representative of the total population or group that we have chosen to study). Since we do not know the true state of affairs in the population, all we can do is to draw inferences based on what we find in our sample. What we imply through the null hypothesis is that any differences found between two sample groups or any relationships found between two variables based on our sample are simply due to random sampling fluctuations and not due to any "true" differences between the two population groups (say, men and women), or relationships between two variables (say, sales and profits). The null hypothesis is thus formulated so that it can be tested for possible rejection. If we reject the null hypothesis, then all permissible alternate hypotheses relating to the particular relationship tested could be supported. It is the theory that allows us to have faith in the alternate hypothesis that is generated in the particular research investigation. This is one more reason why the theoretical framework should be grounded on sound, defendable logic to start with. Otherwise, other researchers are likely to refute and postulate other defensible explanations through different alternate hypotheses.

The *null* hypothesis in respect of group differences stated in the example "*Women are more motivated than men*" would be:

$$H_0: \mu_M = \mu_W$$

or

$$H_0: \mu_M - \mu_W = 0$$

where H_0 represents the null hypothesis, μ_M is the mean motivational level of the men, and μ_W is the mean motivational level of the women.

The *alternate* for the above example would statistically be set as follows:

$$H_A: \mu_M < \mu_W$$

which is the same as

$$H_A: \mu_W > \mu_M$$

where H_A represents the alternate hypothesis and μ_M and μ_W are the mean motivation levels of men and women, respectively.

For the nondirectional hypothesis of mean group differences in work ethic values in the example "*There is a difference between the work ethic values of American and Asian employees*," the null hypothesis would be:

$$H_0: \mu_{AM} = \mu_{AS}$$

or

$$H_0: \mu_{AM} - \mu_{AS} = 0$$

where H_0 represents the null hypothesis, μ_{AM} is the mean work ethic value of Americans and μ_{AS} is the mean work ethic value of Asians.

The alternate hypothesis for the above example would statistically be set as:

$$H_A: \mu_{AM} \neq \mu_{AS}$$

where H_A represents the alternate hypothesis and μ_{AM} and μ_{AS} are the mean work ethic values of Americans and Asians, respectively.

The null hypothesis for the relationship between the two variables in the example "*The greater the stress experienced in the job, the lower the job satisfaction of employees*," would be H_0: There is no relationship between stress experienced on the job and the job satisfaction of employees. This would be statistically expressed by:

$$H_0: \rho = 0$$

where ρ represents the correlation between stress and job satisfaction, which in this case is equal to 0 (i.e., no correlation).

The alternate hypothesis for the above null, which has been expressed directionally, can be statistically expressed as:

$$H_A: \rho < 0 \left(\text{The correlation is negative.}\right)$$

For the example "*There is a relationship between age and job satisfaction*," which has been stated nondirectionally, the null hypothesis would be statistically expressed as:

$$H_0: \rho = 0$$

whereas the alternate hypothesis would be expressed as:

$$H_A: \rho \neq 0$$

Having formulated the null and alternate hypotheses, the appropriate statistical tests (*t*-tests, *F*-tests) can then be applied, which indicate whether or not support has been found for the alternate hypothesis – that is, that there is a significant difference between groups or that there is a significant relationship between variables, as hypothesized.

The steps to be followed in hypothesis testing are:

1. State the null and the alternate hypotheses.
2. Choose the appropriate statistical test depending on whether the data collected are parametric or nonparametric.
3. Determine the level of significance desired ($p = 0.05$, or more, or less).
4. See if the output results from computer analysis indicate that the significance level is met. If, as in the case of Pearson correlation analysis in Excel software, the significance level is not indicated in the printout, look up the critical values that define the regions of acceptance on the appropriate table (i.e., (t, F, χ^2) – see the statistical tables at the end of this book). This critical value demarcates the region of rejection from that of acceptance of the null hypothesis. When the resultant value is larger than the critical value, the null hypothesis is rejected, and the alternate accepted. If the calculated value is less than the critical value, the null is accepted and the alternate rejected.

Note that null hypotheses are rarely presented in research reports or journal articles.

Now do Exercise 5.11, Exercise 5.12, and Exercise 5.13.

EXERCISE 5.11

Create a diagram to illustrate the relationships between the relevant variables in Exercise 5.9 and develop five different hypotheses.

EXERCISE 5.12

A production manager is concerned about the low output levels of his employees. The articles that he has read on job performance frequently mention four variables as being important to job performance: (1) skills required for the job, (2) rewards, (3) motivation, and (4) satisfaction. In several of the articles it was also indicated that only if the rewards were (attractive) to the recipients did motivation, satisfaction, and job performance increase, not otherwise. Given this situation:

1. Define the problem.
2. Create a diagram.
3. Develop at least six hypotheses.

EXERCISE 5.13

A recent study has investigated the effect of corporate social responsibility (CSR) on the market value of the firm. This study developed and tested a conceptual framework, which posits that (1) customer satisfaction mediates the relationship between CSR and the market value of the firm, and (2) two firm factors ("innovativeness capability" and "product quality") moderate the relationship between CSR and customer satisfaction. For this situation, define the problem, draw a schematic diagram, and formulate the hypotheses.

Hypothesis testing is strongly associated with designing experiments and the collection of quantitative data. However, as exemplified by Box 5.1, hypotheses can also be tested with qualitative data.

BOX 5.1

HYPOTHESIS TESTING WITH QUALITATIVE RESEARCH: NEGATIVE CASE ANALYSIS

Hypotheses can also be tested with qualitative data. For example, let us say that, after extensive interviews, a researcher has developed the theoretical framework that unethical practices by employees are a function of their inability to discriminate between right and wrong, or due to a dire need for more money, or the organization's indifference to such practices. To test the hypothesis that these three factors are the primary ones that influence unethical practices, the researcher should look for data to refute the hypothesis. When even a single case does not support the hypothesis, the theory needs revision. Let us say that the researcher finds one case where an individual is deliberately engaged in the unethical practice of accepting kickbacks (despite the fact that he is knowledgeable enough to discriminate right from wrong, is not in need of money, and knows that the organization will not be indifferent to his behavior), simply because he wants to "get back" at the system, which "will not listen to his advice." This new discovery, through disconfirmation of the original hypothesis, known as *the negative case method*, enables the researcher to revise the theory and the hypothesis until such time as the theory becomes robust.

We have thus far seen how a critical literature review is done, theoretical frameworks are formulated, and hypotheses developed. Let us now illustrate this logical sequence through a small example where a researcher wants to examine the organizational factors influencing women's progress to top management positions. The literature review and the number of variables are deliberately kept small, since the purpose is merely to illustrate how a theoretical framework is developed from the literature review, and how hypotheses are developed based on the theoretical framework.

EXAMPLE

Literature review, theoretical framework, and hypothesis development

Introduction

"Fewer large companies are run by women than by men named John, a sure indicator that the glass ceiling remains firmly in place in corporate America" (Wolfers, 2015). Despite the spectacular increase in the number of managerial women during the last decades, the number of women in top management positions continues to be very small and static, suggesting a glass-ceiling effect that women still face (Lückerath-Rovers, 2013; Morrison, White & Vura, 1999; O'Neil, Hopkins & Bilimoria, 2008; Van Velsor, 2000). Given the demographics of the workplace, which projects that more and more women will enter the workforce in the future, it becomes important to examine the factors that might facilitate the advancement of women to top executive positions. This study is an effort to identify the factors that currently impede women's advancement to the top in organizations.

A brief literature review

It is often declared that since women have only recently embarked on careers and entered the managerial ranks, it will take more time for them to rise to top executive positions. However, many women in higher middle-management positions feel that there are at least two major stumbling blocks to their advancement: gender role stereotypes and inadequate access to critical information (Daniel, 1998; Koenig *et al.,* 2011; Schein, 2007; Welch, 2001).

Gender stereotypes, or sex-role stereotypes as they are also known, are societal beliefs that men are better suited for taking on leadership roles and positions of authority and power, whereas women are more suited for taking on nurturing and helping roles (DeArmond *et al.*, 2006; Eagly, 1989; Kahn & Crosby, 1998; Smith, 1999). These beliefs influence the positions that are assigned to organizational members. Whereas capable men are given line positions and developed to take on higher responsibilities and executive roles in the course of time, capable women are assigned to staff positions and dead-end jobs. With little exposure to management of budgets and opportunities for significant decision making, women are seldom groomed for top-level positions.

Women are also excluded from the "old boys" network because of their gender. Information exchange, development of career strategies, clues regarding access to resources, and such important information vital to upward mobility are thus lost to women (*The Chronicle,* 2000). While many other factors impinge on women's upward mobility, the two variables of gender-role stereotypes and exclusion from critical information are particularly detrimental to women's advancement to senior level positions.

Theoretical framework

The dependent variable of advancement of women to top management positions is influenced by gender-role stereotyping and access to critical information. These two variables are also interrelated as explained below.

Gender-role stereotypes adversely impact on women's career progress. Since women are perceived as ineffective leaders but good nurturers, they are not assigned line positions in their early careers but offered staff responsibilities. It is only in line positions that managers make significant decisions, control budgets, and interact with top-level executives who have an impact on their future careers. These opportunities to learn, grow and develop on the job, and gain visibility in the system help managers to advance to top-level positions. However, since women in staff positions do not gain these experiences or have the visibility to be identified as key

people in the organization with the potential to be successful top managers, their advancement to top-level positions is never considered by the system and they are always overlooked. Thus, gender-role stereotypes hinder the progress of women to the top.

Gender-role stereotypes also hinder *access to information*. If women are not considered to be decision makers and leaders, but are perceived merely as support personnel, they will not be apprised of critical information essential for organizational advancement, since this is not seen as relevant for them. Exclusion from the networks where men informally interact with one another (golf courses, bars, and so on) precludes women from gaining access to crucial information and resources vital for their advancement. For example, many of the significant organizational changes and current events are discussed informally among men outside the work setting. Women are generally unaware of the most recent developments since they are not a part of the informal group that interacts and exchanges information away from the workplace. This definitely is a handicap. For example, knowledge of an impending vacancy for an executive position enables one to strategize to occupy that position. One can become a key contender by procuring critical information relevant to the position, get prepared to present the appropriate credentials to the right people at the right time, and thus pave the way for success. Thus, access to critical information is important for the progress of all, including women. When women do not have the critical information that is shared in informal networks, their chances of advancement to top positions also get severely restricted.

The foregoing relationships are shown schematically in Figure 5.8.

Hypotheses

1. *The greater the extent of gender-role stereotyping in organizations, the fewer will be the number of women at the top.*

2. *The effect of gender-role stereotyping on advancement of women to the top is partially mediated by access to information.*

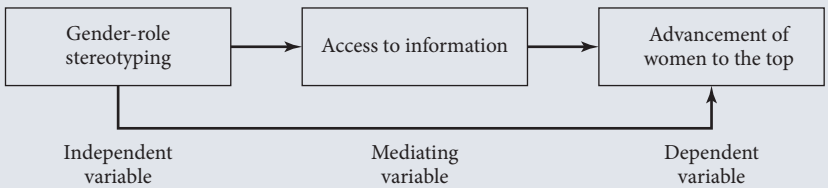

FIGURE 5.8

Schematic diagram of the example relating to women in managerial positions

MANAGERIAL IMPLICATIONS

Knowledge of how and for what purpose the theoretical framework is developed, and the hypotheses are generated, enables the manager to be an intelligent judge of the research report submitted by the consultant. At this juncture, it becomes clear that once the problem is defined, a good grasp of the concepts "independent variable" and "dependent variable" broadens the understanding of managers as to how multiple factors (the independent

variables in the model) may provide possible solutions to the problem (the dependent variable in the model). An understanding of the concept "moderating variable" may allow the manager to understand that some of the proposed solutions may not solve the problem for everybody or in every situation. Likewise, knowledge of what significance means, and why a given hypothesis is either accepted or rejected, helps the manager to persist in or desist from following hunches, which, while making good sense, do not work. If such knowledge is absent, many of the findings through research will not make much sense to the manager and decision making will bristle with confusion.

SUMMARY

- **Learning objective 1: Discuss the need for a theoretical framework in deductive research.**
  A theoretical framework represents a researcher's beliefs on how certain phenomena (or variables or concepts) are related to each other (a model) and an explanation of why he or she believes that these variables are associated with each other (a theory). From a theoretical framework, testable hypotheses can be developed to examine whether a theory is valid or not. The entire deductive research project rests on the basis of the theoretical framework.

- **Learning objective 2: Describe four main types of variables and identify and label variables associated with any given situation.**
  Since a theoretical framework involves the identification of a network of relationships among the variables considered important to the study of any given problem situation, it is essential to understand what a variable means and what the different types of variables are. A variable is anything that can take on differing or varying values. Four main types of variables discussed in this chapter are: (1) the dependent variable; (2) the independent variable; (3) the moderating variable; and (4) the mediating variable.

- **Learning objective 3: Develop a theoretical framework that includes all the relevant components.**
  Three basic features that should be incorporated in any theoretical framework:

  - The variables considered relevant to the study should be clearly defined.
  - A conceptual model that describes the relationships between the variables in the model should be given.
  - There should be a clear explanation of why we expect these relationships to exist.

  Just as the literature review sets the stage for a good theoretical framework, this in turn provides the logical base for developing testable hypotheses.

- **Learning objective 4: Develop a set of hypotheses to be tested.**
  Hypotheses are derived from the theory on which a conceptual model is based. They are often relational in nature. Along these lines, hypotheses can be defined as logically conjectured relationships between two or more variables expressed in the form of testable statements. By testing the hypotheses and confirming the conjectured relationships, it is expected that solutions can be found to correct the problem encountered.

- **Learning objective 5: Demonstrate awareness of the role of the manager in the development of a theoretical framework.**
  Knowledge of how and for what purpose the theoretical framework is developed and the hypotheses are generated enables the manager to be an intelligent judge of the research report submitted by the researcher.

In the next chapter we will examine a number of basic research design issues.

Visit the companion website at **www.wiley.com/college/sekaran** for **Case Study: The Social Network**.

DISCUSSION QUESTIONS

1. "Because literature review is a time-consuming exercise, a good, in-depth interview should suffice to develop a theoretical framework." Discuss this statement.
2. "Good models are complex. What's more, a good model should include both moderating and mediating variables." Discuss this statement.
3. "Academic researchers usually develop more complex and elaborate models than applied researchers." Discuss this statement.
4. "In an applied research context you do not need to explain the relationships between the variables in your conceptual model." Discuss this statement.
5. There is an advantage in stating the hypothesis both in the null and in the alternate; it adds clarity to our thinking of what we are testing. Explain.
6. It is advantageous to develop a directional hypothesis whenever we are sure of the predicted direction. How will you justify this statement?
7. In recent decades, many service markets have been liberalized. For this reason, incumbent service firms are facing new competitors and must address customer switching. You are discussing the determinants of customer switching with a service firm manager. She believes that product quality, relationship quality, and switching costs are important determinants of customer switching. You agree with the contention that product quality and relationship quality are important determinants of switching. However, you believe that switching costs *moderate* the relationships between product quality, relationship quality, and customer switching. Provide arguments for this contention.

8. For the following case:
   a. Identify the problem.
   b. Develop a diagram representing the conceptual model.
   c. Develop the hypotheses.

   Concerned about her current customer base, manager Andersen started to think of factors that might affect the attractiveness of an auditing firm. Of course, the service quality provided and the fees charged by the auditor seem two important factors. Next, she decides that the reputation of the auditing firm also needs to be included in the framework as an independent variable. As illustrated by the dramatic effects of recent auditing scandals, reputation seems especially important for large auditors (i.e., auditing firms that are large in size). Finally, manager Andersen also thinks that the proximity of the auditing firm to the customer is another variable to be included as an independent variable. Proximity very likely affects the possibility for the client to personally meet with the auditors on a regular basis and she knows from her own contact with customers that they perceive personal interactions as quite important.
9. Develop a conceptual model for the scenario below.

   Incidence of smoking in movies has started to increase again, after having declined for several decades. According to the National Cancer Institute, smoking is seen in at least three out of four contemporary box-office hits. What's more, identifiable cigarette brands appeared in about one-third of all movies in 2008. Exposure to smoking in movies is an important predictor of adolescent smoking initiation: smoking in movies has been shown to affect adolescents' intentions to start smoking. In turn, the intentions to start smoking are determined by a more positive attitude toward smoking after seeing a film character smoke. Recent research has revealed that the relationship between seeing a film character smoke and the attitude toward smoking is stronger when a person's identification with a film character increases. These findings are consistent with social learning theory, which predicts that attitudes and behaviors are modeled by observing the behaviors of others.
10. Develop a conceptual model for the following case.

    Once given, bonuses are extraordinarily hard to take away without undermining employee morale. The adverse effects of these cuts far outweigh the anticipated savings in dollars. Research has shown that when the reason behind the cuts is explained to employees, morale does not drop.
11. Product placement is a form of advertising in which a company's products and name are intentionally positioned in motion pictures, television programs, radio broadcasts, and the like. Product placement can take many forms: verbal mentions in dialogue; actual use by a character; or visual displays (for instance, a company logo on a vehicle or billboard). Develop a theoretical framework on this issue, based on a review of the current literature. This framework should include:
    a. a specification and definition of an appropriate dependent variable;
    b. a conceptual model that describes the relationships between the dependent variable, at least one independent variable, and either a moderating or a mediating variable;
    c. a theory on why you would expect these relationships to exist;
    d. an appropriate number of testable hypotheses.

PRACTICE PROJECT

For the topic you chose to work on for the project in Chapter 4, do the following:

- Go through the computer-generated bibliography again.
- Define a problem statement that, in your opinion, would be most useful for researchers to investigate.
- Carry out a literature review that would seem to offer the greatest potential for developing a good theoretical framework, using about five to seven references.
- Develop the theoretical framework incorporating its three basic features, as discussed in the chapter.
- Generate a set of testable hypotheses based on the theoretical framework.

CHAPTER 6

Elements of research design

LEARNING OBJECTIVES

After completing Chapter 6 you should be able to:

1. Explain what is meant by a research design.
2. Develop an appropriate research design for any given study.
3. Explain why a researcher might be constrained to settle for less than the "ideal" research design.
4. Demonstrate awareness of the role of the manager in the area of research design.

INTRODUCTION

Up to now you have made a great effort to:

- develop a problem statement;
- develop a research proposal;
- conduct a critical review of the literature;
- document your literature review; and
- (in deductive research) develop a theoretical framework and hypotheses.

The next step is to design the research in such a way that the requisite data can be gathered and analyzed to answer your research questions to be able to arrive at a solution for the problem that catalyzed the research project.

THE RESEARCH DESIGN

A **research design** is a blueprint or plan for the collection, measurement, and analysis of data, created to answer your research questions.

The various issues involved in the research design and discussed in this chapter are shown comprehensively in Figure 6.1. As may be seen, issues relating to decisions regarding the research strategy (for instance, experiments, surveys, case studies), the extent to which the study is manipulated and controlled by the researcher (extent of

researcher interference), location (i.e., the study setting), the level at which the data will be analyzed (unit of analysis), and temporal aspects (the time horizon) are integral to research design. These issues are discussed in this chapter.

As shown in Figure 6.1, each component of the research design offers several critical choice points. Obviously, there is no single design that is superior in all circumstances. Instead, you will have to make choices and create a design that is suitable for the job at hand. The quality of a research design depends on how carefully you choose the appropriate design alternatives, taking into consideration the specific objectives, research questions, and constraints of the project, such as access to data, time, and/or money.

In addition to the decisions above regarding the research design, choices have to be made as to the data collection method to be used, the type of sample (sampling design), how variables will be measured (measurement), and how they will be analyzed to test the hypotheses (data analysis). These issues are discussed in subsequent chapters.

ELEMENTS OF RESEARCH DESIGN

Research strategies

A strategy is a plan for achieving a certain goal. A *research strategy* will help you to meet your research objective(s) and to answer the research questions of your study. The choice for a particular research strategy will therefore depend on the research objective(s) and (the type of) research questions of your study, but also on your viewpoint on what makes good research and on practical aspects such as access to data sources and time constraints.

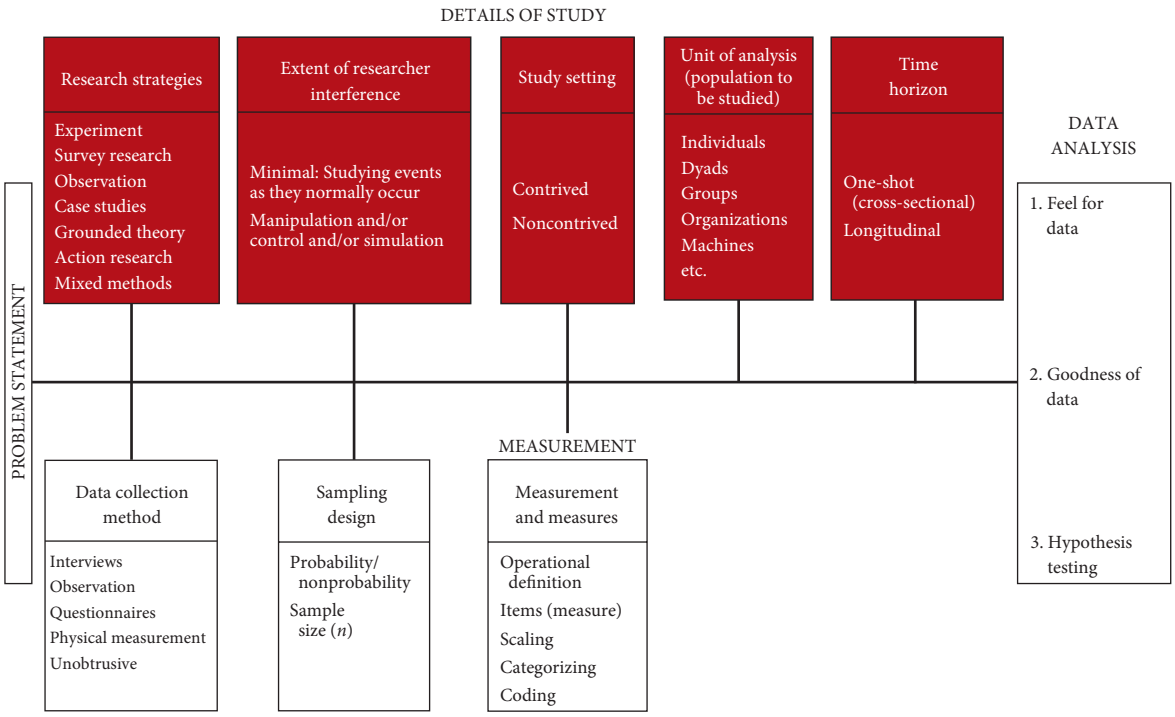

FIGURE 6.1

The research design

In this section we will discuss the following research strategies: experiments, surveys, ethnography, case studies, grounded theory, and action research.

Experiments

Experiments are usually associated with a hypothetico-deductive approach to research. The purpose of an experiment is to study causal relationships between variables. Experimental designs are less useful or appropriate for answering exploratory and descriptive research questions.

In an experiment, the researcher *manipulates* the independent variable to study the effect of this manipulation on the dependent variable. In other words, the researcher deliberately changes a certain variable (or certain variables), for instance "reward system", to establish whether (and to what extent) this change will produce a change in another variable, in this example "productivity". The simplest experimental design is a two-group, post-test-only, randomized experiment, where one group gets a treatment, for instance "piece wages". The other group (the comparison group, in this example the "hourly wages" group) does not get the treatment. Subjects (workers) are randomly assigned to the groups and hence the researcher is able to determine whether the productivity of the two groups is different after the treatment. Later on in this chapter, we will have more to say about the extent of researcher interference with the study and the study setting. This will help us to make a distinction among field experiments and lab experiments. Chapter 10 discusses lab experiments and field experiments, manipulation, controlling "nuisance" variables, factors affecting the validity of experiments, and various types of experiments in considerable detail.

Under the right circumstances, an experimental design is a very strong design to use. However, experimental designs are not always feasible in an applied research context where the researcher tries to solve a management problem. For instance, we do not want (for obvious reasons) to assign customers to a low service quality treatment to study the effect of service quality on customer retention or assign workers to highly stressful situations to investigate the effect of work-related stress on personal and professional relations. In such cases, we may opt for an alternative research strategy to answer the research questions of their study.

Survey research

A **survey** is a *system* for collecting information from or about people to describe, compare, or explain their knowledge, attitudes, and behavior (Fink, 2003). The survey strategy is very popular in business research, because it allows the researcher to collect quantitative and qualitative data on many types of research questions. Indeed, surveys are commonly used in exploratory and descriptive research to collect data about people, events, or situations. For instance, in a business context, surveys are often taken on the subject of consumer decision making, customer satisfaction, job satisfaction, the use of health services, management information systems, and the like. A large number of such surveys are one-time surveys. Other surveys are continuing, allowing the researcher to observe changes over time. The questions in survey instruments are typically arranged into self-administered questionnaires that a respondent completes on his or her own, either on paper or via the computer. Other survey instruments are interviews and structured observation. Interviews, observation, and self-administered questionnaires are discussed in subsequent chapters. Interviews are discussed in Chapter 7, structured observation in Chapter 8, and self-administered questionnaires in Chapter 9.

Ethnography

Ethnography is a research strategy that has its roots in anthropology. It is a strategy in which the researcher "closely observes, records, and engages in the daily life of another culture [. . .] and then writes accounts of this culture, emphasizing descriptive detail" (Markus & Fischer, 1986, p. 18). Ethnography involves immersion in the particular culture of the social group that is being studied (such as, for instance, bankers in the City of London),

observing behavior, listening to what is said in conversations, and asking questions. It thus aims to generate an understanding of the culture and behavior of a social group from an "insider's point of view."

Participant observation is closely related to **ethnography**. However, different people have different ideas about the exact relationship between the two. Ethnography and participant observation are sometimes used interchangeably in the literature. For some, both ethnography and participant observation are research strategies that involve spending long periods watching people and talking to them about what they are doing, thinking, and saying, with the objective of generating an understanding of the social group under study (Delamont, 2004). For others, ethnography is a more inclusive term, whereas participant observation is more specific and related to a particular method of data collection. From this perspective, participant observation is a primary source of ethnographic data. However, it is just one of a number of methods, and rarely the only method, used by a researcher to generate an understanding of a culture or a social group. Along these lines, observation – observing behavior through a long-term engagement in the field setting where ethnography takes place – is regarded as one of several methods for ethnographic research. Other methods, such as interviews and questionnaires, may also be used to collect data in ethnographic research. We will have more to say about these various approaches to observation in Chapter 8.

Case studies

Case studies focus on collecting information about a specific object, event or activity, such as a particular business unit or organization. In case studies, the case is the individual, the group, the organization, the event, or the situation the researcher is interested in. The idea behind a case study is that in order to obtain a clear picture of a problem one must examine the real-life situation from various angles and perspectives using multiple methods of data collection. Along these lines, one may define a case study as a research strategy that involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple methods of data collection (Yin, 2009). It should be noted that case studies may provide both qualitative and quantitative data for analysis and interpretation. As in experimental research, hypotheses can be developed in case studies as well. However, if a particular hypothesis has not been substantiated in even a single other case study, no support can be established for the alternate hypothesis developed.

Grounded theory

Grounded theory is a systematic set of procedures to develop an inductively derived theory from the data (Strauss & Corbin, 1990). Important tools of grounded theory are theoretical sampling, coding, and constant comparison. Theoretical sampling is "the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes the data and decides what data to collect next and where to find them, in order to develop his theory as it emerges" (Glaser & Strauss, 1967, p. 45). In constant comparison you compare data (for instance, an interview) to other data (for instance, another interview). After a theory has emerged from this process you compare new data with your theory. If there is a bad fit between data (interviews), or between the data and your theory, then the categories and theories have to be modified until your categories and your theory fit the data. In constant comparison, discrepant and disconfirming cases play an important role in rendering categories and (grounded) theory.

Action research

Action research is sometimes undertaken by consultants who want to initiate change processes in organizations. In other words, **action research** is a research strategy aimed at effecting planned changes. Here, the researcher begins with a problem that is already identified, and gathers relevant data to provide a tentative problem solution. This solution is then implemented, with the knowledge that there may be unintended

consequences following such implementation. The effects are then evaluated, defined, and diagnosed, and the research continues on an ongoing basis until the problem is fully resolved. Thus, action research is a constantly evolving project with interplay among problem, solution, effects or consequences, and new solution. A sensible and realistic problem definition and creative ways of collecting data are critical to action research.

Extent of researcher interference with the study

The extent of **interference** by the researcher has a direct bearing on whether the study undertaken is correlational or causal. A correlational study (recall that a correlational study is descriptive in nature, see Chapter 3) is conducted in a natural environment (for instance, a supermarket or the factory floor) with minimal interference by the researcher with the normal flow of events. For example, if a researcher wants to study the factors influencing training effectiveness (a correlational study), all that the individual has to do is delineate the relevant variables, collect the relevant data, and analyze them to come up with the findings. Though there is some disruption to the normal flow of work in the system as the researcher interviews employees and administers questionnaires in the workplace, the researcher's interference in the routine functioning of the system is minimal as compared to that caused during causal studies and experimental designs.

In studies conducted to establish cause-and-effect relationships, the researcher tries to manipulate certain variables so as to study the effects of such manipulation on the dependent variable of interest. In other words, the researcher deliberately changes certain variables in the setting and interferes with the events as they normally occur. As an example, a researcher might want to study the influence of lighting on worker performance; hence he manipulates the lighting in the work situation to varying intensities. Here, there is considerable researcher interference with the natural and normal setting. In other cases the researcher might even want to create an altogether new artificial setting where the cause-and-effect relationships can be studied by manipulating certain variables and tightly controlling certain others, as in a laboratory. Thus, there could be varying degrees of interference by the researcher in the manipulation and control of variables in the research study, either in the natural setting or in an artificial lab setting.

Let us give examples of research with varying degrees of interference – minimal, moderate, and excessive.

EXAMPLE

Minimal interference

A hospital administrator wants to examine the relationship between the perceived emotional support in the system and the stresses experienced by the nursing staff. In other words, she wants to do a correlational study. Here, the administrator/researcher will collect data from the nurses (perhaps through a questionnaire) to indicate how much emotional support they get in the hospital and to what extent they experience stress. (We will learn in a later chapter how to measure these variables.) By correlating the two variables, the answer that is being sought can be found. In this case, beyond administering a questionnaire to the nurses, the researcher has not interfered with the normal activities in the hospital. In other words, researcher interference has been minimal.

Moderate interference

The same researcher is now no longer content with finding a correlation, but wants to firmly establish a causal connection. That is, the researcher wants to demonstrate that if the nurses had emotional support, this indeed would cause them to experience less stress. If this can be

established, then the nurses' stress can definitely be reduced by offering them emotional support. To test the cause-and-effect relationship, the researcher will measure the stress currently experienced by the nurses in three wards in the hospital, and then deliberately manipulate the extent of emotional support given to the three groups of nurses in the three wards for, perhaps, a week, and measure the amount of stress at the end of that period. For one group, the researcher will ensure that a number of lab technicians and doctors help and comfort the nurses when they face stressful events – for example, when they care for patients suffering excruciating pain and distress in the ward. Under a similar setup, for a second group of nurses in another ward, the researcher might arrange only a moderate amount of emotional support, employing only the lab technicians and excluding doctors. The third ward might operate without any emotional support. If the experimenter's theory is correct, then the reduction in the stress levels before and after the one-week period should be greatest for the nurses in the first ward, moderate for those in the second ward, and nil for the nurses in the third ward. Here we find that not only does the researcher collect data from nurses on their experienced stress at two different points in time, but she also "plays with" or manipulates the normal course of events by deliberately changing the amount of emotional support received by the nurses in two wards, while leaving things in the third ward unchanged. Here, the researcher has interfered more than minimally.

Excessive interference

The above researcher, after conducting the previous experiments, feels that the results may or may not be valid since other external factors might have influenced the stress levels experienced by the nurses. For example, during that particular experimental week, the nurses in one or more wards may not have experienced high levels of stress because there were no serious illnesses or deaths in the ward. Hence, the emotional support received might not be related to the level of stress experienced. The researcher might now want to make sure that such extraneous factors as might affect the cause-and-effect relationship are controlled. So she might take three groups of medical students, put them in different rooms, and confront all of them with the same stressful task. For example, she might ask them to describe in the minutest detail, the procedures in performing surgery on a patient who has not responded to chemotherapy and keep bombarding them with more and more questions even as they respond. Although all are exposed to the same intensive questioning, one group might get help from a doctor who voluntarily offers clarification and help when students stumble. In the second group, a doctor might be nearby, but might offer clarification and help only if the group seeks it. In the third group, there is no doctor present and no help is available. In this case, not only is the support manipulated, but even the setting in which this experiment is conducted is artificial inasmuch as the researcher has taken the subjects away from their normal environment and put them in a totally different setting. Here, the researcher has intervened maximally with the normal setting, the participants, and their duties. In Chapter 10 we will see why such manipulations are necessary to establish cause-and-effect relationships beyond any doubt.

In summary, the extent of researcher interference is related to whether the research questions are correlational or causal in nature and to the importance of establishing a causal relationship beyond any doubt what so ever.

Study setting: contrived and noncontrived

As we have just seen, business research can be done in the natural environment where events proceed normally (i.e., in **noncontrived settings**) or in artificial, **contrived settings**. Exploratory and descriptive (correlational) studies are invariably conducted in noncontrived settings, whereas most causal studies are done in contrived lab settings.

Studies done in noncontrived settings are called **field studies**. Studies conducted to establish cause-and-effect relationships using the same natural environment in which the subjects under study (employees, consumers, managers, and the like) normally function are called **field experiments**. Here, as we have seen earlier, the researcher does interfere with the natural occurrence of events inasmuch as the independent variable is manipulated. For example, a manager wanting to know the effects of pay on performance should raise the salary of employees in one unit, decrease the pay of employees in another unit, and leave the pay of the employees in a third unit untouched. Here there is a tampering with, or manipulating of, the pay system to establish a cause-and-effect relationship between pay and performance, but the study is still conducted in the natural setting and hence is called a field experiment.

Experiments done to establish a cause-and-effect relationship beyond the possibility of the least doubt require the creation of an artificial, contrived environment in which all the extraneous factors are strictly controlled. Similar subjects are chosen carefully to respond to certain manipulated stimuli. These studies are referred to as **lab experiments**. Let us give some further examples to understand the differences among a field study (a noncontrived setting with minimal researcher interference), a field experiment (noncontrived setting but with researcher interference to a moderate extent), and a lab experiment (a contrived setting with researcher interference to an excessive degree).

EXAMPLE

Field study

A bank manager wants to analyze the relationship between interest rates and bank deposit patterns of clients. She tries to correlate the two by looking at deposits into different kinds of accounts (such as savings, certificates of deposit, golden passbooks, and interest-bearing checking accounts) as interest rates change. This is a field study where the bank manager has merely taken the balances in various types of account and correlated them to the changes in interest rates. Research here is done in a noncontrived setting with no interference with the normal work routine.

Field experiment

The bank manager now wants to determine the cause-and-effect relationship between the interest rate and the inducement it offers to clients to save and deposit money in the bank. She selects four branches within a 60-mile radius for the experiment. For one week only, she advertises the annual rate for new certificates of deposit received during that week in the following manner: the interest rate will be 9% in one branch, 8% in another, and 10% in the third. In the fourth branch, the interest rate remains unchanged at 5%. Within the week, she will be able to determine the effects, if any, of interest rates on deposit mobilization.

The above is a field experiment since nothing but the interest rate is manipulated, with all activities occurring in the normal and natural work environment. Hopefully, all four branches chosen will be more or less compatible in size, number of depositors, deposit patterns, and the like, so that the interest–savings relationships are not influenced by some third factor. But it is possible that some other factors might affect the findings. For example, one of the areas may have more retirees who may not have additional disposable income to deposit, despite the attraction of a good interest rate. The banker may not have been aware of this fact while setting up the experiment.

Lab experiment

The banker in the previous example may now want to establish the causal connection between interest rates and savings, beyond a doubt. Because of this, she wants to create an artificial environment and trace the true cause-and-effect relationship. She recruits 40 students

who are all business majors in their final year of study and are more or less of the same age. She splits them into four groups and gives each one of them chips that count for $1000, which they are told they might utilize to buy their needs, or save for the future, or both. She offers them, by way of incentive, interest on what they save but manipulates the interest rates by offering a 6% interest rate on savings for group 1, 8% for group 2, 9% for group 3, and keeps the interest at the low rate of 1% for group 4.

Here, the manager has created an artificial laboratory environment and has manipulated the interest rates for savings. She has also chosen subjects with similar backgrounds and exposure to financial matters (business students). If the banker finds that the savings by the four groups increase progressively, keeping in step with the increasing rates of interest, she will be able to establish a cause-and-effect relationship between interest rates and the disposition to save.

In this lab experiment with the contrived setting, the researcher interference has been maximal, inasmuch as the setting is different, the independent variable has been manipulated, and most external nuisance factors such as age and experience have been controlled.

Experimental designs are discussed more fully in Chapter 10. However, the above examples show us that it is important to decide the various design details before conducting the research study, since one decision criterion might have an impact on others. For example, if one wants to conduct an exploratory or a descriptive study, then the necessity for the researcher to interfere with the normal course of events will be minimal. However, if causal connections are to be established, experimental designs need to be set up either within a setting where the events normally occur (a field experiment) or in an artificially created laboratory setting (a lab experiment).

In summary, we have thus far made a distinction among (1) field studies, where various factors are examined in the natural setting in which daily activities go on as normal with minimal researcher interference, (2) field experiments, where cause-and-effect relationships are studied with some amount of researcher interference, but still in the natural setting where events continue in the normal fashion, and (3) lab experiments, where the researcher explores cause-and-effect relationships, not only exercising a high degree of control but also in an artificial and deliberately created setting. In Chapter 10 we will see the advantages and disadvantages of using contrived and noncontrived settings for establishing cause-and-effect relationships.

Unit of analysis: individuals, dyads, groups, organizations, cultures

The **unit of analysis** refers to the level of aggregation of the data collected during the subsequent data analysis stage. If, for instance, the problem statement focuses on how to raise the motivational levels of employees in general, then we are interested in individual employees in the organization and have to find out what we can do to raise their motivation. Here the unit of analysis is the individual. We will be looking at the data gathered from each individual and treating each employee's response as an individual data source. If the researcher is interested in studying two-person interactions, then several two-person groups, also known as *dyads*, will become the unit of analysis. Analysis of husband–wife interactions in families and supervisor–subordinate relationships in the workplace are good examples of dyads as the unit of analysis. However, if the problem statement is related to group effectiveness, then the unit of analysis will be at the group level. In other words, even though we may gather relevant data from all individuals comprising, say, six groups, we aggregate the individual data into group data so as to see the differences among the six groups. If we are comparing different departments in the organization, then the data analysis will be done at the departmental level – that is, the individuals in the department will be treated as one unit – and comparisons made by treating the department as the unit of analysis.

Our research question determines the appropriate unit of analysis. For example, if we wish to study group decision-making patterns, we will probably be examining such aspects as group size, group structure, cohesiveness, and the like, in trying to explain the variance in group decision making. Here, our main interest is not in studying individual decision making but *group* decision making, and we will be studying the dynamics that operate in several different groups and the factors that influence group decision making. In such a case, the unit of analysis will be groups.

As our research question addresses issues that move away from the individual to dyads, and to groups, organizations, and even nations, so also does the unit of analysis shift from individuals to dyads, groups, organizations, and nations. The characteristic of these "levels of analysis" is that the lower levels are subsumed within the higher levels. Thus, if we study buying behavior, we have to collect data from, say, 60 individuals, and analyze the data. If we want to study group dynamics, we may need to study, say, six or more groups, and then analyze the data gathered by examining the patterns in each of the groups. If we want to study cultural differences among nations, we will have to collect data from different countries and study the underlying patterns of culture in each country. Some critical issues in cross-cultural research are discussed in later chapters.

Individuals do not have the same characteristics as groups (e.g., structure, cohesiveness), and groups do not have the same characteristics as individuals (e.g., IQ, stamina). There are variations in the perceptions, attitudes, and behaviors of people in different cultures. Hence, the nature of the information gathered, as well as the level at which data are aggregated for analysis, are integral to decisions made on the choice of the unit of analysis.

It is necessary to decide on the unit of analysis even as we formulate the research question, since the data collection methods, sample size, and even the variables included in the framework may sometimes be determined or guided by the level at which data are aggregated for analysis.

Let us examine some research scenarios that would call for different units of analysis.

EXAMPLE

Individuals as the unit of analysis

The Chief Financial Officer of a manufacturing company wants to know how many of the staff would be interested in attending a three-day seminar on making appropriate investment decisions. For this purpose, data will have to be collected from each individual staff member and the unit of analysis is the individual.

Dyads as the unit of analysis

Having read about the benefits of mentoring, a human resources manager wants to first identify the number of employees in three departments of the organization who are in mentoring relationships, and then find out what the jointly perceived benefits (i.e., by both the mentor and the one mentored) of such a relationship are. Here, once the mentor and the mentored pairs are identified, their joint perceptions can be obtained by treating each pair as one unit. Hence, if the manager wants data from a sample of 10 pairs, he will have to deal with 20 individuals, a pair at a time. The information obtained from each pair will be a data point for subsequent analysis. Thus, the unit of analysis here is the dyad.

Groups as the unit of analysis

A manager wants to see the patterns of usage of the newly installed information system (IS) by the production, sales, and operations personnel. Here, three groups of personnel are involved and information on the number of times the IS is used by each member in

each of the three groups, as well as other relevant issues, will be collected and analyzed. The final results will indicate the mean usage of the system per day or month for each group. Here, the unit of analysis is the group.

Divisions as the unit of analysis

Procter & Gamble wants to see which of its various divisions (soap, paper, oil, etc.) have made profits of over 12% during the current year. Here, the profits of each of the divisions will be examined and the information aggregated across the various geographical units of the division. Hence, the unit of analysis will be the division, at which level the data will be aggregated.

Industry as the unit of analysis

An employment survey specialist wants to see the proportion of the workforce employed by the health care, utilities, transportation, and manufacturing industries. In this case, the researcher has to aggregate the data relating to each of the subunits comprised in each of the industries and report the proportions of the workforce employed at the industry level. The health care industry, for instance, includes hospitals, nursing homes, mobile units, small and large clinics, and other health care providing facilities. The data from these subunits will have to be aggregated to see how many employees are employed by the health care industry. This will need to be done for each of the other industries.

Countries as the unit of analysis

The Chief Financial Officer (CFO) of a multinational corporation wants to know the profits made during the past five years by each of the subsidiaries in England, Germany, France, and Spain. It is possible that there are many regional offices of these subsidiaries in each of these countries. The profits of the various regional centers for each country have to be aggregated and the profits for each country for the past five years provided to the CFO. In other words, the data will now have to be aggregated at the country level. As can be easily seen, the data collection and sampling processes become more cumbersome at higher levels of units of analysis (industry, country) than at the lower levels (individuals and dyads). It is obvious that the unit of analysis has to be clearly identified as dictated by the research question. Sampling plan decisions will also be governed by the unit of analysis. For example, if I compare two cultures, for instance those of India and the United States –where my unit of analysis is the country – my sample size will be only two, despite the fact that I shall have to gather data from several hundred individuals from a variety of organizations in the different regions of each country, incurring huge costs. However, if my unit of analysis is individuals (as when studying the buying patterns of customers in the southern part of the United States), I may perhaps limit the collection of data to a representative sample of a hundred individuals in that region and conduct my study at a low cost!

It is now even easier to see why the unit of analysis should be given serious consideration even as the research question is being formulated and the research design planned.

Time horizon: cross-sectional versus longitudinal studies

Cross-sectional studies

A study can be undertaken in which data are gathered just once, perhaps over a period of days or weeks or months, in order to answer a research question. Such studies are called **one-shot** or **cross-sectional studies** (see the following example).

The purpose of the studies in the two following examples was to collect data that would be pertinent to finding the answer to a research question. Data collection at one point in time was sufficient. Both were cross-sectional designs.

EXAMPLE

E.1 Data were collected from stock brokers between April and June of last year to study their concerns in a turbulent stock market. Data with respect to this particular research had not been collected before, nor will they be collected again for this research.

E.2 A drug company wanting to invest in research for a new obesity (reduction) pill conducted a survey among obese people to see how many of them would be interested in trying the new pill. This is a one-shot or cross-sectional study to assess the likely demand for the new product.

Longitudinal studies

In some cases, however, the researcher might want to study people or phenomena at more than one point in time in order to answer the research question. For instance, the researcher might want to study employees' behavior before and after a change in the top management, so as to know what effects the change accomplished. Here, because data are gathered at two different points in time, the study is not cross-sectional or of the one-shot kind, but is carried longitudinally across a period of time. Such studies, as when data on the dependent variable are gathered at two or more points in time to answer the research question, are called **longitudinal studies**.

EXAMPLE

E.1 A marketing manager is interested in tracing the pattern of sales of a particular product in four different regions of the country on a quarterly basis for the next two years. Since data will be collected several times to answer the same issue (tracing pattern of sales), the study falls into the longitudinal category.

E.2 In 2002, Sturges, Guest, Conway and Davey published the results of a two-wave longitudinal study investigating the relationship between career management and organizational commitment among graduates in the first ten years at work. Data were collected at two points in time 12 months apart. The results of this study showed that high organizational commitment predicts the practice of career management activities by graduates to further their career within the organization. On the other hand, low commitment was closely associated with behavior aimed at furthering their career outside the organization. The results also pointed out that graduates who manage their own careers receive more career management help from their employer. This suggests that there may be the potential for employers to create a "virtuous circle" of career management in which individual and organizational activities complement each other.

Longitudinal studies take more time and effort and cost more than cross-sectional studies. However, well-planned longitudinal studies can, among other things, help to identify cause-and-effect relationships. For example, one could study the sales volume of a product before and after an advertisement, and provided other environmental changes have not impacted on the results, one could attribute the increase in the sales volume, if any, to the advertisement. If there is no increase in sales, one could conclude that either the advertisement is ineffective or it will take a longer time to take effect.

Experimental designs invariably are longitudinal studies, since data are collected both before and after a manipulation. Field studies may also be longitudinal. For example, a study of the comparison data pertaining to the reactions of managers in a company toward working women now and ten years later will be a longitudinal

field study. Most field studies conducted, however, are cross-sectional in nature often because of the time, effort, and costs involved in collecting data over several time periods. Longitudinal studies will certainly be necessary if a manager wants to keep track of certain factors (e.g., sales, advertising effectiveness, etc.) over a period of time to assess improvements, or to detect possible causal connections (sales promotions and actual sales data; frequency of drug testing and reduction in drug usage, etc.). Though more expensive, longitudinal studies offer some good insights.

MIXED METHODS

Earlier (in Chapter 3) we explained that qualitative studies are often carried out to better understand the nature of a problem. Extensive interviews with many people might have to be undertaken to get a handle on the situation and understand the phenomenon. When the data reveal some pattern regarding the phenomenon of interest, theories are developed and hypotheses formulated. Other methods, such as an experimental method, for instance, are subsequently used to test these hypotheses. Along these lines, combinations of qualitative and quantitative methods are used in many studies.

Mixed methods research aims to answer research questions that cannot be answered by "qualitative" or "quantitative" approaches alone. Mixed methods research focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. A mixed methods approach is increasingly advocated within business research. The attractiveness of this approach is that it allows researchers to combine inductive and deductive thinking, to use more than one research method to address the research problem, and to solve this problem using different types of data. On the other hand, a mixed methods approach complicates the research design and therefore requires clear presentation to allow the reader to sort out its different components.

EXAMPLE

Henry Mintzberg interviewed managers to explore the nature of managerial work. Based on the analysis of his interview data, he formulated theories of managerial roles, the nature and types of managerial activities, and so on. These have been tested in different settings through both interviews and questionnaire surveys.

Triangulation is a technique that is also often associated with using mixed methods. The idea behind triangulation is that one can be more confident in a result if the use of different methods or sources leads to the same results. Triangulation requires that research is addressed from multiple perspectives. Several kinds of triangulation are possible:

- Method triangulation: using multiple methods of data collection and analysis.
- Data triangulation: collecting data from several sources and/or at different time periods.
- Researcher triangulation: multiple researchers collect and/or analyze the data.
- Theory triangulation: multiple theories and/or perspectives are used to interpret and explain the data.

TRADE-OFFS AND COMPROMISES

This concludes the discussions on the basic design issues regarding the research strategy, extent of researcher interference, study setting, unit of analysis, and the time horizon. The researcher determines the appropriate decisions to be made in the study design based on the research perspective of the investigator, the research objective(s), research questions, the extent of rigor desired, and practical considerations. Sometimes, because of the time and costs involved, a researcher might be constrained to settle for less than the "ideal" research design. For instance, the researcher might have to conduct a cross-sectional instead of a longitudinal study, do a field study rather than an experimental design, choose a smaller rather than a larger sample size, and so on, thus suboptimizing the research design decisions and settling for a lower level of scientific rigor because of resource constraints. This trade-off between rigor and practical considerations will be a deliberate and conscious decision made by the manager/researcher, and will have to be explicitly stated in the research report. Compromises so made also account for why management studies are not entirely scientific, as discussed in Chapter 2. Mixed methods research focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies. As stated above, a mixed methods approach complicates the research design and therefore requires clear presentation to allow the reader to sort out its different components. Regardless of the complexity of the design, the researcher always has to be very clear about each aspect discussed in this chapter before embarking on data collection.

Now do Exercises 6.1, 6.2, 6.3, and 6.4.

EXERCISE 6.1

A foreman thinks that the low efficiency of the machine tool operators is directly linked to the high level of fumes emitted in the workshop. He would like to prove this to his supervisor through a research study.

1. Would this be a causal or a correlational study? Why?
2. Is this an exploratory, a descriptive, or a causal study? Why?
3. What kind of a study would this be: field study, lab experiment, or field experiment? Why?
4. What would be the unit of analysis? Why?
5. Would this be a cross-sectional or a longitudinal study? Why?

EXERCISE 6.2

You want to examine how exposure to thin or heavy models in advertisements influences a person's self-esteem. You believe that the effect of exposure to models in advertisements depends on the extremity of the model's thinness or heaviness. Discuss the design decisions that you as a researcher will make to investigate this issue, giving reasons for your choices.

EXERCISE 6.3

You want to investigate the specific effects of specific emotions on customers' behavioral responses to failed service encounters across industries. Discuss the design decisions that you as a researcher will make to investigate this issue, giving reasons for your choices.

EXERCISE 6.4

You are interested in how person–organization fit relates to employees' affective commitment and intention to stay with an organization during the early stages of a strategic organizational change.

MANAGERIAL IMPLICATIONS

Knowledge about research design issues helps the manager to understand what the researcher is attempting to do. The manager also understands why the reports sometimes indicate data analytic results based on small sample sizes, when a lot of time has been spent in collecting data from several scores of individuals, as in the case of studies involving groups, departments, or branch offices.

One of the important decisions a manager has to make before starting a study pertains to how rigorous the study ought to be. Knowing that more rigorous research designs consume more resources, the manager is in a position to weigh the gravity of the problem experienced and decide what kind of design will yield acceptable results in an efficient manner. For example, the manager might decide that knowledge of which variables are associated with employee performance is good enough to enhance performance results and there is no need to ferret out the cause. Such a decision would result not only in economy in resources, but also cause the least disruption to the smooth flow of work for employees and preclude the need for collecting data longitudinally. Knowledge of interconnections among various aspects of the research design helps managers to call for the most effective study, after weighing the nature and magnitude of the problem encountered, and the type of solution desired.

One of the main advantages in fully understanding the difference between causal and correlational studies is that managers do not fall into the trap of making implicit causal assumptions when two variables are only associated with each other. They realize that *A* could cause *B*, or *B* could cause *A*, or both *A* and *B* could covary because of some third variable.

Knowledge of research design details also helps managers to study and intelligently comment on research proposals and on research reports.

SUMMARY

- **Learning objective 1: Explain what is meant by a research design.**
  A research design is a blueprint or plan for the collection, measurement, and analysis of data, created to answer your research questions. Issues relating to decisions regarding the research strategy (for instance, experiments, surveys, case studies), the extent of researcher interference, location (i.e., the study setting), the level at which the data will be analyzed (unit of analysis), and temporal aspects (the time horizon) are integral to research design.

- **Learning objective 2: Develop an appropriate research design for any given study.**
  Each component of the research design offers several critical choice points. There is no single design that is superior in all circumstances. Instead, the researcher will have to make choices and create a design that is suitable for the job at hand. The researcher determines the appropriate decisions to be made in the study design based on the research perspective of the investigator, the research objective(s), research questions, the extent of rigor desired, and practical considerations.

- **Learning objective 3: Explain why a researcher might be constrained to settle for less than the "ideal" research design.**
  Sometimes, because of the time and costs involved, a researcher might be constrained to settle for less than the "ideal" research design. For instance, the researcher might have to conduct a field study rather than an experimental design or choose a smaller rather than a larger sample size thus sub-optimizing the research design decisions and settling for a lower level of scientific rigor because of resource constraints. This trade-off between rigor and practical considerations should be a deliberate and conscious decision made by the researcher.

- **Learning objective 4: Demonstrate awareness of the role of the manager in the area of research design.**
  Knowledge about research design issues helps the manager to understand what the researcher is attempting to do and to study and intelligently comment on research proposals and on research reports.

Visit the companion website at **www.wiley.com/college/sekaran** for **Case Study: The effect of calorie information on food consumption**.

DISCUSSION QUESTIONS

1. What are the basic research design issues? Describe them in some detail.
2. Why is it important to consider basic design issues before conducting the study and even as early as at the time of formulating the research question?
3. Is a field study totally out of the question if one is trying to establish cause-and-effect relationships?
4. "A field study is often more useful than a lab experiment." Discuss this statement.
5. Why is the unit of analysis an integral part of the research design?
6. Discuss the interrelationships among the research questions of a study (exploratory, descriptive, causal), study setting (noncontrived or contrived), researcher interference, research strategy, and time horizon of study.
7. Below are three scenarios. Indicate how the researcher should proceed in each case; that is, determine the following, giving reasons:
   a. Type of research question (exploratory, descriptive, or causal).
   b. The extent of researcher interference.

c. The study setting.
d. The research strategy.
e. The time horizon for the study.
f. The unit of analysis.

Scenario 1

A specific department within an organization has a high turnover rate; employees of this department have a shorter average tenure than those of other departments in the company. Skilled workers are leaving and the worker population contains a high percentage of novice workers. Ms Joyce Lynn has no idea what is going on and wants to know more about what is happening.

Scenario 2

Mr Paul Hodge, the owner of several restaurants on the East Coast, is concerned about the wide differences in their profit margins. He would like to try some incentive plans for increasing the efficiency levels of those restaurants that lag behind. But before he actually does this, he would like to be assured that the idea will work. He asks a researcher to help him on this issue.

Scenario 3

A manager is intrigued as to why some people seem to derive joy from work and get energized by it, while others find it troublesome and frustrating.