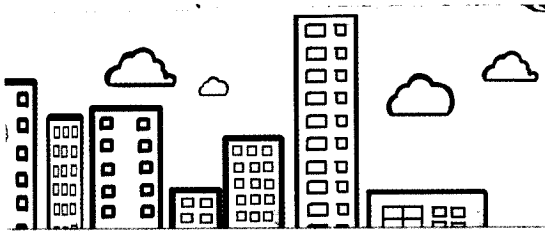

4 Research Design

LEARNING OBJECTIVES

In this chapter you will learn:

- 4-1 What research design is and why it is important
- 4-2 The three major types of research design: exploratory, descriptive, and causal
- 4-3 How exploratory research design helps the researcher gain understanding of a problem
- 4-4 The fundamental questions addressed by descriptive research and the different types of descriptive research
- 4-5 What is meant by causal research and to describe types of experimental research designs
- 4-6 The different types of test marketing and how to select test-market cities

"WHERE WE ARE"

1. Establish the need for marketing research.
2. Define the problem.
3. Establish research objectives.
4. Determine research design.
5. Identify information types and sources.
6. Determine methods of accessing data.
7. Design data collection forms.
8. Determine the sample plan and size.
9. Collect data.
10. Analyze data.
11. Prepare and present the final research report.

Designing Research to Develop Great Ideas

Sven Arn, Managing Director and Partner, Happy Thinking People.

Founded in Munich, Germany (1989), Happy Thinking People is one of the world's leading independent qualitative marketing research and consulting companies. With offices in Berlin, Munich, Paris, Zürich, and Mumbai employing over 100 people, we have over 25 years of in-depth experience in understanding people across the globe and in helping our clients to build relationships between brands, products, services, and their customers that lead to business success.

We have provided qualitative research training for ESOMAR and BVM (the German Market Research Association) for over 15 years. In 2013 we were voted "Best in Class in Analysis" by the German Association of Market Researchers.

Happy Thinking People works for a wide range of clients and categories, focusing on four main areas: exploring markets, creating concepts, evaluating ideas, and brand consulting.

Exploring markets is about understanding people in the contexts, places, and situations in which they make their decisions. We have a range of innovative tools working across the blurring boundaries of online and offline from Brazil to Shanghai, from mobile ethnographies and online communities to behavioral semiotics.

Our concept development embraces the principles of co-creation but doesn't leave everything to the consumer. While being firmly anchored in directional insight, our experience and know-how pinpoint where to follow and where to disrupt consumer expectations. We have a strong portfolio of proprietary techniques involving storytelling and story changing, creative exercises, role playing, war games, and scenario building.

We approach idea evaluation to reflect the complexity of human decision making—without making results confusing. Our recommendations are always founded in understanding consumer reactions rather than just reflecting what people say.

THE PEOPLE UNDERSTANDING COMPANY

Visit Happy Thinking People at www.happythinkingpeople.com.

Our brand consulting offer covers all the stages of the strategic process from insight identification through innovation, portfolio planning, and positioning to brand development.

In summary, "Happy Thinking" is the state that we believe leads to great ideas. We also believe that it makes sound business sense to involve consumers and our clients in an engaging discourse that encourages visionary thinking to develop ideas that make a real difference in people's lives.

—Sven Arn

Source: Text and photos courtesy of Sven Arn, Managing Director & Partner, Happy Thinking People.

Once the problem has been defined and the research objectives have been established, the next step in the marketing research process is determining the research design. In this chapter, you will be introduced to three basic types of research design: exploratory, descriptive, and causal. Each serves a different purpose and relies on different methods. Each has its own set of advantages and disadvantages. Knowing the basic options for research design can assist a researcher in making appropriate decisions in advance of conducting a research project.

© NotarYES/Shutterstock

A research design is a master plan that specifies the methods that will be used to collect and analyze the information needed for a research project.

4-1 Research Design

Marketing research studies are carried out in many different ways. Some projects are food-tasting experiments held in kitchen-like labs; others are focus groups, ethnographic research, or large, nationally representative sample surveys. Some research objectives require only research, whereas others may require thousands of personal interviews. Researchers may observe consumers in convenience stores or conduct two-hour, in-depth, personal interviews in respondents' homes.

Each type of study has certain advantages and disadvantages, and one method may be more appropriate for a given research problem than another. How do marketing researchers decide which method is the most appropriate? After becoming familiar with the problem and research objectives, researchers select a **research design**, which is a master plan that specifies the methods that will be used to collect and analyze the information needed for a research project.

WHY IS KNOWLEDGE OF RESEARCH DESIGN IMPORTANT?

Knowledge of research design is important in developing an appropriate study to approach a problem or opportunity. David Singleton of Zyman Marketing Group, Inc., believes that good research design is the first rule of good research.[1] Why would a practitioner make such a statement? There are reasons to justify the significance placed on research design. First, we need to understand that even though every problem and research objective may seem unique, there are usually enough similarities among problems and objectives to allow us to make some decisions in advance about the best research design to use to resolve the problem. This means we can group or classify seemingly diverse types of research projects well enough to predetermine the most appropriate research design.

Early on in the research process, as the problem and research objectives are forming, researchers can begin to plan which research design will be most appropriate. What allows researchers to do this is the fact that basic research designs available to them can be successfully matched to a range of problems and research objectives. Once the researcher knows the basic research design, a series of advance decisions may be made to form a framework for the development of the research project. The research design for the project calls for detailing what steps will be necessary for the completion of a successful project.

For example, if a researcher knows that an exploratory research design is called for, he or she can start thinking of the different ways to carry out exploratory research given the unique characteristics of the particular project. A series of *focus groups* may be needed. Who will participate in the focus groups? How many focus groups will be conducted? What questions will be asked of focus group participants? What should be the outcomes of the focus groups? The research design will lay out these details. Or perhaps the researcher determines that a causal research design is needed. This sets the researcher off in a completely different direction of thinking about appropriate experimental designs. In this way, identifying the most appropriate basic research design and the characteristics of the design serves the researcher in the same way that a blueprint might serve a builder.

Knowledge of the needed research design allows advance planning so that the project may be conducted in less time and typically at a cost savings due to efficiencies gained in preplanning. Think about taking a long trip. If you have the ability to preplan, you can save yourself time and money. It works the same way in a research project. At this stage, researchers may also face ethical issues related to the research design. Some common ethical considerations are presented in Marketing Research Insight 4.1.

4-2 Three Types of Research Designs

Research designs are classified into three traditional categories: exploratory, descriptive, and causal. The choice of the most appropriate design depends largely on the objectives of the research. Three common objectives are (1) to gain background information and to develop hypotheses, (2) to measure the state of a variable of interest (for example, level of brand loyalty), or (3) to test hypotheses that specify the relationships between two or more variables (for example, level of advertising and brand loyalty).

MARKETING RESEARCH INSIGHT 4.1 *Ethical Consideration*

Planning the Research Design: Areas of Ethical Sensitivity

In most cases professionals know more about their fields than the clients who hire them. In fact, this knowledge is the reason we hire professionals. However, that imbalance of knowledge can cause serious ethical issues. In the marketing research industry, these issues may arise in the potential for researchers to take advantage of clients in the research design process.

Recommending a Costlier Design Than Needed Some research designs are simple, efficient, and much less costly than others. Exploratory research, for example, has these characteristics. A researcher could recommend a much more involved research design that takes more time and increases the cost to the client. Why would a researcher do this? If a researcher's fee is based on a percentage of costs of the project, then there is a built-in incentive to boost those costs. Or, if the researcher has an interest in a subcontracting research firm, there is an incentive to use the services of that firm whether needed or not. An egregious example of this ethical lapse is a researcher presenting secondary data as primary data collected by the researcher. The Marketing Research Association's (MRA's) Code of Marketing Research Standards, Section II 21, states that researchers "will, when conducting secondary research, inform clients of the source of secondary research and not misrepresent it as primary data."

Designing a Study in Which Data Are Collected for Multiple Clients A researcher could save data collection costs by collecting data for multiple clients at the same time. The MRA's Code of Marketing Research Standards, Section II 22, states that researcher must "be granted prior approval, if all or part of the work on a project is to be combined or syndicated with work for other clients, or if the same is to be subcontracted to another entity outside the researcher's organization."

Using Information Obtained for a Client in Another Research Project A researcher could design a research project so that a component of the project that reflects work already conducted and paid for by a previous client is presented as original work for the present client. The MRA's Code of Marketing Research Standards, Section II 24, provides that researchers "will ensure that research conducted is the property of the commissioning party or client(s). At no time may such research be shared with other entities without the express written permission of the original client(s)."

Over- or Underestimating Data Collection Costs As you will learn, data collection costs are strongly influenced by the incidence rate (the percentage of the population possessing the characteristics required to participate in a study). Incidence rates are high if the research design calls for interviewing "any adult over age 18." Incidence rates are low if the study requires "males, over 65, who take statin drugs but still have high cholesterol counts." The lower the incidence rate, the more persons are required to be contacted to find someone who qualifies for the study. As a result, low incidence rate studies can be very costly. The MRA's Code of Marketing Research Standards, Section II 34, states that researchers "will calculate research metrics such as incidence, performance measurements such as response rates, error measurements such as sample margin of error, and other formulas according to commonly accepted industry practices."

Wrongfully Gaining Respondent Cooperation to Reduce Costs A researcher could design a project in which respondent cooperation could be greatly increased by making promises to potential respondents without any intention of fulfilling those promises. The MRA's Code of Marketing Research Standards, Section I 8, requires that researchers will "make factually correct statements to secure cooperation, including for database/sample development, and honor all promises made to respondents including but not limited to the use of data."

Misrepresenting Sampling Methods Research design will include determining the appropriate sampling plan and sample size. Researchers should not use a sample plan that does not allow achievement of the research objectives of the study. Researchers should inform clients as to how the sample plan will result in a representative sample. Likewise, researchers should inform the client of the effect of sample size on the study's accuracy. Some sample plans are more costly than others, and more sample size means greater costs to clients. The MRA's Code of Marketing Research Standards, Section II 30, requires that researchers "offer guidance to clients as to the appropriateness of the methodology being employed and sample selected to the fullest extent possible on each project."

Adherence to ethical standards applies to many aspects of designing a research project, which is why the MRA and other professional associations develop and maintain codes of ethics and standards of conduct. Professionals who understand and comply with these standards serve their clients' interests fairly and responsibly. Fortunately, 99% of marketing researchers are extremely ethical and follow their association's guidelines. The free market has a wonderful way of ensuring that those who aren't ethical do not stay around for long!

We strongly recommend that you visit the websites of the professional organizations identified in Chapter 2 and read their codes of conduct. The MRA posts its standards at http://www.marketingresearch.org (click the link to Standards).

© Mehmet Dilsiz/Shutterstock

Designing a research project may involve many ethically sensitive areas. Researchers learn how to treat clients ethically by being familiar with their association's codes and standards.

The choice of research design also depends on how much we already know about the problem and research objective. The less we know, the more likely it is that we should use exploratory research. Causal research, on the other hand, should only be used when we know a fair amount about the problem and we are looking for causal relationships among variables associated with the problem or research objectives. By reading this chapter you will better understand how different research objectives are best handled by the various research designs.[2]

RESEARCH DESIGN: A CAUTION

Before discussing the three types of research design, a warning may be in order against thinking of research design solely in a step-by-step fashion. The order in which the designs are presented in this chapter—that is, exploratory, descriptive, and causal—is *not* necessarily the order in which these designs should be carried out. In some cases, it may be perfectly legitimate to begin with any one of the three designs and to use only that one design. In many cases, however, research is an iterative process: By conducting one research project, we learn that we may need additional research, which may result in using multiple research designs. We could very well find, for example, that after conducting descriptive research, we need to go back and conduct exploratory research.

Exploratory research is unstructured, informal research that is undertaken to gain background information about the general nature of the research problem.

4-3 Exploratory Research

Exploratory research is unstructured, informal research that is undertaken to gain background information about the general nature of the research problem. By unstructured, we mean that exploratory research does not have a predetermined set of procedures. Rather,

the nature of the research changes as the researcher gains information. It is informal in that there is no formal set of objectives, sample plan, or questionnaire. Often small, nonrepresentative samples are used in exploratory research. Other, more formal, research designs are used to test hypotheses or measure the reaction of one variable to a change in another variable. Yet exploratory research can be accomplished by simply reading a magazine or even by observing a situation. Ray Kroc, the milkshake machine salesman who created McDonald's, observed that restaurants in San Bernardino, California, run by the McDonald brothers were so busy they burned up more milkshake machines than any of his other customers. Kroc took that exploratory observation and turned it into the world-famous fast-food chain. In another example, two eighth graders, Julianne Goldmark and Emily Matson, admired the hair accessories worn by characters on the television show *Gossip Girl* but were unable to find similar products in stores that were affordable. The duo began creating and selling their own hair accessories. They now have a business called Emi-Jay that makes about $10 million a year.[3]

Marketing Research on YouTube™ To see exploratory research in action, go to **www.youtube.com** and enter "brand exploratory research Giants game." An example of "man-on-the-street" interviews is shown.

Exploratory research is flexible in that it allows the researcher to investigate whatever sources he or she identifies and to the extent he or she feels is necessary to gain an understanding of the problem at hand. For example, a Wendy's franchisee went through his restaurant's cash register receipts, which were stamped with dates and times. He observed that weekday afternoons between 2:00 and 4:30 p.m. were his slack periods. He then initiated a mobile campaign for a free order of French fries during this time on weekdays. Traffic and sales went up. A University of West Virginia grad, Tom Petrini, attended a conference on sustainability. He noticed almost none of the attendees were drinking water from the reusable containers provided. When he asked them why, they told him there was no place to clean and refill the bottles. The company he started, Evive Station, provides free stainless steel containers and follow-up sterilization and refilling.[4]

Exploratory research is usually conducted when the researcher does not know much about the problem and needs additional information or desires new or more recent information. Often exploratory research is conducted at the outset of research projects. Chapter 3 discussed the use of a situation analysis to help clarify the problem. A situation analysis is a form of exploratory research.

USES OF EXPLORATORY RESEARCH

Exploratory research is used in a number of situations: to gain background information, to define terms, to clarify problems and hypotheses, and to establish research priorities.

Exploratory research is used to gain background information, to define terms, to clarify problems and hypotheses, and to establish research priorities.

Gaining Background Information When very little is known about the problem or when the problem has not been clearly formulated, exploratory research may be used to gain the needed background information. Even the most experienced researchers often undertake some exploratory research to gain current, relevant background information. Exploratory research can offer breakthrough ideas and fresh insights that lead to strategic knowledge.

Defining Terms Exploratory research helps to define terms and concepts. By conducting exploratory research to define a question such as "What is satisfaction with service quality?" the researcher quickly learns that "satisfaction with service quality" is composed of several dimensions—tangibles, reliability, responsiveness, assurance, and empathy. Not only would exploratory research identify the dimensions of satisfaction with service quality, but it could also demonstrate how these components may be measured.[5]

Clarifying Problems and Hypotheses Exploratory research allows the researcher to define the problem more precisely and to generate hypotheses for the upcoming study. For example, exploratory research on measuring bank image reveals the issue of different groups of bank customers. Banks have three types of customers: retail customers, commercial customers, and other banks for which services are performed for fees. This information is useful in clarifying

the problem of the measurement of bank image because it raises the issue of identifying for which customer group bank image should be measured.

Exploratory research can also be beneficial in the formulation of hypotheses, which are statements describing the speculated relationships among two or more variables. Formally stating hypotheses prior to conducting a research study helps to ensure that the proper variables are measured. Once a study has been completed, it may be too late to state which hypotheses are desirable to test.

Establish Research Priorities Exploratory research can help a firm prioritize research topics. For example, examining user-generated feedback on review websites, such as Engadget or Yelp, may tell management where to devote attention. Business-to-business organizations often find interviews with salespeople helpful sources of future product and service concepts to pursue.

METHODS OF CONDUCTING EXPLORATORY RESEARCH

A variety of methods is available to conduct exploratory research. We will cover some of these in the section of this chapter that deals with qualitative research since the methods overlap. In this section we briefly discuss some commonly used methods for conducting exploratory research: secondary data analysis, experience surveys, and case analysis. Other methods common to both exploratory research and qualitative research are discussed in Chapter 6.

Secondary Data Analysis The process of searching for and interpreting existing information relevant to the research topic is called *secondary data analysis*. Analyzing secondary data is almost always an important part of a marketing research project. Secondary information is widespread and readily available. Thanks to the Internet and today's sophisticated search engines such as Google, you can conduct a search for secondary information on virtually any topic quickly and efficiently. The Internet and your library offer access to large amounts of secondary data, which include information found on websites and in books, journals, magazines, special reports, bulletins, and newsletters. An analysis of secondary data is often the core of exploratory research.[6] A search of secondary data or information may come in many forms. Many executives subscribe to journals or trade publications for their particular industry. By reviewing these publications, they are constantly doing a form of exploratory research—looking for trends, innovations, information about current or potential customers and competitors, the general economy, and so on. As Marketing Research Insight 4.2 outlines, social media websites can be an excellent source of data for exploratory research. We devote part of Chapter 5 to analyzing secondary data and some of its sources.

For some examples of secondary data often used in marketing research, see www.secondarydata.com, a website developed by Decision Analyst, Inc.

Experience Surveys **Experience surveys** refer to gathering information from those thought to be knowledgeable on the issues relevant to the research problem. This technique is also known as the **key-informant technique**. In the technology field, a **lead-user survey** is used to acquire information from lead users of a new technology.[7] A manufacturer of a new building material that provides greater insulation at less cost may call a dozen contractors, describe the new material, and ask them how likely they would be to consider using it on their next building. In other examples, nurses might be interviewed about the needs of hospital patients, and elementary teachers might be surveyed to gather information about types of products that might be developed to help children learn. Experience surveys differ from surveys conducted as part of descriptive research in that there is usually no formal attempt to ensure that the survey results are representative of any defined group of subjects. Nevertheless, useful information can be gathered by this method of exploratory research.

Experience surveys refer to gathering information from those thought to be knowledgeable on the issues relevant to the research problem. Experience surveys may also be called *key-informant* or *lead-user surveys*.

Case Analysis A review of available information about one or more former situations to gain understanding of a current research problem with similar characteristics is called a **case analysis**. Research situations typically have at least some similarities to a past situation.[8]

A case analysis is a review of available information about one or more former situations to gain understanding of a current research problem with similar characteristics.

MARKETING RESEARCH INSIGHT 4.2 Digital Marketing Research

Exploring Social Media Data

Social media websites are a powerful source of data for exploratory research. By providing access to the unfettered opinions of consumers, social media platforms offer an instant way to gain background information for a problem, to define terms, to clarify problems and hypotheses, and to establish research priorities. Many companies are aware of the value of using social media websites to gain marketing insights, but there is so much information out there. How can analysts use social media data to acquire strong and actionable insights from consumers? Following are the steps for analyzing social media data.

Step 1: Develop a Problem Definition and Research Objectives

As stated in Chapter 3, developing focused research objectives is a vital step in the research process. This guideline holds particularly true for social media analysis, where a clear direction is needed to make sense of the copious amount of data. Limiting the focus to a defined topic and specific objectives will make the analysis more manageable. Still, to take full advantage of social media data analysis, the research objectives should also allow for an element of discovery. The data may lead to unexpected places.

Step 2: Identify Key Search Terms

The identification of the proper key search terms is a crucial step to the successful analysis of social media data. The process is often an iterative process, with broader searches being followed by searches using combinations of terms or newly discovered synonyms or tangential phrases. Obvious terms to start a search include the product's brand name, competitors' brand names, and the product class. More exploratory analyses might investigate activities, events, and emotions related to a brand.

Step 3: Identify Social Media Data Sources

Identification of the most useful data sources is another important step to social media data analysis. Online tools, such as TweetDeck and Scout Labs, can aid in this process. Still, these tools can miss some important types of social media platforms. Finding the most current and germane websites is a moving target, since social media–oriented data sources ebb and flow in popularity. Although this makes the task of identifying the best websites from which to gather data more difficult, it also means that new forms of exciting and relevant user-generated feedback are emerging on an ongoing basis and can be uncovered with a bit of persistence.

© Chanpipat/Shutterstock

Knowing the best data sources to use is a very important step in social media data analysis.

Step 4: Organize Data

Some of the most important user-generated data will not necessarily be in the form of text. Photos, videos, artwork, literature, and other forms of data might provide new insights into product feedback. As a result, organization of the data should be flexible and allow for diverse forms of media. A number of commercial services (for example, HootSuite and Radian6) and software (for example, NVivo) are available to assist in this process, as well as free online tools (such as SocialMention and Google Alerts). Or researchers can take more of a do-it-yourself approach to organizing data to ensure versatility and comprehensiveness.

Step 5: Analyze Data

Once the social media data have been gathered and organized, the data should be analyzed. First, the researchers should review the data thoroughly. As with all research, insightful analysis depends on a comprehensive knowledge and understanding of the data. Second, the analysts should begin identifying key themes that emerge from the findings—for example, key beliefs, ideas, concepts, definitions, or behaviors. The data should then be compared and categorized.

Step 6: Present Findings

Following analysis of the data, the findings will be presented in an oral and written presentation, using concrete examples and illustrations. Here is where social media data really stand out. Quotes can be presented from Twitter, reviews, and blogs. Photos found online can illustrate exactly where, when, and how

a consumer is using a product or service. Consumer-produced videos can demonstrate perceived advantages and disadvantages of products.

Step 7: Outline Limitations

When using social media data, it is as important as with other research methods to outline the limitations of the research. Explicitly stating the problems and gaps encountered when gathering and analyzing the data will help to provide a more complete understanding of the findings.

Step 8: Strategize

As with all research, the final and most important step of the analysis is to use the finding to develop research-based, actionable recommendations related to the research objectives. Then, based on the project's results, the next stage of research should be planned.

Source: Veeck, A. (2013, October). Beyond monitoring: Analyzing the content of social media data. *Quirk's Marketing Research Review,* 74–77.

Even when the research problem deals with a radically new product, some similar past experiences may be observed. For example, when Apple introduced the iPad, this new device may have seemed revolutionary. However, Apple could refer to its experience with introducing the iPhone in 2007 when planning the strategy for introducing its new tablet. Then, as Apple introduced successive versions of the iPad, the company could examine the cases of the introductions of previous versions of the iPad to learn from mistakes and successes at the product introduction stage.

Case analysis can be a particularly useful technique for developing strategies to prevent and manage crises, since, by definition, crises occur on rare occasions. For example, an incident of adulterated milk in China in 2008 that led to the death of six infants and the illness of hundreds of thousands of other babies has been studied to prevent other disasters from occurring through supply chain management.[9] The 2009–2010 recall of Toyota automobiles with acceleration pedals that were susceptible to sticking has been examined to develop best practices for companies to communicate product failures to their customers.[10]

Focus Groups *Focus groups* are small groups brought together and guided by a moderator through an unstructured, spontaneous discussion for the purpose of gaining information relevant to the research problem. (We cover focus groups extensively in Chapter 6.) Focus groups are one of the most widely used exploratory techniques to gain greater understanding of a current problem or to develop preliminary knowledge to guide in the design of descriptive or causal research. For example, in 2015 a series of focus groups was conducted by the National Football League (NFL) in St. Louis, Oakland, and San Diego as part of a wider study to determine how fans would react to losing the professional football team that is currently based in their cities.[11]

To conclude, exploratory research in some form should be used in almost every research project. Why? First, exploratory research, particularly secondary data analysis, can be conducted efficiently through online and library resources. Second, compared to collecting primary data, exploratory research is inexpensive. Finally, exploratory research can often provide information that meets the research objectives or can assist in gathering current information necessary to conduct either a descriptive or causal design. Therefore, few researchers embark on a research project without first beginning with exploratory research.

Descriptive research is undertaken to collect data to examine the characteristics of consumers and/or markets.

4-4 Descriptive Research

Descriptive research is undertaken to describe answers to questions of who, what, where, when, and how. When we wish to know *who* our customers are, *what* brands they buy and in what quantities, *where* they buy the brands, *when* they shop, and *how* they found out about our

products, we turn to descriptive research. Descriptive research is also desirable when we wish to project a study's findings to a larger population. If a descriptive study's sample is representative, the findings may be used to predict some variable of interest such as sales.

CLASSIFICATION OF DESCRIPTIVE RESEARCH STUDIES

Two basic types of descriptive research studies are available to the marketing researcher: cross-sectional and longitudinal. **Cross-sectional studies** measure units from a sample of the population of interest at only one point in time. A study measuring your attitude toward adding a required internship course to your degree program, for example, would be a cross-sectional study. Your attitude toward the topic is measured at *one point in time*. Cross-sectional studies are prevalent in marketing research, outnumbering longitudinal studies and causal studies. Because cross-sectional studies are one-time measurements, they can be described as "snapshots" of the population.

Cross-sectional studies measure units from a sample of the population at one point in time.

As an example, many magazines survey a sample of their subscribers and ask them questions such as their age, occupation, income, and educational level. These sample data, taken at one point in time, are used to describe the readership of the magazine in terms of demographics. Cross-sectional studies normally are designed to represent the population of interest and employ fairly large sample sizes, so many cross-sectional studies are referred to as *sample surveys*.

Sample surveys are cross-sectional studies whose samples are drawn in such a way as to be representative of a specific population. Prior to important elections, many sample surveys ask likely voters: "If the election were held today, which candidate would you vote for?" Such survey results are often featured in the news because they attract a lot of attention. The survey samples are drawn so that the news media may report that the results are representative of the U.S. population and that the results are accurate within a certain margin of error (very frequently + or −3%). To be able to report on the accuracy of sample surveys, researchers must plan exactly how the population will be sampled and how many people will be surveyed. You will learn about different methods of conducting samples and how to calculate margin of error in Chapters 9 and 10.

Sample surveys are cross-sectional studies whose samples are designed in such a way as to be representative of a specific population at a pre-determined margin of error.

Longitudinal studies repeatedly measure the same sample units of a population over a period of time. Because longitudinal studies involve multiple measurements, they can be described as "movies" of the population. Longitudinal studies are employed by most of the largest companies that use marketing research. To ensure the success of the longitudinal study, researchers must have access to the same members of a sample, called a panel, so as to take repeated measurements. **Panels** are samples of respondents who have agreed to provide information or answer questions at regular intervals. Maintaining a representative panel of respondents is a major undertaking.

Longitudinal studies repeatedly measure the same sample units of a population over a period of time.

Panels are samples of respondents who have agreed to provide information or answer questions at regular intervals.

Several commercial marketing research firms develop and maintain consumer panels for use in longitudinal studies. Typically, these firms attempt to select a sample that is representative of some population. Firms such as IRI and Nielsen have maintained panels consisting of hundreds of thousands of households for many years. In many cases these companies recruit panel members so that the demographic characteristics of the panel are proportionate to the demographic characteristics found in the total population according to Census Bureau statistics. Sometimes these panels will be balanced demographically not only to represent the United States but also to allow representation of various geographical regions. In this way, a client who wishes to get information from a panel of households in the Northwest can be assured that the panel is demographically matched to the total population in the states making up the northwestern region. Many companies maintain panels to target market segments such as "dog owners" or "kids." Paradigm Sample offers a panel of 18- to 34-year-old mobile users through its IdeaShifters panel. B2B panels are also available allowing researchers to target populations such as building contractors, supermarket owners, physicians, lawyers, university professors, or government workers.

Active Learning

Omnibus Surveys

Let's learn more about omnibus surveys! Go to www.greenbook.org. At the top left, locate "Greenbook Directory." Under "Research Services," select the drop-down menu, and then scroll down and click "Omnibus Surveys." Besides "consumers," what other types of samples may be accessed using omnibus surveys? Go to some of the firms and read what they have to say about omnibus surveys. How long does it take them to get results back to clients?

Continuous panels are samples of respondents who agree to answer the same questions at periodic intervals.

Discontinuous panels vary questions from one panel measurement to the next.

Discontinuous panels, or omnibus panels, are samples of respondents who answer different questions on a regular basis over a period of time.

There are two types of panels: continuous panels and discontinuous panels. **Continuous panels** ask panel members the same questions on each panel measurement. **Discontinuous panels** vary questions from one panel measurement to the next.[12] Continuous panel examples include many of the syndicated data panels that ask panel members to record their purchases using diaries or scanners. The essential point is that panel members are asked to record the *same* type of information (for example, grocery store purchases) on an ongoing basis.

Discontinuous panels are sometimes referred to as **omnibus panels**. (*Omnibus* means "including or covering many things or classes.") They may be used for a variety of purposes, and the information collected by a discontinuous panel varies from one panel measurement to the next. How longitudinal data are applied depends on the type of panel used to collect the data. Essentially, the discontinuous panel's primary usefulness is that it represents a large group—people, stores, or some other entity—and its members are agreeable to providing marketing research information. Discontinuous panels, like continuous panels, are also demographically matched to some larger entity, implying representativeness as well. Therefore, a marketer wanting to know how a large number of consumers, matched demographically to the total U.S. population, feel about two different product concepts may elect to utilize the services of an omnibus panel. The advantage of discontinuous (omnibus) panels is that they represent a group of persons who have made themselves available for research. In this way, then, discontinuous panels represent existing samples of consumers that may be quickly accessed for a wide variety of purposes.

Brand-switching studies are studies that examine the extent that consumers are loyal to one brand.

The continuous panel is used quite differently. Usually, firms are interested in using data from continuous panels because they can gain insights into changes in consumers' attitudes and behaviors. For example, data from continuous panels can show how members of the panel switch brands from one time period to the next. Studies examining the extent to which consumers are loyal to one brand versus buying different brands are known as **brand-switching studies**. Such studies can be invaluable to brand managers because cross-sectional studies that show changes in market shares between several brands can be misleading. We will illustrate this in Tables 4.1 and 4.2. Table 4.1 shows the results of two separate surveys conducted

TABLE 4.1 Results of Two Cross-Sectional Studies "Which Brand of Chocolate Chip Cookie Did You Most Recently Purchase?"

Brand	Cross-Sectional Survey 1	Cross-Sectional Survey 2
Famous Amos	100	75
Pepperidge Farm	200	200
Nabisco	200	225
Total Families	500	500

TABLE 4.2 Results of Two Waves of a Longitudinal Study "Which Brand of Chocolate Chip Cookie Did You Most Recently Purchase?"

Wave 1 Brand	Wave 2 Brand			
	Famous Amos	Pepperidge Farm	Nabisco	Totals, Wave 1
Famous Amos	50	50	0	
Pepperidge Farm	25	150	25	
Nabisco	0	0	200	
Totals, Wave 2	75	200	225	

six months apart. Let's assume you are the brand manager for Famous Amos chocolate chip cookies. We can see that both studies surveyed 500 families who were purchasers of chocolate chip cookies. In survey 1 Famous Amos had 100 families, and the other two brands had 200 and 200 respectively. (Please note these numbers are for illustration only; they do not reflect the true market shares of these brands.) What can we learn as the brand manager from one cross-sectional study? We now know that we are about 20% of the market and that our two competitors have about equal shares, each about 40% of the market. Now, let's look at another sample of 500 other families six months later as shown in cross-sectional survey 2. What can we learn? First, we see that Famous Amos's share has dropped! A brand manager should be very concerned about a drop in market share. Who is the culprit? If we compare the two cross-sectional studies, we see that Pepperidge Farm stayed the same at 200 families, but Nabisco climbed to 225 families. It would be quite natural to assume that Nabisco was eroding the brand share of Famous Amos. In this case, the Famous Amos brand manager would start examining Nabisco's marketing mix during the last few months. Has the competitor changed package design? Has it stepped up its promotion? Is it providing retailers with incentives?

Now, let us take a look at a longitudinal study with two waves of measurements, again six months apart. We will assume that the results (total families purchasing each brand) are exactly the same as we have in our two cross-sectional studies. But what will be different is how each family changed. Remember, with a continuous panel in a longitudinal study we ask the same family the same question with each administration, or wave, of the study. Look at the results in Table 4.2.

Notice that the totals for Wave 1 (green) and Wave 2 (blue) are exactly the same as the totals for the two cross-sectional studies shown in Table 4.1. However, the value of longitudinal data is reflected in the tan area inside of Table 4.2. Of the 100 families who bought Famous Amos cookies in Wave 1, 50 of them stayed with Famous Amos in Wave 2. Another 50 families switched to Pepperidge Farm. None of the Famous Amos families switched to Nabisco. Of the 200 Pepperidge Farm families in Wave 1, 25 switched to Famous Amos, 150 stayed with Pepperidge Farm, and 25 switched to Nabisco. Finally, of the 200 Nabisco families in Wave 1, all 200 of them stayed with Nabisco in Wave 2. This shows us how competition is affecting our brand. Pepperidge Farm, not Nabisco, is interacting with our Famous Amos cookie brand. More detailed data allow us to arrive at a more valid conclusion than we reached by first only considering the cross-sectional studies. As this example illustrates, the value of longitudinal information using continuous panels is that it allows brand managers to explore the dynamics among competing brands.

Another use of longitudinal data is that of market tracking. *Tracking studies* are studies that involve the monitoring of the same variables of interest—such as market share or unit sales—over time. By tracking sales by SKU over time, managers can learn a great deal about what is happening in the marketplace. We discuss tracking studies in more depth in Chapter 5.

Market-tracking studies are studies that monitor the same variables of interest over time.

4-5 Causal Research

Causal research is used to measure causality in relationships, such as "if *x*, then *y*."

Causality is a relationship in which one or more variables affect one or more other variables.

Causal research is used to measure causality in relationships, such as "if *x*, then *y*." **Causality** is a condition in which one or more variables affect one or more other variables. When conducting causal research, "if–then" statements become our way of manipulating variables of interest. For example, if the thermostat is lowered, then the air will get cooler. If I drive my automobile at lower speeds, then my gasoline mileage will increase. If I spend more on advertising, then sales will rise. Marketing managers are always trying to determine what will cause a change in consumer satisfaction, a gain in market share, an increase in website visits, or an increase in sales.

Prior to launching its new aspartame-free diet soda in 2015, PepsiCo conducted two years of research, including testing involving thousands of consumers, and was confident that its formula would be accepted by consumers.[13] Nevertheless, shortly after the introduction of the formula, the ratio of negative to positive comments on social media about the new Diet Pepsi was worse than is usually found with new products.[14] Understanding what causes consumers to behave as they do is extremely difficult. Nevertheless, there is a high payoff in the marketplace for even partially understanding causal relationships. Causal relationships are examined through the use of experiments, which are special types of studies.

EXPERIMENTS

An experiment is a type of study in which one or more independent variables are manipulated to see how one or more dependent variables are affected, while also controlling the effects of additional extraneous variables.

Independent variables are variables over which the researcher has control *and* wishes to manipulate to measure the effect on the dependent variable.

Dependent variables are variables that are measured in response to changes in independent variables.

Extraneous variables are all of the variables other than the independent variables that may have an effect on the dependent variable.

An **experiment** is a type of study in which one or more independent variables are manipulated to see how one or more dependent variables are affected, while also controlling the effects of additional extraneous variables. **Independent variables** are variables over which the researcher has control *and* wishes to manipulate. Broadly speaking, you can think of the 4 Ps (product, price, promotion, and place) as independent variables. Some examples of independent variables are level of advertising expenditure, type of advertising appeal (humor, prestige), display location, placement of website ads, method of compensating salespersons, price, and type of product. **Dependent variables**, on the other hand, are variables that are measured in response to changes in independent variables. Common dependent variables include sales, market share, customer satisfaction, sales force turnover, time spent on site, unique net profits, and RONW (return on net worth). Certainly, marketers are interested in managing these variables. Because managers cannot change these variables directly, they attempt to change them through the manipulation of independent variables. To the extent that marketers can establish causal relationships between independent and dependent variables, they can enjoy some success in influencing the dependent variables. Consider an analogy familiar to students: If you want to change your GPA (dependent variable), you must change certain independent variables such as amount of time devoted to study, class attendance, devotion to reading your text, and listening habits in the lecture hall.

Extraneous variables are all of the variables other than the independent variables that may have an effect on the dependent variable. To illustrate, let's say you and your friend wanted to know if brand of gasoline (independent variable) affected gas mileage in automobiles (dependent variable). Your "experiment" consists of each of you filling up your two cars, one with Brand A, the other with Brand B. At the end of the week, you learn that Brand A achieved 18.6 miles per gallon and Brand B achieved 26.8 miles per gallon. Does Brand B cause better gas mileage than Brand A? Or could the difference in the dependent variable (gas mileage) be due to factors *other* than gasoline brand (independent variable)? Let's take a look at what these extraneous variables may be: (1) One car is an SUV, and the other is a small compact. (2) One car was driven mainly on the highway, and the other was driven in the city in heavy traffic. (3) One car has properly inflated tires, whereas the other car does not. All these extraneous variables could have affected the dependent variable in addition to the brand of gas used.

An example of an experiment is examining if listing nutritional information on menu items affects restaurant sales.

Let's look at another example. Imagine that a restaurant chain conducts an experiment to determine the effect of supplying nutritional information on menu items (independent variable) on restaurant sales (dependent variable).[15] Management has a record of restaurant sales without menu-supplied nutritional information and then changes the menus (manipulates the independent variable) to include the nutritional information and measures sales once again. The experiment is conducted in one of the chain's restaurants. Assume sales increased. Does this mean that if the chain changes the menu information, then sales will increase in all its restaurants? Might other extraneous variables have affected sales? Could the following two variables have affected the restaurant's sales? (1) The restaurant selected for the experiment is located in a high-income area in California known for health spas and workout gyms; and (2) just prior to changing the menus, the FDA announced a study that caloric content for the same type of food had wide variation depending on the restaurant (coffee ranges in calories from 80 to 800 per cup; hamburgers range from 250 to over 1,000).

Yes, the clientele for the restaurant selected for the experiment could be unique, and a new, highly publicized study about nutritional information from a respected source, the FDA, could certainly have had an effect on the acceptance of the new menu information. In fact, it could have helped create "buzz" or positive WOM (word-of-mouth) influence. Both of these possible influences are likely extraneous variables that have an effect on the dependent variable but are not defined as independent variables. As this example illustrates, it is difficult to isolate the effects of independent variables on dependent variables without controlling for the effects of the extraneous variables. Unfortunately, it is not easy to establish causal relationships, but it can be done. In the following section, we will see how the design of an experiment allows us to assess causality.

EXPERIMENTAL DESIGN

An **experimental design** is a procedure for devising an experimental setting so that a change in a dependent variable may be attributed solely to the change in an independent variable. In other words, experimental designs are procedures that allow experimenters to control for the effects on a dependent variable by any extraneous variable. In this way, the experimenter is assured that any change in the dependent variable was due only to the change in the independent variable.

An experimental design is a procedure for devising an experimental setting so that a change in a dependent variable may be attributed solely to the change in an independent variable.

Let's look at how experimental designs work. First, we list the symbols of experimental design:

O = The measurement of a dependent variable

X = The manipulation, or change, of an independent variable

R = Random assignment of subjects (e.g., consumers, stores) to experimental and control groups

E = Experimental effect—that is, the change in the dependent variable due to the independent variable

A pretest is a measurement of the dependent variable that is taken prior to changing the independent variable.

A posttest is a measurement of the dependent variable that is taken after changing the independent variable.

A control group is a group whose subjects have not been exposed to the change in the independent variable.

An experimental group is a group that has been exposed to a change in the independent variable.

When a measurement of the dependent variable is taken *prior to* changing the independent variable, the measurement is sometimes called a **pretest**. When a measurement of the dependent variable is taken *after* changing the independent variable, the measurement is sometimes called a **posttest**.

Control of extraneous variables is typically achieved by the use of a second group of subjects, known as a control group. By **control group**, we mean a group whose subjects have not been exposed to the change in the independent variable. The **experimental group**, on the other hand, is the group that has been exposed to a change in the independent variable. We shall use the following experimental design to illustrate the importance of the control group.

Before-After with Control Group The **before-after with control group** design may be achieved by randomly dividing subjects of the experiment into two groups: the control group and the experimental group. If we assume that our restaurant chain has 100 restaurants spread around the country, we could easily randomly divide them into two groups of 50 restaurants each. Management already has a pretest measurement of the dependent variable on both groups by virtue of knowing sales volume prior to changing the menus. Next, the independent variable, adding the nutritional information to the menus, is changed only in the experimental group (50 restaurants). Finally, after some time period, posttest measurements are taken of the dependent variable in both groups of restaurants. This design may be diagrammed as follows:

Experimental group (R)	O_1	X	O_2
Control group (R)	O_3		O_4

where

$$E = (O_2 - O_1) - (O_4 - O_3).$$

By randomly (R) dividing our 100 restaurants into two groups—50 in the experimental group and 50 in the control group—the groups should be equivalent. That is, both groups should be as similar as possible, each group having an equal number of restaurants in high-income, middle-income, and low-income areas, and an equal number of restaurants in locales favoring exercising and nutrition concerns. The average age of the restaurants should be equivalent, the average square footage should be equivalent, the average number of employees should be equivalent, and the average sales should be equivalent. In other words, randomization should yield two groups of restaurants that are *equivalent* in all respects. An experimenter should take whatever steps are necessary to meet this condition if he or she uses this design. There are other methods for gaining equivalency besides randomization. Matching on criteria thought to be important, for example, would aid in establishing equivalent groups. When randomization or matching on relevant criteria does not achieve equivalent groups, more complex experimental designs should be used.[16]

Looking back at our design, the R indicates that we have randomly divided our restaurants into two equal groups—one a control group, the other an experimental group. We also see that pretest measurements of our dependent variable, restaurant sales, were recorded for both groups of restaurants, as noted by O_1 and O_3. Next, we see by the X symbol that only in the experimental group of restaurants were the menus changed to add the nutritional information for the menu items. Finally, posttest measurements of the dependent variable were taken at the same time in both groups of restaurants, as noted by O_2 and O_4.

Now, what information can we gather from this experiment? First, we know that $(O_2 - O_1)$ tells us how much change occurred in our dependent variable during the time of the experiment. But was this difference due solely to our independent variable, X? No, $(O_2 - O_1)$ tells us how many dollars in sales may be attributed to (1) the change in menu information *and* (2) other extraneous variables, such as the FDA publicizing the wide variation in nutritional

values obtained in restaurant meals or just that more people decided to eat in restaurants during this time interval. Now, let us look at what is measured by the differences in sales among our control restaurants ($O_4 - O_3$). Because it cannot account for changes in restaurant sales due to a change in menu information (the menus were not changed), then any differences in sales as measured by ($O_4 - O_3$) must be due to the influence of all extraneous variables on restaurant sales. Therefore, the *difference* between the experimental group and the control group, $(O_2 - O_1) - (O_4 - O_3)$, results in a measure of E, the "experimental effect."

We now know that if we change menu information, then restaurant sales will change by an amount equal to E. We have, by using a proper experimental design, made some progress at arriving at causality. However, we should point out here, though we have established causality, it did not come without cost and complexity. Notice our experiment went from changing menus in 1 restaurant to 50 restaurants, and our total experiment involved 100 restaurants!

Often organizations use A/B testing to determine which of two or more alternatives involved in marketing a product is better, such as two pricing levels, two types of packaging, or two different brand names. **A/B testing** is testing two alternatives (A and B) to see which one performs better. A/B testing is often used to compare website designs to determine which design is more effective. Website traffic can be split between design A and design B, with an important measure, such as sales or repeat visitors, compared between the two websites to determine which design is superior.

A/B testing is testing two alternatives (A and B) to see which one performs better.

As we noted earlier, there are many other experimental designs, and of course, there are almost limitless applications of experimental designs to marketing problems. Although we have demonstrated how valuable experimentation can be in providing knowledge, we should not accept all experiments as being valid. How we assess the validity of experiments is the subject of our next section.

HOW VALID ARE EXPERIMENTS?

How can we assess the validity of an experiment? An experiment is valid if (1) the observed change in the dependent variable is, in fact, due to the independent variable, and (2) the results of the experiment apply to the "real world" outside the experimental setting.[17] Two forms of validity are used to assess the validity of an experiment: internal and external.

Internal validity is the extent to which a researcher can be certain that a change in the dependent variable is actually due to the independent variable. This is another way of asking if the proper experimental design was used and if it was implemented correctly. To illustrate an experiment that lacks internal validity, let us return to our change in menu information example. Recall that we took the effort to expand our restaurants to 100 and randomly divided them into two groups to ensure that the experimental group and control group were, in fact, equivalent. What would happen if the researcher did not ensure the equivalency of the groups? Our experimental effect, E, could be due to the differences in the two groups (e.g., one group of restaurants was located in areas with clientele sensitive to nutrition). This difference in the groups, then, would represent an extraneous variable that had been left uncontrolled. Such an experiment would lack internal validity because it could not be said that the change in the dependent variable was due solely to the change in the independent variable. Experiments lacking internal validity have little value because they produce misleading results.

Internal validity in an experimental study is the extent to which the researcher is certain that a change in a dependent variable is actually due to the independent variable.

External validity refers to the extent that the relationship observed between the independent and dependent variables during the experiment is generalizable to the "real world."[18] In other words, can the results of the experiment be applied to all the restaurants in the chain? There are several threats to external validity. How representative is the sample of test units? Is this sample really representative of the population? Additionally, there exist many examples of the incorrect selection of sample units for testing purposes. For example, some executives, headquartered in large cities in cold winter climates, have been known to conduct "experiments" in warmer, tropical climes during the winter. Although the experiments they

External validity refers to the extent to which a researcher can be certain that a relationship observed between independent and dependent variables during an experiment would occur under real-world conditions.

conduct may be internally valid, it is doubtful that the results will be generalizable to the total population.

Another threat to external validity is the artificiality of the experimental setting itself. To control as many variables as possible, some experimental settings are far removed from real-world conditions.[19] If an experiment is so contrived that it produces behavior that would not likely be found in the real world, then the experiment lacks external validity.

TYPES OF EXPERIMENTS

Laboratory experiments are those in which one or more independent variables are manipulated and measures of the dependent variable are taken in an artificial setting for the purpose of controlling all extraneous variables that may affect the dependent variable.

We can classify experiments into two broad classes: laboratory and field. **Laboratory experiments** are those in which one or more independent variables are manipulated and measures of the dependent variable are taken in a contrived, artificial setting for the purpose of controlling the many possible extraneous variables that may affect the dependent variable.

To illustrate, let us consider a study whereby subjects are invited to a theater and shown test ads, copy A or copy B, spliced into a TV pilot program. Why would a marketer want to use such an artificial laboratory setting? Such a setting is used to control for variables that could affect the purchase of products other than those in the test ads. By bringing consumers into an artificial laboratory setting, the experimenter is able to control many extraneous variables. For example, you have learned why it is important to have equivalent groups (the same kind of people watching copy A as those watching copy B commercials) in an experiment. By inviting preselected consumers to the TV pilot showing in a theater, the experimenter can match (on selected demographics) the consumers who view copy A with those who view copy B, thus ensuring that the two groups are equal. By having the consumers walk into an adjoining "store," the experimenter easily controls other factors such as the time between exposure to the ad copy and shopping, as well as the consumers being exposed to other advertising by competitive brands. As you have already learned, any one of these factors, left uncontrolled, could have an impact on the dependent variable. By controlling for these and other variables, the experimenter can be assured that any changes in the dependent variable were due solely to differences in the independent variable, ad copy A and ad copy B. Laboratory experiments, then, are desirable when the intent of the experiment is to achieve high levels of internal validity.

There are advantages to laboratory experiments. First, they allow the researcher to control for the effects of extraneous variables. Second, compared to field experiments, lab experiments may be conducted quickly and with less expense. The disadvantage of laboratory experiments is the lack of a natural setting and, therefore, the concern that the findings do not generalize to the real world.

Field experiments are those in which the independent variables are manipulated and the measurements of the dependent variable are taken in their natural setting.

Field experiments are those in which the independent variables are manipulated and the measurements of the dependent variable are made on test units in their natural setting. Many marketing experiments are conducted in natural settings, such as in supermarkets, malls, retail stores, and consumers' homes. Let us assume that a marketing manager conducts a *laboratory* experiment to test the differences between ad copy A, the company's existing ad copy, and new ad copy B. The results of the laboratory experiment indicate that copy B is far superior to the company's present ad copy A. But, before spending the money to use the new copy, the manager wants to know if ad copy B will really create increased sales in the real world. She elects to actually run the new ad copy in Erie, Pennsylvania, a city noted as being representative of the average characteristics of the U.S. population. By conducting this study in the field, the marketing manager will have greater confidence that the results of the study will actually hold up in other real-world settings. Note, however, that even if an experiment is conducted in a naturalistic field setting to enhance external validity, the experiment is invalid if it does not also have internal validity.

The primary advantage of the field experiment is that of conducting the study in a naturalistic setting, thus increasing the likelihood that the study's findings will also hold true in the real world. Field experiments, however, are expensive and time consuming. Also, the experimenter must always be alert to the impact of extraneous variables, which are difficult to control in the natural settings of field experimentation.

The example we just cited of using Erie, Pennsylvania, for a field experiment would be called a "test market." Much of the experimentation in marketing, conducted as field experiments, is known as *test marketing,* which is discussed in the following section.

4-6 Test Marketing

Test marketing is the phrase commonly used to indicate an experiment, study, or test that is conducted in a field setting. Companies may use one or several test-market cities, which are selected geographical areas in which to conduct the test. There are two broad classes of uses of test markets: (1) to test the sales potential for a new product or service, and (2) to test variations in the marketing mix for a product or service.[20]

Test marketing is conducting an experiment or study in a field setting to evaluate a new product or service or other elements of the marketing mix.

Although test markets are very expensive and time consuming, the costs of introducing a new product on a national or regional basis routinely amount to millions of dollars. The costs of the test market are then justified if the results of the test market can improve a product's chances of success. Sometimes the test market identifies a failure early on and saves the company huge losses. Other times a product tests well in a test market and then is introduced more widely. For example, Taco Bell tested a food item called a Quesalupa—a cross between a quesadilla and a chalupa—for two months in 2015 in 36 Toledo-area stores. The Quesalupa tested well in Toledo, so Taco Bell made the decision to launch the product nationally.[21]

Test markets are conducted not only to measure sales potential for a new product but also to measure consumer and dealer reactions to other marketing-mix variables. A firm may use only department stores to distribute the product in one test-market city and only specialty stores in another test-market city to gain some information on the best way to distribute the product. Companies can also test media usage, pricing, sales promotions, and so on through test markets. Products and services in both the consumer (B2C) and industrial (B2B) markets may be test marketed. Marketing Research Insight 4.3 describes some current test markets.

TYPES OF TEST MARKETS

Test markets can be classified into four types: standard, controlled, electronic, and simulated.[22] Each is detailed in the following sections.

Test markets are classified into four types: standard, controlled, electronic, and simulated.

Standard Test Market The **standard test market** is one in which the firm tests the product or marketing-mix variables through the company's normal distribution channels. A disadvantage of this type of test market is that competitors are immediately aware of the new product or service. However, standard test markets are good indicators as to how the product will actually perform because they are conducted in real settings.

A standard test market is one in which the firm tests the product or marketing-mix variables through the company's normal distribution channels.

Controlled Test Markets **Controlled test markets** are conducted by outside research firms that guarantee distribution of the product through prespecified types and numbers of distributors. Companies specializing in providing this service provide dollar incentives for distributors to provide them with guaranteed shelf space. Controlled test markets offer an alternative to the company that wishes to gain fast access to a distribution system set up for test-market purposes. The disadvantage is that this distribution network may or may not properly represent the firm's actual distribution system.

A controlled test market is one that is conducted by outside research firms that guarantee distribution of the product through prespecified types and numbers of distributors.

MARKETING RESEARCH INSIGHT 4.3 *Practical Application*

Test Marketing New Product and Service Ideas

Same-Day Home Deliveries from Target-Instacart?

Minneapolis, Minnesota, is serving as a test market for Target to offer same-day delivery of groceries and other consumer packaged goods through a partnership with Instacart, Inc. Instacart, a San Francisco–based start-up, charges a minimum of $3.99 per order, depending on its size. Instacart hopes to expand delivery of Target items to other cities in the future. The online grocery industry is projected to grow rapidly in the future, and stores that offer grocery delivery first in any given market are expected to have an advantage.[23]

A Dairy-Free Creamer Made with Almonds and Coconuts?

Green Grass Foods, Inc., is test marketing "nutpods": a dairy-free creamer made from almonds and coconuts. Green Grass Foods, Inc., was initially launched through a Kickstarter campaign that raised over $30,000. Nutpods is being tested through a limited market of 10 stores in the Seattle, Washington, area.[24]

An App to Increase Voter Turnout?

Charlotte, North Carolina, is the test market for a new app that is designed to help U.S. citizens learn more about elections, including who is running for office and where to go to vote. Called "Ballot," the nonpartisan app was developed by Amy Chiou, 32, who hopes that providing easily accessible information about elections will encourage more people to vote. Chiou plans to use the trial of Ballot in Charlotte to get feedback to improve the app, with plans to launch an improved app in other markets.[25]

© Sergey Peterman/Shutterstock

Companies conduct test markets to test the sales potential for a new product or service as well as to test variations in the marketing mix for a product or service.

A Burrito Supreme with a Pinot Grigio?

Taco Bell is test marketing a new restaurant concept in urban locations that includes serving beer, wine, and frozen drinks. The first Taco Bell Cantina opened in Chicago in September 2015. While this is first time the chain has experimented with serving alcohol in U.S. restaurants, Taco Bell already offers alcohol in South Korea, Japan, and Spain.[26,27]

An electronic test market is one in which a panel of consumers has agreed to carry identification cards that each consumer presents when buying goods and services.

Electronic test markets are those in which a panel of consumers has agreed to carry identification cards that each consumer presents when buying goods and services. These tests are conducted only in a small number of cities in which local retailers have agreed to participate. The advantage of the card is that as consumers buy (or do not buy) the test product, demographic information on the consumers is automatically recorded. In some cases, firms offering electronic test markets may also have the ability to link media viewing habits to panel members as well. In this way, firms using the electronic test market also know how different elements of the promotional mix affect purchases of the new product. Obviously, the electronic test market offers speed, greater confidentiality, and less cost than standard and controlled test markets. However, the disadvantage is that the test market is one more step removed from the real market.[28]

Simulated test markets (STMs) are those in which a limited amount of data on consumer response to a new product is fed into a model containing certain assumptions regarding planned marketing programs, which generates likely product sales volume.[29] There are many advantages to STMs. They are much faster and only cost 5% to 10% of the cost of a standard test market. STMs are confidential; competitors are less likely to know about the test. The primary disadvantage is that STMs are not as accurate as full-scale test markets, as they are dependent on the assumptions built into the models.[30]

A simulated test market (STM) is one in which a limited amount of data on consumer response to a new product is fed into a model containing certain assumptions regarding planned marketing programs, which generates likely product sales volume.

SELECTING TEST-MARKET CITIES

Three criteria are useful for selecting test-market cities: **representativeness**, **degree of isolation**, and **ability to control distribution and promotion**. Because one of the major reasons for conducting a test market is to achieve external validity, the test-market city should be representative of the marketing territory in which the product will ultimately be distributed. Consequently, a great deal of effort is expended to locate the "ideal" city in terms of comparability with characteristics of the total U.S. (or any national) population. The "ideal" city is, of course, the city whose demographic characteristics most closely match the desired total market. For instance, R. J. Reynolds chose Chattanooga, Tennessee, to test-market its Eclipse "smokeless" cigarette because Chattanooga has a higher proportion of smokers than most cities, and R. J. Reynolds needed to test Eclipse with smokers.[31]

Marketing Research on YouTube™

To learn about McDonald's long process for testing products, go to **www.youtube.com** and type in "McDonald's Test Kitchen: Where Fast Food Is Born."

The ability to control distribution and promotion depends on a number of factors. Are distributors in the city available and willing to cooperate? If not, is a controlled-test-market service company available for the city? Will the media in the city have the facilities to accommodate your test-market needs? At what costs? All of these factors must be considered before selecting the test city. Fortunately, because city governments often consider it desirable to have test markets conducted in their city because it brings in additional revenues, they and local media typically provide a great deal of information about their city to prospective test marketers.

Three criteria useful for selecting test-market cities are representativeness, degree of isolation, and ability to control distribution and promotion.

PROS AND CONS OF TEST MARKETING

The advantages of test marketing are straightforward. Testing product acceptability and marketing-mix variables in a field setting provides the best information possible to the decision maker prior to actually going into full-scale marketing of the product. Test marketing allows for the most accurate method of forecasting future sales, and it allows firms the opportunity to pretest marketing-mix variables. On the downside, first, test markets do not yield infallible results. Second, competitors may intentionally try to sabotage test markets. For example, firms may flood a test market with sales promotions if they know a competitor is test-marketing a product.[32] Another problem with test markets is their cost. The costs of test markets involving several test cities and various forms of promotion can be extremely expensive. Third, test markets bring about exposure of the product to the competition. Competitors get the opportunity to examine product prototypes and to see the planned marketing strategy for the new product via the test market.

Finally, test markets may create ethical problems. Companies routinely report test-marketing results to the press, which allows them access to premarket publicity. But are negatives found in the test market always reported, or do we hear only the good news? Companies eager to get good publicity may select test-market cities that they feel will return favorable results. Perhaps the company already has a strong brand and market power in the market. Is this method of getting publicity ethical? There have been efforts to make reporting of test markets more candid.[33]

Summary

Research design refers to a master plan that specifies the methods that will be used to collect and analyze the information needed for a research project. There are three general types of research designs: exploratory, descriptive, and causal. The significance of studying research design is that, by matching the research objective with the appropriate research design, a host of research decisions may be predetermined. Therefore, a research design serves as a "blueprint" for researchers. Research designs are not carried out in a particular order; in fact, some projects may require only one form of research. But research is often an iterative process in which initial research indicates the need for additional studies, often of a different design.

Researchers are often much more knowledgeable of the marketing research process than managers. This imbalance of knowledge, which is not unique to marketing research, may lead to serious ethical issues. Ethical codes and standards developed by professional organizations prohibit such practices as designing research that is much more complex and expensive than needed.

Selecting the appropriate research design depends, to a large extent, on the research objectives and existing information about the problem. If very little is known, exploratory research is appropriate. Exploratory research is unstructured, informal research undertaken to gain background information; it is helpful for more clearly defining the research problem. Exploratory research is used in a number of situations: to obtain background information, to define terms, to clarify problems and hypotheses, and to establish research priorities. Reviewing existing literature, surveying individuals knowledgeable in the area to be investigated, relying on former similar case situations, and conducting focus groups are methods of conducting exploratory research. Exploratory research should almost always be used because it is fast and inexpensive; sometimes it resolves the research objective or is helpful in carrying out descriptive or causal research.

If concepts and terms are already known and the research objective is to describe and measure phenomena, then descriptive research is appropriate. Descriptive research is undertaken to measure the characteristics of consumers and/or markets and answers the questions of who, what, where, when, and how. Descriptive studies may be conducted at one point in time (cross-sectional study), or several measurements may be made on the same sample at different points in time (longitudinal study). Longitudinal studies are often conducted using panels. Panels represent sample units who have agreed to answer questions at periodic intervals. Continuous panels are longitudinal studies in which sample units are asked the same questions repeatedly. Brand-switching tables may be prepared based on data from continuous panels. Market-tracking studies may be conducted using data from continuous panels.

The second type of panel used in longitudinal research is the discontinuous panel. Discontinuous panels, sometimes called omnibus panels, are those in which the sample units are asked different questions each time they are surveyed. The main advantage of the discontinuous panel is that research firms have a large sample of persons who are willing to answer whatever questions they are asked.

Causal research is used to measure cause-and-effect relationships such as "if x, then y." Causal relationships may be discovered only through special studies called experiments. Experiments allow us to determine the effects of a variable, known as an independent variable, on another variable, known as a dependent variable. Experimental designs are necessary to ensure that the effect we observe in our dependent variable is due to our independent variable and not to other variables known as extraneous variables. The validity of experiments may be assessed by examining internal validity and external validity. Laboratory experiments are particularly useful for achieving internal validity, whereas field experiments are better suited for achieving external validity.

Test marketing is a form of field experimentation. Various types of test markets exist (standard, controlled, electronic, and simulated). Although test markets garner much useful information, they are expensive and not infallible. Test-market cities are selected on the basis of their representativeness, isolation, and the degree to which market variables such as distribution and promotion may be controlled.

Key Terms

Research design (p. 62)
Exploratory research (p. 64)
Experience surveys (p. 66)
Key-informant technique (p. 66)
Lead-user survey (p. 66)
Case analysis (p. 66)
Descriptive research (p. 68)
Cross-sectional studies (p. 69)
Sample surveys (p. 69)
Longitudinal studies (p. 69)
Panels (p. 69)
Continuous panels (p. 70)
Discontinuous panels (p. 70)
Omnibus panels (p. 70)
Brand-switching studies (p. 70)
Causal research (p. 72)
Causality (p. 72)
Experiment (p. 72)
Independent variables (p. 72)
Dependent variables (p. 72)
Extraneous variables (p. 72)
Experimental design (p. 73)
Pretest (p. 74)
Posttest (p. 74)
Control group (p. 74)
Experimental group (p. 74)
Before-after with control group (p. 74)
A/B testing (p. 75)
Internal validity (p. 75)
External validity (p. 75)
Laboratory experiments (p. 76)
Field experiments (p. 76)
Test marketing (p. 77)
Standard test market (p. 77)
Controlled test markets (p. 77)
Electronic test markets (p. 78)
Simulated test markets (STMs) (p. 79)
Representativeness (p. 79)
Degree of isolation (p. 79)
Ability to control distribution and promotion (p. 79)

Review Questions/Applications

4-1. What is research design?

4-2. Explain why it is important for marketing researchers to be knowledgeable of research design.

4-3. Discuss how research design can lead to ethically sensitive situations.

4-4. Provide an example of exploratory research.

4-5. In which type of research design would the key-informant technique be used?

4-6. What is the difference between longitudinal studies and cross-sectional studies?

4-7. In what situation would a continuous panel be more suitable than a discontinuous panel? In what situation would a discontinuous panel be more suitable than a continuous panel?

4-8. What type of panel is an omnibus panel?

4-9. Explain why studies of the "if–then" variety are considered to be causal studies.

4-10. Define each of the following types of variables and give an example of each in an experiment designed to determine the effects of an advertising campaign: independent, dependent, extraneous, control group, and experimental group.

4-11. Explain the two types of validity in experimentation and also explain why different types of experiments are better suited for addressing one type of validity versus another.

4-12. Distinguish among the various types of test marketing.

4-13. Think of a past job you have held. List three areas in which you, or some other person in the organization, could have benefited from having information generated by research. What would be the most appropriate research design for each of the three areas of research you have listed?

4-14. Can you identify research problems that might be addressed through a search of social media websites? What type of research design would you recommend for these problems?

4-15. Design an experiment. Select an independent variable and a dependent variable. What are some possible extraneous variables that may cause problems? Explain how you would control for the effects these variables may have on your dependent variable. Is your experiment a valid one?

4-16. The Maximum Company has invented an extra-strength, instant coffee brand to be called "Max-Gaff" and positioned to be stronger tasting than any competing brands. Design a taste-test experiment that compares Max-Gaff to the two leading instant coffee brands to determine which brand consumers

consider to taste the strongest. Identify and diagram your experiment. Indicate how the experiment is to be conducted and assess the internal and external validity of your experiment.

4-17. Artia Hunt is the CEO of a successful chain of coffee shops in the Midwest. Ms. Hunt would like to add a small selection of pastries to the current food offerings at her coffee shops. You have been hired to conduct an exploratory study using social media sources to develop an initial list of the types of pastries that should be considered for this new initiative. Based on Marketing Research Insight 4.2, outline the steps you will use to conduct this project and present the results of your research to Ms. Hunt.

4-18. Coca-Cola markets PowerAde as a sports drink that competes with Gatorade. Competition for sports drinks is fierce where they are sold in the coolers of convenience stores. Coca-Cola is thinking about using a special holder that fits in a standard convenience-store cooler but moves PowerAde to eye level and makes it more conspicuous than Gatorade. Design an experiment that determines whether the special holder increases the sales of PowerAde in convenience stores. Identify and diagram your experiment. Indicate how the experiment is to be conducted and assess the internal and external validity of your experiment.

4-19. SplitScreen is a marketing research company that tests television advertisements. SplitScreen has an agreement with a cable television company in a medium-sized city in Iowa. The cable company can send up to four different television ads simultaneously to different households. SplitScreen also has agreements with three of the largest grocery store chains, which will provide scanner data to SplitScreen. About 25% of the residents have SplitScreen scan cards that are scanned when items are bought at the grocery store and that allow SplitScreen to identify who bought which grocery products. For allowing SplitScreen access to their television hookups and their grocery-purchase information, residents receive bonus points that can be used to buy products in a special points catalog. Identify and diagram an experimental design possible using the SplitScreen system. Assess the internal and external validity of SplitScreen's system.

CASE 4.1

Memos from a Researcher

John Daniel, a researcher at Georgia Metro Research, made the following notes about several of his clients to you, a newly hired trainee who has just graduated from college:

Client A is a consumer packaged goods manufacturer with a well-established brand name. The client has focused on manufacturing and distribution for years while the marketing program has been set on "auto pilot." All had worked fine, though there was a hint of emerging problems when, in the preceding year, market share had fallen slightly. Now, our client has just reviewed the current market share report and notices that over the previous 12 months, the company's share has gradually eroded 15%. When market share falls, clients are eager to learn why and to take corrective action. In these situations we know immediately the problem is that we don't know what the problem is. There are many possible causes for this slippage. We need to determine the research design needed.

Second, Client B is a manufacturer of several baked goods products sold in grocery stores throughout the country. Marketing is divided into five regional divisions in the United States. The five divisions have had total autonomy over their advertising, though all of them have used TV advertising almost exclusively. Each division has tried several different TV ad campaigns; some were thought to be successful and others not as successful, but no one had ever formally evaluated the ad expenditures. A new marketing VP now wants to evaluate the advertising. She's interested in knowing not only the sales of the client's products sold during the different campaigns but also what happened to sales of competitors' brands. In this case, the client needs us to *describe* sales by SKU in the client's product category for each TV market and for each time period associated with each ad campaign. What research design do you recommend?

Finally, Client C is in a very competitive category with equal market share of the top three brands. Our client is convinced that it has changed every marketing-mix variable possible except for package design. Since the three competitive brands are typically displayed side-by-side, Client C wants us to determine what factors of package design (e.g., size, shape, color, texture) cause an increase in awareness, preference for, and intention to buy the brand. What do you recommend for the appropriate research design?

1. Describe what research design you would recommend for each client.
2. For each research design you selected for the three clients, discuss *why* you believe your choice of design is the correct choice.