LEARNING OUTCOMES

CHAPTER 6 PROBLEM DEFINITION: THE FOUNDATION OF BUSINESS RESEARCH

After studying this chapter, you should be able to

1. Explain why proper "problem definition" is essential to useful business research
2. Know how to recognize problems
3. Translate managerial decision statements into relevant research objectives
4. Translate research objectives into research questions and/or research hypotheses
5. Outline the components of a research proposal
6. Construct tables as part of a research proposal

Chapter Vignette: Deland Trucking Has a "Recruitment" Problem

David Deland, who has owned his trucking business for 20 years, struggles with the spreadsheet in front of him. His recruitment specialist sits glumly across from his desk, pondering what kind of response to give to the inevitable question, "Why are our recruitment costs so high?" Next to the specialist sits James Garrett, a business research consultant who has been hired by the Deland Trucking Company to get a handle on the recruitment expenses the company has seen skyrocket over the last six months.

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"I just don't get it," David sighs in frustration. "We have seen a 45 percent increase in our trucker recruitment advertising costs, and our trucker intake and orientation expenses are killing us! James, I just don't understand what is happening here."

James and the specialist have had some initial discussions, but there is no easy way to reduce those costs without reducing the number of truckers that Deland hires. "Perhaps we can find a more efficient way of advertising our openings," suggests the recruiting specialist. "Maybe we can reduce the number of orientation sessions or travel expenses associated with the hiring process." David counters, "Well, I don't see how we are any different from our competitors. We use the same recruitment and orientation approach that they use. I have no handle on their expenses, but the fact that our expenses are skyrocketing must mean something is going on."

James stares at his copy of the spreadsheet. "There is no easy way to do this, without hurting your ability to keep drivers in your trucks," he says. "Is it that the costs for driver selection and recruitment have gone up?" "No, the costs have been the same," responds the recruiter. "It's just that we have had to do so many orientation and hiring sessions since the first of the year."

"David, it might be best if I get a look at some of your hiring statistics, as well as your driver census over the last year," comments James. Turning to the recruiter, James asks, "Can you give me some of your driver data to look through?"

"Sure," says the recruiter. "We have lots of info about our drivers, and the driver census is updated monthly. We even have some exit data we have gathered from a few drivers who have left us. I don't know exactly what the trend is with those drivers who leave, since we haven't had a chance to really analyze the data. I will send it to you through e-mail this afternoon."

James drives back to his office, reflecting on his meeting. As he passes by trucks on the way, he peeks at the drivers who are going in the same direction as he is. What do they think about

their company? Would they see Deland as a great place to work? What would make Deland Trucking's recruitment costs go so high?

At his office, the e-mail with the trucker census and the hiring data has already arrived. Opening the numerous spreadsheets, James continues to wonder. Does Deland Trucking have a recruitment problem? Is the problem the company itself? What is going on?

As he examines the hiring worksheet, he compares it to the driver census figures for the last six months. "There is the problem!" he exclaims. "I think I need to put together a proposal for David on this. I'm sure he will be surprised about what his company's problem really is."

Introduction

Importance of Starting with a Good Problem Definition

The first stage of the research process introduced in the early chapters and highlighted in Chapter 4 involves translating the business decision situation into specific research objectives. While it is tempting to skip this step and go directly to designing a research project, the chances that a research project will prove useful are directly related to how well the research objectives correspond to the true business "problem." Clearly, the easiest thing for James to do in the opening vignette is to start designing a study of Deland Trucking's recruitment effectiveness. This seems to be what David and his specialist want. But is it what they really need?

This chapter looks at this important step in the research process more closely. Some useful tools are described that can help translate the business situation into relevant, actionable research objectives. Research too often takes the blame for business failures when the real failure was really management's view of its own company's situation. The Research Snapshot on page 110 describes some classic illustrations involving companies as big and successful as Coca-Cola, R.J. Reynolds, and Ford. While the researcher has some say in what is actually studied, remember that the client (either the firm's management team or an outside sponsor) is the research customer and the researcher is serving the client's needs through research. In other words, when the client fails to understand their situation or insists on studying an irrelevant problem, the research is very likely to fail, even if it is done perfectly.

Translating a business situation into something that can be researched is somewhat like translating one language into another. It begins by coming to a consensus on a decision statement or question. A **decision statement** is a written expression of the key question(s) that a research user wishes to answer. It is the reason that research is being considered. It must be well stated and relevant. As discussed in Chapter 4, the researcher translates this into research terms by rephrasing the decision statement into one or more research objectives. These are expressed as deliverables in the research proposal. The researcher then further expresses these in precise and scientific research terminology by creating research hypotheses from the research objectives.

decision statement
A written expression of the key question(s) that the research user wishes to answer.

In this chapter, we use the term *problem definition*. Realize that sometimes this is really opportunity seeking. For simplicity, the term **problem definition** is adapted here to refer to the process of defining and developing a decision statement and the steps involved in translating it into more precise research terminology, including a set of research objectives. If this process breaks down at any point, the research will almost certainly be useless or even harmful. It will be useless if it presents results that simply are deemed irrelevant and do not assist in decision making. It can be harmful both because of the wasted resources and because it may misdirect the company in a poor direction.

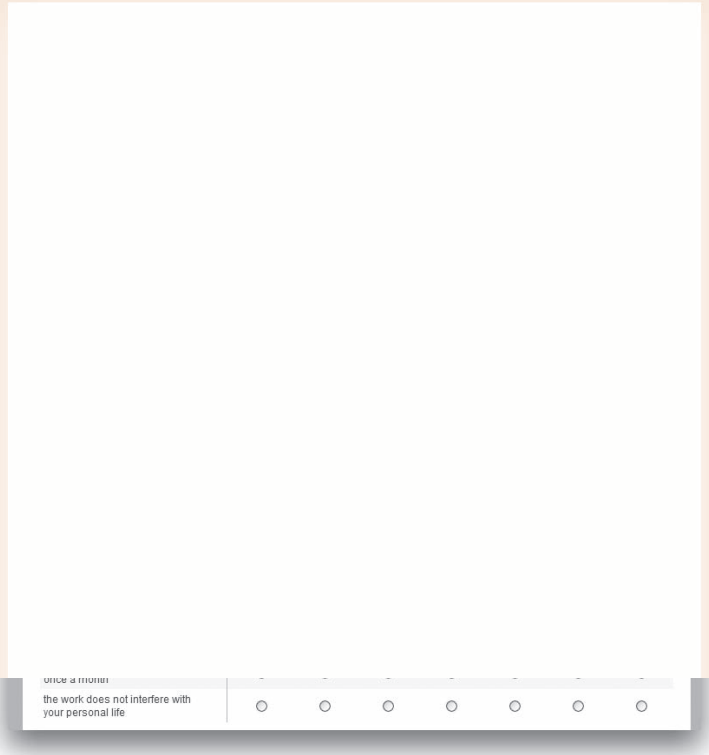
problem definition
The process of defining and developing a decision statement and the steps involved in translating it into more precise research terminology, including a set of research objectives.

Ultimately, it is difficult to say that any one step in the research process is most important. However, formally defining the problem to be attacked by developing decision statements and translating them into actionable research objectives must be done well or the rest of the research process is misdirected. Even a good road map is useless unless you know just where you are going. All of the roads can be correctly drawn, but they still don't get you where you want to be. Similarly, even the best research procedures will not overcome poor problem definition.

SURVEY THIS!

Consider the following questions as you think about this section of the survey and other sections of the survey not shown here.

- What kinds of decision statements might be involved using the information collected in this portion of the survey? Think about the types of companies that might be interested in this information.
- Would any nonprofit institutions be interested in this data?
- Translate a decision statement from above into a research question and the related research hypothesis or hypotheses.
- What would a dummy table look like that might provide the data for these hypotheses?



Problem Complexity

Ultimately, the quality of business research in improving business decisions is limited by the quality of the problem definition stage. This is far from the easiest stage of the research process. Indeed, it can be the most complex. Exhibit 6.1 helps to illustrate factors that influence how complex the process can be.

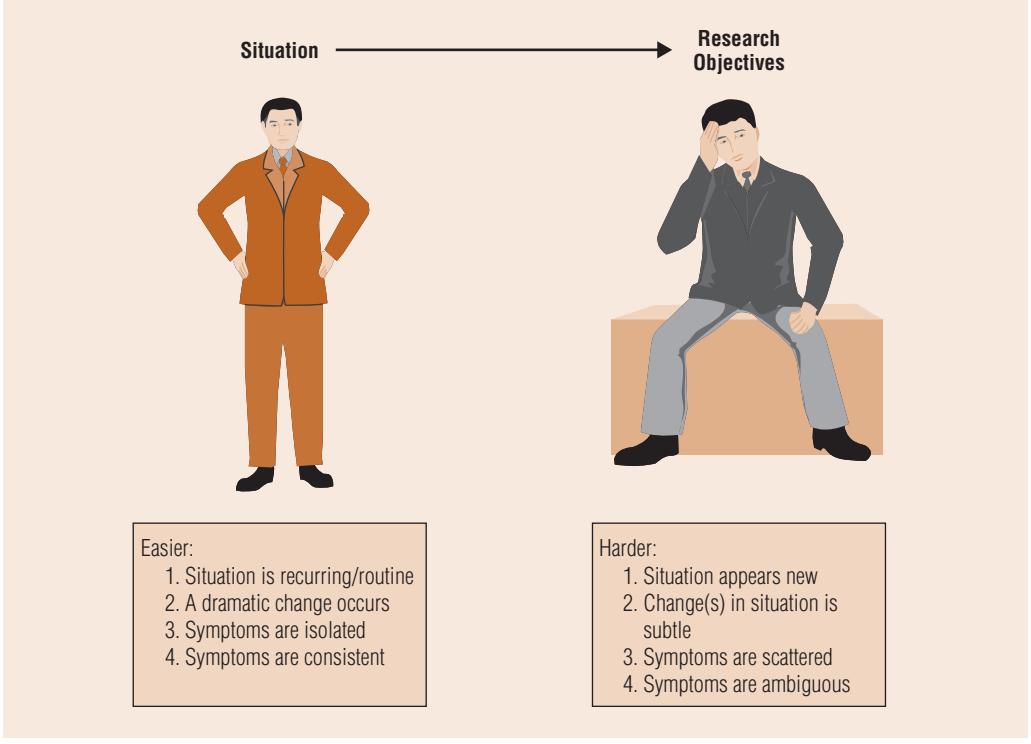


EXHIBIT 6.1
Defining Problems Can Be Difficult

RESEARCH SNAPSHOT

Good Answers, Bad Questions?

It's amazing, but sometimes even the most successful companies make huge blunders. These blunders often are based on a misunderstanding of exactly what the brand and/or product means to consumers. Some of the famous, or infamous, examples of such blunders include RJR's introduction of Premier "Smokeless" Cigarettes, Ford's introduction of the Edsel in the 1950s, and most famous (or infamous) of all, Coca-Cola's introduction of New Coke as a replacement for regular "old" Coke.

Volumes have been written about each of these episodes. One does have to wonder, how did these great companies do such apparently dumb things? The blame is often placed at the foot of the decision makers: "Research should have revealed that product was a loser." However, researchers address the questions they are asked to address by management. Certainly, the researchers play a role in framing any decision situation into something that can be addressed by a pointed research question. The decision makers almost always start the process by asking for input from their staff, or from research consultants they have hired. Hopefully, the dialogue that results will lead to a productive research question that will provide useful results. However it isn't always the case that such research questions are self-evident.

Hindsight certainly is clearer than foresight. It seems almost unthinkable that Coke could have made its decision to replace a product with a century-long success record without considering the emotional meaning that goes along with drinking a "Coke." However, management considered Coke to be a beverage, not a brand. Thus, the focus was on the taste of Coke. Thus, researchers set about trying to decide if New Coke, which was more similar to Pepsi, tasted better than the original Coke. A great deal of very careful research suggested clearly that it did taste better. If the key question was taste, New Coke was preferred over old Coke by more consumers. In fact, there was considerable evidence that already showed a taste preference for Pepsi over old Coke. Interestingly, Coke appeared to view itself as its primary competitor. At least two very important questions were never asked or were addressed insufficiently:

1. Do consumers prefer New Coke over Pepsi?
2. When people know what they are drinking, do they still prefer New Coke to old Coke?

For a taste test to be valid, it is should be done "blindly," meaning that the taster doesn't know what he or she is drinking. Only then can one assess taste without being psychologically influenced by knowing the brand. So, Coke and Pepsi conducted a blind taste test. This is certainly a good research practice—if the question is taste. The Coke research correctly answered the taste question. The big problem is that since management didn't realize that most of the meaning of Coke is psychological, and since they were so convinced that their old product was "inferior," the dialogue between management and researchers never produced more useful questions.

In the case of Ford's Edsel, a postmortem analysis suggests that research actually indicated many of the problems that ultimately led to its demise. The name, Edsel, was never tested by research, even though hundreds of other possibilities were.

Similarly, the idea of a smokeless cigarette seemed appealing. Research addressed the question, "What is the attitude of smokers and nonsmokers toward a smokeless cigarette?" Nonsmokers loved the idea. Smokers, particularly those who lived with a nonsmoker, also indicated a favorable attitude. However, as we know, the product failed miserably. If you take the "smoke" out of "smoking," is it still the same thing? This question was never asked. Would someone who would try a smokeless cigarette replace their old brand with this new brand? Again, this wasn't asked.

Today, it is possible that some famous company could be making a very similar mistake. Consider Macy's. Macy's has acquired many regional and local department stores around the country over the past few years. Clearly, Macy's is a very recognizable name brand that brings with it considerable "equity." How important is it for Macy's to ask, "What is the best name for this department store?" If the acquisition involves taking over a local retail "institution," is a name change always a good thing? Certainly, it seems to be a good question to which research could probably provide a good answer!

Sources: Gibson, Larry, "Why the New Coke Failed," *Marketing Research* 15 (Summer 2003), 52; "Is Macy's the New Coke?" *Advertising Age* 76 (September 26, 2005), 24.

Good research does not guarantee correct decisions.

SITUATION FREQUENCY

Many business situations are cyclical. Cyclical business situations lead to recurring business problems. These problems can even become routine. In these cases, it is easy to define problems and identify the types of research that are needed. In some cases, problems are so routine that they can be solved without any additional research. Recurring problems can even be automated through a company's DSS.

For example, pricing problems often occur routinely. Just think about how the price of gas fluctuates when several stations are located within sight of each other. One station's prices definitely affect the sales of the other stations as well as of the station itself. Similarly, automobile companies, airline companies, and computer companies, to name just a few, face recurring pricing issues. Because these situations recur so frequently, addressing them becomes routine. Decision makers know how to communicate them to researchers and researchers know what data are needed.

Most pricing decisions in the airline industry are automated based on sophisticated demand models. The models take into account fluctuations in travel patterns based on the time of the year, time of the day, degree of competition for that particular route, and many other factors. At one time, these decisions were based on periodic research reports. Now, the information is simply fed into a decision support system that generates a pricing schedule. It is interesting that one factor that is not very important in many of these pricing decisions is the cost involved in flying someone from point A to point B. Indeed, some passengers pay a fare much higher than the actual costs and others pay a fare much lower than the actual costs involved in getting them to their desired destination.

DRAMATIC CHANGES

When a sudden change in the business situation takes place, it can be easier to define the problem. For example, if Deland's business had increased sharply at the beginning of the year, the key factors to study could be isolated by identifying other factors that have changed in that same time period. It could be that a very large trucking contract had been obtained, or that a current customer dramatically increased their distribution needs, which Deland is benefiting from.

In contrast, when changes are very subtle and take effect over a long period of time, it can be more difficult to define the actual decision and research problems. Detecting trends that would permanently affect the recruitment challenges that Deland faces can be difficult. It may be difficult to detect the beginning of such a trend and even more difficult to know whether such a trend is relatively permanent or simply a temporary occurrence.

HOW WIDESPREAD ARE THE SYMPTOMS?

The more scattered any symptoms are, the more difficult it is to put them together into some coherent problem statement. In contrast, firms may sometimes face situations in which multiple symptoms exist, but they are all pointing to some specific business area. For instance, an automobile manufacturing company may exhibit symptoms such as increased complaints about a car's handling, increased warranty costs due to repairs, higher labor costs due to inefficiency, and lower performance ratings by consumer advocates such as *Consumer Reports*. All of these symptoms point to production as a likely problem area. This may lead to research questions that deal with supplier-manufacturer relationships, job performance, job satisfaction, supervisory support, and performance. Although having a lot of problems in one area may not sound very positive, it can be very helpful in pointing out the direction that is most in need of attention and improvement.

In contrast, when the problems are more widespread, it can be very difficult to develop useful research questions. If consumer complaints dealt with the handling and the appearance of the car, and these were accompanied by symptoms including consumer beliefs that gas mileage could be better and that dealerships did not have a pleasant environment, it may be more difficult to put these scattered symptoms together into one or a few related research questions. Later in the chapter, we'll discuss some tools for trying to analyze symptoms in an effort to find some potential common cause.

SYMPTOM AMBIGUITY

Ambiguity is almost always unpleasant. People simply are uncomfortable with the uncertainty that comes with ambiguity. Similarly, an environmental scan of a business situation may lead to many symptoms, none of which seem to point in a clear and logical direction. In this case, the problem area remains vague and the alternative directions are difficult to ascertain.

A retail store may face a situation in which sales and traffic are up, but margins are down. They may have decreased employee turnover, but lower job satisfaction. In addition, there may be several issues that arise with their suppliers, none of which is clearly positive or negative. In this case, it may be very difficult to sort through the evidence and reach a definitive decision statement or list of research objectives.

The Problem-Definition Process

Problems Mean Gaps

problem
Occurs when there is a difference between the current conditions and a more preferable set of conditions.

A **problem** occurs when there is a difference between the current conditions and a more preferable set of conditions. In other words, a gap exists between the way things are now and a way that things could be better. The gap can come about in a number of ways:[1]

1. Business performance is worse than expected business performance. For instance, sales, profits, and margins could be below targets set by management. This is a very typical type of problem analysis. Think of all the new products that fail to meet their targeted goals. Trend analysis would also be included in this type of problem. Management is constantly monitoring key performance variables. Previous performance usually provides a benchmark forming expectations. Sales, for example, are generally expected to increase a certain percentage each year. When sales fall below this expectation, or particularly when they fall below the previous year's sales, management usually recognizes that they have a potential problem on their hands. The Research Snapshot on the next page illustrates this point.
2. Actual business performance is less than possible business performance. Realization of this gap first requires that management have some idea of what is possible. This may form a research problem in and of itself. Opportunity-seeking often falls into this type of problem-definition process. Many American and European Union companies have redefined what possible sales levels are based upon the expansion of free markets around the world. China's Civil Aviation Administration has relaxed requirements opening the Chinese air travel market to private airlines.[2] Suddenly, the possible market size for air travel has increased significantly, creating opportunities for growth.
3. Expected business performance is greater than possible business performance. Sometimes, management has unrealistic views of possible performance levels—either too high or too low. One key problem with new product introductions involves identifying realistic possibilities for sales. While you may have heard the old adage that 90 percent of all new products fail, how many of the failures had a realistic sales ceiling? In other words, did the company know the possible size of the market? In this case, the problem is not with the product but with the plan. Some product "failures" may actually have been successful if management had a more accurate idea of the total market potential. Management can close this gap through decision making. Researchers help managers make decisions by providing relevant input.

The Problem-Definition Process Steps

The problem-definition process involves several interrelated steps, as shown in Exhibit 6.2. Sometimes, the boundaries between each step aren't exactly clear. But generally, completing one step leads to the other and by the time the problem is defined, each of these steps has been addressed in some way. The steps are

1. Understand the business situation—identify key symptoms
2. Identify key problem(s) from symptoms
3. Write managerial decision statement and corresponding research objectives
4. Determine the unit of analysis
5. Determine the relevant variables
6. Write research questions and/or research hypotheses

A separate section deals with each stage below.

Understand the Business Decision

situation analysis
The gathering of background information to familiarize researchers and managers with the decision-making environment.

A **situation analysis** involves the gathering of background information to familiarize researchers and managers with the decision-making environment. The situation analysis can be written up

RESEARCH SNAPSHOT

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Why Did Our Employees Leave? FleetBoston's Initiatives to Stop the Exit

Getting bigger does not always translate easily to better performance. FleetBoston, prior to its own acquisition by Bank of America, had grown to one of the largest banks in the United States through a series of mergers and acquisitions. With each acquisition, however, came the usual "growing pains" that can create dissatisfaction among existing and new employees. With employee turnover rates approaching 40 percent, FleetBoston compared itself to industry averages and found itself underperforming. In fact, the customer-focused mission of FleetBoston was genuinely believed to be at risk.

What could they do? Through a series of careful studies the research team realized that employees are likely to stay when they feel that opportunities are there for them, and that the bank provided a more stable management within which they could grow. Additionally, these studies revealed that the quality of the hiring process directly impacted the length of stay for those same employees.

As a result, FleetBoston was able to create a set of retention strategies that focused on what the bank employees do and what they value in their work environment. These strategies yielded short-term benefits that directly affected their bottom line. By hiring better, and by creating opportunities for those employees to stay, turnover rates were reduced significantly. This in turn led to a reduced need to spend money on recruitment costs. All in all, the benefits of carefully examining performance as measured through employee retention paid off. FleetBoston had successfully stopped the exit.

Source: Nalbantian, H. R. and A. Szostak, "How Fleet Bank Fought Employee Flight", *Harvard Business Review* (April 2004), 116–125.

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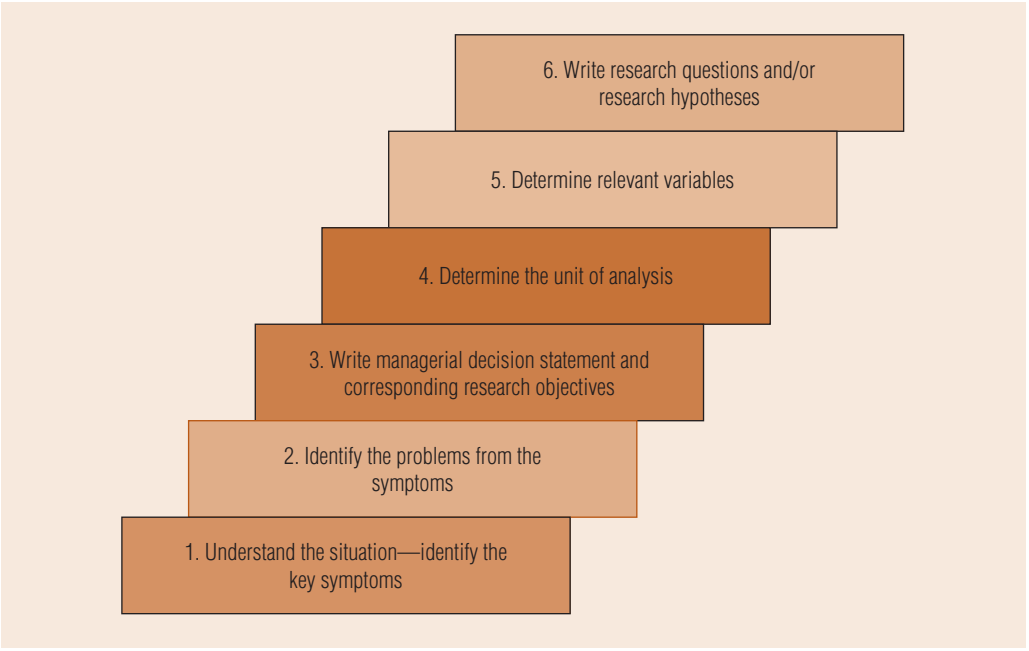


EXHIBIT 6.2
The Problem-Definition Process

as a way of documenting the problem-definition process. Gaining an awareness of marketplace conditions and an appreciation of the situation often requires exploratory research. Researchers sometimes apply qualitative research with the objective of better problem definition. The situation analysis begins with an interview between the researcher and management.

INTERVIEW PROCESS

The researcher must enter a dialogue with the key decision makers in an effort to fully understand the situation that has motivated a research effort. This process is critical and the researcher should be granted access to all individuals who have specific knowledge of or insight into this situation. Researchers working with managers who want the information "yesterday" often get

little assistance when they ask, "What are your objectives for this study?" Nevertheless, even decision makers who have only a gut feeling that the research might be a good idea benefit greatly if they work with the researcher to articulate precise research objectives.[3] Even when there is good cooperation, seldom can key decision makers express the situation in research terms:

> *Despite a popular misconception to the contrary, objectives are seldom clearly articulated and given to the researcher. The decision maker seldom formulates his objectives accurately. He is likely to state his objectives in the form of platitudes which have no operational significance. Consequently, objectives usually have to be extracted by the researcher. In so doing, the researcher may well be performing his most useful service to the decision maker.*[4]

Researchers may often be tempted to accept the first plausible problem statement offered by management. For instance, in the opening vignette, it is clear that David believes there is a recruitment problem. However, it is very important that the researcher not blindly accept a convenient problem definition for expediency's sake. In fact, research demonstrates that people who are better problem solvers generally reject problem definitions as given to them. Rather, they take information provided by others and re-associate it with other information in a creative way. This allows them to develop more innovative and more effective decision statements.[5]

There are many ways to discover problems and spot opportunities. There is certainly much art involved in translating scattered pieces of evidence about some business situation into relevant problem statements and then relevant research objectives. While there are other sources that address creative thinking in detail, some helpful hints that can be useful in the interview process include

1. Develop many alternative problem statements. These can emerge from the interview material or from simply rephrasing decision statements and problem statements.
2. Think about potential solutions to the problem.[6] Ultimately, for the research to be actionable, some plausible solution must exist. After pairing decision statements with research objectives, think about the solutions that might result. This can help make sure any research that results is useful.
3. Make lists. Use free-association techniques to generate lists of ideas. The more ideas, the better. Use interrogative techniques to generate lists of potential questions that can be used in the interview process. **Interrogative techniques** simply involve asking multiple what, where, who, when, why, and how questions. They can also be used to provoke introspection, which can assist with problem definition.
4. Be open-minded. It is very important to consider all ideas as plausible in the beginning stages of problem solving. One sure way to stifle progress is to think only like those intimately involved in the business situation or only like those in other industries. Analogies can be useful in thinking more creatively.

interrogative techniques
Asking multiple what, where, who, when, why, and how questions.

IDENTIFYING SYMPTOMS

Interviews with key decision makers also can be one of the best ways to identify key problem symptoms. Recall that all problems have symptoms just as human disease is diagnosed through symptoms. Once symptoms are identified, then the researcher must probe to identify possible causes of these changes. **Probing** is an interview technique that tries to draw deeper and more elaborate explanations from the discussion. This discussion may involve potential problem causes. This probing process will likely be very helpful in identifying key variables that are prime candidates for study.

probing
An interview technique that tries to draw deeper and more elaborate explanations from the discussion.

One of the most important questions the researcher can ask during these interviews is, "what has changed?" Then, the researcher should probe to identify potential causes of the change. At the risk of seeming repetitive, it is important that the researcher repeat this process to make sure that some important change has not been left out.

In addition, the researcher should look for changes in company documents, including financial statements and operating reports. Changes may also be identified by tracking down news about competitors and customers. Exhibit 6.3 provides a summary of this approach.

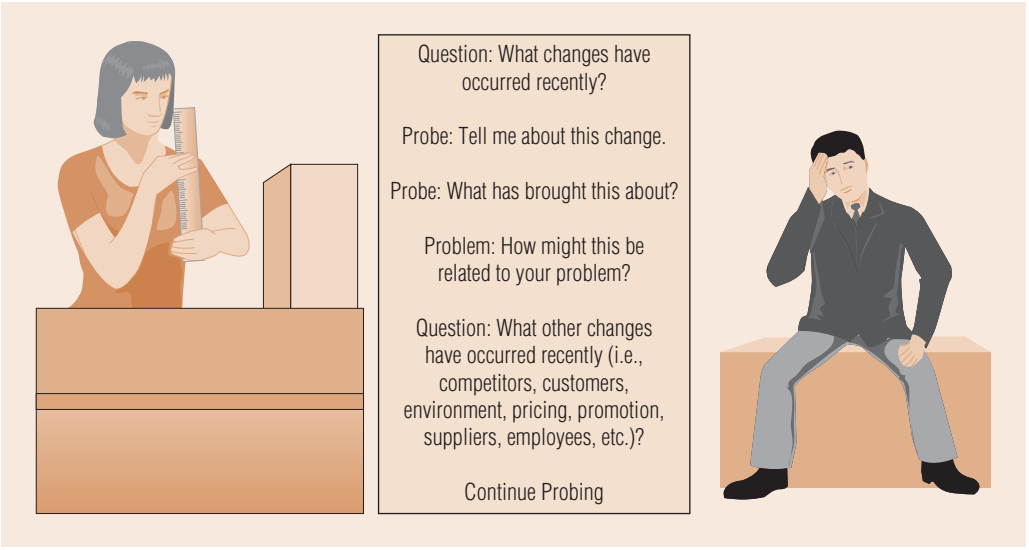


EXHIBIT 6.3
What Has Changed?

Think back to the opening vignette. Often, multiple interviews are necessary to identify all the key symptoms and gain a better understanding of the actual business situation. On a follow-up interview, the dialogue between James and David may proceed as follows:

James: *David, it is clear that your recruitment costs have been increasing since the start of the year. What other changes have occurred inside of your business within the past year?*
David: *Just a few things. We have had pressures on our bottom line, so we held back on raising the cents per mile that we give our drivers. Also, we have had to extend our long-haul trucking needs, so our drivers are on the road for a much longer period of time for each trip.*
James (probing): *Tell me, what led to this decision to extend the driver's time on the road?*
David: *It just worked out that way. Our contract just changed to allow us to do this, and our operations manager felt we could make more money per load this way.*
James: *Have you noticed changes in your customers?*
David: *We do see that they are a little irritated due to some of the problems of getting their freight delivered successfully.*
James: *Has there been a change in personnel?*
David: *Yes, we've had more than the usual share of turnover. I've turned over most personnel decisions to our new human resources manager. We've had trouble maintaining a person in that role.*

In the *change interview,* the researcher is trying to identify possible changes in the customers, the competitors, the internal conditions of the company, and the external environment. The interplay between things that have changed and things that have stayed the same can often lead to key research factors. Before preparing the proposal, James and David agree that the real decision faced is not as narrow as a recruiting problem. In this case, James is beginning to suspect that one key factor is that the increase in recruitment costs is a reflection of increased driver turnover. If driver retention could be increased, the need for larger recruitment expenses would stabilize, or even go down.

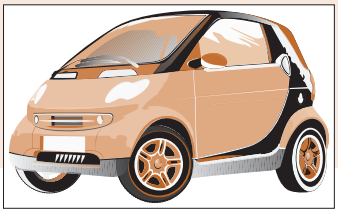
Almost any situation can be framed from a number of different perspectives. A pricing problem may be rephrased as a brand image problem. People expect high quality products to have higher prices. A quality problem may be rephrased as a packaging problem. For example, a potato chip company thought that a quality differential between their potatoes and their competitor's was the cause for the symptom showing sliding market share. However, one of the research questions that eventually resulted dealt with consumer preferences for packaging. In the end, research suggested that consumers prefer a foil package because it helps the chips stay fresher longer. Thus, the key gap turned out to be a package gap![7]

RESEARCH SNAPSHOT

Opportunity Is a "Fleeting" Thing

Have non-European automotive companies missed out on European opportunities? Europe represents a nearly $17 million annual market for new automobiles. Traditionally, the thinking is that European's prefer smaller or "light-cars." Thus, European car companies like BMW and Audi were slow to enter the SUV market. Mercedes entered the SUV market rather early on, but the emphasis was on the American market. American and Japanese companies offered little more than a token effort at selling SUVs in Europe. Thus, the SUV wars were fought in America where total volume reached 4 million shortly after 2000. Europeans were left with fewer choices if an SUV struck their fancy.

As a result, pre-2000 SUV sales in Europe were almost nonexistent. However, SUV sales in Europe have increased dramatically since then. By 2004, European SUV sales reached 16.5 million units, about one in twenty of all new autos sold in Europe. Today, Nissan, Toyota, Land Rover, and Suzuki are major players in the European SUV market. However, sales expectations for new entries from Opel, Renault, Volkswagen, Mercedes, and Audi are sluggish through 2008 with so many SUVs to choose from coupled with high fuel prices. In hindsight, could it be that several prominent automobile companies missed opportunities in Europe because they failed to know how big the market truly was?



Looking at this from the opposite direction, the tiny (by U.S. standards) two-seater SMART (http://www.smartusa.com) car has being introduced in the United States. Approximately 30,000 U.S. consumers have put down $99 to reserve the right to buy a SMART car since its introduction. SMART is poised to take advantage of an opportunity created by high gas prices while GM scrambles to turn production away from large SUVs like HUMMER toward new entries like the Chevrolet Volt. The relative success of these new entries against European minis like the SMART may also depend on the exchange rate which presently makes European entries expensive in the United States. Word is there may even be a SMART SUV—a miniature version of an American icon. What is the SMART future?

Sources: "The Business Week," *Business Week* 4008 (June 16, 2008), 6–10; Crain, K.C., "Analyst Sees Sales Decline for Light Vehicles in 2005," *Automotive News* 79 (January 24, 2005), 111; Meiners, Jena, "SUV Sales in Europe Will Peak in 2008," *Automotive News Europe* 9 (June 28, 2004); Marquand, R., "Euorpe's Little Smart Car to Hit U.S. Streets," *Christian Science Monitor* (2008), http://www.csmonitor.com/2008/0109/p01s01-woeu.html, accessed July 31, 2008.

Researchers should make sure that they have uncovered all possible relevant symptoms and considered their potential causes. Perhaps more interview time with key decision makers asking why people choose Coke would have helped identify some of the less tangible aspects of the Coke-Pepsi-New Coke battle. Similarly, as seen in the Research Snapshot above, the makers of automobiles in the United States should examine more carefully the possible ways that consumers make choices about the vehicles they buy. It can help avoid mistakes later.

Identifying the Relevant Issues from the Symptoms

TO THE POINT

The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.

—Marcel Proust

Anticipating the many influences and dimensions of a problem is impossible for any researcher or executive. The preceding interview is extremely useful in translating the decision situation into a working problem definition by focusing on symptoms. The probing process discussed on pages 115–116 begins this process. However, the researcher needs to be doubly certain that the research attacks real problems and not superficial symptoms.

For instance, when a firm has a problem with advertising effectiveness, the possible causes of this problem may be low brand awareness, the wrong brand image, use of the wrong media, or perhaps too small a budget. Certain occurrences that appear to be the problem may be only symptoms of a deeper problem. Exhibit 6.4 illustrates how symptoms can be translated into a problem and then a decision statement.

Writing Managerial Decision Statements and Corresponding Research Objectives

The situation analysis ends once researchers have a clear idea of the managerial objectives from the research effort. Decision statements capture these objectives in a way that invites multiple solutions. Multiple solutions are encouraged by using plural nouns to describe solutions. In other words, a decision statement that says in what "ways" a problem can be solved is better than one that says in what "way" a problem can be solved. Ultimately, research may provide evidence showing results of several ways a problem can be attacked.

EXHIBIT 6.4 **Symptoms Can Be Confusing**

	Firm's Situation	Symptoms	Probable Problem	Decision Statement
Research Action	Conduct Situation Analysis including interviews with key decision makers		Consider results of probing and apply creative processes	Express in actionable terms and make sure decision makers are in agreement
Situation 1	22-year-old neighborhood swimming association seeks research help	• Declining Membership for 6 years • Increased attendance at new water park • Less frequent usage among members	Swim facility is outdated and does not appeal to younger families. Younger families and children have a negative image of pool. Their "old market" is aging.	What things can be done to energize new markets and create a more favorable attitude toward the association?
Situation 2	Manufacturer of palm-sized computer with wireless Internet access believes B2B sales are too low	• Distributors complain prices are too high • Business users still use larger computers	• Business users do not see advantages of smaller units • Advantages are not outweighed by costs • Transition costs may be a drawback for B2B customers more than for B2C customers	What things can be done to improve competitive positioning of the new product in B2B markets?
Situation 3	A new microbrewery is trying to establish itself	• Consumers seem to prefer national brands over the local microbrew products • Many customers order national brands within the microbrew itself • Some customers hesitant to try new microbrew flavors	Is there a negative flavor gap? Do consumers appreciate the micro-brew approach and the full beer tasting (as opposed to drinking) experience?	How can we encourage more consumers to come to the microbrew and try our products? Should we redesign the brewery to be more inviting?

Decision statements must be translated into research objectives. At this point, the researcher is starting to visualize what will need to be measured and what type of study will be needed. Exhibit 6.5 on the next page extends the examples from Exhibit 6.4, showing research objectives that correspond to each decision statement. Note that each research objective states a corresponding potential result(s) of the research project. Thus, in some ways, it is stating the information that is needed to help make the decision. Once the decision statement is written, the research essentially answers the question, "What information is needed to address this situation?"

Referring back to the opening vignette, the analysis of the symptoms has led to the conclusion that there is an employee retention problem. Perhaps drivers are dissatisfied with being away from their families for so long and this is leading to higher levels of driver turnover. Or, perhaps it is the cents per mile that is leading to driver frustration and a desire to go to a higher-paying competitor. David and James eventually agree on the following decision statement:

> *In what ways can Deland Trucking build driver loyalty so that retention increases and subsequent recruitment costs decrease?*

What information or data will be needed to help answer this question? Obviously, we'll need to study the driver census and the number of hires needed to fill open positions. James needs to find out what might cause employee dissatisfaction and cause turnover to increase. Thinking back to the interview, James knows that there have been several changes in the company itself, many related to saving costs. Saving costs sounds like a good idea; however, if it harms driver loyalty

EXHIBIT 6.5 Translating Decision Statements

	Decision Statement	Research Objectives	Research Questions	Research Hypotheses
Research Action	Express in actionable terms and make sure decision makers are in agreement	Expresses potential research results that should aid decision-making	Ask a question that corresponds to each research objective	Specific statement explaining relationships, usually involving two variables, and including the direction of the relationship
Situation 1	What things can be done to energize new markets and create a more favorable attitude toward the association?	Determine reasons why families may choose to join or not join a "swim club."	How do the type of facilities and pricing relate to family attitudes toward a swim facility?	Child-friendly *pool designs* are positively related to *attitudes toward the facility*. Flexible *pricing policies* are positively related to *attitudes toward the facility*.
Situation 2	What product features can be improved and emphasized to improve competitive positioning of the new product in B2B markets?	List actions that may overcome the objections (switching costs) of B2B customers toward adoption of the new product.	What are the factors that most lead to perceptions of high switching costs?	*Perceived difficulty* in learning how to use the new device is related to *switching costs*. *Price* is positively related to *switching costs*. *Knowledge* of new product is positively related to *switching costs*.
Situation 3	How can we encourage more consumers to come to the microbrew and try our products? Should we redesign the brewery to be more inviting?	Describe how situational factors influence beer consumption and consumer attitudes toward beer products. List factors that will improve attitudes toward the microbrewery.	Do situational factors (such as time of day, food pairings, or environmental factors) relate to taste perceptions of beer?	Microbrew beer is *preferred* when consumed *with food*. An exciting *atmosphere* will improve consumer *attitudes toward the microbrew*.

even slightly, it probably isn't worthwhile. Thus, the corresponding research objectives are stated as follows:

- Determine what key variables relate to driver loyalty within the company, meaning (1) how does the lower level of pay impact driver retention and (2) what does the increase in long-haul trucking do to Deland Trucking's ability to increase retention?
- Assess the impact of different intervention strategies on driver satisfaction

These research objectives are the deliverables of the research project. A research study will be conducted that (1) shows how much each of several key variables relates to loyalty and retention and (2) provides a description of likelihood of different intervention strategies on driver satisfaction.

The researcher should reach a consensus agreement with the decision maker regarding the overall decision statement(s) and research objectives. If the decision maker agrees that the statement captures the situation well and understands how the research objectives, if accomplished, will help address the situation, then the researcher can proceed. The researcher should make every effort to ensure that the decision maker understands what a research project can deliver. If there is no agreement on the decision statement or research objectives, more dialogue between decision makers and researchers is needed.

Determine the Unit of Analysis

The **unit of analysis** for a study indicates what or who should provide the data and at what level of aggregation. Researchers specify whether an investigation will collect data about individuals (such as customers, employees, and owners), households (families, extended families, and so forth), organizations (businesses and business units), departments (sales, finance, and so forth), geographical areas, or objects (products, advertisements, and so forth). In studies of home buying, for example, the husband/wife dyad typically is the unit of analysis rather than the individual because many purchase decisions are made jointly by husband and wife.

unit of analysis
A study indicates what or who should provide the data and at what level of aggregation.

Researchers who think carefully and creatively about situations often discover that a problem can be investigated at more than one level of analysis. For example, a lack of worker productivity could be due to problems that face individual employees or it could reflect problems that are present in entire business units. Determining the unit of analysis should not be overlooked during the problem-definition stage of the research.

Determine Relevant Variables

WHAT IS A VARIABLE?

What things should be studied to address a decision statement? Researchers answer this question by identifying key variables. A **variable** is anything that varies or changes from one instance to another. Variables can exhibit differences in value, usually in magnitude or strength, or in direction. In research, a variable is either observed or manipulated, in which case it is an experimental variable.

variable
Anything that varies or changes from one instance to another; can exhibit differences in value, usually in magnitude or strength, or in direction.

The converse of a variable is a **constant**. A constant is something that does not change. Constants are not useful in addressing research questions. Since constants don't change, management isn't very interested in hearing the key to the problem is something that won't or can't be changed. In causal research, it can be important to make sure that some potential variable is actually held constant while studying the cause and effect between two other variables. In this way, a spurious relationship can be ruled out. At this point however, the notion of a constant is more important in helping to understand how it differs from a variable.

constant
Something that does not change; is not useful in addressing research questions.

TYPES OF VARIABLES

There are several key terms that help describe types of variables. The *variance* in *variables* is captured either with numerical differences or by an identified category membership. In addition, different terms describe whether a variable is a potential cause or an effect.

A **continuous variable** is one that can take on a range of values that correspond to some quantitative amount. Consumer attitude toward different airlines is a variable that would generally be captured by numbers, with higher numbers indicating a more positive attitude than lower numbers. Each attribute of airlines' services, such as safety, seat comfort, and baggage handling can be numerically scored in this way. Sales volume, profits, and margin are common business metrics that represent continuous variables.

continuous variable
A variable that can take on a range of values that correspond to some quantitative amount.

A **categorical variable** is one that indicates membership in some group. The term **classificatory variable** is sometimes also used and is generally interchangeable with *categorical variable*. Categorical variables sometimes represent quantities that take on only a small number of values (one, two, or three). However, categorical variables more often simply identify membership.

categorical variable
A variable that indicates membership in some group.

classificatory variable
Another term for a categorical variable because it classifies units into categories.

For example, people can be categorized as either male or female. A variable representing biological sex describes this important difference. The variable values can be an "M" for membership in the male category and an "F" for membership in the female category. Alternatively, the researcher could assign a "0" for men and a "1" for women. In either case, the same information is represented.

A common categorical variable in consumer research is adoption, meaning the consumer either did or did not purchase a new product. Thus, the two groups, purchase or not purchase,

Several variables describe child consumers. Their biological sex is a categorical variable; how much they weigh, or how often they go out to the mall are continuous variables.

dependent variable
A process outcome or a variable that is predicted and/or explained by other variables.

independent variable
A variable that is expected to influence the dependent variable in some way.

comprise the variable. Similarly, turnover, or whether an employee has quit or not, is a common organizational variable.

In descriptive and causal research, the terms *dependent variable* and *independent variable* describe different variable types. This distinction becomes very important in understanding how business processes can be modeled by a researcher. The distinction must be clear before one can correctly apply certain statistical procedures like multiple regression analysis. In some cases, however, such as when only one variable is involved in a hypothesis, the researcher need not make this distinction.

A **dependent variable** is a process outcome or a variable that is predicted and/or explained by other variables. An **independent variable** is a variable that is expected to influence the dependent variable in some way. Such variables are independent in the sense that they are determined outside of the process being studied. That is another way of saying that dependent variables do not change independent variables.

For example, average customer loyalty may be a dependent variable that is influenced or predicted by an independent variable such as perceptions of restaurant food quality, service quality, and customer satisfaction. Thus, a process is described by which several variables together help create and explain how much customer loyalty exists. In other words, if we know how a customer rates the food quality, service quality, and satisfaction with a restaurant, then we can predict that customer's loyalty toward that restaurant. Note that this does not mean that we can predict food quality or service quality with customer loyalty.

Dependent variables are conventionally represented by the letter Y. Independent variables are conventionally represented by the letter X. If research involves two dependent variables and two or more independent variables, subscripts may also be used to indicate Y_1, Y_2 and X_1, X_2, and so on.

Ultimately, theory is critical in building processes that include both independent and dependent variables (see Chapter 4). Managers and researchers must be careful to identify relevant and actionable variables. *Relevant* means that a change in the variable matters and *actionable* means that a variable can be controlled by managerial action. Superfluous variables are those that are neither relevant nor actionable and should not be included in a study. Theory should help distinguish relevant from superfluous variables.

The process of identifying the relevant variables overlaps with the process of determining the research objectives. Typically, each research objective will mention a variable or variables to be measured or analyzed. As the translation process proceeds through research objectives, research questions, and research hypotheses, it is usually possible to emphasize the variables that should be included in a study (as in Exhibits 6.5 and 6.6).

Exhibit 6.6 includes some common business research hypotheses and a description of the key variables involved in each. In the first case, a regional grocery chain is considering offering a delivery service that would allow consumers to purchase groceries via the store Web site. They have conducted a trial of this in one market and have conducted a survey in that area. In the second case, a Korean automobile company is considering offering one of its models for sale in Europe. The company has also conducted a survey in two key European auto markets.

Write Research Objectives and Questions

Both managers and researchers expect problem-definition efforts to result in statements of research questions and research objectives. At the end of the problem-definition stage, the researcher

EXHIBIT 6.6 **Example Business Decision Situations, Corresponding Research Hypotheses, and Variable Descriptions**

Managerial Decision	Research Question(s)	Research Hypotheses	Categorical Variable(s)	Continuous Variable(s)
Retail grocer considering Web-based delivery service	Is there sufficient demand? How much should delivery personnel be paid? Will delivery service (new retail form) cannibalize current business?	*Projected sales volume* will exceed $5 M annually. Delivery personnel can be paid less than cashiers and achieve the same job satisfaction. Web customers express lower *intentions to visit store* than other customers.	Type of employee (delivery, cashier, etc.) Retail form (independent variable): classifies respondents based on whether they shopped (1) in store or (2) via the Web (delivery).	Sales volume: dollar amount based on a test trial in one geographic market (i.e., Phoenix/ Scottsdale). Hourly wages and satisfaction with pay. Intentions to visit store (dependent variable): the percentage likelihood that a survey respondent would visit the store within the next 7 days.
What market segments should be served?	Does nationality matter? Will French and German consumers express interest in our product? Does the attitude toward Korean companies influence purchase intentions?	*French* consumers have more *interest in purchasing our product* than *German* consumers. *Attitude toward Korean companies* is related positively to *product purchase interest*.	Nationality (independent variable): represents which country a survey respondent lives in: (1) France (2) Germany.	Attitude toward Korean companies (independent variable): ratings scale that describes how favorably survey respondents view Korean companies (quality, reputation, value—higher scores mean better attitude). Product purchase interest: ratings scale that shows how interested a consumer is in buying the Korean product (higher scores = more interest).

should prepare a written statement that clarifies any ambiguity about what the research hopes to accomplish. This completes the translation process.

Research questions express the research objectives in terms of questions that can be addressed by research. For example, one of the key research questions involved in the opening vignette is "Are wages and long-haul distance related to driver loyalty and retention?" Hypotheses are more specific than research questions. One key distinction between research questions and hypotheses is that hypotheses can generally specify the direction of a relationship. In other words, when an independent variable goes up, we have sufficient knowledge to predict that the dependent variable should also go up (or down as the case may be). One key research hypothesis for Deland Trucking is:

Higher cents per mile are related positively to *driver loyalty*.

At times, a researcher may suspect that two variables are related but have insufficient theoretical rationale to support the relationship as positive or negative. In this case, hypotheses cannot be offered. At times in research, particularly in exploratory research, a proposal can only offer research questions. Research hypotheses are much more specific and therefore require considerably more theoretical support. In addition, research questions are interrogative, whereas research hypotheses are declarative.

research questions

Express the research objectives in terms of questions that can be addressed by research.

TO THE POINT

I don't know the key to success, but the key to failure is trying to please everybody.

—Bill Cosby

Clarity in Research Questions and Hypotheses

Research questions make it easier to understand what is perplexing managers and to indicate what issues have to be resolved. A research question is the researcher's translation of the marketing problem into a specific inquiry.

RESEARCH SNAPSHOT

Pricing Turbulence

A heavy equipment distributor sought out research because it believed there was an opportunity to increase revenues by raising prices. After several weeks of discussion, interviews, and proposal reviews, they settled on a decision question that asked, "In what ways could revenues be increased by altering pricing policies across customers?" A research project was conducted that offered the following deliverables: (1) demonstrate how much customer characteristics and environmental characteristics influence price elasticity and (2) identify market segments based on price elasticity. This led to several hypotheses including the following:

H1: The desired delivery time for equipment is negatively related to price sensitivity.
H2: The degree of market turbulence is negatively related to price sensitivity.

In addition, a research question specifically addressing market segments was asked:

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RQ1: Are there market segments that can be identified based on customers' desired benefits or environmental characteristics?

In other words, the more critical a piece of heavy equipment is to a company, the less concerned they are with the price. Similarly, customers are less concerned with price in markets that are more turbulent, meaning there are ever-changing environmental, competitive, and political pressures.

A study of heavy equipment purchasers around the world supported both hypotheses. For business segments where delivery time is of critical importance, higher prices can be charged without the fear of losing business. Similarly, in turbulent international markets, customers have other important concerns that make them less sensitive to equipment price and more sensitive to reliability and service. In the end, the heavy equipment company was able to build customer characteristics data into a DSS system that automated prices.

Interestingly, management did not express any concerns about either market segments or market turbulence in the initial interviews. Thus, this research succeeded because good research objectives, questions, and hypotheses were developed before any study was implemented.

Sources: Smith, M.F., I. Sinha, R. Lancianai, and H. Forman, "Role of Market Turbulence in Shaping Pricing," *Industrial Marketing Management* 28 (November 1999), 637–649; Peters, G., "Combating Too Much Information," *Industrial Distribution* 94 (December 2005), 22.

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A research question can be too vague and general, such as "Is advertising copy 1 better than advertising copy 2?" Advertising effectiveness can be variously measured by sales, recall of sales message, brand awareness, intention to buy, recognition, or knowledge, to name a few possibilities. Asking a more specific research question (such as, "Which advertisement has a higher day-after recall score?") helps the researcher design a study that will produce useful results, as seen in the Research Snapshot above. Research question answers should provide input that can be used as a standard for selecting from among alternative solutions. Problem definition seeks to state research questions clearly and to develop well-formulated, specific hypotheses.

A sales manager may hypothesize that salespeople who show the highest job satisfaction will be the most productive. An advertising manager may believe that if consumers' attitudes toward a product are changed in a positive direction, consumption of the product also will increase. Hypotheses are statements that can be empirically tested.

A formal hypothesis has considerable practical value in planning and designing research. It forces researchers to be clear about what they expect to find through the study, and it raises crucial questions about data required. When evaluating a hypothesis, researchers should ensure that the information collected will be useful in decision making. Notice how the following hypotheses express expected relationships between variables:

- There is a positive relationship between *buying on the Internet* and the presence of *younger children* in the home.
- *Sales* are lower for salespeople in regions that receive less *advertising support*.
- Consumers will experience *cognitive dissonance* after the decision to *adopt* a TiVo personal video recorder.
- *Opinion leaders* are more affected by mass media communication *sources* than are non-leaders.
- Among non-exporters, the degree of perceived importance of overcoming barriers to exporting is related positively to general interest in exporting (export intentions).[8]

Management is often faced with a "go/no go" decision. In such cases, a research question or hypothesis may be expressed in terms of a meaningful barrier that represents the turning

point in such a decision. In this case, the research involves a **managerial action standard** that specifies a specific performance criterion upon which a decision can be based. If the criterion to be measured (for example, sales or attitude changes) turns out to be higher than some predetermined level, management will do *A*; if it is lower, management will do *B*.[9] In Exhibit 6.6, the specified sales volume of $5 million represents a managerial action standard for the retail grocery chain.

managerial action standard

A specific performance criterion upon which a decision can be based.

Research objectives also should be limited to a manageable number. Fewer study objectives make it easier to ensure that each will be addressed fully. It becomes easy to lose focus with too many research objectives.

Exhibit 6.7 summarizes how a decision statement (corresponding to a business research problem) leads to research objectives that become a basis for the research design. Once the research has been conducted, the results may show an unanticipated aspect of the problem and suggest a need for additional research to satisfy the main objective. Accomplished researchers who have had the experience of uncovering additional aspects of a particular research problem after finishing fieldwork recommend designing studies that include questions designed to reveal the unexpected.

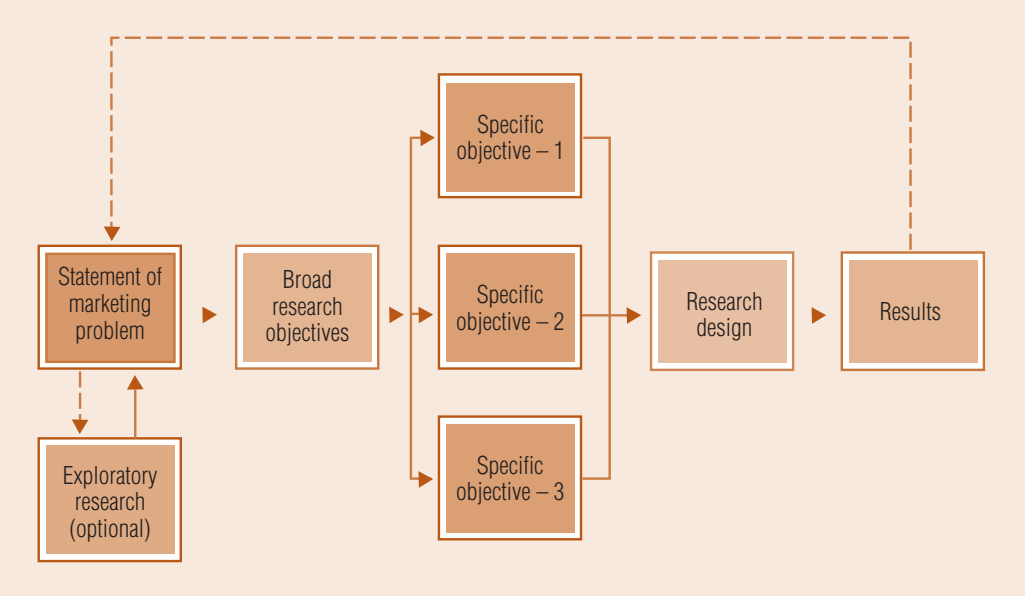


EXHIBIT 6.7
Influence of Decision Statement of Marketing Problem on Research Objectives and Research Designs

How Much Time Should Be Spent on Problem Definition?

Budget constraints usually influence how much effort is spent on problem definition. Business situations can be complex and numerous variables may be relevant. Searching for every conceivable cause and minor influence is impractical. The more important the decision faced by management, the more resources should be allocated toward problem definition. While not a guarantee, allowing more time and spending more money will help make sure the research objectives that result are relevant and can demonstrate which influences management should focus on.

Managers, being responsible for decision making, may wish the problem-definition process to proceed quickly. Researchers who take a long time to produce a set of research objectives can frustrate managers. However, the time taken to identify the correct problem is usually time well spent.

The Research Proposal

research proposal
A written statement of the research design.

The **research proposal** is a written statement of the research design. It always includes a statement explaining the purpose of the study (in the form of research objectives or deliverables) and a definition of the problem, often in the form of a decision statement. A good proposal systematically outlines the particular research methodology and details procedures that will be used during each stage of the research process. Normally a schedule of costs and deadlines is included in the research proposal. The research proposal becomes the primary communication document between the researcher and the research user.

Exhibit 6.8 illustrates an abbreviated proposal for a short research project conducted for the Internal Revenue Service (IRS) that explores public attitudes toward a variety of tax-related issues.

EXHIBIT 6.8 An Abbreviated Version of a Research Proposal for the IRS

Current Situation
Public perception of the IRS appears to be extremely negative. The IRS is the brunt of jokes, and the public avoids contact with any IRS entity. As a result, taxpayers are more inclined to cheat on their returns and many services provided by the IRS to assist taxpayers in preparing their tax returns and to help them understand ways they can avoid paying unnecessary taxes and penalties go unused. In addition, negative attitude lessens the Service's ability to effectively lobby for policy changes. The key decision faced by the IRS due to this situation can be stated as,

What steps could be taken to effectively improve consumer perceptions of the IRS and help design more user-friendly services?

Purpose of the Research
The general purpose of the study is to determine the taxpaying public's perceptions of the role of the IRS in administering the tax laws. In defining the limits of this study, the IRS identified the study areas to be addressed. A careful review of those areas led to the identification of the following specific research objectives:

1. To identify the extent to which taxpayers cheat on their returns, their reasons for doing so, and approaches that can be taken to deter this kind of behavior
2. To determine taxpayers' experience and level of satisfaction with various IRS services
3. To determine what services taxpayers need
4. To develop an accurate profile of taxpayers' behavior relative to the preparation of their income tax returns
5. To assess taxpayers' knowledge and opinions about various tax laws and procedures

Research Design
The survey research method will be the basic research design. Each respondent will be interviewed in his or her home. The personal interviews are generally expected to last between 35 and 45 minutes, although the length will vary depending on the previous tax-related experiences of the respondent. For example, if a respondent has never been audited, questions on audit experience will not be addressed. Or, if a respondent has never contacted the IRS for assistance, certain questions concerning reactions to IRS services will be skipped.

Some sample questions that will be asked are

Did you or your spouse prepare your federal tax return for (year)?

☐ **Self**
☐ **Spouse**
☐ **Someone else**

Did the federal income tax package you received in the mail contain all the forms necessary for you to fill out your return?

☐ **Yes**
☐ **No**
☐ **Didn't receive one in the mail**
☐ **Don't know**

If you were calling the IRS for assistance and no one was able to help you immediately, would you rather get a busy signal or be asked to wait on hold?

☐ **Busy signal**
☐ **Wait on hold**
☐ **Neither**
☐ **Don't know**

During the interview a self-administered questionnaire will be given to the taxpayer to ask certain sensitive questions, such as

Have you ever claimed a dependent on your tax return that you weren't really entitled to?

☐ **Yes**
☐ **No**

Sample Design
A survey of approximately 5,000 individuals located in 50 counties throughout the country will provide the database for this study. The sample will be selected on a probability basis from all households in the continental United States.

Eligible respondents will be adults over the age of 18. Within each household an effort will be made to interview the individual who is most familiar with completing the federal tax forms. When there is more than one taxpayer in the household, a random process will be used to select the taxpayer to be interviewed.

Data Gathering
The fieldworkers of a consulting organization will conduct the interviews.

Data Processing and Analysis
Standard editing and coding procedures will be utilized. Simple tabulation and cross-tabulations will be utilized to analyze the data.

Report Preparation
A written report will be prepared, and an oral presentation of the findings will be made by the research analyst at the convenience of the IRS.

Budget and Time Schedule
Any complete research proposal should include a schedule of how long it will take to conduct each stage of the research and a statement of itemized costs.

Based on *A General Taxpayer Opinion Survey*, Office of Planning and Research, Internal Revenue Service, March 1980.

The Proposal as a Planning Tool

Preparation of a research proposal forces the researcher to think critically about each stage of the research process. Vague plans, abstract ideas, and sweeping generalizations about problems or procedures must become concrete and precise statements about specific events. Data requirements and research procedures must be specified clearly so others may understand their exact implications. All ambiguities about why and how the research will be conducted must be clarified before the proposal is complete.

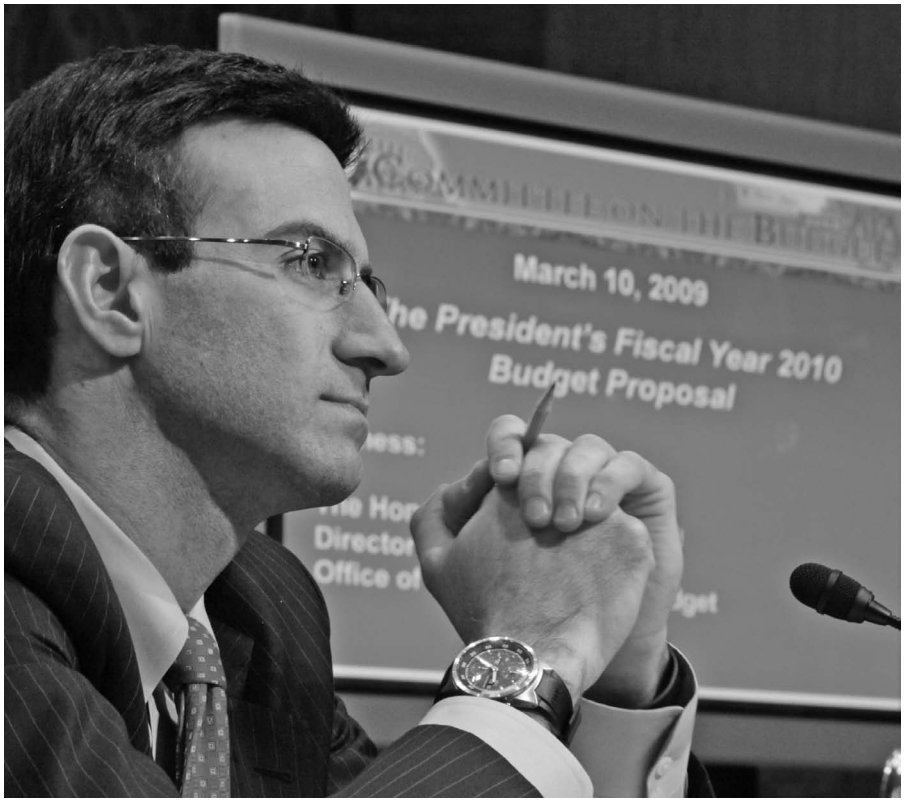
The researcher submits the proposal to management for acceptance, modification, or rejection. Research clients (management) evaluate the proposed study with particular emphasis on whether or not it will provide useful information, and whether it will do so within a reasonable resource budget. Initial proposals are almost always revised after the first review.

The proposal helps managers decide if the proper information will be obtained and if the proposed research will accomplish what is desired. If the problem has not been adequately translated into a set of specific research objectives and a research design, the client's assessment of the proposal will help ensure that the researchers revise it to meet the client's information needs.

An effective proposal communicates exactly what information will be obtained, where it will be obtained, and how it will be obtained. For this reason, it must be explicit about sample selection, measurement, fieldwork, and data analysis. For instance, most proposals involving descriptive research include a proposed questionnaire (or at least some sample questions).

The format for the IRS research proposal in Exhibit 6.8 follows the six stages in the research process outlined in Chapter 4. At each stage, one or more questions must be answered before the researcher can select one of the various alternatives. For example, before a proposal can be completed, the researcher needs to know what is to be measured. A simple statement like "market share" may not be enough; market share may be measured by auditing retailers' or wholesalers' sales, using trade association data, or asking consumers what brands they buy. What is to be measured is just one of many important questions that must be answered before setting the research process in motion. Exhibit 6.9 on the next page presents an overview of some of the basic questions that managers and researchers typically must answer when planning a research design.

Congress fights about everything . . . including how to spend taxpayers' money on federal research grants.



The Proposal as a Contract

When the research will be conducted by a consultant or an outside research supplier, the written proposal serves as that person's bid to offer a specific service. Typically, a client solicits several competitive proposals, and these written offers help management judge the relative quality of alternative research suppliers.

A wise researcher will not agree to do a research job for which no written proposal exists. The proposal also serves

EXHIBIT 6.9 **Basic Points Addressed by Research Proposals**

Decisions to Make	Basic Questions
Problem definition	What is the purpose of the study? How much is already known? Is additional background information necessary? What is to be measured? How? Can the data be made available? Should research be conducted? Can a hypothesis be formulated?
Selection of basic research design	What types of questions need to be answered? Are descriptive or causal findings required? What is the source of the data? Can objective answers be obtained by asking people? How quickly is the information needed? How should survey questions be worded? How should experimental manipulations be made?
Selection of sample	Who or what is the source of the data? Can the target population be identified? Is a sample necessary? How accurate must the sample be? Is a probability sample necessary? Is a national sample necessary? How large a sample is necessary? How will the sample be selected?
Data gathering	Who will gather the data? How long will data gathering take? How much supervision is needed? What procedures will data collectors need to follow?
Data analysis and evaluation	Will standardized editing and coding procedures be used? How will the data be categorized? Will computer or hand tabulation be used? What is the nature of the data? What questions need to be answered? How many variables are to be investigated simultaneously? What are the criteria for evaluation of performance? What statistical tools are appropriate?
Type of report	Who will read the report? Are managerial recommendations requested? How many presentations are required? What will be the format of the written report?
Overall evaluation	How much will the study cost? Is the time frame acceptable? Is outside help needed? Will this research design attain the stated research objectives? When should the research begin?

as a contract that describes the product the research user will buy. In fact, the proposal is in many ways the same as the final research report without the actual results. Misstatements and faulty communication may occur if the parties rely only on each individual's memory of what occurred at a planning meeting. The proposal creates a record, which greatly reduces conflicts that might arise after the research has been conducted. Both the researcher and the research client should sign the proposal indicating agreement on what will be done.

The proposal then functions as a formal, written statement of agreement between marketing executives and researchers. As such, it protects the researcher from criticisms such as, "Shouldn't we have had a larger sample?" or "Why didn't you use a focus group approach?" As a record of the researcher's obligation, the proposal also provides a standard for determining whether the actual research was conducted as originally planned.

Suppose in our Deland Trucking case, following the research, David is unhappy with the nature of the results because they indicate that higher cents per mile do, in fact, impact driver loyalty. This is something that David may not wish to face. In his despair, he complains to James saying,

> *"What I really wanted was a recruitment expense study, yet you provide results indicating my wages are too low! Why should I pay you?"*

James can refer back to the research proposal, which is signed by David. He can point right to the deliverables described above showing that David agreed to a study involving driver loyalty and the organizational characteristics that lead to loyalty. The proposal certainly protects the researcher in this case. In most cases like this, after the initial emotional reaction to unflattering results, the client comes around and realizes the report contents include information that will be helpful. Realize too that the proposal protects David in case James produced a study that addresses only research objectives not included in the proposal.

In basic research efforts, a formal proposal serves much the same purpose. **Funded business research** generally refers to basic research usually performed by academic researchers and supported by some public or private institution. Most commonly, researchers pursue federal government grants. A very detailed proposal is usually needed for federal grants, and the agreement for funding is predicated on the research actually delivering the results described in the proposal.

funded business research
Refers to basic research usually performed by academic researchers that is financially supported by some public or private institution, as in federal government grants.

One important comment needs to be made about the nature of research proposals. Not all proposals follow the same format. A researcher can adapt his or her proposal to the target audience or situation. An extremely brief proposal submitted by an organization's internal research department to its own executives bears little resemblance to a complex proposal submitted by a university professor to a federal government agency to research a basic consumer issue.

Anticipating Outcomes

As mentioned above, the proposal and the final research report will contain much of the same information. The proposal describes the data collection, measurement, data analysis, and so forth, in future tense. In the report, the actual results are presented. In this sense, the proposal anticipates the research outcome.

Experienced researchers know that research fails more often because the problem-definition process breaks down or because the research client never truly understood what a research project could or couldn't do. While it probably seems as though the proposal should make this clear, any shortcoming in the proposal can contribute to a communication failure. Thus, any tool that helps communication become as clear as can be is valued very highly.

DUMMY TABLES

One such tool that is perhaps the best way to let management know exactly what kind of results will be produced by research is the *dummy table*. **Dummy tables** are placed in research proposals and are exact representations of the actual tables that will show results in the final report with one exception: The results are hypothetical. They get the name because the researcher fills in, or "dummies up," the tables with likely but fictitious data. Dummy tables include the tables that will present hypothesis test results. In this way, they are linked directly to research objectives.

dummy tables
Tables placed in research proposals that are exact representations of the actual tables that will show results in the final report with the exception that the results are hypothetical (fictitious).

TIPS OF THE TRADE

- Researchers should allocate a substantial amount of time toward identifying and refining decision statements, research problems and questions, and research hypotheses. This is a way that the relevance of the research can be increased.
- Use qualitative research tools to probe the key decision makers during early interviews.
  - Ask what has changed.
  - Ask the decision maker to tell more about situations for clarification.
  - Ask the decision maker to compare and contrast situations.
- Express decision statements in creative terms whenever possible. For example, state them in plural form by using terms such as "what ways" might solve a problem rather than trying to find "the way" to solve a problem.
- Research questions and research hypotheses clearly identify the variables that need to be studied.
- Dummy tables are a very effective way to communicate exactly how a research problem might be linked to better decision making.

A research analyst can present dummy tables to the decision maker and ask, "Given findings like these, will you be able to make a decision?" If the decision maker says yes, the proposal may be accepted. However, if the decision maker cannot see how results like those in the dummy tables will help make the needed decision(s), it may be back to the drawing board. In other words, the client and researcher need to rethink what research results are necessary to solve the problem. Sometimes, examining the dummy tables may reveal that a key variable is missing or that some dependent variable is really not relevant. In other words, the problem is clarified by deciding on action standards or performance criteria and recognizing the types of research findings necessary to make specific decisions.

EXAMPLE DUMMY TABLE

Exhibit 6.10 shows a dummy table taken from the research proposal for David Deland's trucking company. From it, David can see that it shows what things most determine driver loyalty. If the results turn out as shown in the dummy table, it would suggest that David needs to perhaps increase his compensation or reduce the number of long-haul routes that his drivers must conduct.

While some tables may require some additional explanation from the researcher, every effort should be made to allow tables to stand alone and be interpreted by someone who is not an experienced researcher. In other words, the user should be able to understand the results and surmise implications that the results imply. When the final report is compiled, these tables will be included with the dummy results replaced with the actual research results.

EXHIBIT 6.10
A Dummy Table for David Deland

Regression Table: Results Showing Which Variables Determine Driver Loyalty

	Standardized Regression Coefficient	Rank (Importance)
Increase cents/mile	.50**	1
Number of long-haul routes (per month)	−.45**	2
Days off (per month)	.30**	3
Vehicle quality	.25*	4
Benefits provided	.15	5

* p-value < .01
** p-value < .05

Summary

1. Explain why proper "problem definition" is essential to useful business research. Problem definition is the process of defining and developing a decision statement and the steps involved in translating it into more precise research terminology, including a set of research objectives. While it is difficult to point to any particular research stage as the most important, a strong case can be made for this, the first stage. If this step falls apart, the entire research design is misguided. Effective problem definition helps make sure the research objectives are relevant and useful—meaning the results will actually be used. If problem definition is glossed over or done poorly, the results are likely irrelevant and potentially harmful.

2. Know how to recognize problems. Problems and opportunities are usually associated with differences. The differences can occur because of changes in some situation, or they can occur because expectations were unrealistic. Problems occur when there is a difference, or gap, between the current situation and a more ideal situation. One very common type of gap is when business performance does not match the expectations of performance in that dimension. In addition, opportunities exist when actual performance in some area does not match the potential performance. Research can supply information to help close the gap. Thus, problems are noticed by spotting these gaps. While many of these gaps may just be symptoms, further steps are taken to make sure that research addresses relevant issues, not just symptoms.

3. Translate managerial decision statements into relevant research objectives. The problem-definition process outlined in the chapter can help make sure that the research objectives are relevant. A situation analysis is helpful in this regard. In particular, interviews that identify symptoms and then probe the respondent for potential causes of these symptoms are helpful. One tool to help in this process is the "what has changed?" technique. The research objectives, once written, also indicate what variables are likely needed in the study.

4. Translate research objectives into research questions and/or research hypotheses. Research questions simply restate the research objectives in the form of a question. When the researcher has sufficient theoretical reasoning to make a more specific prediction that includes the direction of any predicted relationship, the research question can be translated into one or more research hypotheses.

5. Outline the components of a research proposal. The research proposal is a written statement of the research design that will be followed in addressing a specific problem. The research proposal allows managers to evaluate the details of the proposed research and determine if alterations are needed. Most research proposals include the following sections: decision description, purpose of the research including the research objectives, research design, sample design, data gathering and/or fieldwork techniques, data processing and analysis, budget, and time schedule.

6. Construct dummy tables as part of a research proposal. Dummy tables are included in research proposals and look exactly like the real tables that will be included in the final research report. However, they cannot actually contain results since the study has not yet been done. So, they include hypothetical results that look as much as possible like the actual results. These tables are a very good tool for communicating the value of a research project to management because they provide a real sense for implications that may result from the research.

Key Terms and Concepts

categorical variable, *119*
classificatory variable, *119*
constant, *119*
continuous variable, *119*
decision statement, *108*
dependent variable, *120*
dummy tables, *127*
funded business research, *127*
independent variable, *120*
interrogative techniques, *114*
managerial action standard, *123*
probing, *114*
problem, *112*
problem definition, *108*
research proposal, *124*
research questions, *121*
situation analysis, *112*
unit of analysis, *119*
variable, *119*

Questions for Review and Critical Thinking

1. What is a *decision statement?* How does the focus on an irrelevant decision affect the research process?
2. Define *problem recognition*. How is this process like translating text from one language into another? What role does "probing" play in this process?
3. List and describe four factors that influence how difficult the problem-definition process can be.
4. What are three types of gaps that exist, indicating that research may be needed to assist a business in making some decision?
5. Examine an article in the *Wall Street Journal* or a similar source that discusses a business situation of a company in the electronics or defense industry. Identify a problem that exists with the company. Develop some research objectives that you believe correspond to the problem.
6. What is a situation analysis? How can it be used to separate symptoms from actual problems?
7. Define unit of analysis in a marketing research context.
8. Find some business journal articles that deal with culture and international expansion. Find one that lists some hypotheses. What kinds of decisions might be assisted by the results of testing these hypotheses?
9. List and describe at least four terms that can describe the nature of a variable.
10. For each of the following variables, explain why it should be considered either continuous or categorical:
    a. Whether or not a university played in a football bowl game during 2006
    b. The average wait time a customer has before being served in a full-service restaurant
    c. Letter grades of A, B, C, D, or F
    d. The job satisfaction of a company's salespeople
    e. A consumer's age
11. Write at least three examples of hypotheses that involve a managerial action statement. Provide a corresponding decision statement for each.
12. What are the major components of a research proposal? How does a research proposal assist the researcher?
13. The chapter provides an example dummy table for the Deland Trucking vignette. Provide another example dummy table that corresponds to this same situation.
14. Evaluate the following statements of business research problems. For each provide a decision statement and corresponding research objectives:
    a. A farm implement manufacturer: Our objective is to learn the most effective form of advertising so we can maximize product line profits.
    b. An employees' credit union: Our problem is to determine the reasons why employees join the credit union, determine members' awareness of credit union services, and measure attitudes and beliefs about how effectively the credit union is operated.
    c. The producer of a television show: We have a marketing problem. The program's ratings are low. We need to learn how we can improve our ratings.
    d. A soft-drink manufacturer: The marketing problem is that we do not know if our bottlers are more satisfied with us than our competitors' bottlers are with them.
    e. A women's magazine: Our problem is to document the demographic changes that have occurred in recent decades in the lives of women and to put them in historical perspective; to examine several generations of American women through most of this century, tracking their roles as students, workers, wives, and mothers and noting the changes in timing, sequence, and duration of these roles; to examine at what age and for how long a woman enters various stages of her life: school, work, marriage, childbearing, divorce. This will be accomplished by analyzing demographic data over several generations.
    f. A manufacturer of fishing boats: The problem is to determine sales trends over the past five years by product category and to determine the seasonality of unit boat sales by quarters and by region of the country.
    g. The inventor of a tension-headache remedy (a cooling pad that is placed on the forehead for up to four hours): The purpose of this research is (1) to identify the market potential for the product, (2) to identify what desirable features the product should possess, and (3) to determine possible advertising strategies/channel strategies for the product.
15. Comment on the following statements and situations:
    a. "The best researchers are prepared to rethink and rewrite their proposals."
    b. "The client's signature is an essential element of the research proposal."
16. You have been hired by a group of hotel owners, restaurant owners, and other people engaged in businesses that benefit from tourism on South Padre Island, Texas. They wish to learn how they can attract a large number of college students to their town during spring break. Define the marketing decision statement.
17. You have been hired by a local Big Brothers and Big Sisters organization to learn how they can increase the number of males who volunteer to become Big Brothers to fatherless boys. Define your research objectives.

Research Activities

1. **'NET** Examine the Web site for International Communications Research (**http://icrsurvey.com**).[10] What services do they seem to offer that fall into the problem-definition process?
2. Consider the current situation within your local university music department. Assuming it stages musical productions to which audiences are invited and for which tickets are sold, describe the marketing situation it faces. Prepare a research proposal that would help it address a key decision. Make sure it includes at least one dummy table.

Case 6.1 E-ZPass

In the 1990s, a task force was formed among executives of seven regional transportation agencies in the New York–New Jersey area.[11] The mission of the task force was to investigate the feasibility and desirability of adopting electronic toll collection (ETC) for the interregional roadways of the area. Electronic toll collection is accomplished by providing commuters with small transceivers (tags) that emit a tuned radio signal. Receivers placed at tollbooths are able to receive the radio signal and identify the commuter associated with the particular signal. Commuters establish ETC accounts that are debited for each use of a toll road or facility, thus eliminating the need for the commuter to pay by cash or token. Because the radio signal can be read from a car in motion, ETC can reduce traffic jams at toll plazas by allowing tag holders to pass through at moderate speeds.

At the time the New York and New Jersey agencies were studying the service, electronic toll collection was already being used successfully in Texas and Louisiana. Even though several of the agencies had individually considered implementing ETC, they recognized that independent adoption would fall far short of the potential benefits achievable with an integrated interregional system.

The task force was most interested in identifying the ideal configuration of service attributes for each agency's commuters and determining how similar or different these configurations might be across agencies. The task force identified a lengthy list of attributes that was ultimately culled to six questions:

- How many accounts are necessary and what statements will be received?
- How and where does one pay for E-ZPass?
- What lanes are available for use and how they are controlled?
- Is the tag transferable to other vehicles?
- What is the price of the tag and possible service charge?
- What are other possible uses for the E-ZPass tag (airport parking, gasoline purchases, and so forth)?

From a researcher's perspective, it also seemed important to assess commuter demand for the service. However, the task force was not convinced that it needed a projection of demand, because it was committed to implementing ETC regardless of initial commuter acceptance. The task force considered its primary role to be investigating commuters' preferences for how the service should be configured *ideally.*

Questions

1. Evaluate the problem-definition process. Has the problem been defined adequately so that a relevant decision statement can be written?
2. What type of research design would you recommend for this project?
3. What research questions might be tested?
4. What might a dummy table include in this research proposal?

Case 6.2 Cane's Goes International

Raising Cane's is a fast-food chicken finger establishment based in Baton Rouge, Louisiana. Cane's restaurants are popular throughout the Gulf South. Cane's recently has been approached by people interested in opening Cane's restaurants in other countries. The best contact is an Australian. However, Cane's has also been approached about outlets in Montreal, Quebec, and in Monterrey, Mexico. Cane's prepares high-quality fried chicken fingers and has a limited menu consisting of fingers, fries, slaw, and lemonade (**http://www.raisingcanes.com**).

1. Write a decision statement for Raising Cane's.
2. Write corresponding research objectives and research questions.
3. What role would a proposal play in assisting this research effort and in assisting Cane's in improving their business situation?

Case 6.3 Deland Trucking

Based on the case scenario described throughout this chapter, prepare a research proposal that addresses this situation.