

Basic Marketing Research: Volume 1

Handbook for Research Professionals

Official Training Guide from Qualtrics

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INTRODUCTION

It's been said that information is power. This simple cliché underscores the market control and business success that information yields.

Marketing research is about collecting information. While it applies to a wide range of situations, marketing research gives decision-makers the information they need to find solutions to business problems, such as the following

- How satisfied are customers with your product and service offering?
- How will customers react to a decision to change a price or product?
- What are service representatives hearing from customers?
- What responses to competition will bring you success in a given market?

Simply put, the solution to most business problems can be found through marketing research.

While the foundations of research have existed for thousands of years, technological advances during the last century have made a wider range of studies possible.

Increased Internet access in the last 15 years has made research available at a much lower cost and, therefore, more accessible to organizations of all sizes. As a result, the research field has exploded with new opportunities and methodologies, and organizations have more information at their disposal than ever before.

At Qualtrics, we see all types of researchers: from students starting their first studies to elite researchers who have been conducting studies since before Internet surveys were even possible. The goal of this text is to help Qualtrics users improve their understanding of research so they can improve future studies.

This text, along with its companion volumes, is designed to provide an introduction to all things marketing research. This first book in the research series addresses research methods, while the second focuses on analyzing data and interpreting results. Two other volumes are the Qualtrics Guidebook, a users' guide to Qualtrics and 50 Perfect Surveys, a basic introduction to survey building.



This first volume starts with research basics.

Chapter one provides an introduction to marketing research. It explains the nine-step process of how to design a study.

Chapter two discusses how to focus your research and minimize error.

Chapter three explores the secondary sources of information that are available to researchers.

General principles for conducting interviews and minimizing error within them are the subject of chapter four.

Chapter five, Interviewing Modes, delves deeper and explores specific modes of survey data collection.

In chapter six, we discuss focus groups, hierarchical value mapping and other qualitative research methods.

Chapter seven describes sampling procedures, including the computation of sample size, and we conclude with an introduction to the basics of experimental design in chapter eight.

This book and its companion will be useful as you develop and implement your own research.

EVERY
THING
— IS —
marketing



1

An Introduction to Marketing Research

Successful entrepreneurs must adapt to an ever-changing business environment. In addition to the everyday aspects of running a business, a company has to consider materials, energy shortages, inflation, economic recessions, unemployment, and technological changes. A profitable company must also respond to the market with its products and advertising. A critical tool for measuring the market and keeping competitive is effective marketing research. In this chapter, we will introduce marketing research and discuss the tools you need to be successful.

WHAT IS MARKETING RESEARCH?

Think of marketing research as a search for information that will help you succeed in capturing market share. To begin, let's consider the differences between **fundamental** and **applied** research.

Fundamental research seeks to extend the boundaries of knowledge in a given area and doesn't necessarily solve your immediate problems. Nevertheless, it has useful applications. It reveals information and relationships that could be useful at a later date. For example, The Green Yogurt company conducted fundamental research about consumer preferences for certain combinations of fruits, nuts, and caramel that differ in sugar type and strength of sweetness.

Applied research gathers information to solve a specific problem or set of problems. For instance, customers engaged in a blind taste test would respond with what they specifically liked or disliked about a new yogurt product compared to a competitor's product. You would use this information to tune your business plan, focus your advertising campaign, or improve your product.

FOCUSING YOUR RESEARCH

Marketing research focuses on understanding the *customer*, the *company*, and the *competition*. These relationships are at the core of marketing research. Companies must understand and respond to what customers want from their products. However, this relationship is always influenced by *competitors* and how their products are received by your market. Thus, you must clearly identify the customer, company, and competition before developing a research project.

There are several important factors you must consider before you begin, including:

- Your customers and competition
- Awareness and image of your product
- Product usage
- Undiagnosed problems with your product
- Customer desires and needs for new product development

At the Qualtrics.com “Survey University,” we have identified twenty different types of applied research surveys that are fundamental to marketing research. Each focuses on a different aspect of marketing research and your business activities, and provides deep insights into your company’s market position, your products, your competition, and the market in general. These are shown in Exhibit 1.1.



EXHIBIT 1.1

TWENTY DIFFERENT TYPES OF MARKETING SURVEYS

1 - MARKET DESCRIPTION SURVEYS:

Determine the size and relative market share of the market.

Provide key information about market growth, competitive positioning and share of market.

2- MARKET PROFILING-SEGMENTATION SURVEYS:

Identify customers and non-customers, and why they are or are not your customers. Often a descriptive market segmentation and market share analysis.

3 - STAGE IN THE PURCHASE PROCESS / TRACKING SURVEYS:

Where is the customer in the adoption process?

Shows market Awareness – Knowledge – Intention – Trial – Purchase – Repurchase of the product.

4 - CUSTOMER INTENTION - PURCHASE ANALYSIS SURVEYS:

Customer motivation to move from interest in the product to actual purchase.

Key to understanding customer conversion, commitment and loyalty.

5 - CUSTOMER ATTITUDES AND EXPECTATIONS SURVEYS:

Does the product meet customer expectations? Attitudes formed about the product and/or company.

Improve ads, customer conversion, commitment and loyalty.

6 - CUSTOMER TRUST - LOYALTY – RETENTION ANALYSIS SURVEYS:

Depth of consumer attitudes formed about the product and/or company.

Especially for high priced consumer goods with long decision and purchase processes.

7 - NEW PRODUCT CONCEPT ANALYSIS SURVEYS:

Appropriate in the initial screening of new product concepts.

Likes and dislikes, acceptability and likelihood of purchase are especially useful measures.

8 - NEW PRODUCT ACCEPTANCE AND DEMAND SURVEYS (CONJOINT ANALYSIS):

Estimating demand for new product descriptions, graphics, or prototypes.

Yields market share estimates for alternative concept configurations.

9 - HABITS AND USES SURVEYS:

Understanding usage situations, including how, when and where the product is used.

May include a real or virtual pantry audit.

10 - PRODUCT FULFILLMENT SURVEYS:

Evaluation of promised attribute and feature benefits (both tangible and intangible).

Are expectations produced by advertising, packaging, and product appearance fulfilled?

11 - COMPETITIVE PRODUCT AND MARKET POSITIONING:

"Best Practices" study of "How does the market view us relative to the competition?"

Compares attributes and benefits of the product.

12 - BRAND EQUITY SURVEYS:

What is psychological value that a brand holds in the marketplace?

A composite of brand awareness, brand quality, brand associations and brand loyalty measures.

13 - ADVERTISING VALUE IDENTIFICATION AND ANALYSIS SURVEYS:

Mapping the hierarchical attributes, benefits and values associated with and portrayed by an advertisement. Means-end analysis is often part of this type of study.

14 - ADVERTISING MEDIA AND MESSAGE EFFECTIVENESS SURVEYS:

Identifies the impressions, feelings, and effectiveness in moving the respondent to a desired goal (increased awareness, product information, trial, repeat purchase).

15 - SALES FORCE EFFECTIVENESS SURVEYS:

Sales activities, performance and effectiveness in producing the desired and measurable effect or goal. Often measured in a 360 degree survey completed by the sales person, the client (evaluating the sales call) and the supervisor responsible for evaluating the sales person.

16 - SALES LEAD GENERATION SURVEYS:

(1) Timely use and follow-up of sales leads, (2) Qualifying sales leads (thereby saving valuable sales force time) and (3) Providing more effective tracking of sales leads.

17 - CUSTOMER SERVICE SURVEYS:

Focus in detail on the actual customer service that was received, the process involved in receiving that service and the evaluation of the participants in the service process.

18 - CUSTOMER SERVICE REPRESENTATIVE (CSR) SURVEYS— ATTITUDES, BURNOUT, TURNOVER AND RETENTION:

Customer Service Representatives hold attitudes that reflect on their job related activities including (1) the allocation of time; (2) solutions to customer needs; (3) how to improve their job; (4) best practices; (5) how well internal departments help customers. Focuses on reducing costs and increasing the quality of customer relationships.

19 - SALES FORECASTING AND MARKET TRACKING SURVEYS:

Expert estimates of the market, judgmental bootstrapping (expert based rules describing how to use available secondary market information), conjoint analysis (estimation of consumer choice preferences), and self-reported intentions to make future purchases.

20 - PRICE SETTING SURVEYS AND ELASTICITY OF DEMAND ANALYSIS:

Estimates of demand elasticity, optimal price points, and prices too low or too high.

Estimates for different product-service segments, or usage situations.

FIGURE 1.1 THE RESEARCH PROCESS STAGES



Each of these surveys focuses on a specific area of research that will be addressed in later chapters. For now, let us focus on the basics.

THE BASIC RESEARCH PROCESS

Given these 20 different types of marketing research studies, select one that you find interesting and then ask yourself two questions: first, how can you conduct your own marketing research for this study? And second, what are the basic steps you need to follow in order to complete your project?

In this chapter, we will show you the steps of conducting such a research project. Figure 1.1 shows the stages in the research process. While these steps are presented in order, you can be creative and adapt the steps to meet your business needs. Some steps can be completed in parallel to speed the project as it begins to develop. The major basic research issues are shown in Exhibit 1.2.

STAGE 1: FORMULATING THE PROBLEM

Formulating a problem is the first step in the research process. In many ways, research starts with a problem that management is facing. This problem needs to be understood, the cause diagnosed, and solutions developed. However, most management problems are not always easy to research. A management problem must first be translated into a research problem. Once you approach the problem from a research angle, you can find a solution. For example, “sales are not growing” is a management problem. Translated into a research problem, we may examine the expectations and experiences of several groups: potential customers, first-time buyers, and repeat purchasers. We will determine if the lack of sales is due to (1) poor expectations that lead to a general lack of desire to buy, or (2) poor performance experience and a lack of desire to repurchase.

What then is the difference between a management problem and a research problem? Management problems focus on an action. Do we advertise more? Do we change our advertising message? Do we change an under-performing product configuration? If so, how? Research problems, on the other hand, focus on providing the information you need in order to solve the management problem.

EXHIBIT 1.2

BASIC RESEARCH ISSUES

As technology advances, marketing researchers continually look for ways to adapt new technology to the practice of research. However, researchers must never forget that research basics cannot be overlooked. Rather, what must be done is to adapt the new techniques and technologies to these basics. All studies must address the following basic issues (Anderson, Berdie, & Liestman, 1984):

1 - ASK THE RIGHT QUESTIONS.

This is the essence of project design and the heart of proper planning. Every project is unique, and as such must be tailored to the user's needs.

2- ASK THE RIGHT PEOPLE.

The goal of sample design should be that only those people who are of interest to the researcher are contacted, and that those contacted are representative of the group of interest

3 - ASK QUESTIONS THE RIGHT WAY.

It is not enough to be able to ask the right questions; they must be asked the right way. This is the essence of questionnaire design. If the wording of the questions is not clear to the respondents, the results will be useless. Pretesting the questionnaire is crucial for ensuring that responses are the ones that are needed.

4 - OBTAIN ANSWERS TO QUESTIONS.

Data collection is central to all marketing research. The techniques used should minimize non-response while maximizing response.

5 - RELATE ANSWERS TO THE NEEDS OF THE RESEARCH USER/CLIENT.

Data seldom speaks for itself. Proper data analysis is needed if a study is to have any value to the user. Here there is a risk of letting advanced techniques become the master of the researcher rather than the opposite. Common sense is a valuable tool for the researcher when considering alternative analysis approaches for any project.

6 - COMMUNICATE EFFECTIVELY AND IN A WAY THAT THE CLIENT UNDERSTANDS.

Many good projects are ruined because the information that is reported to the user is in a form that is not understandable. Reports must tell the user what information is relevant, and how it is relevant to the issues at hand.

Once you've created a research problem, you have to develop a research question. A research question gives your research direction. From the research question, a hypothesis or hypotheses can be formulated to guide the research. A hypothesis should include a statement about the relationship between two or more variables and carry clear implications for testing the stated relationship. For example, you might need to know if and how your customers' positive and negative product expectations are confirmed or disconfirmed upon product use.

HOW TO FORMULATE THE RESEARCH PROBLEM

Problem formulation is simplified once we define the components of the research problem.

1. Specify the Research Objectives

A clear statement of objectives will help you develop effective research. It will help the decision makers evaluate your project. It's critical that you have manageable objectives. (Two or three clear goals will help to keep your research project focused and relevant.)

2. Review the Environment or Context of the Problem

As a marketing researcher, you must work closely with your team. This will help you determine whether the findings of your project will produce enough information to be worth the cost. In order to do this, you have to identify the environmental variables that will affect the research project. These variables will be discussed in-depth in later chapters.

3. Explore the Nature of the Problem

Research problems range from simple to complex, depending on the number of variables and the nature of their relationship. If you understand the nature of the problem as a researcher, you will be able to better develop a solution for the problem. To help you understand all dimensions, you might want to consider focus groups of consumers, sales people, managers, or professionals to provide what is sometimes much needed insight.

4. Define the Variable Relationships

Marketing plans often focus on creating a sequence of behaviors that occur over time, as in the adoption of a new package design, or the introduction of a new product. Such programs create a commitment to follow some behavioral pattern in the future. Studying such a process involves:

- Determining which variables affect the solution to the problem.
- Determining the degree to which each variable can be controlled.
- Determining the functional relationships between the variables and which variables are critical to the solution of the problem.

During the problem formulation stage, you will want to generate and consider as many courses of action and variable relationships as possible.

5. The Consequences of Alternative Courses of Action

There are always consequences to any course of action. Anticipating and communicating the possible outcomes of various courses of action is a primary responsibility in the research process. Exhibit 1.3 provides an example of a company introducing a new product based on research that did not examine relevant variables in the consumer purchase decision.

EXHIBIT 1.3

"NEW COKE" VERSUS ORIGINAL COKE

In the mid-1980s, the Coca Cola Company made a decision to introduce a new beverage product (Hartley, 1995, pp. 129–145). The company had evidence that taste was the single most important cause of Coke's decline in the market share in the late 1970s and early 1980s. A new product dubbed "New Coke" was developed that was sweeter than the original-formula Coke.

Almost 200,000 blind product taste tests were conducted in the United States, and more than one-half of the participants favored New Coke over both the original formula and Pepsi. The new product was introduced and the original formula was withdrawn from the market. This turned out to be a big mistake! Eventually, the company reintroduced the original formula as Coke Classic and tried to market the two products. Ultimately, New Coke was withdrawn from the market.

What went wrong? Two things stand out. First, there was a flaw in the market research taste tests that were conducted: They assumed that taste was the deciding factor in consumer purchase behavior. Consumers were not told that only one product would be marketed. Thus, they were not asked whether they would give up the original formula for New Coke. Second, no one realized the symbolic value and emotional involvement people had with the original Coke. The bottom line on this is that relevant variables that would affect the problem solution were not included in the research.



NEW COKE COMMERCIAL

<http://www.youtube.com/watch?v=o4YvmN1hvNA>



NEW AND CLASSIC COMMERCIAL

<http://www.youtube.com/watch?v=ky45YGUA3co>

STAGE 2: METHOD OF INQUIRY

The scientific method is the standard pattern for investigation. It provides an opportunity for you to use existing knowledge as a starting point and proceed impartially. As shown in Exhibit 1.4, the scientific method includes the following steps:

1. Formulate a problem
2. Develop a hypothesis
3. Make predictions based on the hypothesis
4. Devise a test of the hypothesis
5. Conduct the test
6. Analyze the results

The terminology is similar to the stages in the research process. However, there are subtle differences in the way the steps are performed. For example, the scientific method is objective while the research process can be subjective. Objective-based research (*quantitative research*) relies on impartial analysis. The facts are the priority in objective research. On the other hand, subjective-based research (*qualitative research*) emphasizes personal judgment as you collect and analyze data.

EXHIBIT 1.4

THE SCIENTIFIC METHOD

In structure, if not always in application, the scientific method is simple and consists of the following steps:

1. OBSERVATION.

This is the problem-awareness phase, which involves observing a set of significant factors that relate to the problem situation.

2. FORMULATION OF HYPOTHESES.

In this stage, a hypothesis (i.e., a generalization about reality that permits prediction) is formed that postulates a connection between seemingly unrelated facts. In a sense, the hypothesis suggests an explanation of what has been observed.

3. PREDICTION OF THE FUTURE.

After hypotheses are formulated, their logical implications are deduced. This stage uses the hypotheses to predict what will happen.

4. TESTING THE HYPOTHESES.

This is the evidence collection and evaluation stage. From a research project perspective this is the design and implementation of the main study. Conclusions are stated based on the data collected and evaluated.

THE SCIENTIFIC METHOD, CONTINUED:

A simple example will show how the scientific method works. Assume a researcher is performing a marketing research project for a manufacturer of men's shirts:

1. OBSERVATION:

The researcher notices some competitors' sales are increasing and that many competitors have shifted to a new plastic wrapping.

2. FORMULATION OF HYPOTHESES:

The researcher assumes his client's products are of similar quality and that the plastic wrapping is the sole cause of increased competitors' sales.

3. PREDICTION OF THE FUTURE:

The hypothesis predicts that sales will increase if the manufacturer shifts to the new wrapping.

4. TESTING THE HYPOTHESES:

The client produces some shirts in the new packaging and market-tests them.

STAGE 3: RESEARCH METHOD

In addition to selecting a method of inquiry (objective or subjective), you must select a research method.

There are two primary methodologies that can be used to answer any research question: experimental research and non-experimental research. Experimental research gives you the advantage of controlling extraneous variables and manipulating one or more variables that influences the process being implemented. Non-experimental research allows observation but not intervention. You simply observe and report on your findings.

STAGE 4: RESEARCH DESIGN

The research design is a plan or framework for conducting the study and collecting data. It is defined as the specific methods and procedures you use to acquire the information you need.

STAGE 5: DATA COLLECTION TECHNIQUES

Your research design will develop as you select techniques to use. There are many ways to collect data. Two important methods to consider are interviews and observation.

Interviews require you to ask questions and receive responses. Common modes of research communication include interviews conducted face-to-face, by mail, by telephone, by email, or over the Internet. This broad category of research techniques is known as survey research. These techniques are used in both non-experimental research and experimental research.

Another way to collect data is by observation. Observing a person's or company's past or present behavior can predict future purchasing decisions. Data collection techniques for past behavior can include analyzing company records and reviewing studies published by external sources.

In order to analyze information from interview or observation techniques, you must record your results. Because the recorded results are vital, measurement and development are closely linked to which data collection techniques you decide on. The way you record the data changes depends on which method you use.

STAGE 6: SAMPLE DESIGN

Your marketing research project will rarely examine an entire population. It's more practical to use a sample—a smaller but accurate representation of the greater population. In order to design your sample, you must find answers to these questions:

1. From which base population is the sample to be selected?
2. What is the method (process) for sample selection?
3. What is the size of the sample?

Once you've established who the relevant population is (completed in the problem formulation stage), you have a base for your sample. This will allow you to make inferences about a larger population. There are two methods of selecting a sample from a population: probability or non-probability sampling. The probability method relies on a random sampling of everyone within the larger population. Non-probability is based in part on the judgment of the investigator, and often employs convenience samples, or by other sampling methods that do not rely on probability.

The final stage of the sample design involves determining the appropriate sample size. This important step involves cost and accuracy decisions. Larger samples generally reduce sampling error and increase accuracy, but also increase costs. You will find more on this important topic in Chapter 7.

STAGE 7: DATA COLLECTION

Once you've established the first six stages, you can move on to data collection. Depending on the mode of data collection, this part of the process can require large amounts of personnel and a significant portion of your budget. Personal (face-to-face) and telephone interviews may require you to use a data

collection agency (field service). Internet surveys require fewer personnel, are lower cost, and can be completed in days rather than weeks or months.

Regardless of the mode of data collection, the data collection process introduces another essential element to your research project: the importance of clear and constant communication.

STAGE 8: ANALYSIS AND INTERPRETATION

In order for data to be useful, you must analyze it. Analysis techniques vary and their effectiveness depends on the types of information you are collecting, and the type of measurements you are using. Because they are dependent on the data collection, analysis techniques should be decided before this step.

STAGE 9: THE RESEARCH REPORT

The research process culminates with the research report. This report will include all of your information, including an accurate description of your research process, the results, conclusions, and recommended courses of action. The report should provide all the information the decision maker needs to understand the project. It should also be written in language that is easy to understand. It's important to find a balance between completeness and conciseness. You don't want to leave any information out; however, you can't let the information get so technical that it overwhelms the reading audience.

One approach to resolving this conflict is to prepare two reports: the technical report and the summary report. The technical report discusses the methods and the underlying assumptions. In this document, you discuss the detailed findings of the research project. The summary report, as its name implies, summarizes the research process and presents the findings and conclusions as simply as possible.

Another way to keep your findings clear is to prepare several different representations of your findings. PowerPoint presentations, graphs, and face-to-face reports are all common methods for presenting your information. Along with the written report for reference, these alternative presentations will allow the decision maker to understand all aspects of the project.

RESOURCE PLANNING FOR YOUR STUDY

As you are developing your study, you have to account for the expenditure of your resources: personnel, time, and money. Resource plans need to be worked out with the decision maker and will range from very formal budgeting and approval processes to a very informal "Go ahead and do it". Before you can start the research project, you should get yourself organized and prepare a budget and time schedule for the major activities in the study. Microsoft Project and similar programs are good resources for breaking down your tasks and resources.



SUMMARY

We've introduced the research process and discussed some of the decisions that need to be made before you start your research project.

We've also discussed how managers use research to help with decision-making. It's important to build strong and frequent communication between team members, decision makers, and clients. As you develop your research project, you want to consult with the decision makers throughout the project, building a common understanding of exactly what is needed and is to be provided to assure success.



2

Focusing Your Research Design

Your company has decided to create a smartphone app and the vice president has asked you to be the team leader. Your team's assignment is to nurture the concept. When you meet with your VP next week, you will specify the kind of apps your company might develop, determine what the different apps might do, and focus on your target audience for each possible app.

As your project matures, you understand how important it is to have a research design. Such a plan will guide your team and your company's decision makers. It will lay out the methods and procedures you need to employ as you collect information.

To develop a research design, you will rely on three types of studies: **exploratory studies, descriptive studies, and causal studies**. Each depends on different information that will help you. No matter how large or small your project, conducting surveys and establishing a research design is vital to your success. If you don't know where your project is going, you won't know if it's succeeding.

EXPLORATORY STUDIES

First, you need to do an exploratory study. This is the problem finding phase. An exploratory study forces you to focus the scope of your project. It helps you anticipate the problems and variables that might arise in your project.

Perhaps the most common problem is size. Your project must be kept focused. If the scope of a project is too big, it will not get off the ground. Too much information is overwhelming. An important objective of an exploratory study is keeping your project manageable. The larger your project's scope, the more difficult it is to control. This process will help you weed out problems.

In the case of developing an app, for example, an exploratory study would help your research team take an abstract idea and develop it into a focused plan. The specific app would be market-driven. This process takes legwork, but the results are worth the effort.

Exploratory studies generally encompass three distinct methods:

1. Literature search
2. Expert interviews
3. Case studies

LITERATURE SEARCH

A literary search means you go to secondary sources of information: the internet, the public library, company or government records. These sources are usually easy and inexpensive to access.

For example, your development team would search online. They would look at other kinds of apps on the market, the preferred phone to develop an app, the pricing of similar products, and any other information necessary to set parameters on their project.

EXPERT INTERVIEWS

After a literature search, your team would have a useful background for the project. They know what questions to ask and how to set up their project. After the literary search, the next step is to interview experts. These experts might include company executives or consumers. They would also talk to people who used similar products. Your team would seek out professionals who have careers relating to the research project.

Your team knows that one effective way to gain information from experts is through focus groups. A focus group includes 6-8 individuals who share a common background (software development, market analysis, administration, dog breeding, fly fishing) who participate in a joint interview. The secret to a successful focus group is ignoring the traditional question/answer format. Instead, you encourage the free flow of ideas and discussion.

CASE STUDIES

Every research project will have pitfalls. Thus, case studies become a vital tool because they allow you to examine another business's managerial problems and solutions. If another study deals with similar issues, you can avoid these pitfalls by learning from its mistakes. Case studies include histories of other projects and simulations of possible alternatives. A good "What if?" can save a lot of time and resources.

DESCRIPTIVE STUDIES

Who are you selling to? An exploratory study helped you establish what you are selling, but the descriptive study will help you find your market and understand your customer. Since you will not be able to sell to everyone, a descriptive study is necessary to focus your project and resources.

There are different kinds of studies you can implement to better understand your market. Consider the following descriptive studies:

- Market potential: description of the number of potential customers of a product.
- Market-share: identification of the share of the market received by your product, company and your competitors.
- Sales analysis: description of sales by territory, type of account, size or model of product.
- Product research: identification and comparison of functional features and specifications of competitive products.
- Promotion research: description of the demographic characteristics of the audience being reached by the current advertising program.
- Distribution research: determining the number and location of retailers handling the company's products. These are supplied by wholesalers and distributed by the company.
- Pricing research: identifying competitors' prices by geographic area.

These studies will help you formulate solutions. At the same time, they indicate how potential customers might react.

CAUSAL STUDIES

Even though descriptive studies describe and sometimes predict relationships, results, or events, you may *want to know why*. If you can discover the reasons behind your solutions, then you can assemble your own predictive models. Such models can be used in the future. As a marketing researcher, knowing *why* will make your job easier. Causal studies try to find out the relationship between a specific cause and a specific effect.

FIGURING OUT CAUSAL RELATIONSHIPS

Cause and effect have to be related. Before a cause and effect can be established, a logical implication (or theoretical justification) has to be found.

There are three types of evidence that can be used to establish causal relationships:

1. Associative variation
2. Sequence of events
3. Absence of other possible causal factors

Associative Variation

Associative variation involves taking two variables and seeing how often they are associated. The more they show up in studies, the more likely they are related. Associative variation can be broken down into two distinctions: association by presence and association by change.

Association by presence measures how closely presence of one variable is associated with presence of another. However, association by change measures the extent to which a change in the level of one variable is associated with a change in the level of the other.

For example, if you wanted to find a causal relationship between a salesperson's success in sales and training, you would have to establish a relationship between the two variables. Do sales only increase after training? Can sales increase before training? If you find that one variable is affected by another, you know which variable to adjust.

Sequence of Events

In order to establish a cause/effect relationship, you must first establish that the causal factor occurred first. For example, in order for salesperson training to result in increased sales, the training must have taken place prior to the sales increase. If the cause does not precede the effect, then there is no causal relationship.

Absence of Other Possible Causal Factors

You must also demonstrate that other factors did not cause the effect. Once you have proved this, you can logically conclude that the remaining factor is the cause. For example, if we can control all other factors affecting the sales item, then we have to conclude that the increase in sales comes from training.

SOURCES OF MARKETING INFORMATION

The app development team knows it must do careful market research before it can begin development. But where do they start?

There are four major sources for finding marketing information. We'll briefly describe each in this section. However, we will discuss these in-depth in later chapters. These four sources include:

1. Secondary sources
2. Respondents
3. Natural and controlled experiments
4. Simulation

Secondary Sources

Secondary information is information that someone else researched for a solution to a problem other than yours. Even though this information wasn't intended for your project, it could provide valuable insights. For example, PetMD conducted a study and found that sixty-nine percent of dog owners need help understanding their dog's nutritional needs. Meanwhile, Hill's®ScienceDiet is developing a new chicken and whole grain dog food that meets the full spectrum of nutritional needs. While the purpose of PetMD's study had a different purpose, Hill's can use PetMD's research to better its own market products.

Respondents

Information from respondents plays a huge role in research. Customers' verbal and behavioral responses provide useful information. Later in this book, we'll look at how both asking questions and observing behavior come together to form a complete response.

Natural and Controlled Experiments

Natural experiments are just what they would seem. The investigator only measures results, having no control over the elements of the experiment. For example, if Nielson wanted to research a TV audience's response to a specific television commercial, a natural experiment would involve the researcher monitoring viewership and interviewing the audience. The results would then be compared to a control group who had not watched the commercial. Natural experiments are useful when you want to gauge general results.

Controlled experiments measure specific variables and require the researcher to be more involved. Experimental results are then compared to a control group in order to measure the chosen variable.

Two kinds of intervention are required in controlled experiments:

1. Manipulating at least one causal variable.
2. Random assignment of subjects to experimental and control groups.

Controlled experiments work best when the researcher controls all but one *causal* variable. The researcher assigns subjects to an experimental group where the causal variable is manipulated or to a control group where no causal variables are manipulated. The researcher measures the dependent variable in both situations and then tests for differences between the groups. This strict control allows differences between the groups, if present, to be attributed to the manipulated variable.

Qualtrics.com online will be invaluable when you do field experiments. This tool is quick, easy to use, and cost effective. Qualtrics provides a rich assortment of tools for conducting experiments. They include: advanced branching logic, randomization, question block presentation, question response timing, and JavaScripting capabilities.

Simulation

Experimentation can be expensive and time-consuming. It might be more cost effective to create a simulation model instead of doing real-world experiments.

Simulations are effective when the project has a scope larger than regular experiments can cover. Environmentally rich models (containing complex interactions and nonlinear relationships) are usually too difficult to solve by standard analytical methods such as calculus or other mathematical programming techniques. Rather, the analyst views a simulation model as a limited imitation of the process or system under study and attempts to run the system on a computer to see what would happen if a particular set of conditions were put into effect.

Simulations are often developed for marketing systems, and include marketing-mix elements (new-product, price, advertising, and sales-force variables).

TYPES OF ERRORS AFFECTING RESEARCH RESULTS

Information gained from research projects should be as accurate as possible. Any research project is subject to errors, so a research designer must do everything he/she can to minimize them. As shown in Table 2.1, two general errors have important implications in research designs:

1. Errors related to improper selection of respondents
2. Errors related to accuracy of responses

TABLE 2.1
COMMON ERROR TYPES

RESPONDENT SELECTION ERRORS	ACCURACY OF RESPONSE ERRORS
1. Population Specification Error 2. Sampling Errors 3. Selection Errors 4. Frame Errors 5. Survey Non-Response Errors	1. Non-Response Errors 2. Surrogate Information Errors 3. Measurement Errors from Interviewers 4. Measurement errors from questions 5. Measurement errors from respondents

The next discussion considers some strategies that can be employed to make your research project relatively error-free.

Understanding the possible errors that can taint the accuracy of information in your study is key to avoiding and correcting sampling errors. Below is a brief explanation of possible errors.

RESPONDENT SELECTION ERRORS



POPULATION SPECIFICATION ERROR

This type of error occurs when the researcher selects an inappropriate population or universe from which to obtain data.

Example: Packaged goods manufacturers, for example, frequently survey housewives because they are an easy contact. Also, it is assumed housewives decide what is to be purchased and do the actual purchasing for a household. However, in this situation, there often is population specification error. Increasingly, husbands may purchase a significant share of the packaged goods and have significant influence over what is bought.



SAMPLING ERROR

Sampling error occurs when a sample does not accurately represent the population.

Example: Suppose that we used tweets (Twitter) to recruit a random sample of 500 people from the general adult population. After an analysis, though, we find our study was composed only of people aged 18 to 35. Because the sampling pool shares so many age group specific traits, the data isn't accurate in representing the general population.

The more homogeneous the population (meaning people who are similar), the smaller the sampling error; and as sample size increases, sampling error decreases. If a census were conducted (i.e., all elements of the population were included) there would be no sampling error.



SELECTION ERROR

Selection error is the sampling error that occurs when a sample is selected by a nonprobability method.

Example: Interviewers conducting a mall intercept study have a natural tendency to select those respondents who are the most accessible and agreeable. Such samples often comprise friends and associates who are rarely representative of the desired population.

Selection error often reflects people who are easily reached, are better dressed, have better kept homes, or are more pleasant. These types of samples rarely represent the desired population. Having clear, written procedures that specify how to select respondents can help to reduce selection error.



FRAME ERROR

A sampling frame supposedly represents all the members of the population. It is usually a listing of the respondents you want to sample.

Example: The sample frame for a study at a shopping mall includes all shoppers in the mall during the time of data collection. In years past, a commonly used frame for consumer research was the telephone directory. Over time, this frame has increasingly introduced error because many elements of the population (households, singles, students) are no longer included in the directory. There are also unlisted phone numbers, move-ins, and cell phones to consider. Some elements are listed more than once, and non-population elements are also included (businesses and people who have left the area).

A perfect frame identifies each member of the targeted population once, but only once, and does not include members outside of that specific population.



SURVEY NON-RESPONSE ERROR

Non-response error occurs when respondents and non-respondents are too different. Your respondents should accurately represent the population you want to sample. If non-respondents are not equally distributed across the population, you will not have an accurate sample.

There are two ways in which survey non-response can occur: (a) non-contact (the inability to contact all members of the sample frame); and (b) refusal (non-

response to some or all items on the measurement instrument). Responders often represent passionately positive or negative views about the survey topic and may not be representative of the targeted population as a whole. Virtually every survey contains some degree of error from the inability to reach a representative spectrum of respondents.

Example: In telephone surveys, non-respondents are not available because they are not at home for the initial call or call-backs, they have moved, or they are away from home during the period of the survey.

If you contact a respondent, it doesn't necessarily mean they will answer your questions. Potential respondents may decline the entire interview for different reasons. A survey or question about income, religion, sex, and politics may be distasteful. Other potential respondents refuse to participate because of time requirements, health issues, past experiences in which an "interviewer" turned out to be a telemarketer, or other reasons. Refusals are more frequent when the respondent doesn't like the method of data collection (mail, email, telephone surveys) or the amount of effort required to respond to the survey. Non-response to mail and email questionnaires sometimes runs into the 90 percent range, even after several successive mailings.

Non-response is also a potential problem in business-to-business research and when you are conducting research within organizations. The respondents are individuals, but they represent organizations that have a variety of respondents and levels of authority.

Tomaskovic-Devey, Leiter, and Thompson (1994) studied organizational responses to surveys and concluded that an organizational respondent is more likely to respond if three characteristics in the respondent are met:

1. Authority to respond: The respondent has the formal or informal authority to respond to a survey request.
2. Capacity to respond: The respondent has the knowledge to adequately answer in behalf of the organization.
3. Motive to respond: The respondent has individual and organizational motivations to provide information.



SURROGATE INFORMATION ERROR

In some research situations, the needed information cannot be obtained. Instead, you may accept substitute data that will act as a surrogate for the required information. The need for substitute information arises from either the inability or unwillingness of respondents to provide the information requested.

For example, decision-oriented behavioral research is always concerned with the prediction of behavior. This limits most marketing research projects since one cannot observe future behavior. Typically, researchers obtain one or more kinds of surrogate information useful in predicting behavior.

Examples: You might obtain information on past behavior if you believe it is indicative of future behavior. For example, if you wanted to market home computers in developing countries, you would investigate, among other factors, education levels, income, and electricity in the home. These variables affect home computer sales in developing countries.

The need for surrogate information is specified during the problem-formulation stage of the research process. Minimizing this error requires an accurate problem definition.

ERRORS RELATED TO ACCURACY OF RESPONSES

MEASUREMENT ERROR



Measurement error is the difference between the measurements you obtain and the truth. This error comes up at many points throughout the research process, from the development of your survey to analyzing your findings. Measurement error can be introduced by the interviewer, the questionnaire, or the respondent.

Examples of measurement error from the interviewer and questionnaire might include: faulty wording of questions; bias in representative graphics materials; unintentional interviewer modification of the question's wording; interviewer misinterpretation or misrecording of the response.

On the respondent side, measurement error includes the way a respondent interprets the question, and the respondent giving incorrect information.

QUESTION NON-RESPONSE ERROR



Some potential respondents refuse to answer the entire survey. Perhaps it pertains to a sensitive topic. Some may choose not to answer specific questions. Most often, respondents refuse to provide personal information that may place them at risk, including information about banking and finances, private personal behaviors, and information capable of identifying them.

A recent unpublished study showed that question non-response behavior differs by country of origin. Respondents from the US received requests for sensitive information and simply did not respond to the **questions**. However, respondents from Hong Kong receiving the same requests, abruptly discontinued the **survey**.

METHODS FOR DEALING WITH POTENTIAL ERRORS

For any research design, recognizing that potential errors exist is one thing, but doing something about them is another. There are two basic approaches for handling potential errors:

1. Minimize errors through precision in the research design
2. Measure or estimate the error or its impact

MINIMIZE ERROR

Two different approaches can be taken to minimize total error. The first uses of the research design (of research methods) to minimize errors that may result from each of the individual error components. The second approach recognizes that individual error components sometimes affect each other. Thus, when you try to fix one error, you may increase another. This means that you must trade off errors when developing a research design in order to minimize total error. For a fixed project budget, you may want to choose a smaller sample size if you can develop techniques that will reduce non-response and/or improve the accuracy of the measurement process. If the reduction in these non-sampling errors exceeds the increase in sampling error, there will be a reduction in total error.

ESTIMATE OR MEASURE ERROR

Estimating or measuring individual error components and total error is not easy, primarily due to the nature of non-sampling errors. There is a body of accepted sampling theory that allows the researcher to estimate sampling error for a probability sample, but nothing comparable exists for non-sampling errors. Consequently, subjective or judgmental estimates must be made.

TABLE 2.2
SELECTED METHODS FOR HANDLING NON-SAMPLING ERRORS

Type of Error	Design to Avoid	Measure	Estimate
SURROGATE INFORMATION	Strive for realism	No method of direct measurement, as event has not yet occurred	Use track record of studies, Use surrogate variables
MEASUREMENT			
1. Instrument Induced	Pretest alternative wording, alternative positions, etc.	Experiment by using alternative positioning, etc. in a subsample	Estimate will likely be for no bias but some variable error
2. Interviewing- associated (e.g., bias, recording, cheating in telephone and personal interviews)	Select and train interviewers correctly Use same editor for all interviews by one interviewer Use cheater questions Use computer program to analyze for patterns of responses by interviewer	Re-interview subsample using expert interviewer Analysis of variance Use cheater questions Use computer program to analyze for patterns Use interpenetrating sample	Estimate will be for both bias and variable error
3. Response	Randomize response technique Ask for verification checks Cross-check questions Use mail-back technique	Compare with known data	Have interviewer evaluate respondent Estimate will be for both bias and variable error
4. Editing	Prepare editing manual Train editors Require daily return of data	Use master editor to edit subsample	Estimate will be for limited bias, some variable error
5. Coding (text and manually entered data)	Pre-code variables Use coding manual User computer program to clean data	Use master coder to validate subsample	Some bias and variable error
6. Tabulation	Use verification for data entry	Recheck sample of forms	Variable error
7. Analysis	No remedy except competence	Use more competent analyst	
FRAME	Use multiple frames	Take subsample of excluded segments	Use compensating weights Use past data
SELECTION	Make sample element and sample unit the same Use probability sample	Compare with known population	Use compensating weights
NON-RESPONSE	Use callbacks Call at appropriate time Use trained interviewers	Take subsample of non-respondents	Use Politz-Simmons method Use wave analysis

For individual error components, many diverse procedures can be used to estimate and measure their impact as illustrated in Table 2.2. These are discussed where appropriate in subsequent chapters.

CHOOSING A RESEARCH DESIGN

We have considered designs and errors. We also looked at how different designs can help you with a specific problem. We should also note that the amount of information and the cost effectiveness of every research design will vary.

To illustrate, suppose that a researcher is tasked with determining the market share of the ten leading brands of energy drinks. There are different ways to measure the market share of different brands, including questioning a sample of respondents, observing purchases at a sample of retail outlets, obtaining sales figures from a sample of wholesalers, and obtaining sales figures from a sample of retailers and vending machine operators. You may also obtain tax data, subscribe to a national consumer panel, subscribe to a national panel of retail stores, or obtain data directly from trade association reports or a recent study by some other investigative agency. The list goes on.

Selecting the best design is just like choosing among the alternatives in any decision. Find the value and cost of information each design. The design with the highest expected payoff should be selected.



SUMMARY

Research design is the single most important aspect of the research project. This chapter described what a research design is, discussed the types of designs, and examined major sources of marketing information for each design. Finally, we considered the errors that affect research designs.

This chapter was an overview, and the topics will be discussed in depth in the next several chapters. These chapters deal with major sources of marketing information—respondents and experimentation—and the means of obtaining and analyzing research information.



3

Secondary Sources of Information

There are three data sources: **primary data**, **secondary data**, and **commercial data**.

Primary data is collected by the researcher. Respondents are asked questions while the researcher collects the responses. These can be verbal or written. Responses can also be observed via the respondent's behavior. Collecting primary data is vital in finding solutions to research problems.

Secondary data is collected from research. This information is often found in outside sources. However, don't overlook your own company's records or your competitors' open records. Such information can help build a strong foundation for your research project.

Commercial data is secondary data sold by syndicated services. Marketing research firms or industry associations collect this information. It is similar to both primary and secondary data because commercial data is initially collected as primary data to address a research problem. However, it is not specific to the purchaser's current research problem. Commercial data tends to be general enough to apply to a variety of projects, but it can be quite useful. Researchers can purchase this information and incorporate it into their study as secondary source material.

In this chapter, we will focus on secondary data, including commercial data: obtaining secondary information, types of secondary information, sources of external secondary data, and syndicated services that provide secondary data. Secondary data allows both management and researchers to make critical decisions about a research problem. Primary data is discussed in subsequent chapters.

REASONS FOR OBTAINING SECONDARY INFORMATION

Before you start a research project, before you look at primary data, it is important to investigate secondary sources first. The reasons will be discussed below.

SECONDARY INFORMATION MAY SOLVE THE PROBLEM

If enough information is available, you may solve the problem and avoid doing primary research.

Example: Campbell Soup Co. based their successful “soup is good food” ad campaign on federal government data. Information on eating habits and nutritional health was collected over 15 years. This data provided Campbell’s with all of the information it needed for its campaign.

SECONDARY INFORMATION SEARCHES COST LESS

Compared to original research, an in-depth search of secondary sources takes a fraction of the time and budget. Numerous research publications and databases can be accessed online for free. The rewards of a secondary information search far outweigh the costs. Such information allows you to avoid redundancy in your primary research. Furthermore, you can use the primary research budget elsewhere. In fact, many research programs won’t approve expenditures on primary research if a secondary information source can be utilized.

SECONDARY INFORMATION HAS IMPORTANT SUPPLEMENTARY USE

Sometimes, secondary information isn’t enough to solve your research problem, but it can still be useful. Supplementary uses for secondary information include:

1. *Defining the problem and formulating hypotheses about its uses.* As you’re refining your research question and developing a hypothesis, you want as much information as possible. Secondary information will develop the context for your research problem, and may even suggest new solutions.
2. *Planning the collection of primary data.* Analyzing data collection techniques in secondary research can provide input on what will work for your research project.
3. *Defining the population and selecting the sample.* Past information on the population, sample, and appropriate sampling techniques can help establish a framework for your primary research.

SECONDARY INFORMATION PITFALLS

Even though secondary information is vital, you must be cautious. Secondary data must be readily available, relevant to your needs, accurate, and pertinent to the problem. When you research secondary sources, you must evaluate why the data was originally collected, if it is reliable, and if the right techniques were used.

Example: One company wanted to do an analysis on foreign markets, emphasizing demographics. The company wanted to use the official government census of each population. However, the data was not available from all countries in equal quantity and detail. The reliability of data was not the same.

In short, you can't always expect to find consistency among the data you consider. Data may not use the same categories or demographics. You have to know what techniques were used and what the original purpose for the data was as you research secondary sources.

TYPES OF SECONDARY INFORMATION

Secondary information generally falls into two categories: **internal secondary data** and **external secondary data**.

INTERNAL SECONDARY DATA

Companies collect information as they conduct business everyday. They receive orders, fill orders, record costs, receive warranty cards, submit sales reports, and make engineering reports. These sources are called **internal secondary data**. Even though this information is collected for other purposes, you can easily access it for a research project. The key to internal data is knowing where to find it. In order to use internal data effectively, the company must have an effective information system.

Example: The Spectra Physics Lasers Division produces laser grocery store scanners. They regularly perform customer satisfaction studies. These studies are primary research for the Retail Systems organization. They are also internal secondary information to other divisions that may want to use the information. They can also be secondary data to the Retail Systems organization, should they use them at a much later date for other projects.

EXTERNAL SECONDARY DATA

Data that you obtain from outside sources is called **external secondary data**. External data is available in staggering amounts and assortments. It is often available for major types of marketing research, focusing on non-controllable aspects of the problem (total market size; market characteristics; competitor products, prices, promotional efforts, and distribution needs).

Example: A consumer goods company is considering whether or not it should establish a direct sales operation. Direct selling requires personal contact between a salesperson and a consumer away from a store (e.g. door-to-door sales). In the United States, for example, the Direct Selling Association (DSA) regularly provides secondary information developed from periodic surveys of the industry, including:

- Estimated U.S. sales
- Estimated U.S. salespeople
- Percent of sales by major product groups
- Location of sales
- Percent of sales by census region
- Sales strategy

SOURCES OF EXTERNAL SECONDARY DATA

We've discussed the different kinds of secondary data sources. You'll already have access to some through internal data, but where do you find external secondary data? The major sources of external secondary information include:

- Government (supranational, federal, state, local, etc.)
- Trade associations and trade press
- Periodicals and professional journals
- Institutions (universities, research organizations, etc.)
- Commercial services

Both governmental and trade sources are so important that experienced researchers will be thoroughly familiar with those having ties to his/her field of specialization. Periodicals and research publications of universities and research organizations frequently provide valuable information. Commercial services are also available and are useful for specific research problems. These common secondary sources can be divided into **government data sources**, **private data sources**, and **internet databases**.

GOVERNMENT DATA SOURCES

Basic market data is usually available from censuses conducted by federal, state, local, and supranational governments. Censuses from these governments will normally provide such demographic information as the number of consumers (or consuming units) by age group, income class, gender, and geographic area. You can use this information for market performance studies.

A good first source is the *Statistical Abstract of the United States*, available online from the Bureau of the Census. This reference simplifies data from original reports and provides useful material on social, political, and economic matters. The source is a good reference to more detailed data.

The State and Metropolitan Area Data Book is a publication of the Bureau of the Census that is available online in PDF format. It provides detailed comparative data on states, metropolitan areas, component counties, and central cities. It covers information about numerous relevant topics, including population, income, labor force, commercial office space, banking, health care, housing, and so forth.

The *Census of Population* and the *Census of Housing* taken by the U.S. Department of Commerce every 10 years is the most comprehensive of these options.

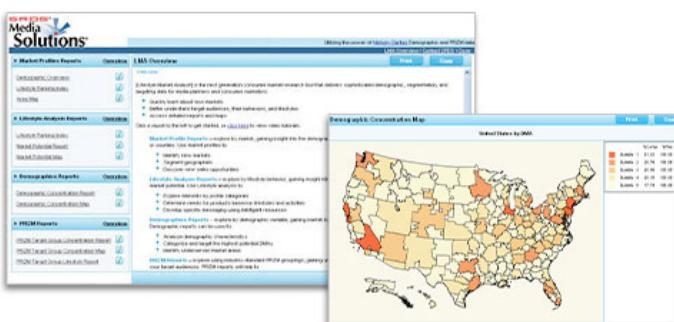
Updates of various census measurements based on smaller yearly surveys are available in *Current Population Reports* and *Current Construction and Housing Reports*. Many other up-to-date estimates are made periodically by governmental and non-governmental agencies.

Data from the U.S. Census Bureau is available online for custom data analysis, on DVD, and in report form as downloadable PDF files. There are also private companies that make such data available—for a fee—in more processed forms. GeoLytics corporation offers a line of census data products and a variety of custom data retrieval services.

Other value-add companies provide mapping software that is used for geographic market analysis. This type of software often integrates census data, making it useful for such applications as retail site analysis, real estate site reports, direct marketing, and database creation. One supplier is Scan/US, Inc., whose software product *Scan/US Streets and Data U.S.A.* includes maps for the entire United States and includes all types of demographics.

FIGURE 3.1

MAP OF A SELECTED LIFE STYLE INCIDENCE ACROSS THE U.S.



PRIVATE DATA SOURCES

Private organizations are another useful source of demographic information. To illustrate, SRDS publishes *The Lifestyle Market Analyst*. This annual publication provides demographic and lifestyle information for 210 Designated Market Areas (DMAs) in the United States (Figure 3.1).

Nielsen's Claritas division, a provider of solutions for geographic, lifestyle and behavioral target marketing, has developed a demographic widget that is available as a free download for personal electronics.

Market size studies (e.g., size in sales dollars or units) often are conducted by trade associations, media, industrial firms, and private research organizations. These studies are published and made available to interested parties. They often include estimates of market characteristics, market segments, and market segments size.

Example: Mediemark Research, Inc. conducts a single-source continuing survey, primarily aimed at the advertising industry. It provides demographics, lifestyles, product usage, and advertising media data. One part of this study is a series of studies on specific products/services that is published as syndicated reports.

Information on new products and processes is available in the form of patent disclosures, trade journals, competitors' catalogs, and reports from testing agencies. A researcher can also find governmental reports from the Food and Drug Administration, the Department of Agriculture, and the National Bureau of Standards. Further resources provide an advertiser's gold mine:

- Publishers Information Bureau provides a compilation of expenditures by medium for each competitor.
- Audit Bureau of Circulations provides data on the number of magazine copies sold under specified conditions.
- Standard Rate and Data Service provides complete information on the rates and specifications for buying advertising space and time.
- Mediemark Research, Inc. publishes data on multiple major media markets, relating detailed media behavior to demographic characteristics of readers/viewers/listeners.
- Arbitron Radio and Television Reports, the Nielsen Radio-Television Index, and Starch Advertising Readership Service all measure of audience exposure to specific advertisements or programs.

COMPUTERIZED DATABASES

The Internet has become a research staple. You are able to access most commercial electronic databases online. There are thousands of databases available. These can be divided into five categories of commercial databases:

- Bibliographic databases that index publications
- Financial databases with detailed information about companies
- Statistical databases of demographic, econometric, and other numeric data for forecasting and doing projections
- Directories and encyclopedias offering factual information about people, companies, and organizations
- Full-text databases from which an entire document can be printed out

The advantages of such current databases are obvious, as indicated in Exhibit 3.1. All that is needed is a personal computer with Internet access.

Computerized databases have led to an expanded focus on database marketing. Database marketing is an extension of traditional marketing. Databases are employed to target direct response advertising and track response and/or transactions. In database marketing, you identify behavioral, demographic, psychographic, sociological, attitudinal, and other information on individual consumers/households that are already served or that are potential customers. Data may come from secondary and/or primary sources.

Qualtrics.com's clients are increasingly using APIs (Application Programming Interface) to link and integrate customer databases with survey data and respondent panels. APIs can be used to link and integrate data from multiple sources in real time. Thus, information in database profiles is augmented by new contact and survey data, and can be viewed in conjunction with current information and used to better target and predict market response.

Databases can be used to estimate market size, find segments and niches for specialized offerings, and even view current customer use and spending. In short, they help you develop more specific, effective, and efficient marketing programs.



EXHIBIT 3.1

ATTAINING MARKET KNOWLEDGE FROM ONLINE SOURCES

Elkind and Kassel (1995) provided essential guidelines for attaining market knowledge from online sources:

- **DEVELOP AN ONLINE RESEARCH PLAN.**

The plan will outline all the key areas of inquiry and will provide a systematic pathway to search, retrieve, and arrive at the desired data, information, and knowledge.

- **DEVELOP A KNOWLEDGE INVENTORY**

Clearly define your information needs, knowledge gaps, and issue to be resolved. One of the best ways is to do a knowledge inventory or review to determine what you already know or have in your possession, both primary and secondary research.

- **FOCUS THE SEARCH.**

Start by applying the learning from your knowledge inventory and specify the new areas that are critical to your project. The focus can be further enhanced by specifying key hypotheses regarding possible findings, information categories relevant to the issue, and other criteria such as product categories, consumer targets, market areas, time frames, and so on.

- **SEARCH ACROSS MULTIPLE SOURCES.**

Don't expect to find what you need in single pieces of data or sources of information. You only rarely will find what you need in one place.

- **INTEGRATE INFORMATION FROM THE MULTIPLE SOURCES.**

Use techniques of trend analysis to identify patterns that emerge when various information elements are combined. For example, content analysis, stakeholder analysis, paradigm shift, trend lines, critical path analysis, sector analysis (technological, social/cultural, occupational, political, economic), or other analytic techniques that facilitate integration of diverse data and information and identification of underlying patterns.

- **SEARCH FOR DATABASES THAT CONTAIN ANALYSES RATHER THAN LIMITING THE SEARCH TO JUST DATA OR INFORMATION.**

Many of the professional online database producers and vendors offer thousands of full-text articles and resources that contain analyses. You may be able to find material that already provides some interpretation that may be helpful.

- **ENHANCE THE ROBUSTNESS OF YOUR DATA OR INFORMATION THROUGH MULTIPLE-SOURCE VALIDATION.**

You can increase confidence in the validity of the findings of your secondary searches by looking for redundant patterns that cut across different sources and studies.



SUMMARY

This chapter has explained secondary information and detailed sources of secondary information. We started with why secondary information is important to your research project. Then, we discussed various types and sources of secondary information, including government data, private data, and internet databases.



4

Conducting Interviews

Once you've finished researching secondary sources, it's time to evaluate whether or not you need to conduct primary research. Refer back to your problem. Have you discovered a solution? If you have not, primary research is the next step.

One effective tool for conducting primary research is the **interview**.

THE INTERVIEW

Research interviews allow you to obtain information directly from respondents. Research interviews are dyadic (person to person), relying on one person asking a question and another responding.

Because interviews rely on people, bias can be a factor. Some respondents will answer the questions differently based on how they view the interviewer. In fact, respondents may be biased by any number of things: background characteristics (age, education, socioeconomic status, race, religion and gender), psychological attributes (perceptions, attitudes, expectations, motives), and behavior (errors in asking questions, probing, motivating, recording responses).

The interviewer affects the information gathered in an interview. Depending on the level of warmth or formality of the interviewer, the respondent's answers will vary. Thus, it's important that you determine which interview style will be the most effective with which respondent.

Exhibit 4.1 discusses what is an interview and the elements defining the environment in which each interview takes place.

EXHIBIT 4.1

WHAT IS AN INTERVIEW?

Universal dimensions underlie the relationships that are shaped as part of every interview.

- Involvement encompasses the degree to which each party wants to take part in the interview, and includes the degree of commitment to making it a success.
- Control refers to the degree of power the interviewer or interviewee has to affect the interview process and its outcome.
- Relationship is the degree of warmth or friendship between the interview parties.

A number of elements also define the environment in which each interview takes place:

1. CONTEXT.

The total situation in which an interview takes place, including location, physical arrangements, the people present, and those absent. This also includes status differences between parties, temperature, privacy, and time.

2. CONTENT.

What the parties talk about during the interview. It involves topic selection and treatment, arguments, supporting materials, language, and questions and answers.

3. STRUCTURE.

Includes the interviewer's or interviewee's basic organizational patterns, sequences of topics and questions, and the means used to open and close interviews.

4. DISCLOSURE.

The willingness on the part of both parties to reveal their "true" selves to one another.

5. FEEDBACK.

The continuous stream of verbal and nonverbal signals (e.g., smiles, puzzled expressions, raised eyebrows, moans) sent between interview parties that reveal feelings: belief or disbelief, approval or disapproval, understanding or misunderstanding, interest or disinterest, and awareness.

6. COOPERATION.

The degree to which the interview parties are willing and able to reduce the competition inherent in most interview situations and work together for their mutual benefit.

7. CONFLICT.

The potential or actual struggle between parties because of incompatible or opposing needs, desires, demands, and perceptions.

8. TRUST.

Belief in the good, worth, ethics, believability, and reliability of the other party.

Involvement, control, and relationships have some effect upon each of the elements. These dimensions and elements of relationships are present in each interview but are not of equal importance. Although they are independent of each other, they have strong interdependence as well.

SOURCE: From Stewart, C. J. and Cash, W. B., Interviewing Principles and Practices, 4/e. © 1985 William C. Brown, Publishers. Reprinted with permission of The McGraw-Hill Companies, pp. 9–13

STRUCTURE OF THE INTERVIEW

In marketing research, interviews can be classified as **structured** or **unstructured**. The difference between the two depends on whether there is a formal questionnaire or whether the questions are asked in a specific order. Interviews are also categorized as **direct** or **indirect**, depending on whether or not the purpose of the questions is disguised. These interviews are either **objective** or **subjective**. Structured-direct and unstructured-direct interviews are considered **objective** interviews, while structured-indirect and unstructured-indirect interviews are considered **subjective**. These four categories will each be discussed in turn.

STRUCTURED-DIRECT INTERVIEWS

Structured-direct interviews, complete with formal questionnaire and with nondisguised questions, are focused and to the point. They are used to get descriptive information from consumers. They typically consist of a formal questionnaire with nondisguised questions.

Example: A marketing research manager of a bedroom-furniture manufacturer wants to find out what kinds of people prefer various styles of headboards and dressers. The question sequence is fixed and only those questions are asked. The resulting interview is structured-direct in nature. Figure 4.1 shows a portion of the questionnaire used.

FIGURE 4.1

EXAMPLE SURVEY FOR A STRUCTURED-DIRECT INTERVIEW

The next portion of this questionnaire is designed to obtain information about furniture styles that you own, bedroom furniture design preferences, and socioeconomic characteristics.

Which of the styles of furniture shown in these pictures is most nearly similar to your furniture? (Show folder with furniture pictures.)

- | | |
|-------------------------------------|--------------------------------------|
| <input type="radio"/> Country | <input type="radio"/> Modern |
| <input type="radio"/> Spanish | <input type="radio"/> Cape Cod |
| <input type="radio"/> Mediterranean | <input type="radio"/> Student Budget |
| <input type="radio"/> Traditional | <input type="radio"/> Shabby Chic |

Which of the styles of bedroom sets shown in these pictures do you like best? (Show folder with bedroom set pictures.)

- | | |
|---------------------------------|---|
| <input type="radio"/> Log Cabin | <input type="radio"/> Traditional |
| <input type="radio"/> Spanish | <input type="radio"/> Contemporary |
| <input type="radio"/> Modern | <input type="radio"/> Scandinavian Modern |

Please indicate your occupation.

About how much was your total household income (for you and your spouse) last year from salary and other sources?

- | | |
|---|---|
| <input type="radio"/> \$0 - \$25,000 | <input type="radio"/> \$125,001 - \$150,000 |
| <input type="radio"/> \$25,001 - \$50,000 | <input type="radio"/> \$150,001 - \$175,000 |
| <input type="radio"/> \$50,001 - \$75,000 | <input type="radio"/> \$175,001 - \$200,000 |
| <input type="radio"/> \$75,001 - \$100,000 | <input type="radio"/> \$200,000+ |
| <input type="radio"/> \$100,001 - \$125,000 | |

Benefits: Structured-direct interviews are easy to use and make it easy to collect information. The questions are worked out carefully and in advance so respondents can avoid misunderstandings.

In a structured-direct interview, the interviewer simply asks questions (via internet, telephone, or on paper). The same questions are asked in the same order to every respondent. It's a low cost process. You use interviewers with no skills beyond asking questions and recording answers. The questions are uniform and standard. This reduces errors in editing, tabulating, and analyzing responses.

Problems: The challenges that face this interview style involve wording questions properly and getting unbiased and complete answers to each question. Respondents will sometimes answer by rote with little consideration of the questions.

UNSTRUCTURED-DIRECT INTERVIEWS

Unstructured-direct interviews are often used in exploratory studies and qualitative research (Chapter 5). In unstructured-direct interviews, interviewers are given only general instructions for the interview. Interviewers are told what information they need to gather, but the interview's structure is left to the interviewer's judgment as long as the questions are direct.

Researchers often use unstructured interviews as a preliminary step when creating formal questionnaires.

Example: The owner of a bedroom set is asked, "Why did you buy your bedroom set?" The answer is almost certain to be incomplete. Answers such as "Because we needed a bed," "Our old bed was worn out," or "Because it was on sale," provide you with some motivations but don't provide useful marketing information.

When the interviewer wants to understand motives, a **depth interview** is conducted. The interviewer asks follow up questions such as: "What did you mean by that statement?" "Why do you feel this way?" "What other reasons do you have?" These probing questions are used until all necessary information is gathered.

Benefits: Unstructured-direct interviews allow the interviewer to be casual and informal, developing questions naturally over the course of the interview. The interviewer can also adjust the vocabulary level for the comfort of each respondent. When skillfully used, the flexible unstructured-direct interviews can gather much more information than structured-direct interviews.

Problems: The interviewer must formulate and adapt questions naturally. As a result, he or she may influence the quality of information gathered. For example, the completeness, the objectivity, and the bias in the interview may be affected. Thus, a major problem with unstructured-direct interviews is finding competent interviewers. These responses cost more per-interview because of the additional attention required to assure quality in unstructured interviews. As you would assume, these interviews generally take longer than those that use a questionnaire. In addition, editing and tabulating problems becomes more complicated because of the varied order of asking questions and difficulty in evaluating, coding and recording answers.

STRUCTURED-INDIRECT AND STRUCTURED-DIRECT INTERVIEWS

A number of techniques have been devised to obtain information from respondents indirectly. Many of these techniques employ the principle of **projection**. This is where a respondent is given a non-personal, ambiguous situation and asked to describe it. Theoretically, the respondent will interpret the situation in terms of his or her own needs, motives, and values. The description, therefore, involves a projection of personality characteristics onto the situation described. These techniques are discussed in more depth in Chapter 5.

REDUCING RESPONSE AND NON-RESPONSE BIAS

A major concern in any interview will be bias (Review Chapter 2 on measurement error). In this section, we will expand upon the subject. Specifically, we're going to examine how to reduce nonsampling based errors that occur during the interview process. We will discuss how to reduce **inaccuracy**, **ambiguity**, and **non-response error**.

INACCURACY

Inaccuracy refers to either intentional or unintentional errors in a respondent's answers, in the future (**predictive**) or in the present (**concurrent**). **Predictive inaccuracy** is a special case of response error caused by inaccurate intentions.

Example: A respondent indicates that he intends to buy a new sports car within 6 months, but he does not. In this case, the respondent's intention was clear, but was not followed. This situation is a predictive inaccuracy.

A similar type of predictive inaccuracy can occur when marketing researchers try to predict actual market response to a price by asking consumers, "How much are you willing to pay for Product X?" Differences between predicted and actual price acceptability may occur because the true range of an acceptable price may change by the time of purchase. Budget constraints, windfalls, similar products at the point of purchase, search costs, and purchase urgency must be considered.

Concurrent inaccuracy occurs when the respondent intentionally does not provide accurate information because of an **inability** or an **unwillingness to respond**.

Concurrent inaccuracies are a major concern for information obtained in interviews (for information on past behavior, socioeconomic characteristics, level of knowledge, and opinions and attitudes). Concurrent inaccuracies may also apply to instances where respondents are observed but not formally interviewed) and the interviewer is unable or unwilling to provide the desired information. It is clear from these brief examples that inability and unwillingness to respond are major contributors to response bias and warrant more detailed attention to understand how they can be controlled.

Inability to Respond

Even a straightforward question such as “What is the model year of your family car?” may result with inaccuracies, particularly if the car is several years old. If respondents were asked, “What brand or brands of tires do you have on your car?” most would have difficulty providing an accurate answer without looking. Finally, if respondents were asked, “What reasons did you have for buying Brand ‘A’ tires instead of some other brand?” most respondents struggle in providing an accurate answer. Semon (2000a, 2000b) suggests that inaccuracies due to inability to respond stem from three major conditions:

- **Memory error:** A respondent gives the wrong factual information because he or she does not remember the details of a specific event. Often, the amount of time since a purchase was made is underestimated or overestimated. A better questionnaire and survey design can help reduce this error. Proven techniques such as follow-up interviews will verify answers. However, they often are not used because they add to the length and cost of the survey.
- **Ignorance error:** This refers to the respondent’s lack of understanding, awareness, or perception of the question. If too many customers struggle with interview questions, your research design or even entire questionnaire may be unrealistic, deficient, or directed to the wrong population.
- **Misunderstanding:** Poorly defined terms or words with different meanings can lead to inaccurate responses. Proper question design avoids words with multiple meanings and definitions. Proper questions will also clearly define the context of word usage in the questionnaire.

Unwillingness to Respond

When we start looking at respondents’ motivations, the problem of reducing bias gets more complicated. We have to figure out why respondents are not willing to accurately provide the information desired. There are always negative perceptions attached to sharing personal information, and there are no complete theories to explain this behavior.

Investigator Expectations

One complex source of inaccuracy in response stems from the respondents' appraisal of the investigator.

Example: A cosmetics study reported an unexpectedly high usage of luxury cosmetics among women from low-income families. In this case, a well-dressed and carefully groomed interviewer conducted all of the interviews. The study was repeated with a matronly woman. Her clothing was similar to the women previously interviewed. This time, the same respondents reported that they used fewer expensive brands. In this case, the specific interviewer had a direct effect on the answers of the respondents.

Investigator Unwillingness

Sometimes the respondent is willing to provide accurate data, but the interviewer is cheating. This happens when an interviewer finds a particular question too embarrassing to ask; when the interviewer finds it easier to complete the survey forms himself/herself rather than conduct the interviews; or when interviewers have friends complete the survey. An interviewer may also complete some of the questions legitimately and then estimate or infer other information such as age, income, and certain attitudes or behaviors of respondents.

Carefully selecting, training, and supervising can reduce the level of interview cheating. Control procedures can also help. The simplest control procedure is to call back a subsample. If the information on an initial interview disagrees significantly with that on the call-back interview, establish who the interviewer was and call back his/her respondents.

Other control procedures include the use of "cheater" questions. Cheater questions have specified answers or are common knowledge, such as, "For this question, select option three", and "The sun revolves around the earth". Likewise, analyzing patterns of responses for interviewer differences will disclose interviewer cheating when there are significant variations from expected norms.

Costs of Time and Effort

Perhaps the most common reason for respondent unwillingness to provide accurate information is the time and effort required to provide answers. This is especially problematic in online surveys. Here respondents often give hasty, ill-considered, or incomplete answers. They resist completing the open ended text questions that probe for more accurate information. A respondent will tend to act in a manner that will reduce time costs. Such behavior often results in inaccurate or missing information.

When using telephone questionnaires, a good solution is to have interviewers ask, "Is this a good time to answer some questions, or would you rather set a time when I could contact you again?" Experience has shown this latter technique only slightly lowers response rates.

Perceived Losses of Prestige

When respondents attribute prestige to the information, there is a tendency to give higher-prestige responses. Questions that elicit this type of bias often include sensitive information related to socioeconomic status, including age, income, educational level, occupation, place of birth, and residence.

Example: People subtly associate prestige with brands of beer. In a survey on what national brand respondents preferred, one of the questions was, “Do you prefer light or regular beer?” The response was overwhelmingly in favor of light beer. Nevertheless, sales data indicated a strong preference for regular beer. The reported information was clearly inaccurate. Subsequent investigation revealed that the respondents viewed people who drank light beer as being more discriminating. Therefore, respondents had given answers that, in their view, were associated with a higher level of prestige.

Measuring the amount of inaccuracy is a difficult task. One solution is to ask for the information two different ways. For example, when obtaining information on respondents’ ages, it is a common practice to ask early in the interview, “What is your present age?” and later “In what year did you graduate from high school?” Likewise, a third-person technique can be used. Respondents could be asked, “Are you afraid to fly?” followed later by “Do you think your neighbor is afraid to fly?” In this case, most neighbors turned out to have severe anxieties about flying.

Invasion of Privacy

Clearly, some types of information are viewed as private. Both non-response and inaccuracy can be expected. Finances, family, personal life, personal hygiene, political beliefs, religious beliefs, and occupation information can be delicate issues. Respondents sometimes respond badly when they feel an interviewer is prying. Privacy is a sensitive matter, and what one person considers private may not be viewed that way by others.

The investigator should attempt to determine sensitivity if it is suspected to be a problem. One way of handling this is to add questions in the pretest stage which ask about the extent of sensitivity to topics and specific questions. A comprehensive treatment of sensitive information and how to ask questions about it is given by Bradburn and Sudman (1979), and by Reuzetti and Lee (1993).

AMBIGUITY

Ambiguity occurs when respondents misinterpret written or spoken questions. Ambiguity is a constant challenge. Unambiguous communication in research requires

FIGURE 4.2**COMPARISON OF
QUESTION WORDING**

Do you like tomato juice?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Neither like nor dislike
.....	
Do you like the taste of tomato juice?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Neither like nor dislike

that the question asked and the answers given mean the same thing to the interviewer and the respondent. To illustrate this point, pretesting in an actual research project on tomato juice produced the following question change.

The questions in Figure 4.2 may not appear to have much difference. The analyst who drew up the question assumed that “like” refers to taste. In pretesting, however, it was discovered that some housewives answered “Yes” in relation to another factor. They “like” the amount of Vitamin C their children get when they drink tomato juice, and they “like” the tenderizing effect that tomato juice has when used in cooking of meat dishes. If the wording of the question had not been changed, there would have been a misunderstanding for many respondents.

Understanding questions goes beyond ambiguity. Sometimes a respondent may not understand a question. The problem is there’s no opportunity to request clarification. Most personal and telephone interviewing uses standardized interviewing, meaning that the interpretation of questions is left up to the respondent.

Procedures for Recognizing and Reducing Ambiguity in Communication

Every research design that uses communication to obtain information should have multiple safeguards against ambiguity. Procedures should be employed to recognize such problems and reduce them. Alternative wording, pretesting, and verification by observation are three procedural steps that can help:

1. Alternative question wording and forms of questions are helpful where ambiguity is suspected. Present these alternatives to a sub-sample of respondents. The use of this simple experimental technique costs no more for online surveys. In personal and telephone interviewing the interviewers can be instructed to change the order of the questions for one-half the interviews. If significant differences in response are discovered, there will be worthwhile warning for interpreting the information.

2. Pretesting questionnaires is a virtual necessity. The only way to know if questions are unambiguous is to query a group of respondents who represent your target population. Then ask those participating whether they had any trouble with any questions. Be sure to ask about the exact nature of the problem. If the pretest is done by an interviewer, each respondent can be asked about each question, probing to get more information about problem responses. Using the feedback from this sample, revise your questions.

3. Verification by observation is advisable whenever cost, time, and the type of information permit, and verification is possible or practical. The housewife may state that the only brand of toothpaste she buys for her children is Crest, but observation

may show she has more than one brand on hand. Observation is difficult for most studies, but can dramatically decrease ambiguity in the final questionnaire.

Making Sense of Ambiguity

It's important to remember that your research may not be free of ambiguity. As you study the data from the interviews, you must select, organize, and interpret the data so you create a picture that is meaningful and coherent. Which factors are given importance and how they are interpreted is dependent on the expertise, background and frame of reference of the interviewer.

Example: A cereal manufacturer ran a promotional campaign involving a drawing contest for children. Each child who entered was required to submit (along with a box top) a picture he or she had drawn that depicted the cereal being eaten. Prizes were awarded on the basis of artistic merit, and the brand manager turned his attention to other matters. Later, a psychologist who worked for the company happened to see the pictures and was permitted to study them. He found that a sizable proportion of them showed a child eating cereal alone, often with no other dishes on the table. This suggested to him that cereal is often eaten by children as a between-meal snack. Later studies by the company's marketing research department showed that cereals are eaten between meals by children in greater amounts than are eaten for breakfast. The advertising program of the company was subsequently changed to stress the benefits of its cereals as between-meal snacks.

NON-RESPONSE ERROR IN INTERVIEWS

A non-response error occurs when an individual is included in the sample but, for any of many possible reasons, is not reached or does not complete the survey. In most consumer surveys, this can create a potentially sizable error.

Non-response errors are different depending on the mode of survey administration. Families who generally cannot be reached by phone or person-to-person interviews have different characteristics than those who can be reached. They may be away from home during the day while other families have at least one member found at home during the day. They also differ with respect to age, number of small children, and the proportion of time in which the wife is employed. Some more examples of hard to locate respondents include: fathers who are unwed, poor, and live in large cities; busy executives and professionals; or occupational groups such as hospital purchasing agents responsible for chemical agents; and students who have replaced traditional land lines with cell phones.

Internet surveys can potentially increase contact rates because the survey invitation appears in the inbox until the potential respondent sees it. However, non-response can still come from other respondent differences (time pressure, occupation, lack of interest) or technological issues (spam filters).

Researchers believe that major reasons for refusing participation include lack of interest; lack of time; concerns about data privacy and personal protection; a general aversion to telemarketing efforts of all

types; consumers' natural aversion to telephone surveys; low salaries of interviewers; and the fact that financial remuneration is not widely used in surveys to compensate consumers for their time. Evangelista, Albaum and Smith (2012) identify six general motivations that drive survey response. Exhibit 4.2 suggests that response rates are increased (and non-response bias decreased) by using specific motivational techniques and inducements.

EXHIBIT 4.2

THEORIES OF SURVEY RESPONSE

Why do people participate as respondents in a survey? Marketing researchers often ask the question, but few techniques have been developed to increase participation. The following theories are among those proposed (and studied to varying degrees) as answers to this question.

EXCHANGE

Obtaining information from respondents can be viewed as a social exchange. Very simply, social exchange theory asserts that the actions of individuals are motivated by the reward from these actions. For survey response to be maximized by this theory, three conditions must be present:

1. The costs for responding must be minimized.
2. The rewards must be maximized.
3. There must be a belief that such rewards will, in fact, be provided.

COGNITIVE DISSONANCE

Cognitive dissonance theory suggests that reducing dissonance is important as potential survey respondents decide whether to respond or not.

The process begins with a questionnaire and invitation requesting participation. A respondent's self-perception of being a helpful person means that failure to respond will produce a state of dissonance. Potential respondents hope to reduce this dissonance by becoming a survey respondent. Since the decision process can involve a series of decisions, delaying the ultimate decision may be a way to avoid completing the questionnaire. Delaying a decision, therefore, may in itself be a dissonance-reducing response.

SELF-PERCEPTION

Self-perception theory asserts that people find the causes of their behavior by interpreting their attitudes and knowledge. Interpretations are made on the basis of self-observation. To the extent that a person's behavior is attributed to internal causes and is not perceived as due to circumstantial pressures, a positive attitude toward the behavior develops. These attitudes (self-perception) then affect subsequent behavior. The self-perception paradigm has been incorporated into survey response. Researchers utilize the concepts of salience (behaviors one has attended to), favorability (the affect or feeling generated by a given behavioral experience), and availability (information in memory). To enhance the effects, researchers should create labels. Labeling involves classifying people according to their behavior.

COMMITMENT AND INVOLVEMENT

Commitment and involvement deals with the allegiance someone feels for any system they belong to. Consistent behavior is a central theme, including the following characteristics:

1. Persists over some period of time
2. Leads to the pursuit of at least one common goal
3. Rejects other acts of behavior

Consequently, the major elements of commitment are viewed as including the following:

1. The individual is in a position in which his or her decision regarding particular behavior has consequences for other interests and activities not necessarily related to it.
2. The person is in that position by his or her own prior behavior.
3. The committed person must recognize the interest created by one's prior action, and realize it as being necessary.

Someone highly committed to some activity will probably stick to it longer than someone uncommitted.

The theory of commitment (or involvement) can be extended to explain survey response behavior. Commitment can be attached to many different aspects of a survey, such as the source or the sponsor, the researcher, the topic and issues being studied, and/or the research process itself. To a large extent, commitment is manifested by interest in what is being asked of the potential respondent. The following hypotheses (untested) can be proposed:

1. The less favorable the attitude toward a survey's sponsor, topic, and so forth, the less involvement with, and thus commitment to, anything related to that study.
2. The less the extent of involvement, the more behavior productive of disorder (e.g., non-response, deliberate reporting of false information, etc.) is perceived as legitimate.
3. The more behavior productive of disorder is perceived as legitimate, the less favorable the attitude toward the survey.

RECIPROCITY

Reciprocity requires that a person give an in-kind response to another: positive for positive, negative for negative. Explained by social exchange theory, reciprocity covers incentives, money or otherwise offered to the prospective respondent. A potential respondent may also feel the obligation to reciprocate and complete and return the questionnaire, based on the request to participate and the recognition that time, effort, and resources were invested by the researcher.

LEVERAGE-SALIENCE

This theory suggests that interest in a topic is a key factor in prospective respondents' willingness to participate in surveys. Potential respondents vary in the importance they assign to different aspects of a survey request. The incentive, topic, sponsor, survey appearance, and even the general predisposition toward taking surveys can influence the respondents' willingness to participate.

REDUCING INTERNET SURVEY ERROR

Online surveys have become the dominant mode for conducting structured-direct interviews. This shift to online research is due to reduced cost, the ability to display interactive and illustrating graphics, the ease of survey creation and administration, and the ability to eliminate many errors associated with collecting and recording data. Online surveys have become a logical option, but they still are not error free. This section focuses on identifying and managing the four major sources of errors in online surveys: **coverage error, sampling error, non-response error, and measurement error.**

COVERAGE ERROR

Coverage error occurs when the sample frame (the group from which the sample is drawn) does not represent the population as a whole. For example, a random sample of Mac users would be a mismatch for the adult population of the United States. In more traditional research methods such as mail or telephone methodologies, samples are drawn from sources such as telephone directories, driver's license records, rolls of property owners, credit reports, and so forth. However, these typical sampling frames are very information specific and often do not contain email addresses.

E-mail list brokers offer panels and e-mail address lists that can be targeted to reduce coverage error. Respondent lists can be selected by many variables, including gender, occupation, interests and hobbies (e.g., computers, electronics, family, finance, Internet, medical, and travel), and online purchasing. These lists are typically double opt-in, meaning that the users have specifically indicated their agreement to receive surveys or other promotional materials.

When the researcher requires a more detailed set of sample criteria, the cost of reducing coverage error increases. Selective lists such as physicians of a given specialty are expensive, sometimes costing more than \$100 per completed response. While this amount seems large, the cost is much less than other methods of data collection. E-mail list brokers make a practice of not providing the physical list, but of sending the survey invitation out, thereby controlling their list and avoiding survey abuse of the potential respondents on the list (survey abuse is sending survey invitations too frequently).

Online sampling frames rarely include all elements (people, businesses, etc.) of the target population. Therefore coverage error will continue to be the greatest source of inaccuracy for online surveys for many years to come. While this same problem is encountered in the use of mail and phone lists, it may be more severe with online e-mail lists, at least until everyone is connected and cataloged as part of the web. Email lists are often based on lists from online websites, including magazines that have specialized hobby and interest affiliations. Carefully selecting lists from well constructed probability panels or panels having millions of members will help to reduce coverage error.

SAMPLING ERROR

Sampling error is when a non-representative sample is drawn from the sampling frame. The estimation of sampling error requires that probability sampling methods be used, where every element of the frame population has a known non-zero probability of being selected. However, when the relationship between the sample frame and the target population is unknown, statistical inferences to the target population using confidence intervals may be inaccurate or entirely misleading. In online surveys the degree of sampling error is generally unknown unless the sample is drawn from an online panel or other frame with known size and characteristics. This information is rarely found in any consumer research and is rarely estimated, regardless of the data collection mode.

Online surveys are therefore subject to certain amounts of sampling error. Sampling error may be reduced in part by increasing the sample size. In response to this easy fix, online surveys and panels now have average sample sizes in the 400-600 range.

NON-RESPONSE ERROR

Internet researchers are confronted with many non-respondent problems that have elements both unique and common to those faced in telephone surveys. Spam filters stop many survey requests from reaching email inboxes. Internet users are often reluctant to participate in surveys because of time constraints. Additionally, potential respondents weigh the survey topic, survey length, and incentives in deciding whether or not to complete the survey. The net impact is that without adequate survey response and sample representativeness, non-response error will reduce validity and accuracy of results (Shaefer and Dillman, 1998).

Efforts to increase response rates and reduce non-response error will often include the use of multiple invitations, and the use of personalization in the contact email requesting completion of the interview. Sometimes however, even these techniques do not get results.

Exhibit 4.3 discusses increasing response rates.

When a population of interest is not adequately represented online or is particularly difficult to interview, consider a mixed-mode survey strategy to reduce non-response error. This may include a combination of e-mail and telephone, mail, or mall-intercept techniques.

Example: Many airline passengers making a connection in Cincinnati during July, 2009 encountered an interviewer in the terminal who was giving travelers a business card with online survey taking instructions and an online survey code. She requested that the traveler complete the airline satisfaction survey when they returned home or to their office. The contact was quick, novel and non-intrusive. Most travelers kindly accepted the card, but the actual follow through to completion would be low. Nonetheless, some respondents would feel committed and be recruited with relatively little effort.

EXHIBIT 4.3

INCREASING RESPONSE RATES

The variation in response rates for surveys is enormous, especially when interest and incentives are considered. Ryan Smith, co-founder of Qualtrics.com, relates his experience with three client surveys that differed greatly in their respective response rates. These three very different surveys provide insight into the types of variables that influence response rate:

1. The first survey consisted of a short 10-question survey entitled “What Do Women Want . . . For Valentine’s Day?” This somewhat whimsical survey was sent using a single e-mail blast (with no second communication) to a “random sample” of Internet users through an e-mail list broker. Recipients of the survey were offered the chance to win \$500 cash in a random drawing and in addition were promised a copy of the results. This combination of incentives plus a short, interesting survey produced an amazing 43 percent response rate.
2. A second e-mail survey, a very long academic survey of more than 100 questions, focused on developing a demographic, psychographic, and technological expertise profile of the online shopper. This survey measuring attitudes and behaviors was sent through the same panel broker to a random sample of “Internet shoppers.” Respondents were promised the chance to win \$500 cash in one of seven random drawings. The university sponsorship of the survey was identified in the cover letter that contained the professor’s name, contact information, and link to the survey. The response rate was 11 percent.
- A parallel paper and pencil survey was conducted for comparison purposes using a national sample provided by Experian, a provider of credit rating reports. This mail survey was implemented using three separate mailings (1) a pre-notification, (2) the survey, and (3) a follow-up reminder. The mail version produced a 20 percent response rate. Comparison of the mail and online survey results showed that demographic profiles were very different. This difference was attributed to the difference in sampling frames. Respondents to the mail sample were older, had different family structures and were more financially secure. However, demographic differences aside, the psychographic profiles related to online shopping were nearly identical.
3. A third survey sent to brokers by a leading investment firm resulted in a .002% response rate after two mail outs. Further follow up revealed that the potential respondents were a fast paced group of professionals too busy to be bothered with a survey.

Smith believes that five actions will greatly increase your online survey response rates:

- (1) make your survey as short as possible by removing marginal questions
- (2) make your survey as interesting as possible to the respondents
- (3) include an offer of incentives
- (4) stress group affiliations whenever applicable
- (5) use requests that focus on altruistic self-perception appeals (“I need your help”)

The single most important factor in reducing survey non-response is the number of attempts to make contact with each prospective respondent. While many studies have confirmed this fact, one of the more rigorous studies compared response rates for mail and e-mail surveys (Shaefer and Dillman, 1998). In this field study, respondents in the mail and e-mail treatment groups were contacted four times using (1) pre-notifications, (2) letters and surveys, (3) thank-you/reminder notes, and (4) replacement surveys. Results showed no statistically significant difference between the 57.5 percent response rate for the mail group, and the 58.0 percent response rate for the e-mail group. Email and mail methodologies were found to be similar in that individuals responded at the same rate.

With a little creativity and some additional technologies and software, respondents can be found and non-response error minimized. You can differentiate the number of surveys sent out, the number actually received by potential respondents, the number opened, and the number of surveys taken. While technological advances help the researcher to reduce non-response rates, it is clear that multiple factors are responsible for the decision not to respond.



MEASUREMENT ERROR

Measurement error is a result of the measurement process itself and represents the difference between the information generated on the measurement scale and the true value of the information. Measurement error is caused by factors like faulty wording of questions, poor preparation of graphical images, respondent misinterpretation of the question, or incorrect answers provided by the respondent.

Measurement error is troublesome to the researcher because it can arise from many different sources and can take on many different forms. Misinterpreting responses, recording responses incorrectly, or making poor inferences when reporting the data are all possible causes of measurement error.

In online surveys, technical issues can create measurement error. The size and resolution of the monitor, browser, operating system (Mac, Microsoft Windows, Android, Linux), and even web page color pallet may change the appearance of the survey. The formatting of the survey can also have an effect.

Researchers have for decades compared measurement error differences for the various modes of data collection. While differences do exist, online surveys have less error than traditional paper-and-pencil and telephone surveys. However, as will be discussed later, the differences between the less personal online surveys and the in-person qualitative research are far more extreme.

You can avoid many of the traditional measurement errors associated with transcription and recording of data by using electronic data entry. With Internet surveys, the survey as well as the analysis of results can be completed in real-time within hours. In one recent survey of programmers and software developers conducted by Qualtrics.com for Microsoft, 6,000 invitations were sent out with the promise of a \$20 Amazon.com gift certificate. Nine hundred completed surveys were received within 48 hours, and researchers were able to immediately see the results online.

To gain perspective on error potential, online studies may be completed in 24 hours, whereas paper and pencil mail studies may require four to ten weeks. Mail surveys must be prepared, printed, mailed, followed up with mail reminders, manually coded, manually entered or scanned into the database, analyzed and then compiled into a managerial report. These steps involve many participants with varying levels of expertise, and each may introduce error. Internet based surveys eliminate most of these steps and complete the research much more quickly and easily, and with fewer opportunities for error. No matter which mode of data collection you choose, you must address error control to assure quality results.



SUMMARY

This chapter focused on interviewing. First we examined the various types of information that can be obtained through interviews. We then considered communication as a means to obtain information from respondents and discussed the types of respondent interviews—structured-direct, unstructured-direct, structured-indirect and unstructured-indirect.

The next section introduced the concepts of inaccuracy and ambiguity as the major sources of response and non-response bias. Predictive and concurrent sources of inaccuracy were discussed in the context of respondent inability or unwillingness to respond. Methods of reducing non-response error were then discussed in the context of theories of survey response. Finally our discussion focused on how to reduce coverage, sampling, non-response and measurement errors in online surveys.

This chapter has stressed the need to improve the research process by reducing errors in the research process. New technologies continue to be developed, but each must be tested for sources of potential response error and compared to current modes of data collection, all this as researchers apply them to research projects.



5

Interviewing Modes: Personal - Call - Send

Now that you've reviewed the various methods of interviewing, you have to figure out which media strategy will be most effective for your survey. You can interview respondents **in person, by telephone, by mail, or by email and online surveys.**



PERSONAL INTERVIEWS

Personal interviews are face-to-face surveys where an interviewer asks questions directly to a respondent. The interviewer must get in touch with respondents, ask questions, and record answers. Whether they record answers during the interview or after it, the interviewer is responsible for recording clear, unambiguous, and correct information.

Even though face-to-face surveys cost more than mail and phone interviews, there are advantages to consider. They produce a lower nonresponse rate because the respondents are physically in a room with the interviewer. Personal interviews also yield more information. They can be longer and can include follow-up questions so you get more complete and accurate answers. Finally, interviewers have freedom to adapt questions to specific people and situations. This results in more complete information since the respondent's behavior can be factored into the final report.

Personal interviews, however, have limitations. As discussed in Chapter 4, time, cost, and bias are all struggles with face-to-face meetings. These challenges grow when interviewers are poorly trained. Because personal interviews are interactions between strangers, the interviewer will usually have little in common with a respondent. It's vital to have capable interviewers who can overcome natural bias and conduct a useful face-to-face interview.

INTERCEPT METHODS

While general personal interviews are effective at home and the workplace, contacting respondents on this individual level can be time-consuming and expensive. A good alternative for consumer studies involves the mall-intercept method. With the mall-intercept method, you station people at various points in a shopping mall and have them ask passersby for an interview. This approach works in any high traffic area. A predetermined sampling plan will help interviewers target respondents. Incentives such as money, gifts, or coupons will increase your response rate. Exhibit 5.1 discusses the advantages and disadvantages of the intercept approach.

Since this method is widely used, many malls have research facilities that can accommodate your survey team. These facilities often include videotape equipment, private interviewing rooms, food preparation areas for taste tests, and a variety of other resources.

For many research studies, data from the mall-intercept method will produce results comparable to other methods because mall-intercept respondents are regular customers at shopping centers. While they may be demographically dissimilar (older mall walkers and young teens hanging out after school), the average shopper can provide more specific brand- and store-oriented information than other respondents.

You can apply the principles of the intercept method to interviews at conferences, sales meetings, or other venues. You'll get the best research results when the population of interest is represented on site. Generally, research is best conducted in the context of the respondents' current activities: on site when the topic is about the business or when the purchase decision is being made. Respondents are best able to recall and discuss their experiences while the experience is happening, not days later during a survey.

David Kay (1997), a partner in Research Dimensions International, suggests there are five types of interviews for on-site research:

1. **Stream-of-consciousness interview.** This is a conversation with questions designed to elicit what the respondent is thinking and experiencing in relation to the research topic.
2. **Spontaneous reaction interview.** This relies on candid reactions from customers about their environment. Minimal prompts are used.
3. **Directed general-response interview.** This method asks general questions often directed to assess the effectiveness of strategy.
4. **Directed specific-response interview.** This interview determines why consumers feel as they do.
5. **Prompted reaction to execution elements.** This is designed to elicit response to specific elements. For example, an in-store taste test might include the question "Using a 5 point scale where 1 is poor and 5 is excellent, how would you rate the taste of China Sea brand Spring Rolls?"

EXHIBIT 5.1

PROS AND CONS OF INTERCEPTS

According to Katherine Smith (1989), intercepts have the following advantages:

1. They allow researchers to conduct visual, auditory and taste tests of ads, products and other physical stimuli.
2. They offer an opportunity to obtain immediate response.
3. They potentially provide more depth of response than non-face-to-face interviews.
4. Researchers can use equipment to analyze responses (for example, voice-pitch or eye movement tracking analysis).
5. A large number of respondents from a wide geographic area can be interviewed in a limited time.
6. Researchers can control the interviewing environment and supervise the interviewer.

Intercept studies are less expensive than door-to-door interviewing, because travel time and the “not-at-home problem” are eliminated. However, it is becoming increasingly difficult to locate people at home, and even more people are hesitant to let strangers inside.

Using the intercept, interviewing takes place where members of the population of interest are doing something related to what is being measured. For studying certain types of products or behaviors, the mall is a more realistic setting when a respondent is being asked to make choices. Finally, using certain sampling methods, the intercept procedure may give a better distribution of respondents.

Despite all these virtues, intercepts have limitations:

1. The customer may not reflect the general population.
2. The intercept is not well suited to probability sampling.
3. Respondents in a hurry may respond carelessly.
4. The interview time constraint is more severe with intercepts than with other personal interviewing methods.

The obvious advantage of on-site interviews is that the respondent is usually in a proper state of mind and has better task and product recall. In addition it is easier to contact the actual target group, making the response rates higher.

On-site interviews seem to produce more robust information. Using some form of incentive tends to increase overall response rates for personal interviews, as well as for other types of interviews. Incentives do not seem to influence the quality of the data collected.

Today's tablet computers access online surveys through WI-FI and high-speed data networks. These ultra-portable devices make intercept surveys logically easy and the online surveys are more interesting to potential respondents.

THE TELEPHONE INTERVIEW



For business to business and consumer research, telephone interviewing is generally as effective as personal interviewing for scope and depth of information obtained. In addition, when a telephone survey is conducted from a call center, supervision is better than in personal interviews.

Telephone interviews are a great option when you need to collect information quickly and inexpensively. Interviewers have personal contact with the respondents, which allow you to get clarification and more complete information from the interview. Plus, telephone interviews are often less costly than mail surveys, and they are much quicker.

Virtually all telephone interviews are structured-direct interviews (as discussed in Chapter 4). However, when the population of interest includes business decision makers, some research practitioners believe that you can get more information through telephone questionnaires than by conducting focus groups. For business people and consumers alike, it is frequently easier to get 10 minutes of telephone cooperation than to get a longer personal interview or attendance at a focus group. You can find respondents easily with a detailed database or online directory like LinkedIn.

A useful tool that increases telephone response rates is the pre-notification letter. A recent study of political telephone surveys showed a significant increase in response rates when the respondents were sent a pre-notification letter.

There is always the chance that a potential respondent will refuse to be interviewed. Telephone surveys are unique in that they allow the interviewer to respond to the potential respondent objections and try to turn a refusal into a completed interview. In his classic treatise on telephone surveys, Dillman (1978) identifies common reasons people give for refusals and suggests some possible responses the interviewer can give. These responses can help the researcher handle objections and refine their interviewing skills. These are shown in Table 5.1.

As a final form of refusal, it is well recognized that potential respondents self-screen through caller ID, leading to higher proportions of non-contacts. Little can be done about these self-screener other than attempt to gain cooperation through pre-notification and offers of incentives.

TABLE 5.1
POSSIBLE ANSWERS TO REASONS FOR REFUSALS

REASONS FOR REFUSING	POSSIBLE RESPONSES
Too busy	This should only take a few minutes. Sorry to have caught you at a bad time, I would be happy to call back. When would be a good time for me to call in the next day or two?
Bad health	I'm sorry to hear that. Have you been sick long? I would be happy to call back in a day or two. Would that be okay? (If lengthy or serious illness, substitute another family member. If that isn't possible, excuse yourself and indicate they will not be called again.)
Too old	Older people's opinions are just as important in this particular survey as anyone else's. In order for the results to be representative, we have to be sure that older people have as much chance to give their opinion as anyone else. We really do want your opinion.
Feel inadequate: Don't know enough to answer	The questions are not at all difficult. They mostly concern your attitudes about local recreation areas and activities, rather than how much you know about certain things. Some of the people we have already interviewed had the same concern you have, but once we got started they didn't have any difficulty answering the questions. Maybe I could read just a few questions to you and you can see what they are like.
Not interested	It's awfully important that we get the opinions of everyone in the sample; otherwise the results won't be very useful. So, I'd really like to talk with you.
No one else's business what I think	I can certainly understand, that's why all of our interviews are confidential. Protecting people's privacy is one of our major concerns, and to do it people's names are separated from the answers just as soon as the interview is over. And, all the results are released in a way that no single individual can ever be identified.
Objects to surveys	We think this particular survey is very important because the questions are ones that people in parks and recreation want to know answers to, so they would really like to have your opinion.
Objects to telephone surveys	We have just recently started doing our surveys by telephone, because this way is so much faster and it costs a lot less, especially when the survey is not very long, like this survey.

SOURCE: Reprinted from *Mail and Telephone Surveys: The Total Design Method* by Dillman, D. Copyright © 1978. This material is used by permission of John Wiley & Sons, Inc.

As with all modes of interviewing, telephone questionnaires benefit from the use of inducements or incentives—monetary or nonmonetary—to encourage potential respondents to participate. Incentives can be distributed in a variety of ways. They may be promised, they can be sent in advance with a preliminary letter when the mailing address of the potential respondent is known, or they may also be offered when the initial request for participation is refused. When used this way, it is known as a *refusal conversion incentive*.

The main purpose of incentives is to get a greater response rate and reduce non-response error. However, there are implications when using incentives. First, total cost will increase, although cost per response may decrease depending on how effective the incentive is. Second, data quality may be affected, leading to a positive or negative response bias. Third, sample composition may be affected, again with a positive or negative effect. Fourth, expectations of the interviewer and the respondent may be changed. Finally, the effort required by the interviewer may be affected.

The telephone interview can reach specific market segments when door-to-door interviewers cannot. In order for this mode of data collection to be worth the effort, there must be a high level of results. There are basic limitations with telephone interviews. For example, the limited time you can keep a person on the phone limits the number of questions and amount of information you can obtain, especially compared with alternative methods. There is also a bias in any sample of home telephone subscribers. Access to residents through a published directory is also a problem: unlisted numbers are more than 25 % nationally and more than 50 % in large cities. They either have an unlisted number or have moved and directories don't have current information.

Another problem for telephone researchers is that fewer people have home "landlines." Currently about 1 in 5 homes do not have a landline telephone, but rely instead on cell phones or computer based phone services (SIP phones, Skype, etc.). This problem is more acute for younger age groups.

Sample control and interviewer performance are also problems with telephone interviewing. Interviewers will sometimes give up on harder-to-reach respondents. This can increase non-response error in surveying the original sample. Simply adding another sample doesn't correct inaccuracies in the original sample.

As much as the interviewer can interact and to the same degree control the interview, there are aspects of telephone interviews that are beyond the interviewer's control. A big factor in any telephone interview is the interviewer's accent. The interviewer's accent makes the respondent more or less cooperative. For example, respondents react immediately to regional dialects (New England, the Deep South) and cultural dialects (Hispanic, Asian, Indian). Some respondents will have difficulty understanding a different accent. When there are communication problems, more people will refuse to participate.

On the other hand, some accents increase curiosity (British, Irish) and can actually increase response rates. Respondents who are concerned with an interviewer's accent sometimes have preconceived biases against the interviewer and the survey. Accent-free interviewing is a safe way of eliminating one source of nonresponse and bias. At the very least, if a study is regional in nature, have interviewers from that region to reduce nonresponse and bias.



THE MAIL INTERVIEW

In years past, mail interviews were very popular as a versatile and cost effective means of surveying. A questionnaire may still be prepared and mailed to any location at the same cost per person: the cost of preparing the questionnaire, addressing the letter or card sent, and the postage involved. In mail interviews, respondents remain anonymous unless a name is requested.

Timeliness of responses is critical in mail surveys. If the time given is reasonable, say one or two weeks, stating a deadline should not adversely affect the response rate. Stating such a deadline may encourage the potential respondent not to postpone the task indefinitely.

Table 5.2 summarizes the process of conducting a mail survey. The principles are applicable to personal interview, telephone, and online questionnaires. When designing a survey, the researcher must consider issues that can affect response rate and data quality, including those shown in Table 5.2.

TABLE 5.2
SELECTED DIMENSIONS OF A MAIL SURVEY AND ALTERNATIVES FOR CHOICE

DIMENSION	ALTERNATIVES
Preliminary notification	Letter, postcard, telephone call, e-mail, none
Reminder	Letter, postcard, telephone call, e-mail, none
Cover letter	Separate item, included as first page of questionnaire Personalized, non-personalized Color of ink in signature (black, blue)
Length of questionnaire	Number of pages
Format of questionnaire	Print front, print front and back, individual stapled pages, booklet
Type of outgoing postage	First-class stamp, first-class metered, bulk, nonprofit (where appropriate)
Return envelope postage	First-class stamp, metered, first-class permit, none
Inducements	Monetary (amount), nonmonetary (pen, silver jewelry, trinkets of all types), contribution to charity, none when given (prepaid, promise to pay)
Coding with a number	Yes (on questionnaire, on return envelope), none
Anonymity/Confidentiality	Yes, no
Endorsement	Yes, no

INCREASING RESPONSE RATES

As discussed in previous chapters, the most serious problem with mail surveys is nonresponse. Typically, people indifferent to the survey topic will not respond. It is usually necessary to send additional mailings (i.e., follow-ups) to increase response. However, even with added mailings, response to mail questionnaires is generally a small percentage of those sent; the modal response rate is often only 20 to 40%. You can increase response rates by contacting respondents before the survey. This is called a preliminary notification or contact and can happen by letter or telephone call, and includes actual or promised monetary or non-monetary (a gift) inducements.

Albaum and Smith (2012) suggest that six= general motivations drive survey response. Exhibit 4.2, as presented in the previous chapter, suggests that response rates increase (and non-response bias decreases) by using specific motivational techniques and incentives.

Response rates are affected by several factors: questionnaire format and length, survey sponsorship, endorsements, type of postage, personalization and type of cover letter, hand addressed personalized envelopes, anonymity and confidentiality, deadline date of premiums and rewards, perceived time for task, and the use of a follow-up reminder. Follow-up and monetary or non-monetary incentives are the most effective techniques, but each of the others has merit and will be discussed individually.

COVER LETTERS

Cover letters are included as the first page of a questionnaire as shown in Exhibit 5.2. If you are emailing an invitation to a questionnaire, the cover letter should be much shorter. Perhaps limit it to only one short paragraph. There is no evidence that any alternative is universally better than another within each dimension. The best rule of thumb is to use courtesy and common sense. Further discussion of these will be found in the many review articles and studies published in such sources as the *International Journal of Market Research*, *Public Opinion Quarterly*, in the book by Bourque and Fielder (2003b), and in the classic works of Dillman (1978, 2007).

ENDORSEMENTS

Endorsements are an intriguing dimension of survey research. An endorsement is an identifying sponsorship that provides “approval and support for a survey from an individual or organization.” An endorsement can be included as a company logo or a person under whose signature the letter is sent. Unknowingly, an endorsement may have a positive, neutral, or negative effect, depending on how the endorser is perceived by a potential respondent.

Rochford and Venable (1995) found higher response rates when respondents were associated with the external third party than when there was no endorsement. In addition, endorsements by locally known individuals got higher response rates than national but unfamiliar endorsements.

EXHIBIT 5.2

EXAMPLE OF A COVER LETTER

My colleague, Dr. David Boush, and I are engaged in a study of consumers' use of financial services. The broad objective of this study is to gain an understanding of how people use banks and similar financial organizations, and what characteristics influence their behavior with such companies. The Bank of Anytown has agreed to cooperate with us in this endeavor by assisting us in data collection.

The enclosed questionnaire is being sent to a large number of the customers of the Bank of Anytown, each of whom has been selected by a random process. I would greatly appreciate your completing the questionnaire and returning it in the envelope provided. Please note that you do not have to add postage to this envelope.

All individual replies will be kept in strictest confidence. No person associated with The Bank of Anytown will see any questionnaire. Only aggregate results will be shown in our write-up of the results. No person other than Dr. Boush, myself, and our research assistant will ever see a completed questionnaire. If you do not wish to participate in this survey simply discard the questionnaire. Completing and returning the questionnaire constitutes your consent to participate.

The code number at the top of the questionnaire will be used only for identifying those people who have not responded so that he or she will not be burdened by receiving a follow-up mailing. After the second mailing has been made, all records that match a number with a person's name will be destroyed.

The success of this project depends upon the assistance of persons such as you. If you have any questions, please call me at 503-346-4423.

Sincerely,
Gerald Albaum
Professor of Marketing

Since people often respond to mail questionnaires because they have strong feelings about the subject, biased results are to be expected. One way to measure this bias is to conduct a non-response validation. Contact a sample of the nonrespondents by another means (telephone interview works best) and compare the sample results.

VARIATIONS ON MAIL INTERVIEWS

There are a lot of variations on the mail interview. Some are the warranty card, hand delivered questionnaires, newspaper/magazine surveys, the fax back survey, survey on the back of checks, website polls (a one question survey), and, of course, the email survey.

Warranty cards ask for basic information. They have simple questions about where the item was purchased, what kind of store or outlet sold it, when it was purchased, and other variables such as demographics and lifestyle. Although warranty cards do not provide detailed information, they have high response rates and are useful for creating a customer database.

WEB AND EMAIL INTERVIEWS



The use of online surveys has increased as more and more homes have Internet access. Web and e-mail surveys are a driving force in marketing research. As of 2011, more than 80% of all U.S. households have a computer in their homes and of these 92% have Internet access.

The Internet has grown more rapidly than any other modern technology. Even though some demographics still aren't widely represented in online surveys (including the elderly, single mothers, African Americans and Hispanics, and lower-income individuals), most groups like company employees and students have nearly 100% internet access and check e-mail on a daily basis.

We live in an increasingly virtual world. There is a huge upswing in Internet purchases for airline tickets, CDs, DVDs, books, computer software, hardware, and systems. Online customers are a good resource for survey information.

You can benefit from online surveying by eliminating mailing and interviewing costs and reducing turnaround time for study completion. As a result, online marketing research is so widely accepted that online research accounts for as much as half of all marketing research revenue. Online research is growing. Researchers now operate in a much faster-paced environment than ever before. The pace will only increase as more consumers shift to an Internet-based world.



The benefits of choosing Internet-based surveys include the following:

- Data collection is faster compared to manual methods.
- Respondents choose their own schedule for completing a questionnaire.
- Surveys can easily incorporate complex choices throughout the questionnaire.
- Questionnaires can easily display a variety of graphics and directly relate them to questions.
- Researchers can accurately measure response times to key questions.
- Errors in data are less likely, as data encoding is automatic.

Depending on what data you are looking for, a variety of methods can be used for your surveys. Table 5.3 compares the success rates of the different methods.

TABLE 5.3

COMPARATIVE EVALUATION OF ALTERNATIVE SURVEY METHODS OF DATA COLLECTION

CRITERIA	TELE-PHONE CATI	IN-HOME INTERVIEWS	MALL-INTERCEPT INTERVIEWS	CAPI	MAIL SURVEYS	MAIL PANELS	INTERNET/WEB
Flexibility of data collection	Moderate to high	High	High	Moderate to high	Low	Low	Moderate to high
Diversity of questions	Low	High	High	High	Moderate	Moderate	Moderate to high
Use of Physical Stimuli	Low	Moderate to high	High	High	Moderate	Moderate	Moderate
Sample Control	Moderate to high	Potentially high	Moderate	Moderate	Low	Moderate to high	Low to moderate
Control of data collection environment	Moderate	Moderate to high	High	High	Low	Low	Low
Control of field force	Moderate	Low	Moderate	Moderate	High	High	High
Quantity of data	Low	High	Moderate	Moderate	Moderate	High	Moderate
Response rate	Moderate	High	High	High	Low	Moderate	Very low
Perceived anonymity of respondent	Moderate	Low	Low	Low	High	High	High
Social desirability	Moderate	High	High	Moderate to high	Low	Low	Low
Obtaining sensitive information	High	Low	Low	Low to moderate	High	Moderate to high	High
Potential for interviewer bias	Moderate	High	High	Low	None	None	None
Speed	High	Moderate	Moderate to high	Moderate to high	Low	Low to moderate	Very high
Cost	Moderate	High	Moderate to high	Moderate to high	Low	Moderate	Low

SOURCE: From Malhotra, N., *Marketing Research: An Applied Orientation*, 4th edition, Copyright © 2004. Reprinted with permission of Pearson Education, Inc., Upper Saddle River, NJ.

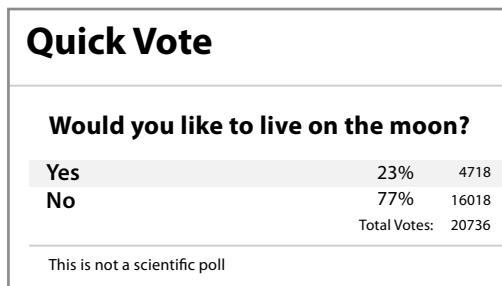
PROBABILITY AND NONPROBABILITY SURVEY APPROACHES

A variety of approaches are used to recruit respondents online. Surveys based on probability samples, if done properly, provide for bias-free sample units and permit the measurement of sampling error. However, many research studies ignore issues of sample, or validity and accuracy of the results. The question becomes, what is required for effective online research?

ONLINE NONPROBABILITY SURVEYS

Nonprobability samples are generally conducted for entertainment purposes or to create interest in a website. As an example of the website interest survey, Figure 5.1 shows a CNN.com “Quick Vote” survey, which includes a link to the online results page.

FIGURE 5.1
WEB SITE INTEREST SURVEY



Source: <http://edition.cnn.com/>

Many non-probability surveys are well recognized, one being the ACNielsen BASES (for test marketing). In ongoing non-probability surveys, panels are continually redefined to match the demographic characteristics of telephone and mall intercept surveys. The parallel telephone and mall intercept studies can provide weighting to proportionately adjust online samples to reduce selection bias.

ONLINE PROBABILITY SURVEYS

Probability-based surveys allow the researcher to estimate the effects of sampling error and infer hypotheses about the target population. Coverage errors, non-response errors, and measurement errors still apply and may reduce the ambiguity of the data. Online probability samples generally result where e-mail surveys are sent to comprehensive lists that represent the target population. When the target population is large, random samples from the list will be used. For smaller populations such as employees of a company, the survey may be sent to the entire population, thus representing a census.

Where the target population of interest is visitors to a given website, pop-up surveys can randomly poll visitors during their visit to the site. In this case, the target population is well defined and the sample element has a known nonzero probability. The Qualtrics.com Site Intercept tool allows you to control all pop-up and pop-under content without the assistance of an IT department. Surveys, white papers,

and messages can be distributed based on a variety of conditions. For example, you could administer a specific survey about kitchen appliances to a visitor who viewed pages dealing with major appliances (stoves and refrigerators) rather than counter-top appliances (mixers and waffle irons).

MIXED MODE STUDIES

Mixed-mode designs present respondents with a choice of responding via online survey or via another mode. Respondents contacted by mall intercept, telephone, mail, or other probability-based sampling mechanism, are given the opportunity to respond in several modes, including online. It is common for businesses or individuals to prefer the online survey format. Additionally, non-probability based approaches like Twitter can be used to recruit specific groups of respondents to match the target population.

STRATEGIES OF DATA COLLECTION

As you decide on a survey strategy, you should focus on the total package rather than any single technique. The total package includes steps before and after contact with respondents. You have to consider all aspects of a study before deciding on a research design. This is the essence of a total design. Pretesting and conducting pilot surveys are part of this package.

PRETESTING AND PILOT SURVEYS

There is a difference between a **pretest** and a **pilot** survey. A **pretest** is about the development of a questionnaire or experiment. The pretest asks, does it work? In contrast, a **pilot** survey is a small-scale test of what the study will be, including all activities that will go into the final survey. Pretesting a questionnaire answers two broad questions:

1. Are we asking “good” questions?
2. Does the questionnaire flow smoothly, and is the question sequence logical?

Pretesting does not ensure that the questionnaire (or even the survey) will be valid. A general rule of thumb for most surveys is that a pretest of about 30 to 100 interviews is adequate, provided this covers all subgroups in the main population. The pilot study is designed to test how the survey fits together. In fact, the pilot can help determine the size of the required sample for the actual survey.

Both pretesting and pilot surveys can provide information helpful in managing potential research error. In the long run, pretesting and piloting make a survey more efficient and effective.



SUMMARY

This chapter first examined the different ways you can conduct interviews. We discussed the personal interview, the telephone interview, the mail interview, and online e-mail interview.

The objective of marketing research is to understand the consumer and apply information and knowledge for mutual benefit. Technological advances in online marketing research provide the ability to monitor customer knowledge, perceptions, and decisions. This generates solutions tailored to customer needs. In this chapter we have stressed the advantages as well as the caveats associated with online research. Perhaps the biggest mistake the market researcher could make would be to view the selected data collection method from only a time- and cost-saving perspective. As new technologies continue to be developed, they are tested for applicability in marketing research settings, and judged for suitability in identifying the needs and wants of today's consumers.



6

Qualitative Research and Observation

As we discussed in Chapter 4, you can get information from respondents by either asking questions or observing behavior. We went on to discuss structured-direct and unstructured-direct interviewing methods. In this chapter, we will discuss qualitative interviewing methods such as focus groups, projection, and depth interviewing. We will also discuss indirect interviews, special types of unstructured-direct interviews, and observational methods for obtaining information from respondents. We will conclude the chapter with an assessment of direct and indirect research techniques.

FOCUS GROUPS

Perhaps the most widely used indirect interview is a **focus group**. As we mentioned in Chapter 2, a focus group doesn't use the traditional question-and-answer format. Instead, a moderator conducts a discussion of about 8 to 12 participants. Focus groups are invaluable to exploratory research because they help you determine what consumers want, generate ideas, and test comprehension of promotional materials.

Raymond Johnson (1988) conducted an extensive review of focus groups, identifying four distinct categories. Each reflected an adaptation of an interviewing technique to solve one of four basic research problems. The focus group types are as follows:

- **Exploratory studies:** Researchers find out what consumers want and need.
- **Concept reaction studies:** Potential customers react to a concept still in its formative or experimental stage.
- **Habits and usage studies:** Actual consumers describe detailed personal experiences in using a particular product or service.
- **Media Testing:** Respondents interpret the message of a rough media strategy. They talk about their understanding of the message and evaluate whether or not they find it credible, interesting, and emotionally involving.

Why do focus groups work? One view is that clients are provided with a gut-level grasp of their customers. They learn about customers' self-perceptions, desires, and needs. Focus groups are not just for intellectual comprehension of consumers; they place clients in the customers' shoes. Such groups allow clients to see and feel how their customers think and react.

Some guidelines and questions that may assist in observing focus groups more effectively are discussed briefly in Exhibit 6.1.

One critical aspect of a focus group's success is the moderator. The moderator's job is to focus the group's discussion on the topics of interest. Thus, the moderator needs to explain the format and function of the group. He/she must establish a rapport and introduce each topic. Once the respondents are comfortable, the moderator needs to keep the discussion on track while influencing how the discussion proceeds in an unbiased manner. A moderator has done a good job if the group members talk with each other, and not with the moderator.

When your focus group involves recruiting professionals (doctors, engineers, bankers, etc.), there are some unique implementation issues. You have to pay special attention to recruitment, type of compensation or gratuity, convenience of the facility to be used, and the moderator. Moderators in professional focus groups are authorities on research in the field.

Focus groups don't always need to be in-person interactions. They can be conducted by telephone or over the Internet by use of a conference call. In this approach, respondents may be recruited from across the country and told to call a toll-free number at a certain time to participate. Simon (1988) listed some of the advantages of this approach:

1. Groups can have tremendous geographic diversity.
2. Travel costs can be virtually eliminated.
3. Recruitment is easier because you do not ask a respondent to spend an evening traveling to, sitting in, and returning from a facility.
4. Mixed groups (on any dimension) are not a problem.
5. Bad weather generally has no effect on a group session.
6. The information from a telephone interview is clean, concise, and to the point.
7. Overbearing respondents can be "handled" (dropped from the call) without disrupting the group.
8. Concept testing is easy.

One disadvantage of the telephone focus group is that you lose the ability to observe behavior. However, with technological help, you can now view focus groups live without traveling to the geographic areas where they are held. With this possibility of preserving non-verbal communication (observable behaviors), focus groups are becoming global. You can capture and interpret nonverbal information such as body

EXHIBIT 6.1

OBSERVATION OF FOCUS GROUPS BY CLIENTS

As an observer, a client should be cognizant of certain things as he or she observes the dynamics of a focus group in the “back room” from behind a one-way mirror. According to Judith Langer (2001), a client should consider the following:

1. Determine your overall impression of the people in the group by looking at their sophistication level, appearance, and the way they express themselves.
2. Do the respondents' reactions support your assumptions? A way to assess whether the people are atypical or less than fully honest is to have outside data.
3. Are there segments that seem to exist in the focus groups, perhaps based on psychographics?
4. Are there patterns that emerge after several groups? Watch out for making conclusions after just one session. Look for variance! Do not count numbers.
5. A single comment by a respondent may be quite insightful.
6. Look at how people say things, not just what they say. Nonverbal communication can be valuable in interpreting the verbal responses.
7. If a new product or product concept is involved, are the respondents enthusiastic or are they neutral about it?
8. Although certain statements by respondents may appear to be complimentary, they may not really be. This is known as a false positive and is something to be avoided.
9. Be aware of any contradictions that arise between what respondents say and what they report as behavior.
10. Are respondents open to changing their minds, given other information?
11. After the session, talk with the moderator and ask him or her to put the responses in perspective. The last suggestion may be difficult for a client to accept. Never take what is said as being personal. Forget about ego and company politics.
12. Join the participants of the focus group (after the focus group script is ended). Seeing and hearing consumers up close has an impact that no set of data and no written report alone can have. It makes the abstract real because it is human and individual.

language, voice inflection, facial expression, and interactions between people. These observations are critical to an accurate portrayal of focus group interactions (Miller, 1994).

INDIRECT INTERVIEWS AND QUALITATIVE RESEARCH

You can obtain indirect information in several different ways. Most of these techniques employ the principle of **projection**. You give respondents an ambiguous situation and ask them to describe it, expand on it, or build a structure around it. Respondents will build their own stories, projecting personal characteristics, wants, and opinions into the situation through their responses.

Projection techniques include word association tasks, sentence completion tests, and interpretation of pictures (see Table 6.1). These techniques are widely used for comparing products such as cars, soap, gasoline, fashion brands, and food. Projection techniques can stimulate a relaxed interview but are designed to bypass people's built-in censors, so they are useful in gathering information about sensitive or threatening topics.

TABLE 6.1
CLASSIFICATION OF PROJECTIVE TECHNIQUES

TECHNIQUE	RESPONSE REQUESTED OF SUBJECTS
Construction	To create a story based on a stimuli presented
Ordering Item preference test	To order stimulus items by preference
Expressive techniques	Play a role; draw a picture of a person doing something; describe a character in a simulated situation
Association Word-Association test	To reply to a stimulus with the first word, image, or percept that comes to mind
Completion Sentence-completion test	To complete incomplete expressions, images, or situations

Most indirect interviews give the interviewer flexibility in questioning the respondent, so that they may pursue more complete information. Indirect interviews, therefore, are neither fully structured nor fully unstructured; they utilize both types of questions. Within the marketing research community these techniques constitute *qualitative research techniques*.

THE THIRD-PERSON TECHNIQUE

The simplest way of obtaining information through indirect questioning is to ask a respondent the view of an unnamed neighbor. This permits the respondent to project his or her own views without feeling social pressure to give an "acceptable" answer.

An early study on instant coffee by Mason Haire (1950) used this technique. This study was conducted when instant coffee was first introduced. The purpose was to determine consumers' attitudes toward

instant coffee in general by comparing Nescafe, a brand of instant coffee, to Maxwell House, a brand of drip grind coffee. A questionnaire with direct questions asked things such as "Do you use instant coffee?" and (if "No") "What do you dislike about it?" The majority of the unfavorable responses were a generic, "I don't like the flavor." However, blind taste tests suggested that this wasn't necessarily true. The response was probably due to a stereotype rather than the true reason.

Using third-person techniques, respondents were asked to describe the housewife shopping for either “Nescafe instant coffee” or “Maxwell House coffee (drip grind).” This indirect approach found a different reason. The woman buying instant coffee was characterized as being lazy, unorganized, a spendthrift, and a worse wife than the woman shopping for the traditional coffee. These imputed characteristics were projected feelings toward instant coffee from the respondents.

WORD ASSOCIATION TESTS

Everyone has done a word association test before. Someone says “warm” and you respond with the first word that comes into your head. Word association tests present a series of stimulus words to a respondent who is asked to answer quickly with the first word that comes to mind. The respondent, by answering quickly, presumably gives the word that he or she associates most closely with the stimulus word.

Word association tests are simple and easy to use. They offer powerful insights into the perceptions and associations related to the concepts being tested.



Word clouds can be generated as part of Qualtrics text analytics.

SENTENCE COMPLETION TESTS

Sentence completion tests are similar to word association tests. The beginning phrase of a sentence (sentence stem) is read to the respondent, who is asked to complete the sentence quickly and with the first thought that comes to mind. Recognizing that people may react in more than one way to a sentence stem, participants are asked to fill in the sentence several times rather than once. This gives a more complete picture than just one answer would.

Sentence completion tests provide a top-of-mind association between the respondent and the topic/product/subject being investigated. This data is easy to collect, but the differences between groups and the interpretations of their comments make accurate perspectives difficult to obtain.

Example: A sentence completion in a study of automobile buying was used to probe the motivations of automobile buyers and thereby provide a sounder basis for advertising. Analysis of selected responses of men and women illustrates how inferences of motivational influences can be drawn through the use of this technique (Newman, 1957, pp. 227–228).

Sentence stem: When you first get a car . . .

Woman's responses:

- “. . . you can't wait till you drive.”
- “. . . you would go for a drive.”
- “. . . you would take rides in it, naturally.”
- “. . . you would put gas in it and go places.”

Men's responses:

- “. . . you take good care of it.”
- “. . . I want to make darn sure it has a good coat of wax.”
- “. . . check the engine.”
- “. . . how soon can I start polishing it.”

Women's responses indicated that for them a car is something to use and that pride of ownership stresses being seen in the car. For men a car was something for which they should be protective and responsible. Their emphasis was on examining the car and doing things to it. Men appeared to feel closer to their car and regarded it as more of a necessity than women did.

THE DEPTH INTERVIEW

The unstructured, informal, one-on-one interview in marketing research is referred to as a depth interview. Depth interviews can be used to explore the underlying predispositions, needs, desires, feelings, and emotions of the consumer toward products and services. If used effectively, depth interviews produce the detail necessary to provide accurate and understandable qualitative information about the research problem (exploratory studies).

Depth refers to the uncovering of underlying motivations. When conducting depth interviews, the key is to ask questions that reach the depth required to understand the underlying relationships and motivations.

There are three distinct research situations where depth interviews can be used (Kates, 2000):

1. Depth interviews are useful in exploratory research to obtain background information.
2. Depth interviews may be used as the sole research method for hard-to-reach groups or when focus groups are not feasible. Obviously, results normally cannot be statistically significant, but they can be projected to the population if the interview base is large enough.
3. Depth interviews can obtain information on a subject without being biased by the group dynamic that often occurs in a focus group.

When conducting in-depth interviews, it is important to use empathy in understanding and appreciating someone else's beliefs and behaviors. People often forget to include empathy in their studies. Specific guidelines for conducting empathetic interviews include the following (Lawless, 1999):

1. The researcher needs to imagine himself/herself in the respondent's situation and must listen to the respondent fully.
2. Do not be hindered by the discussion guide; react and improvise as needed.
3. Ask open-ended, non-leading questions that start with how, what, and why.
4. Avoid self-referencing by setting aside thoughts, preconceptions, and interpretations.
5. Challenge generalizations by asking for specific examples.
6. Probe non-judgmentally to understand the person's beliefs, feelings, and behaviors.
7. Let the respondent reveal himself/herself through personal stories.

The next section demonstrates a depth interviewing technique called means-end analysis, which focuses on discovering how product attributes/features are perceived and relate to the benefits and values that motivate the use or purchase of a product.

MEANS-END ANALYSIS

Means-end analysis is a one-on-one interviewing technique that uses laddering and the means end chain. It allows you to identify the connections people make between product **attributes** (the means of deriving value), the **benefits** they get from those attributes (the consequences), and the **values** or end state that underlie the desire to achieve the consequences (the ends). The premise is consumers make product attribute decisions, selecting those attribute packages that produce their desired benefits or consequences and that are consistent with their achieving, fulfilling, or identifying with specific personal values.

EXHIBIT 6.2

DECISION MAKING ELEMENTS IN MEANS-END ANALYSIS

ABSTRACT

VALUES

The Driving Force of why the buyer wants the product or service.

TERMINAL VALUES

Internal: How one views oneself: Self Esteem, Security.

INSTRUMENTAL VALUES

External: Makes me feel more important or more accepted.

BENEFITS – CONSEQUENCES:

The desired positive results that are explicitly communicated verbally or visually by the product or service brand.

PSYCHO-SOCIAL-EMOTIONAL CONSEQUENCES

The social consequences of a decision, such as having more friends, having more fun, being more attractive to others, etc.

FUNCTIONAL, ATTRIBUTE CONSEQUENCES

The product or service use related consequences like saving money, not having to clean as often, etc.

ATTRIBUTES-FEATURES

The message elements communicated about the characteristics of the product or service brand.

ABSTRACT CHARACTERISTICS

The abstract attributes of the product or service such as smell, flavor, or attractiveness.

PHYSICAL CHARACTERISTICS

The physical attributes of the product or service, including size, color, performance metrics, or time and effort saved.

CONCRETE

Laddering interviews employ structured dialogues (Exhibit 6.2). The interviewer moves up and down the means-end chain, identifying components and connections within the individual's hierarchical value structure. This interview focuses on eliciting the strength and valence (+/-) of linkages between product attributes, product benefits, personal benefits, and personal values. The interviewer usually asks questions like "Why is that important to you?" or "What do you gain from having that characteristic?" Interviews typically last between 45 and 90 minutes and are recorded for analysis.

EXHIBIT 6.3

METHODS FOR ELICITING BRAND ATTITUDES

A variety of methods can be used in marketing research to elicit brand attitudes:

- **TOP-OF-MIND IMAGING.**

The respondent gives positive and negative associations for the brand or product category, along with reasons why the characteristic is viewed that way. This line of questions uncovers the attributes and consequences that distinguish the characteristic.

- **GROUPING SIMILAR BRANDS.**

Grouping identifies similar and dissimilar brand groupings within a product category and the reasons for this perceived similarity or dissimilarity. The primary reasons, most important attributes, and most representative brands are identified and attributes and consequences are laddered.

- **CONTEXTUAL ENVIRONMENT.**

The usage context for a brand or product can be described either as physical occasions (place, time, people), or need state occasions (relaxing, rejuvenating, building relationships, feeling powerful, reducing stress, and getting organized). A brand or product is associated with a usage context.

- **PREFERENCE, USAGE, SIMILARITY AND DISSIMILARITY.**

Comparing brands based on personal preference or usage is commonly used to distinguish between brands. Similarity and dissimilarity groupings also provide a direct method of distinguishing between brands. Questions of why Brand A was grouped differently or ranked higher than Brand B produce elicitations of attributes and consequences.

- **TIMING OF PURCHASE OR CONSUMPTION.**

Timing issues are often related to product or brand choice and usage. For example, a respondent might be asked to identify products used for relief of a stuffy nose into several stages like onset, full-blown, and on-the-mend, or daytime and nighttime. Then the respondent would relate which brands were preferred for each time-related stage.

- **USAGE TRENDS.**

Dialogues about past and expected future usage of a brand help to elicit attributes and consequences that lead to different usage patterns. For example, respondents may be asked, "Will this brand be used more often, less often, or about the same as you have used it in the past?" Then, reasons for increased, decreased, or unchanged usage are discussed.

- **PRODUCT OR BRAND SUBSTITUTION.**

Product and brand substitution methods elicit the degree of similarity of perceived attributes and consequences associated with usage. When questions are asked about the degree of substitutability, attributes and consequences are discovered that inhibit or promote substitution (attributes or consequences that need to be added or removed for substitution or trial to occur.) The respondent can first sample or be given a brand description, followed by questions like: how likely would you be to

substitute (name of the new brand) for your current brand for this occasion—Why is that?

- Alternative usage occasions.

Alternative uses are presented to determine if and why the brand is present or absent from the choice set. Questions might be phrased to ask: why would you consider using Brand A for this occasion, or what is keeping you from using Brand A for this occasion now? Both positive reasons why a brand fits a new occasion and negative reasons why it does not fit can be elicited and laddered.

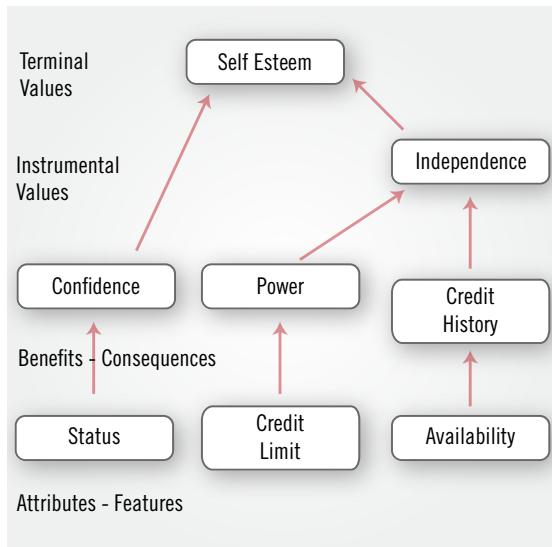
Adapted from by Reynolds, Dethloff, and Westberg, 2001, and Reynolds and Whitlark, 1995

EXHIBIT 6.4

HIERARCHIAL VALUE MAPPING OF A BANK CREDIT CARD

Alpha-Beta Bank is issuing a new credit card and has initiated a research study to understand the market. Focus groups of credit card users provided information about choice decisions and usage by responding to the following questions:

- Why do you use credit cards?
- How do they benefit you?
- What differences are there between credit cards?
- What is your least favorite credit card and why?
- What specific things did you dislike about this card?
- Have you had negative experiences that affect your card preferences?
- Under what conditions would you reject sources for a card?
- How does your preferred card affect your life?
- How does this card make you feel as a consumer?
- What does this preferred card do for you that the rejected cards don't?
- During what period of your life are you most likely to need these services?
- During which period has it most benefited you? Why?
- Describe the best personal experience you have ever had concerning credit cards.
- How has that experience changed your life?
- Do you seek out similar experiences today?
- How would you describe a card that could help you achieve this?



Nine attributes were found to be critical in selecting a new card: no annual fee, status, low interest rate, added value features, acceptance, credit limit, ability to carry a balance, location of the sponsoring bank, and availability.

These attributes were found to be linked to 12 benefits (consequences) that were perceived as part of card usage: not feeling cheated, independence, convenience, dependability, saving money, financial responsibility, freedom, establishing a credit history, power, security, supporting the community (local card), and confidence.

Finally, four distinct sub-hierarchies were found, each linked to a terminal value that stressed a different set of attributes and consequences: “Providing for the Family,” “Superior Quality of Life,” “Peace of Mind,” and “Heightened Self-Esteem.” The hierarchical linkages for heightened self esteem is shown above.

Laddering first focuses attribute identification, and then on both the positive and negative linkages between attributes and consequences that are most important in distinguishing and choosing a brand. This laddering of the reasons that underlie a decision provides a much deeper understanding of the consumer than does a traditional “ratings survey” of product attributes.

Exhibit 6.3 identifies a series of approaches that might be used to discover the attributes that are most important in distinguishing between brands. In practice, several different methods may be used to capture a full range of meaningful distinctions between a brand and its competitors. For example as in Exhibit 6.4, a laddering interview might start with top-of-mind imaging to understand general product-category beliefs, then focus on brand-related specifics by asking about the usage context (contextual environment), and finally focus on alternative usage occasions. Other tools, such as a worksheet might also be used.

The advantage of the benefit chain is that it is relatively easy to administer without a highly sophisticated interviewer. The only key decision is when to stop probing.

OBSERVATION

One final method for collecting qualitative information is through observation. Observation is used to obtain information on both current and past behavior of people. Because people aren't always honest

or aware of their behavior, it is often more accurate to observe subjects' behavior, rather than have them report behavior. Of course, you can't observe past behavior, but you can find the results of such behavior through a case study or customer case research. This exploratory qualitative method focuses on tracing the stories of people, circumstances, decisions and events leading to actual purchase decisions through one-on-one interviews (Berstell & Nitterhouse, 2001). The case study approach is for determining any underlying patterns and may uncover unforeseen problems and unexpected opportunities. Some key characteristics of this approach are (Berstell, 1992):

- Case studies uncover motivations through demonstrated actions, not through opinions.
- Studies are conducted where a product is bought or used.



- Observation and documentation are used to stimulate questions and corroborate responses.
- Case studies can access multiple decision makers because they are done on site.
- Case studies require researchers who are essentially “market detectives” rather than “census takers.” Such detectives must have the skills necessary to continue asking “why” questions until answers emerge that show and explain motivations.

Even though observation can be used alone, it may be used in conjunction with other means. It is a method that should always be considered in research investigations that deal with behavior. In some circumstances, observation is the only means of collecting the data desired. Respondents often cannot and sometimes will not report information accurately. For example, over-reporting of brand usage for well-established brands generally reflects a “halo effect,” an upward bias reflecting the prestige the respondent associates with the use of a premium brand. Many companies, for example, have found that respondent reported brand purchases vary widely from the actual brand of product that the consumer has on hand.

There are some problems in using observation. One concern is with the selective nature of perception: what people observe depends upon their backgrounds and depends upon who is doing the observing. The second potential problem is that the behavior being observed may not be representative. What has been observed may be the “exception” rather than the rule. That is, the behavior observed may be a unique incident. Of particular concern is whether those being observed know they are being observed. If a person is being observed, or observed behavior is committed in the presence of others, that behavior may not be a “true” behavior. Thus, the situation and setting are critical to the observation experience.

THE AUDIT

Audits of both distributor inventories and consumer purchases are widely conducted to understand purchase patterns. The distributor audit is the more widely known of the two. The commercially available Nielsen Retail Index, an audit of retail stores was described in Chapter 2. As indicated there, data from audits available through Nielsen and other research agencies provide estimates of market size, market share, geographic pattern of the market, seasonal purchasing patterns, and results of promotional and pricing changes.

The pantry audit of consumer homes is the second type of audit. In this type of audit, the field worker takes an inventory of the brands, quantities, and package sizes that the consumer has on hand. When this audit is performed on a recurring basis, inconspicuous labels may be attached to the package showing the date the item was first included in the inventory. When the audit is combined with questioning of the consumer, an estimate of usage may be made. The pantry audit is expensive when compared with a self-reporting consumer panel. Panel audits have declined as the use of consumer panels have increased.



RECORDING DEVICES

A number of electromechanical devices for “observing” the behavior of respondents are used in laboratory-type investigations, including the eye/pupilometric camera and the psychogalvanometer. Using recording devices to “observe” respondent behavior has been largely confined to the pretesting of advertising. In general, all such devices have the advantage of permitting careful and detailed observations of behavior that could not be made otherwise. Pupil dilation and eye movement tracking permit tracking of rapidly occurring physiological activities such as speed and intensity of focus on specific visual items being tested.

Recording devices have the added advantage of providing permanent records of the behavior observed. In using these devices, however, one should always keep in mind two important questions:

1. Is the behavior we are observing a valid predictor of what we want to predict?
2. Are the subjects behaving as they would in a natural situation?

The answer to the second question can clearly be "yes" if the observation is made outside the laboratory. For example, hidden video cameras are used in many situations to record respondent behavior.

DIRECT OBSERVATION

Direct observation of people and how they behave in situations of interest is a commonly used method of collecting information. Many studies have been made of shopping behavior. Researchers have studied the relative effects of such variables as displays, product availability, and reliance on salesperson advice. Supermarkets and department store managers continually observe traffic flows and waiting lines length to determine the best location for various products and the number and location of salespeople and cash registers. Traffic flow is an important consideration in the location decision for banks, retail stores, and entire shopping centers.



SUMMARY

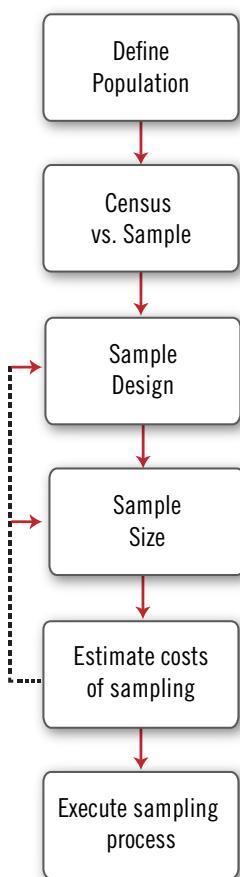
In this chapter, we first examined the various types of indirect interviews and qualitative research techniques that can be used to obtain information from respondents. In the indirect types of interviews, we described the more commonly used projective techniques, including the third person technique, word association, sentence completion, and depth interviews. We also discussed focus groups and in-depth interviews. We then considered the means of obtaining information through observation of people. The use of audits, recording devices, and direct observation were described and their applications discussed.



7

Sampling Procedures in Research

FIGURE 1.1
STEPS IN
SAMPLE
PLANNING



Once you've established research designs and interview methods, you need to finalize whom you want to sample. Every survey will have a **population of interest**, the group of people you want to study. The science of sampling is about accurately representing this group.

Deciding if and how to use sampling is a key element of the research design. As you determine the population of interest for your survey, you must ask yourself the following questions:

1. Can we take a complete census or should we sample?
2. What kind of sample should be taken?
3. What size should the sample be?

In this chapter, we will discuss each of these questions in detail. This discussion will help you use sampling in your research project.

PLANNING THE SAMPLE

As you plan your sample, two objectives are fundamental:

- Estimation of information about a population based on a sample from the population.
- Hypothesis testing to compare the relationships between data items for selected population groups.

Sample planning is an important part of assuring precision and accuracy for your research project. The process is outlined in Figure 7.1. Each step will be discussed in depth.

DEFINE THE POPULATION

The first step in planning a sample is to define the population. A population consists of the total set of individuals, households, or businesses you want to include in your study.

Location and time are important factors in defining a population. Since these can limit the scope of your study, a useful approach is to first define your ideal population. Once you've established the ideal population, you can apply practical constraints to establish a workable study population. Be careful. Under-defining the population will lead to the unnecessary inclusion of certain groups, obscuring the groups of real interest, and the need for larger samples; however, over-defining the population can lead to higher cost and highly defined groups that are more difficult to locate and survey.

CENSUS VS. SAMPLE

Once you have the population defined, you must decide whether to survey everyone in your population or to develop a sample. A **census** is a complete survey of an entire population, while a **sample** gets information from just a small, but hopefully representative, fraction of the population. A census has many advantages if the population is small and within a workable location. However, most research objectives are better achieved with a small but accurate sample.



The two major advantages of using a sample rather than a census are speed and timeliness. For large populations, a census requires hiring, training, and supervising many people. A survey based on a sample takes less time to complete and reduces costs and effort.

In testing product performance until it fails, a sample can limit the number of items destroyed as part of the measurement. Likewise, in the study of human subjects, a variety of surveys may need to be conducted within a short period of time. Here, samples solve the problem of wearing out the respondent with too many surveys. Highly surveyed individuals respond differently, exhibiting a narrower range of scale usage and more negative responses. As we will discuss later in this chapter, nonprobability sampling techniques protect against this problem.

In other situations, a sample may limit non-sampling errors by using a smaller number of high-quality interviews characterized by better interviewers, higher response rates, and better measurement in general. More time can be spent on call back interviews in an effort to minimize errors overall. This approach is consistent with our discussion in Chapter 2, where we emphasized the importance of minimizing total error.

SAMPLE DESIGN

Specifying a sample design involves both theoretical and practical considerations (such as cost, time, labor involved, and organization). The following checklist will help you obtain a sample that represents the population (Fink, 2003):

1. Are the survey objectives stated precisely?
2. Are the eligibility criteria for survey respondents or experimental subjects clear and definite? Exclusion criteria rule out certain people.
3. Are rigorous sampling methods chosen? This involves selecting an appropriate probability or non-probability sampling method.

Further questions to be answered in this section include:

- What type of sample should be used?
- What is the appropriate sampling unit?
- What is the appropriate frame (that is, list of sampling units from which the sample is to be drawn) for the particular design and unit decided upon?
- How are refusals and nonresponse to be handled?

TYPE OF SAMPLE

In behavioral sciences research, samples are most often selected by the investigator's judgment, convenience, or other non-probabilistic (non-random) processes. In contrast, probability samples offer the promise of bias-free selection and permit the measurement of sampling error. Non-probability samples offer neither of these features. In non-probability sampling, you have to trust that the researcher had the knowledge and resources to select an unbiased sample.

Example: A dog food manufacturer tested consumer reactions to a new dog food by giving product samples to employees who own dogs and eliciting their responses about a week later. The employees' dogs liked the food and the pet food manufacturer actually introduced the new dog food product. However when it hit the market, the product was a flop. Dogs simply would not eat it. As managers scrambled to find out what went wrong, the investigation showed that employees were so loyal to the company's products that their dogs had little variety and would eat anything for a change. In the broader market, dogs ate a greater variety of dog foods including table scraps. Thus, they did not like the taste of the new dog food.

The point of this case is that a non-probability sample was erroneously assumed to conform to the general population of dogs and dog owners.

THE SAMPLING UNIT

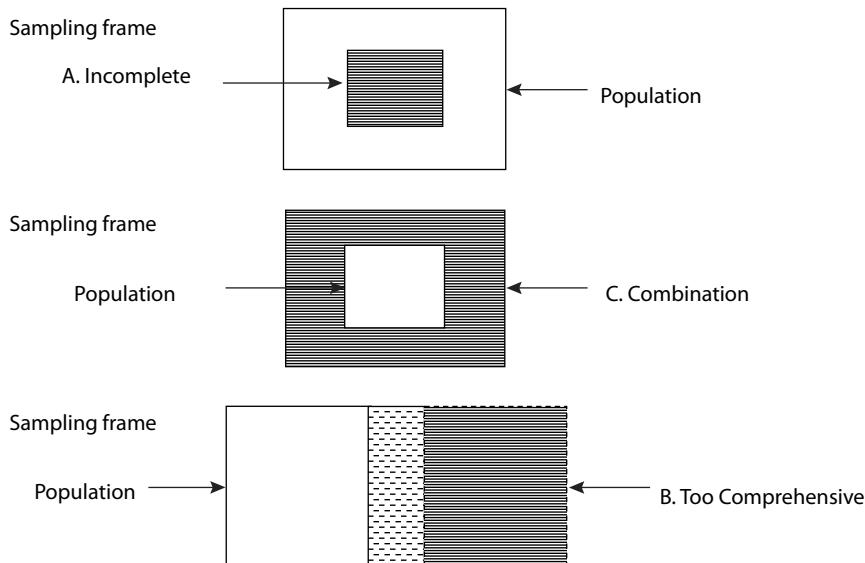
A sampling unit is a unit of the population chosen during the sampling process. The sampling unit may contain one or more elements describing the population. For instance, a group medical practice may be interested in surveying past patient behavior of the male wage earner or his entire household. In either case, it may be preferable to select a sample of households as sampling units.

THE SAMPLING FRAME

A sample frame is a physical listing of elements within the population. The frame helps you to identify, assess, and select the elements to be considered in the population. When a list doesn't actually exist, the sampling frame would be the procedure producing a list.

Ideally, the sample frame should identify each population element only once and avoid elements not in the defined population. Of course, such a perfect frame is rarely available for behavioral research purposes. As shown in Figure 7.1, a sampling frame may be incomplete, too comprehensive, or a combination of both. In addition, the frame may include individual population elements more than once. Any of these situations can lead to coverage error.

FIGURE 7.1
SAMPLING FRAME - POPULATION RELATIONSHIP



Example: One of the classic cases of frame error occurred in the 1936 presidential election where *Literary Digest* declared Alf Landon the President of the United States, over Franklin D. Roosevelt. A 22% survey return rate could not assure accurate results because the sample frame was from car registrations and telephone directories. While a similar frame could make sense today, in 1936, many Americans did not own cars or telephones and those who did were largely Republicans. The results wrongly predicted a Republican victory.

When considering a sampling frame, Dillman (2007) suggests asking the following five questions about any potential sampling list:

- Does the list contain everyone in the survey population?
- Does the list include names of people who are not in the study population?
- How is the list maintained and updated?
- Are the same sample units included on the list more than once?
- Does the list contain other respondent information that can be used to customize the survey or direct survey logic?



SAMPLE SIZE

Sample size is related to precision. Three traditional approaches can help decide the size for any given research project:

1. Arbitrarily or judgmentally determined
2. Minimum cell size needed for analysis
3. Budget-based

Once the data has been collected using one of these approaches, precision can be estimated by applying the appropriate standard error formula or formulas. A fourth approach would involve specifying your desired precision before sampling and then applying the appropriate standard error formula to determine the sample size.



COSTS OF SAMPLING

The plan must account for the estimated costs of sampling. There are two traditional cost categories: **overhead costs**, which are relatively fixed for a sampling procedure, and **variable costs**, which depend on the number of respondents contacted and interviewed in the study. In reality, costs of the whole data collection process are usually considered together. The dashed lines in Figure 7.1 indicate that sample design and sample size are usually considered together. If the estimated costs are too large, you may consider either another sample design and/or smaller-sized samples.



EXECUTION OF THE SAMPLING PROCESS

The last step in sample planning is to execute the sampling process. Whichever sample you choose needs to be representative and to adequately mirror the various patterns and subclasses of the population.

Many researchers feel that the best way to assess the validity of a sample is to compare its demographic profile (i.e., distributions of the key demographic characteristics) with a national or otherwise known profile. This alone does not necessarily guarantee a good sample. At the same time, a poor fit does not necessarily mean that the obtained sample is bad.

When the fit is not good, some researchers tend to develop schemes to weight different groups of respondents in the sample. However, many studies have shown that large differences in demographic characteristics may translate into small differences in the variable of interest, whether it is a behavior or an AIO (attitudes, interests, or

opinions) measure. Of course, there could be serious distortion if specific segments are of concern. But the differences generally have to be much greater than we would think for a significant effect.

The sample size should be large enough to provide confidence in the stability of its characteristics. This requires a measure of precision, which means using a probability-based sample design. In general, you obtain a more ideal sample with a probability process. However, you must also recognize that it is more important to avoid distorted samples than to be able to measure sampling error. There is a tendency to ignore potential bias when using probability designs. This chapter is primarily concerned with probability sampling, but before discussing this topic it is useful to describe some of the procedures by which non-probability samples are taken.

NON-PROBABILITY SAMPLING PROCEDURES

Non-probability sampling is distinguished from probability sampling in that non-probability sample elements do not have a known, nonzero chance of being selected for the sample. As such, sampling error generally cannot be measured. Non-probability samples are widely used in exploratory research, but are also valuable for non-exploratory research. Consider the following types of non-probability samples.

THE QUOTA SAMPLE

The quota sample is the most commonly employed non-probability sampling procedure. Respondents are selected to reflect proportions in the various subclasses (or strata) of the population of interest. This might be, for example, the proportion of the adult population who fall into various age-by-gender-by-education groupings.

To prepare a quota sample, the subclass proportions are first estimated from some outside source, such as census data. Next, if an interviewer has a total number of, say, 600 interviews to obtain, the desired proportion to be in each age-gender-education classification is applied to the 600 total interviews to determine the appropriate quotas.

However, in quota sampling the interviewer is *not* required to *randomly* select the respondents necessary to fill each quota category. The lack of random selection is the major distinction between quota sampling and stratified random sampling.

Because the interviewer's judgment is relied upon to select actual respondents within each quota, many sources of selection bias are potentially present. For example, the interviewer may not bother to call back if the first call results in a "not-at-home." Interviewers may go to selected areas with a higher likelihood of finding a particular type of respondent. Certain houses may be skipped because the interviewer does not like the appearance of the property, and certain people may be allowed to pass in a mall-intercept approach because they do not "look right." Still other interviewer habits and biases exist that can influence their selection of respondents within the quota.

The advantages of quota sampling are the lower costs and greater convenience provided to the interviewer when selecting respondents to fill each quota. Quota sampling is quite close to traditional probability sampling when selection is tightly controlled (Sudman, 1976).

THE JUDGMENT SAMPLE



A somewhat representative sample may be provided through the use of judgment sampling. Sound judgment and an appropriate strategy are here used to carefully and consciously choose the elements as you develop a suitable sample. The intent is to select respondents representative of the population in such a way that errors of judgment in the selection will cancel each other out. The advantages of judgment sampling include: it is inexpensive, convenient to use, less time-consuming, and yields results as good as probability sampling. One weakness of this approach is that without an objective basis for making the judgments, there is no way of knowing whether the so-called typical cases are, in fact, typical.

THE CONVENIENCE SAMPLE



Convenience sampling is a generic term that covers a wide variety of ad hoc procedures for selecting respondents. Convenience sampling means that the population is accessible, convenient, easily measured, cooperative and articulate. An illustration of convenience sampling is the Mall-Intercept method of interviewing discussed in Chapter 5. Again, the purpose is to obtain a relatively large number of interviews quickly.

Convenience samples may be taken from such intact groups as Parent-Teacher Associations, church groups, philanthropic organizations, and so on. However depending on the purpose of the research, many potential sources of selection bias may occur; only certain members may respond who may be disproportionately different on one of many demographic, attitudinal or behavioral dimensions. Usually the sponsoring organization receives a donation from the interviewing firm for the help and cooperation of its members.

SNOWBALL SAMPLING



Snowball sampling (also known as multiplicity or chain-referral sampling) is the rather colorful name given to the procedure where initial respondents are selected randomly, but you collect referrals from the initial group for additional respondents. One major advantage of snowball sampling is the ability to estimate various characteristics that are rare in the total population. Zinkhan, Burton, and Wallendorf (1983) provide a more complete discussion of this technique.

Example: A study of international tourism, required researchers to interview respondents in the United Kingdom, France, and Germany who visited the United States in its bicentennial year. Given the likelihood of finding a qualified adult respondent was less than two percent, stratified probability methods were used to select initial respondents. A referral procedure (up to two referrals per qualified respondent) was then used to obtain a second group of qualified respondents.

In other types of snowball sampling, referrals are obtained from referrals, and so on, thus leading to the “snowballing” effect. Even though a probability-based procedure may be used to select the initial group of respondents, the overall sample is a non-probability sample. This technique increases the probability of finding desired, low incidence characteristics in the population, and it lowers sampling variance and costs.

TABLE 7.2
SELECTION METHODS FOR PROBABILITY SAMPLES

PROBABILITY SAMPLES	NONPROBABILITY SAMPLES
I. <i>Equal probability</i> for all elements <ul style="list-style-type: none"> <li data-bbox="240 944 583 974">a. Equal probabilities at all stages <li data-bbox="240 985 597 1111">b. Equal overall probabilities for all elements obtained through compensating unequal probabilities at several stages 	<i>Unequal probabilities</i> for different elements; ordinarily compensated with inverse weights <ul style="list-style-type: none"> <li data-bbox="654 974 1269 1003">a. Caused by irregularities in selection frames and procedures <li data-bbox="654 1015 1284 1044">b. Disproportionate allocation designed for optimum allocation
II. <i>Element Sampling:</i> single stage, sampling unit contains only one element	<i>Cluster Sampling:</i> sampling units are clusters of elements <ul style="list-style-type: none"> <li data-bbox="654 1186 955 1215">a. One-stage cluster sampling <li data-bbox="654 1223 1055 1252">b. Sub-sampling or multistage sampling <li data-bbox="654 1260 826 1290">c. Equal clusters <li data-bbox="654 1297 855 1327">d. Unequal clusters
III. <i>Unstratified Selection:</i> sampling units selected from entire population	<i>Stratified Sampling:</i> separated selections from partitions, or strata, of population
IV. <i>Random Selection</i> of individual sampling units from entire stratum or population	<i>Systematic Selection</i> of sampling units with selection interval applied to list
V. <i>One-Phase Sampling:</i> final sample selected directly from entire population	<i>Two-Phase (or Double) Sampling:</i> final sample selected from first-phase sample, which obtains information for stratification or estimation

SOURCE: Adapted from Kish, 1965, p. 20.

PROBABILITY SAMPLING PROCEDURES

As we previously discussed, the majority of sampling procedures are probability sampling procedures. No doubt, the simple random sample is the best-known type of probability sample. However, you will often find yourself in need of a more specialized sampling procedure. Statisticians have developed a variety of specialized probability-sampling designs that, although derived from simple random-sampling principles, can be used to reduce sampling error and cost. Five major modifications can be made to the basic selection process, as shown in Table 7.2.

These techniques are discussed in turn, following a review of simple random sampling. Our purpose is to describe the major characteristics of each technique, rather than to present a detailed mathematical exposition of the procedure. Many excellent statistics and research books review the mathematical aspects of these sampling techniques.

THE SIMPLE RANDOM SAMPLE

In a simple random sample, two conditions exist: each sample element has an equal probability of selection, and each possible sample of n elements that can be drawn randomly from the sample frame has an equal probability of being the sample actually selected. The sample frame is a list containing an exclusive and exhaustive enumeration of all sample elements. One widely used process for generating a simple random sample is to upload the elements of the sample frame to a spreadsheet, number them, and then use the random-number generator to select the sample members.

Simple random samples are difficult to use in consumer research for two reasons. First, it is often difficult to obtain a sampling frame that will permit a simple random sample to be drawn; and second, one may not want to give all sample units an equal probability of being selected. Consumer research usually requires people, households, stores, or areas to be the basic sampling units. While a complete representation of areas is available through maps, there normally is no complete listing of persons, the households in which they live, or the stores available. When persons, households, or stores are to be sampled, some other sample design must be used.

In business-to-business (B2B) research, there is a greater opportunity to apply simple random sampling. In this case purchasing agents, companies, records or areas are the usual sampling units, and the population under study is often relatively small. One is therefore in a better position to develop a complete list of respondents or sample frame.

THE SYSTEMATIC SAMPLE

Systematic sampling involves only a slight variation from simple random sampling. The mechanics of taking a systematic sample are rather simple. If the population contains N ordered elements and a sample size n is desired, one merely finds the ratio of N/n and rounds to the nearest integer to obtain the sampling interval. For example, if there are 600 members of the population and one desires a sample of

60, the sampling interval is 10. A random number is then selected between 1 and 10, inclusively. Suppose the selected number turns out to be 4. The analyst then takes as the sample elements 4, 14, 24, and so on.

Thus, in a systematic sample, each sample element has a known and equal probability of selection. However, of the permissible samples of size n that can be drawn, each has a known and equal probability of selection, and the remaining samples of size n have a zero probability of being selected.

Essentially, systematic sampling assumes that population elements are ordered in some fashion—names in a telephone directory, a card index file, or the like. Some types of ordering, such as an alphabetical listing, will usually be uncorrelated with the characteristic (say, income level) being investigated. In other instances, the ordering may be related to the characteristic under study, as when a customer list is arranged in decreasing order of annual purchase volume.

If the arrangement of the elements of the sample is itself random with regard to the characteristic under study, systematic sampling will tend to give results close to those provided by simple random sampling. We say “close” because in systematic sampling, all combinations of the characteristic do not have the same chance of being included. For example, it is clear that in the preceding example, the fifth, sixth, and so on items have zero chance of being chosen in the particular sample after the first item has been determined.

Systematic sampling may increase the sample’s representativeness when items are ordered with regard to the characteristic of interest. For example, if the analyst is sampling a customer group ordered by decreasing purchase volume, a systematic sample will be sure to contain both high- and low-volume customers. On the other hand, the simple random sample could possibly yield, say, only low-volume customers, and may thus be unrepresentative of the population being sampled if the characteristic of interest is related to purchase volume.

It is also possible that systematic sampling may decrease the representativeness of the sample in instances where the items are ordered in a cyclical pattern. For example, a sample interval of 7 for a systematic sampling of daily retail-store sales figures would reflect the same day of data for each week and would not reveal the day-of-the-week variations in sales.

THE STRATIFIED SAMPLE

It is sometimes desirable to break the population into different strata based on one or more characteristics, such as the frequency of purchase of a product, type of purchase (e.g., credit card versus non-credit card), or the industry in which a company competes. In such cases, a separate sample is then taken from each stratum. Technically, a stratified random sample is one in which a simple random sample is taken from each stratum of interest in the population. In practice, however, systematic and other types of random samples are sometimes taken from each of the strata. In this case, the resulting design is still referred to as a stratified sample. Stratified samples are generally conducted according to the following procedure:

- The entire population is first divided into an exclusive and exhaustive set of strata, using some external source, such as census data, to form the strata.
- A separate random sample is selected within each stratum.
- From each separate sample, some statistic (such as a mean) is computed and properly weighted to form an overall estimated mean for the whole population.
- Sample variances are also computed within each separate stratum and appropriately weighted to yield a combined estimate for the whole population.

Example: A company is interested in estimating consumers' average purchases of hot cereal. The researcher may be willing to assume that, although average consumption would vary markedly by family size, the variances around the means of the strata would be more or less equal among family sizes. If so, the researcher would make use of proportionate stratified sampling.

More generally, however, both means and variances will differ among strata. If this is the case, the researcher would make use of disproportionate stratified sampling. The number of families included in each stratum would be proportionate to (the product of) the relative size of the different family-sized strata in the population and the standard deviation of each family class. This requires, of course, that the researcher be able to estimate (from past studies) the within-group standard deviation around the average purchase quantity of each purchasing stratum. Formulas for computing sampling errors can be found in standard texts on sampling.

The increased efficiency of stratified sampling over simple random sampling depends on how different the means (or some other statistic) really are among strata, relative to the within-stratum variability. The greater the within-stratum homogeneity and among-stratum heterogeneity, the more efficient the stratified sampling is relative to simple random sampling.

THE CLUSTER SAMPLE

The researcher will ordinarily be interested in the characteristics of some elementary element in the population such as an individual family. However, when larger primary sampling units are desired, such as geographic areas, cluster sampling may be used. For example, the researcher may choose to sample city blocks and interview all the individual families residing therein. The blocks, not the individual families, would be selected at random. Each block consists of a cluster of respondents. The main advantage of a cluster sample relative to simple random sampling is in lower interviewing costs rather than in greater reliability.

THE AREA SAMPLE: SINGLE STAGE AND MULTISTAGE

As the name area sampling suggests, samples are made of geographical areas—for example, counties, townships, blocks, etc. A single-stage area sample occurs when only one level of sampling takes place (such as a sampling of blocks) before the basic elements are sampled (the households).

Example: Consider the sample design used by the Gallup Organization for taking a nationwide poll. Gallup draws a random sample of locations as the first stage of the sampling process. Blocks or geographic segments are then randomly sampled from each of these locations in a second stage, followed by a systematic sampling of households within the blocks or segments. A total of about 1,500 persons are usually interviewed in the typical Gallup poll.

DETERMINING SAMPLE SIZE

BASIC SAMPLE SIZE TERMINOLOGY

Intuitively we would expect that when we increase the size of the sample, our estimates of the population should get closer to the true value (i.e. the population mean). Also, we would expect that the less dispersed the population's characteristics are, the closer our sample estimates should be to the true parameter. After all, the reason why we sample in the first place is to make some inference about the population. These inferences should be more reliable when the sample is larger and when there is less variability in the population variables measured. To see this in action, consider the example in Exhibit 7.1.

When you read about samples in newspapers or other documents, the researcher often reports the margin of error or confidence interval for the statistical findings reported in the study. The **margin of error** or **confidence interval** is the plus-or-minus figure that represents the accuracy of the reported results. Consider another example:

A Canadian national sample showed who Canadians spend their money on for Mother's Day. Eighty-two percent of Canadians expect to buy gifts for their mom, compared to 20% for their wife and 15% for their mother-in-law. In terms of spending, Canadians expect to spend \$93 on their wife this Mother's Day versus \$58 on their mother. The national findings are accurate, plus or minus 2.75%, 19 times out of 20.

In this example, if 82% of your sample indicates they will “buy a gift for mom” and you use a confidence interval of 2.75%, you can be 95% confident that for all Canadians, somewhere between 79.25% (82%-2.75%) and 84.75% (82%+2.75%) would have picked that answer.

Confidence level tells you how confident you are of this result. It is expressed as a percentage of times that different samples (if repeated samples were drawn) would produce this result. The 95% confidence level means that if 20 different samples were drawn, 19 times out of 20, the results would fall in this +/- confidence interval. A 99% confidence level would mean that 99 out of 100 times, the results would fall

into the stated +/- confidence interval. The 95% confidence level is the most commonly used.

When you put the confidence level and the confidence interval together, you can say that you are 95% (19 out of 20 times) sure that the true percentage of the Canadian population that will “buy a gift for mom” is between 79.25% and 84.75%.

Wider confidence intervals increase the certainty that the true answer is within the range specified. These wider confidence intervals are associated with smaller sample sizes and, of course, produce larger sampling errors. When the costs incurred from making an error are extremely high (for example, you are betting your company, or a multi-million dollar decision is being made) the confidence interval should be kept small. This can be done by increasing the sample size to reduce the sampling error.

EXHIBIT 7.1

HOW DO ELECTION POLLS WORK?

The following is an edited version of “Inside the Paper’s Election Polls,” an article by Elsa McDowell that appeared in The Charleston Post and Courier:

The beauty of election polls is that they are straightforward. They use statistical formulae to estimate how many people will vote one way and how many will vote another. No spin. No qualifying clauses to muddy the picture. The difficulty of election polls is that they are not always straightforward. How else could you explain that a poll done by one candidate shows him in the lead and that a poll done by his opponent shows her in the lead? Statisticians say there are ways to twist questions or interpret answers to give one candidate an advantage over another.

One reader took issue with a recent poll results run in The Post and Courier. He questioned whether the methodology was described in enough detail, whether the sample size was adequate. He was right about one point. The story did not make clear who was polled. It said “voters” and failed to elaborate. It should have indicated that the people polled were registered and likely to vote in the November elections. His next point is debatable. He said the sample size of 625 likely voters was insufficient for a state with nearly 4 million residents and suggested at least 800 should have been polled.

Brad Coker, the researcher responsible for the study responded that “the standard sample size used by polling groups nationally is 625. It produces, as the story stated, a margin of error of plus-or-minus 4 percent. Increasing the sample size to 800 would have produced a margin of error of plus-or-minus 3.5%—more accurate, but not so much more accurate to justify the additional cost.”

“Many people do not understand how sample sizes work. They believe that, the larger the pool, the larger the sample size needs to be. It’s not like that. You can take a drop of blood from a 400-pound person and it will contain the same data you would get if you took it from a 100-pound person,” he said.

The reader's next concern was that the margin of error of plus-or-minus 4 applies only to the group viewed in its entirety. "If 'minorities' constituted 27 percent of the total sample, then only 169 were sampled. The margin of error then skyrockets into double digits." Coker said the reader is right and wrong. The margin of error (also known as a confidence interval) does jump for subgroups, but does not reach double digits. In this case, it moves from plus-or-minus 4 to plus-or-minus 6 to 8.

Two days before The Post and Courier ran their poll, another short story was run about a poll commissioned by MSNBC. That poll indicated incumbent Gov. Jim Hodges with a 45-43 percent lead. (Our) poll indicated challenger Mark Sanford was ahead 45 to 41 percent. When the margin of error is considered, both polls show the race is still a toss-up.

CONTROLLING THE SIZE OF THE CONFIDENCE INTERVAL

Sampling theory teaches us that the accuracy of a sample estimate is dependent on such factors as the dispersion and skew of the population's responses, the sample size, and the size of the population. Controlling these variables contributes to the incidence (and elimination) of sampling error. Note that "non-sampling" errors, such as bad question design or selection of a "bad" sample frame, are not controlled by sample size.

SAMPLE SIZE

Larger sample sizes generally produce a more accurate picture of the true characteristics of the population. Larger samples tighten the size of the confidence interval, making your estimate much more accurate. This relationship is not linear as shown in Table 7.2. Increasing sample size from 500 to 1000 reduces the confidence interval from ± 4.38 to ± 3.1 .

DISPERSION

The accuracy of an estimate also depends on the dispersion and skew of the population on the question being asked. A sample of individuals registered for the republican political party would likely give a less dispersed evaluation of a republican candidate than would a sample of democrats. Likewise, a sample of Catholic priests would have less variability on the issue of abortion than would a survey of the general population. Accuracy of the sample estimate increases as the dispersion in the population decreases. Depending on the method of sample size calculation, dispersion is expressed as sample variance or as a proportion holding alternative positions (favorable or unfavorable toward an issue).

When using a proportion to compute sample size or estimate confidence intervals, it is easy to cover all eventualities by assuming maximum variability (50-50 proportions). Likewise, once your data has been collected, the observed proportion and final sample size can be used to obtain a more accurate estimate of the actual confidence interval. Online sample calculators, such as that found at Qualtrics.com, provide

handy tools (<http://www.qualtrics.com/blog/calculating-your-sample-size>) capable of estimating an appropriate sample size given a hypothetical level of dispersion. Likewise, confidence intervals can be estimated and Table 7.2 can be replicated.

POPULATION SIZE

The size of the population also influences the size of the confidence interval, but not as much as you might expect. For a sample of 1000 respondents from a population of 100,000, the confidence interval is $\pm 3.08\%$. However, if the population were instead 1 million, the confidence interval widens to only $\pm 3.1\%$. The confidence interval is far more sensitive to changes in the sample size than to the size of the total population.

Non-sampling errors cannot be compensated for by increased sample size. Often, larger samples accentuate non-sampling errors rather than reduce them. Non-sampling errors come from samples that are not truly random, bad scales, misleading questions, incomplete surveys, etc.

TABLE 7.2
PROPORTION BASED CONFIDENCE INTERVALS AT THE 95% LEVEL

SAMPLE SIZE	VARIABILITY PROPORTIONS					
	50/50%	40/60%	30/70%	20/80%	90/10%	95/5%
25	20	19.6	18.3	16	12	8.7
50	14.2	13.9	13	11.4	8.5	6.2
75	11.5	11.3	10.5	9.2	6.9	5
100	10	9.8	9.2	8	6	4.4
150	8.2	8	7.5	6.6	4.9	3.6
200	7.1	7	6.5	5.7	4.3	3.1
250	6.3	6.2	5.8	5	3.8	2.7
300	5.8	5.7	5.3	4.6	3.5	2.5
400	5	4.9	4.6	4	3	2.2
500	4.5	4.4	*4.1	3.6	2.7	2
600	4.1	4	3.8	3.3	2.5	1.8
800	3.5	3.4	3.2	2.8	2.1	1.5
1000	3.1	3.0	2.8	2.5	1.9	1.4
1500	2.5	2.5	2.3	2.0	1.5	1.1
2000	2.2	2.2	2.0	1.6	1.2	0.96
2500	2	1.9	1.8	1.6	1.2	0.85
5000	1.4	1.4	1.3	1.1	.83	0.6

*Example Interpretation: In a product usage study where the expected product usage incidence rate is 30%, a sample of 500 will yield a precision of +/- 4.1 percentage points at the 95% confidence level.

This table is compute using the following formula:

$$(Number\ of\ Standard\ Errors)^2 * ((proportion)*(1-proportion)) / (Accuracy)$$

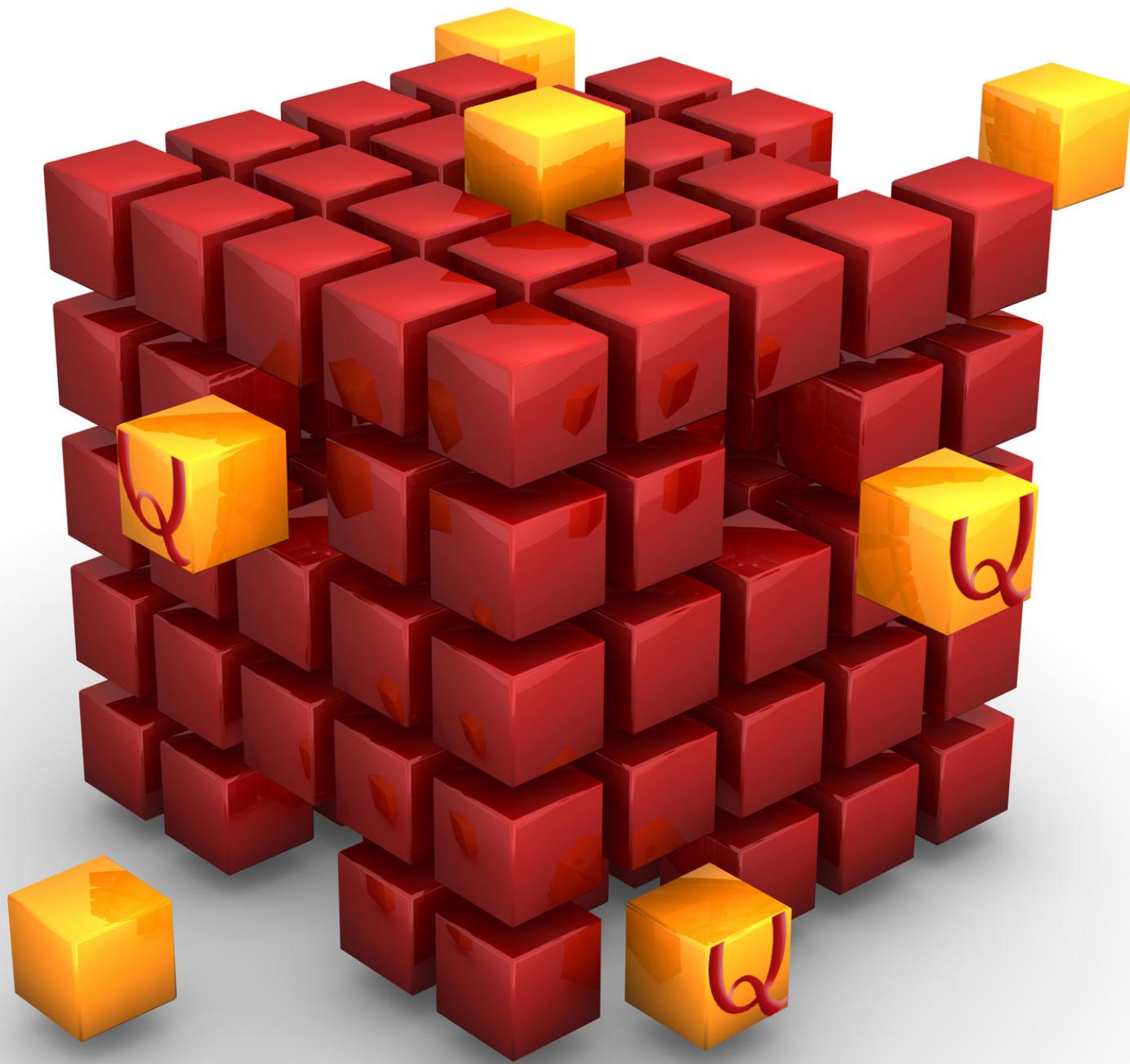
$$(1+((Number\ of\ Standard\ Errors)^2 * ((proportion)*(1-proportion)) / (Accuracy)-1) / (the\ population\ size))$$

This formula is easily entered into a spreadsheet, to compute a sample size determination table.



SUMMARY

Sample size is one of the most complicated parts of a research design. We first discussed the difference between a census and a sample. This chapter discussed how to decide on which kind of sample to use. Each was discussed in turn in relation to your surveys. Finally, we concluded this chapter with a discussion of the terminology used when discussing accuracy of samples and the proportion approach to estimating sample size.



8

Experimentation

Experimentation is widely used in behavioral and psychological research. Experiments are conducted for a variety of projects. Increasingly, they are conducted online to evaluate new products, to select advertising themes, and to test movie goer reactions.

The term **experimentation** is used to describe a variety of objectives. For the purposes of this chapter, an experiment identifies the effects of a **causal variable**. As discussed in previous chapters, a causal variable is the variable that creates a specific outcome.

In marketing, identifying causal effects gives you the power to implement your findings in everyday marketing practices. You can increase sales, increase customer satisfaction, and improve your overall business.

This chapter discusses how to run experiments. Running experiments will help you identify what a specific causal variable is and how it affects your outcome.

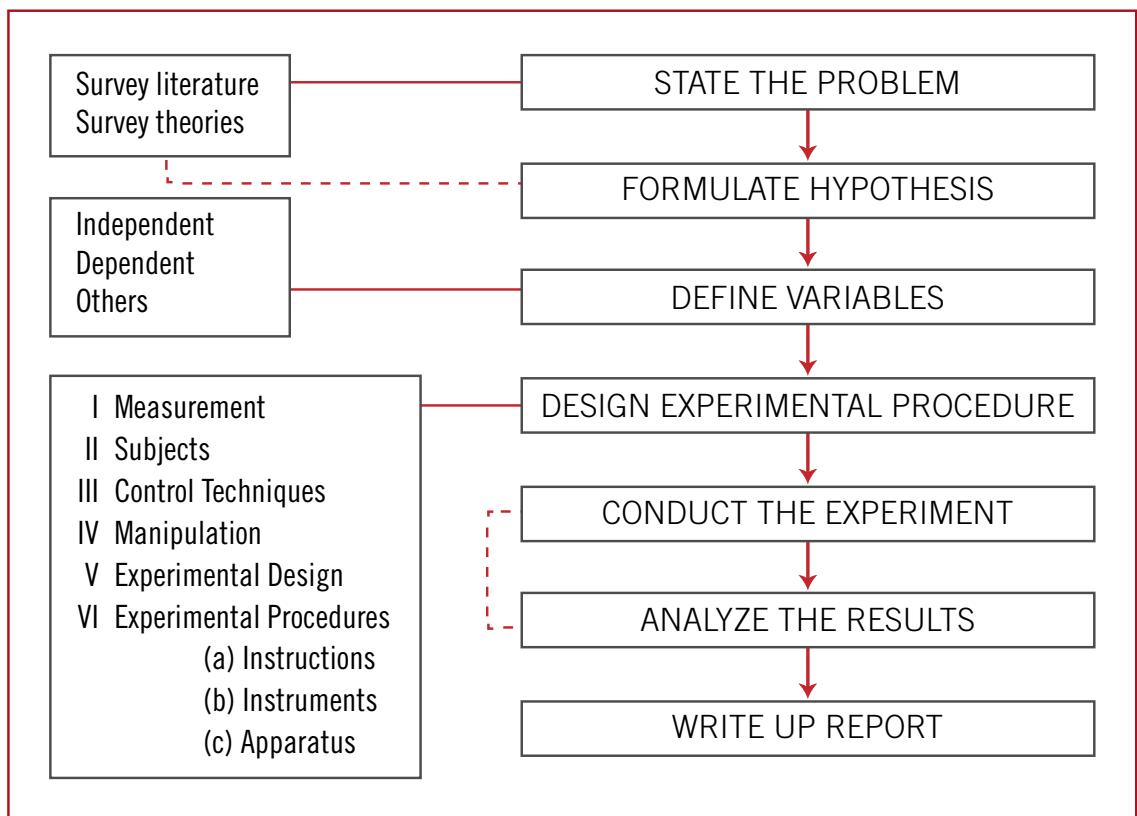
THE NATURE OF EXPERIMENTATION

As we discussed in Chapter 2, there are two types of experiments: **natural** and **controlled**. In a **natural experiment**, you only intervene when you need to measure results. The point is to keep the experiment as organic as possible. On the other hand, **controlled experiments** have two types of intervention: The first requires you to manipulate at least one causal variable; the second randomly assigns subjects to control groups and experimental groups that are measured for effect.

INGREDIENTS OF A MARKETING EXPERIMENT

Experiments rely on a series of interrelated steps, as shown in Figure 8.1. In this chapter, we will define variables, discuss sources of invalidity in experiments, and design the experimental procedure.

FIGURE 8.1
COMPONENTS OF AN EXPERIMENT



All experiments involve three types of variables.

1. *The "Treatment" Variable:* Also called the independent variable, the treatment variable affects another variable within the experiment. This effect is what the experiment measures.
2. *The Outcome Variable:* Also called the dependent variable, the outcome variable is the variable that changes when the treatment variable changes.
3. *Extraneous Variables:* Variables that you don't manipulate in the study. However, these can still affect the experiment.



SOURCES OF INVALIDITY

In the context of experimentation, validity is the extent to which you actually observe and measure what you say you observe and measure. There are four distinct types of validity:

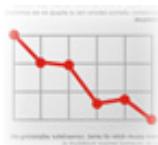
- **Statistical conclusion:** Are the independent and dependent variables related?
- **Internal:** Once that correlation is established, are the variables causally related?
- **Construct:** How and why does a measurement work? Can findings be applied to general cause and effect?
- **External:** To what level can findings of an experiment apply to other people or situations?

These four types of validity are interrelated. Incorporating one into your experiment could lessen another's influence. For most applied research, internal and external validity take priority. In order to plan a valid experiment, you have to understand the outside factors that affect these sources of validity.

INTERNAL VALIDITY

Internal validity deals with whether or not the outcomes of your experiment are due to the experiment itself or due to extraneous variables. Although there are countless extraneous independent variables that could invalidate your experiment, there are general variables that affect experimental designs. They are each briefly discussed below.

1. *History.* History deals with influences outside of the experimental design that affect the dependent variable. Usually, the greater the time span of the experiment, the more likely history will affect the results.
2. *Maturation.* The participants of the experiment change over time: they gain experience, grow physically older, allow extraneous variables to change their opinions, and so on. These factors can tamper with your results.
3. *Testing.* As you measure data from the experiment, your subjects will retain the information you are testing . This can influence potential information gained and measured in subsequent tests. If your customers, for example, remain fixated on the questions you ask in your first measurement, later measurements may be enhanced by the customers remembering their responses to previous questions.
4. *Instrumentation.* Often, if there is a change in the measuring instrument or process, the experiment's results may be influenced. The more consistent your experimental design and measurement process, the more likely your findings are untainted.
5. *Selection.* If the test units are selected or assigned to treatment groups at random, the selection effect will be a measurable random variation. However, if a non-random selection method is used (self-selection, purposive selection, etc.), the resulting treatment groups may differ on important characteristics that may influence the dependent variable.
6. *Mortality.* Different types of people drop out of groups during the experiment process. This can create validity problems from one measurement to the next.
7. *Statistical Regression.* Under conditions where measurements are unreliable, high pretest scorers will score relatively lower at the posttest. At the same time, low pretest scorers will score higher. There is a tendency with repeated measures for scores to regress to the mean scores of the population (Cook and Campbell, 1990).



EXTERNAL VALIDITY

External validity is concerned with whether or not your conclusions apply outside the scope of your study. These external concerns include whether conclusions apply to and across populations, settings, times, etc. The four primary errors in external validity are briefly discussed below.



1. *Reactive Effect of Testing.* You will often want to get a “before” measurement prior to the actual experiment starting. However, many studies rely on the fact that participants do not know they are being measured or tested. These pre-measurements may alert participants to the study and have an impact on the participant’s responses to the treatment variable.
2. *Reactive Effects of Experimental Situation.* Participants may sometimes react to aspects of the experiment itself (setting, arrangements, staff, etc.). You can’t always predict the reactions of a participant.
3. *History-Treatment Interaction.* You need to carefully plan when to measure the results of the experiment. This form of invalidity occurs if you measure at a time when the dependent variable is not being affected by the independent variables.
4. *Selection-Treatment Interaction.* The selection method affects the extent to which your findings can be generalized to a larger population.

MODELS OF EXPERIMENTAL DESIGN

Varieties of experimental designs exist, each developed to counteract different sources of invalidity (See Table 8-1). In general, experimental designs can be divided into two groups: **classical** and **statistical**. Classical designs focus on the impact of only one dependent variable at a time. Statistical designs, however, examine the impact of two or more independent variables.

TABLE 8.1

CONTROLLING SOURCES OF INVALIDITY WITH SELECTED EXPERIMENTAL DESIGNS

	INTERNAL								EXTERNAL		
	History	Maturation	Testing	Instrumentation	Regression	Selection	Mortality	Interaction or Selection and Others	Interaction of Testing and X	Interaction of Selection and X	Reactive Arrangements
<i>Sources of Invalidity</i>											
One-Shot Case Study X O	-	-				-	-			-	
One-Group Pretest-Posttest Design O X O	-	-	-	-	?	+	+	+	-	-	?
Time Series O O O X O O O	-	+	+	?	+	+	+	+	-	?	?
Multiple Time-Series O O O X O O O O O O O O O	+	+	+	+	+	+	+	+	-	-	?
Static-Group Comparison X O O	+	?	+	+	+	-	-	-	-	-	
Nonequivalent Control Group Design O X O O O	+	+	+	+	?	+	+	-	-	-	?
Posttest-Only Control Group Design R X O R O	+	+	+	+	+	+	+	+	+	+	?
Separate-Sample Pretest-Posttest Design R O (X) R X O	-	-	+	?	+	+	-	-	-	-	+
Solomon Four-Group Design R O X O R O O R X O R O											+
Note: In the tables, a minus (-) indicates that the factor is not controlled, a plus (+) indicates that the factor is controlled, a question mark (?) indicates a possible source of concern, and a blank indicates that the factor is not relevant.											

SOURCE: Adapted from Campbell, D. T., & Stanley, J.C., *Experimental and Quasi-Experimental Designs for Research*. Copyright ©1963 by Houghton Mifflin Company. Adapted by permission.

CLASSICAL DESIGNS

The two major types of classical designs are pre-experimental and quasi-experimental. Pre-experimental require no outside influence or control (a natural experiment). They are frequently used for exploratory research. Quasi-experiments involve controlling elements of the experiment, but lack random assignment of subjects.

There are three types of designs that qualify as pre- or quasi-experimental:

1. Time-series and trend designs
2. Cross-sectional designs
3. Combinations of the two previous classes

Time-Series and Trend Designs

Time-series and trend designs are similar in theory, but they are different as you implement them. A **time-series design** involves collecting data from the same sample (same individual respondents) at several points in time during a study. An example would be tracking cancer cure and recurrence rates for patients who received various forms of treatment. This type of experimental design allows you to collect data over time.

Trend designs collect information from the same population over time, but they come from statistically matched samples (not the same individual respondents).

True Experimental Designs

As briefly mentioned, **true experiments** require two kinds of intervention. You have to manipulate at least one causal variable, and you have to randomly assign subjects to control and experimental groups. This randomization eliminates effects due to selection and extraneous variables

STATISTICAL DESIGNS

Statistical designs allow you to look at more than one independent variable in the results of your experiment. In general, statistical designs deal with the layouts that assign test objects to different treatment levels and measures are taken only after the treatments are administered.

There are two accepted types of statistical design: **completely randomized designs** and **factorial designs**. For our purposes, each design will be briefly summarized below.

Completely Randomized Design

The simplest form of statistical design is the completely randomized design, where test units (samples, population, etc.) are assigned to experiment groups on a completely random basis.

Factorial Design

Factorial designs allow you to study the relationships between the variables. A factorial experiment uses different variable combinations, which you observe an equal number of times and record your findings. Factorial experiments measure the effects of variables (main effects) and variable combinations (interaction effects¹).

There are three sub-types of factorial designs. Each will briefly be discussed below.

Latin Square Designs

Latin square designs allow you to decrease the number of observations needed to measure your experiment (by ignoring interaction effects). For example, Latin square designs would allow you to have information from 64 observations by relying on only 16 actual observations (See Table 8-2).

TABLE 8.2

LATIN-SQUARE DESIGN - ENERGY DRINK SALES (DEPENDENT VARIABLE) BY SHELF CONFIGURATIONS (INDEPENDENT VARIABLES)

VARIABLE B-SHELF FACING				
VARIABLE A - SHELF HEIGHT	B ₁	B ₂	B ₃	B ₄
A ₁	C ₁	C ₂	C ₃	C ₄
A ₂	C ₄	C ₁	C ₂	C ₃
A ₃	C ₃	C ₄	C ₁	C ₂
A ₄	C ₂	C ₃	C ₄	C ₁

Randomized Block Designs

Because of the level of errors that can affect all experiments, you may want to use a randomized block design to control certain nuisance factors. For example, in Table 8-3, advertising spokesperson models are tested by randomly assigning potential viewers of different age (blocks) into the different treatment groups. The rule of thumb for using statistical designs to control errors is to “block where you can (to isolate the effect) and randomize everything else (extraneous variables).”

¹ *Interaction effect:* The situation in an experiment where the response to changes in the levels of one treatment variable is dependent on the level of some other treatment variable.

TABLE 8.3
RANDOMIZED-BLOCK DESIGN - AD SPOKESPERSON EXPERIMENT

		TREATMENTS - SPOKESPERSON		
BLOCKS - CUSTOMER AGE (1=<18, 2=19-29, 3=30+)		LEVEL 1 MALE	LEVEL 2 FEMALE	LEVEL 3 CARTOON
1	X ₁₁	X ₁₂	X ₁₃	
2	X ₂₁	X ₂₂	X ₂₃	
3	X ₃₁	X ₃₂	X ₃₃	

Covariance Designs

Covariance designs allow you to remove the effects of selected variables when testing the relationships between the controlled variables in an experiment.

PANELS IN EXPERIMENTS

Panels are efficient ways of measuring what your customers are thinking. While most other experiment forms rely on measuring data, panels give you direct access to your customers. Panels are effective in both natural and controlled experiments. While both have strengths, they also have weaknesses.

NATURAL EXPERIMENTAL DESIGNS USING PANELS

Panels are an efficient and useful way to generate an ongoing flow of natural experimental data. For example, a treatment group could be created to measure product preference after exposure to advertising materials. A separate control group from the panel would receive no treatment, but simply report their everyday product choices. Panels are also easily adaptable to time series, cross sectional, or cross sectional-time series classical designs.

Despite the ease of using panels for natural experimental designs, there are limitations. Within panel groups, it's sometimes difficult to separate extraneous variable effects from treatment variable effects (for example, price difference effects on sales by geographic regions). The economic conditions of different territories could taint the results.

CONTROLLED EXPERIMENTAL DESIGNS USING PANELS

Controlled experiments using panels are particularly useful when testing new products, promotions, price changes, etc., in market tests. Choosing one territory and displaying the desired level of each treatment variable will automatically turn the remaining areas into control groups (with no change). However, the

limitations of each design apply here, when the designs are used with panels, just as they do in natural experimental designs using panels.

STRUCTURING EXPERIMENTS ONLINE

We now discuss the capacities of Qualtrics online survey software to create experimental designs through the control of question flow, logic, and randomization. These features provide fundamental tools for increasing control of field experiments.

Advanced online questionnaires, including experiments are built in 5 basic steps:

1. Identify the populations to be sampled, and the experimental and control groups.
2. Map the logic and flow of the experiment, including randomization.
3. Identify blocks of similarly treated questions (for survey flow, branching or experimentation).
4. Specify the questions (and question types) within each question block.
5. Define sample size quotas that are required for appropriate analyses.

ENHANCING SURVEY CONTENT: GRAPHICS, AUDIO, VIDEO AND INTERACTIVE EXPERIENCES

Graphics increase interest and provide realism to a survey. For experiments and concept tests, graphics and movies can provide product and brand treatments. (Figure 8.2).

FIGURE 8.2
A NOKIA FLASH COMMERCIAL WITH AN EVALUATION QUESTION

In considering the people using the cell phone in this ad, would you say they are...



Just like me

Somewhat like me

Somewhat unlike me

Not at all like me

CREATING DYNAMIC QUESTIONS THROUGH “PIPING”

Piping generally refers to the movement of question text, answer text, graphics, or database information from one location to another within the survey. Movement may be triggered by a respondent's choices (product category chosen), options not chosen, or even information from embedded or external data sources that might contain information like the respondent's past purchases.

Example: Travelocity customers receive a survey a few days after they return from a trip booked online. The invitation letter and questionnaire are not of the “Dear Traveler” variety. Instead, the customer is addressed by name and is asked specific questions about their flight to Dallas on Delta Airlines. If they booked a rental car, the block of questions about satisfaction with the service of their rental car company (identified by name) is included in the survey flow. Question blocks are also customized for hotels and cruises booked for the trip. In short, the online customer database is interfaced with the survey database through a simple API (application program interface) and the questionnaire is totally customized to ask about specific aspects of their personal travel experience.

Question Blocks

A question block is a cohesive group of questions that receive similar treatment. A more advanced questionnaire design could branch the survey flow into multiple question blocks based on the respondent's survey responses or any other characteristic found in an associated database. Questionnaires with multiple blocks, advanced question flow and branching logic can be used for sophisticated experiments. For example, a block of questions can be:

- a) displayed based on choices previously made by a respondent.
- b) randomly presented or held in a fixed position while randomizing the order of other blocks (each block is a treatment or control in an experiment).
- c) repeated in a looping pattern with piped text that describes the purchase situation or usage occasion under which the block of questions is to be evaluated.

CREATING EXPERIMENTS WITH SKIP LOGIC, BRANCHING, LOOPING AND CONTROL

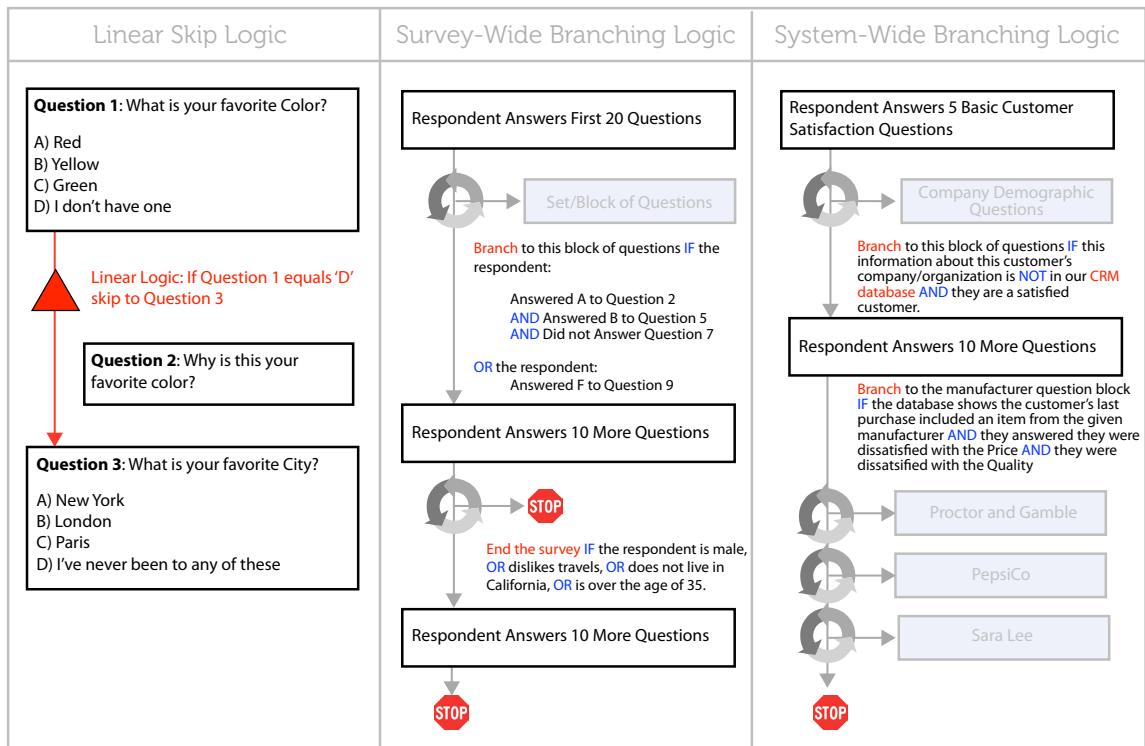
With increasing time demands, potential respondents often review questionnaires to estimate the time and effort required. Streamlining questionnaires using skip logic, looping and piping has the potential of reducing the physical length of the survey and associated respondent fatigue, thereby increasing data quality and completion rates.

Logic to control question order based on respondent answers can be easily added to online surveys. Survey flow logic exists on several levels of sophistication. (Figure 8.3). At the most basic level, simple questionnaires use only a single question block (a single default question block is created automatically in

Qualtrics) with either no skip logic or may use simple linear skip logic (for screening the respondent or for skipping past question sections that don't apply to the respondent).

At the advanced level, branching uses a complex sequence of logic conditions to direct the movement. Branching can be based on multiple questions, on points of information provided by the respondent, or on information found in the panel data.

FIGURE 8.3
LINEAR SKIP LOGIC VERSUS BOOLEAN LOGIC AND COMPOUND



BLOCK LOOP AND MERGE WITH PIPING

Suppose that a respondent is asked to select from a list of 150 educational programs, those used by their organization. Next, the person is asked to respond to three evaluation questions about each program they selected. Rather than building a linear survey of 600 questions, the researcher would build only 4 questions (a multiple select question showing the list of 150 programs, and the three evaluation questions). The pipe text and loop - merge features would loop through only those programs selected, identifying them by name in the block containing the three evaluation questions. (See: <http://www.qualtrics.com/tutorials/loopandmerge.html>)

Quota Fulfillment

Quota fulfillment is an integral part of experimental designs. Quotas work by testing the size of the sample groups (defined by answer categories within a given question) against target numbers. Where experimental designs are used, quotas may be created to avoid over or under sampling of treatment groups.

Randomizer: Randomizing Answer Choices, Branches, Question Blocks and Surveys

Randomization techniques are used to control answer presentation order bias, as well as the effects of extraneous variables not controlled by an experimental design. In new product concept tests and other advanced measurement situations, the researcher may randomize and control the presentation order of the following in online research and experimental designs:

- Complete randomization of all answer choice options.
- Complete randomization of answer choice options and non-randomization of “other” or text input options.
- Partial randomization of answer choice options, where one or more specific answers (such as the item of interest) are held in a fixed position, and all other answers are randomly ordered.
- Randomization of question blocks (may contain treatments).
- Partial randomization of blocks, where one or more of the blocks are held in fixed presentation order, or are presented to all respondents, while other blocks are randomly or intermittently presented (randomly present 2 of the 4 other treatment blocks).
- Randomization of separate questionnaires, each containing different treatments.

Randomization is used when it is not important to maintain the order or context of the questions (or answers). However, block randomization may be used to assist in maintaining context and at the same time achieving a level of randomization. For example, context often requires that questions be presented in a given sequential order, but blocks of questions (each block, for example, containing questions presented in fixed order about different brands) can be randomized. The option to randomize either the questions within a block or an entire blocks of questions, is valuable when conducting concept tests, or using advanced experimental designs.

RESPONSE TIMING: SURVEYS, RESPONSES, EXPOSURES, AND COUNT-DOWN AND COUNT-UP TIMERS

Timing of responses and control of the timing of the survey flow is an important part of experimentation. In consumer reaction studies, controlling the length of ad exposure may be a key variable in equalizing the treatments across respondents. Qualtrics has many options for monitoring and reporting the activities

of the respondent, including the ability to measure total survey response time, timing of individual pages, automatic page changing, and hiding of next page button.

Timing JavaScript

Many other advanced functions for experimental design and advanced surveys are possible in Qualtrics. We refer you to the Coder's Corner, which contains useful JavaScript, HTML and CSS Codes. Qualtrics software is designed to be "easy enough for an intern," which is one of the features they are most proud of. However, with thousands of elite academic and corporate researchers using Qualtrics, there is the need to accommodate some really unique studies that require some really unique solutions.

To this end, Qualtrics is infinitely customizable. Users can insert custom code (like JavaScript and HTML) right into their surveys for some pretty amazing results. The Coder's Corner is located at: <http://www.qualtrics.com/university/coders-corner/>



SUMMARY

This chapter introduced the underlying principles of experiments within marketing research and discussed the basic models of experimental designs. We talked about the nature of experiments and the sources of invalidity that can affect the outcome of experiments. We concluded this chapter with a discussion of some of the problems involved in marketing experimentation and solutions using the capabilities of Qualtrics for controlling online experiments.

CONCLUSION

Congratulations. You have completed the first of our two books on marketing research.

In this book, we have discussed everything from basic studies to advanced experimentation. Our focus has been on obtaining information, through secondary sources or through creating and executing primary research.

Chapter one provided an Introduction to marketing research.

Chapter two discussed how to focus your survey research and minimize error.

Chapter three explored the secondary sources of information that are available to you.

General principles for conducting interviews and minimizing error within them were the subject of chapter four.

Chapter five went deeper and explored specific interview types discussed in detail.

In chapter six, qualitative research methods were discussed in detail.

Chapter seven described sampling procedures, including sample size.

We concluded with experimentation in chapter eight.

In our second book, we will turn our focus to analyzing results after you obtain them.

We will introduce you to data analysis and the methods used by researchers to interpret results. This will include a primer on statistics, multivariate analysis and much more.

Like this first book, it will be published on Qualtrics University and is available for all Qualtrics users. We hope you will enjoy it as much as this edition.

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Glossary of Terms

Accuracy of information

Degree to which information reflects reality.

Accuracy in sampling

Is affected by nonresponse bias, memory error, misunderstanding of questions, problem of definition of terms, and processing error,

A.C. Nielsen BASES

Panel-based research conducted by the marketing research/consulting firm A.C. Nielsen using the Internet for data collection.

Adequate sample

A sample that is of sufficient size to provide confidence in the stability of its characteristics.

After-only with control group design

A true experiment requiring one treatment and an “after” measurement of both the experimental and control groups.

Alpha error

See Type I error.

Alternate forms reliability

The extent to which measurement scores from equivalent forms of the measure administered to the same sample are the same.

Alternative hypothesis

A hypothesis making statement of expected difference.

Ambiguity of questions and responses

Errors made in the transmission of information in interpreting written or spoken words or behavior

Analysis

The categorizing, the aggregating into constituent parts, and the manipulation of data to obtain answers to the research question(s) underlying the research project.

Applied research

See decisional research.

Area sample

A probability sample where the primary sampling is of geographical units.

Arithmetic mean

See mean.

ASP model

See Online Application Service Provider.

Associative variation

A measure of the extent to which occurrences of two variables, or changes of two variables, are associated. Also known as “concomitant variation.”

Attitude measurement

Measurement of the person’s mental state toward a certain stimuli according to specified sets of dimensions and instructions.

Audimeter

An electromechanical devise used to record automatically the times a household’s television set is turned on and off and the stations which it is tuned to.

Availability of information

Availability of information when a decision is being made.

Balanced scale

A rating scale with an equal number of response alternatives in opposite directions from some midpoint, e.g., positive and negative alternatives.

Balancing

See matching.

Bases for inferring causation

The means by which causation can be inferred: (1) associative variation, (2) sequence of events, and (3) absence of other possible causal factors.

Basic research

See fundamental research.

Before-after with one control group design

A true experimental design with one treatment and with measurements of the experimental and control groups made both “before” and “after” the treatment is administered.

Behaviorally-anchored rating scale (BARS)

A rating scale using behavioral incidents to define each position on the rating scale rather than verbal, graphic, or numeric labels.

Beta error

See Type II error.

Bias

The difference between the true value of that which is being measured and the average value derived from a number of independent measures of it.

Bivariate analysis

The analysis of relationships between two variables.

Bounded recall

An approach for reducing telescoping by asking questions about events of concern in previous time periods as well as the time period of research interest.

Bulletin Board

Qualitative research online technology at a website that allows users to register and then participate in unmoderated discussions of topics of interest to participants of the bulletin board.

CATI

A Computer Aided Telephone Interview in which the interviewer reads the questions from a computer and enters the responses directly.

Causal study

Research design which attempts to determine the causes of what is being predicted—i.e., the “reasons why.”

Census

All members of the population are included for study.

Central tendency error

Reluctance of respondents to give extreme scores or to use an extreme position on an individual scale item.

Cheater question

A question included in a questionnaire that will disclose a respondent’s giving fabricated answers.

Chi-square test

For a simple tabulation it tests the goodness-of-fit between the observed distribution and the expected distribution of a variable, and for cross tabulation it tests whether the observed association or relationship between the variables is statistically significant.

Cluster analysis

A class of statistical techniques whose objective is to separate objects into groups such that the similarity of objects within each group is maximized while maximizing the difference between groups.

Cluster sampling

A probability sample in which a simple random or stratified random sample is selected of all primary sampling units, and then all elements within the selected primary units are sampled.

Codebook/coding manual

A manual which shows how the data have been coded for analysis.

Coding

The process by which responses are assigned to data categories and symbols (usually numbers) are assigned to identify them with the categories.

Commercial data

Data sold in the form of syndicated services.

Collected by commercial marketing research firms or industry associations. See syndicated services.

Comparative rating scale

Objects are rated in comparison with other objects.

Completely randomized design

A statistical design where experimental treatments are assigned to test units on a random basis.

Concept

An abstraction formed by generalization about particulars.

Conceptual definition

A construct is defined in terms of other constructs. Also known as constitutive definition.

Concept testing

How people, without prompting, interpret deliberately a sketchy idea for a new product or service.

Concurrent validity

See criterion validity.

Confidence interval

A range of values with a given probability of covering the true population value (parameter).

Confounding

In an experiment, it is the tangling effects of two or more levels of a treatment variable or two or more treatment variables.

Conjoint analysis

A technique of research that measures psychological judgments by decomposing a set of overall responses to a set of factorially designed stimuli so that the utility of each stimulus attribute and attribute level can be inferred from the respondent's overall evaluations of the stimuli.

Constant sum question

A question in which the respondent is asked to allocate a fixed sum of points to options to show the importance (or some other attribute or characteristic) of each option.

Construct

A concept that is the conscious invention of researchers to be used for a special research purpose.

Construct validity

A form of external validity that assesses the extent to which generalizations can be made about higher-order constructs from research operations; it is a measurement issue and is concerned with how and why a measurement works.

Content analysis

Coding of free responses to open-end questions.

Content validity

The extent to which a scale or measurement instrument represents the universe of the property or characteristic being measured.

Continuous panel

A sample of individuals, households, or firms from whom information is obtained at successive time periods.

Controlled experiment

A research design in which the investigator intervenes by manipulating at least one assumed causal variable and in which subjects (respondents) are assigned randomly to experimental and control groups.

Convergent validity

A type of construct validity concerned with the correspondence in results between measuring the same construct by two or more independent methods.

Convenience sample

A nonprobability sample chosen by a convenient process and because elements are easy to obtain.

Conversational interviewing

In personal or telephone interviewing the interviewer answers queries from respondents about question meaning and understanding.

Correlation analysis

The analysis of the extent to which changes in one variable are related to changes in one or more other variables.

Correlation coefficient

A measure of the association between two or more variables.

Coverage error

Occurs when the sample frame or group from which the sample is drawn does not represent the population as a whole. See also frame error.

Criterion validity

The extent to which the measurement instrument works in predicting the future (predictive validity) or reflects the present (concurrent validity). Also known as pragmatic validity.

Criterion variable

See dependent variable.

Cross-over design

A statistical experimental design in which different treatments are applied to the same test units in different time periods.

Cross sectional design

A research design where several groups are measured at the same time, with each group having been exposed to a different level of the treatment variable.

Cross tabulation

The simultaneous counting of the number of observations that occur in each of the data categories of two or more variables.

Cross validation

A procedure in regression analysis and discriminant analysis for examining whether the predictive equations derived hold up beyond the data on which parameters are based.

Cumulative scale

A scale constructed of a set of items with which the respondent indicates agreement or disagreement, it is unidimensional, and there is a pattern of item responses that is related to the total score.

Data collection techniques

The means by which data are collected by communication or by observation.

Data matrix

A rectangular array of data entries where the rows are a respondent's responses and the columns are the variables or data fields for the responses. Also known as the basic data matrix.

Decision model

See problem-situation model.

Decisional research

Applied research which attempts to use existing knowledge to aid in the solution of some given problem (s).

Dependent variable

The effect of interest or outcome in an experiment.

Depth interview

An often unstructured interview that is used to explore the underlying predisposition, needs, desires, feelings, and emotions of consumers toward products and services. May consist of direct and/or indirect questions.

Descriptive study

Provides information such as describing market characteristics or functions on groups and phenomena that already exist; there is prior formulation of specific research questions. Also known as an "observational study."

Determinants of a research project

The problem, the researcher, the respondent/subject, and the client.

Dichotomous question

A multiple-choice question with only two alternative responses.

Differential scale

A rating scale, assumed to be interval, in which a respondent is asked to agree with only a subset of items (statements) about an object, with each item having a predetermined scale value (position on the scale), and the items agreed with correspond to the respondent's position on the dimension being measured.

Direct interview

An interview in which the purposes of the questions are not purposely disguised.

Direct-judgment rating method

A respondent is asked to give a numerical rating to each stimulus with respect to some designated attribute.

Directory-based sampling

A directory or other physical listing is used as a sample frame to select sample elements to be called in a telephone survey.

Discriminant validity

A form of construct validity which assesses the extent to which a measure is unique and not simply a reflection of other variables.

Disproportionate stratified sampling

A stratified sample in which characteristics other than just relative size, such as relative size of stratum variances, are taken into account.

Distance

A characteristic of the real number system where the differences between ordered numbers are ordered.

Double opt-in mailing list

A list of people with e-mail addresses who have indicated agreement to receive surveys.

Drop-off/pick-up survey

A survey where the questionnaire is left with a respondent and a representative of the research organization returns later to pick up the completed questionnaire, or the questionnaire can be returned by mail.

Editing

The process of reviewing the data to ensure maximum accuracy and clarity.

Electronic surveying

See online research.

E-mail submission form

Used when the researcher builds a HTML online survey, distributes actively to the respondent, and receives the respondent's answers as part of an e-mail message that is directed back to the researcher.

Emic vs. etic issue

An issue in cross-national/cultural research in which a researcher must decide whether constructs and methods are culture-specific (emic) or culture-free (etic).

E-panel

Doing panel research using the Internet for data collection.

Equal-appearing intervals

See differential scale.

Ethical behavior

Behavior conforming to professional standards of conduct; it is what most people in a given society view as being moral, good, or right.

Ethics

Moral principles, quality, or practice.

Ethnography

A qualitative approach to research that studies human behavior within a cultural context.

Executive summary

That part of a formal research report which reduces the essentials of the study—the why, the what, the how, the conclusions, and the recommendations—to one or two pages.

Experimental error

Noncorrespondence of the true (or actual) impact of, and the impact attributed to, the independent variable (s).

Experimentation

A research method where there is researcher intervention and control over the factors affecting the response variable of interest, thus allowing for the establishment of causal relationships.

Explicit model

A model described verbally, graphically or diagrammatically, mathematically (symbolically), or as a logical sequence of questions (logical flow).

Ex post facto design

A quasi-experiment in which the test and control groups are not known until after the treatment has been administered.

Exploratory study

A study whose purposes include the identification of problems, more precise formulation of problems (including identification of relevant variables), and the formulation of new alternative courses of action.

External secondary information

Secondary information that must be obtained from outside sources.

External validity

The generalizability of a relationship beyond the circumstances under which it is observed.

Extraneous variable

A variable other than the manipulated independent variable that could influence the dependent variable.

Factor analysis

A class of statistical techniques whose purpose often is data reduction and summarization which is accomplished by representing a set of observed variables, persons, or occasions in terms of a smaller number of hypothetical, underlying and unknown dimensions which are called factors.

Factorial design

A statistical experimental design where there is an equal number of observations made of all combinations involving at least two levels of at least two variables.

False negative error

A respondent reports not to have an attitude when he or she really does have one.

False positive error

Statements by respondents that appear to be complimentary, but really are not, or when respondents appear to have an attitude and they do not.

Field experiment

An experiment conducted in a natural environmental setting.

Fixed-size sampling

The number of elements to be included in the sample is decided upon in advance.

Focus group

A group of topic knowledgeable people who jointly participate in an interview that does not use a structured question-and-answer methodology. Usually consists of 8 to 12 people selected purposively.

Formal research report

Consists of a number of components which can be organized into three components: prefatory pages, report body, and appended parts.

Four-group, six-study design

Combines an after-only with control group design and a before-after with control group design.

Fractionation

A rating scale in which the respondent is given two stimuli at a time and is asked to give some numerical estimate of the ratio between them, with respect to some attribute.

Frame error

Noncorrespondence of the sought sample to the required sample. Occurs when the sample frame is incomplete, has multiple entries for elements, or has elements included that are not in the relevant population.

Framing effects

The difference in response to objectively equivalent information depending upon the manner in which the information is labeled or framed.

Free answer question

A question that has no fixed alternatives to which the answer must conform. Also known as open-ended text.

Frequency distribution

See simple tabulation.

Full profile conjoint analysis

Conjoint analysis where different stimulus (e.g., a product) descriptions are developed and presented to the respondent for acceptability or preference evaluations.

Fundamental research

Seeks to extend the boundaries of knowledge in a given area with no necessary immediate application to existing problems.

Funnel approach

An approach to questionnaire design that specifies a sequence of questions where one proceeds from the general to the specific or from the easier questions to answer to those that are more difficult to answer.

Goodness-of-fit test

An analysis of whether the data obtained in a research study fit or conform to a model or distribution.

Graphic positioning scale

A semantic differential used for multiple object ratings where all objects are evaluated on each scale item.

Graphic rating scale

A rating scale in which a respondent indicates his/her rating of a stimulus on a graphical response item.

Guided imagery

A modified TAT where participants are asked to appraise a product or brand by concentrating on creating and experiencing an associated image.

History

Events outside an experimental design that affect the dependent variable.

Hypothesis

An assertion about the “state of nature” or the relation between things that often, from a practical standpoint, implies a possible course of action with a prediction of the outcome if the course of action is followed.

Implicit model

A model that guides a decision but has not been specified in an explicit or formal manner.

Inaccuracy in response

Errors made in the formulation of information. May be concurrent or predictive (e.g., when reported intentions are not carried out).

Independent variable

In an experiment, it is a variable whose effect upon some other variable the experiment is designed to measure; it is the variable that is manipulated and is also known as the treatment variable.

Indirect interview

An interview that is neither fully structured nor unstructured, and in which the purposes of the questions asked are intentionally disguised.

Information

Recorded experience that is useful for decision making; communicated knowledge which changes the state of knowledge of the person who receives it.

In-store interviewing

A type of mall intercept in which the interviews take place in a single store, usually at the point of purchase.

Instrument effect

Changes in the measuring instrument or process that may affect the measurement obtained in an experiment.

Intentions

Presently planned actions to be taken in a specified future time period.

Interaction

The situation in an experiment where the response to changes in the levels of one treatment variable is dependent on the level of some other treatment variable(s).

Interactive interviewing

Interviews that are conducted by having a respondent respond on a personal computer. Some software may customize new questions based on responses to previously answered questions.

Intercoder reliability

The reliability of coding done by multiple persons.

Internal consistency reliability

Reliability within single testing occasions in which the variables are grouped.

Internal secondary information

Secondary information that is available from within the company or the organization.

Internal validity

Assesses whether the observed effect is due solely to the experimental treatments and not due to some extraneous variable(s).

Interpretation

The process of taking the results of analysis, making inferences relevant to the research relationships studied, and drawing managerially useful conclusions about these relationships.

Interval scale

A measurement scale that possesses the characteristics of order and distance, and the zero point of the scale is arbitrary.

Interview

A form of person-to-person (dyadic) communication between two parties that involves the asking and answering of questions.

Interviewer

A person who asks questions in an interview of a respondent.

Judgment sample

A nonprobability sample where the elements to be included are selected on the basis of the researcher's sound judgment or expertise and an appropriate strategy.

Kurtosis

The shape of a data distribution in terms of height or flatness.

Laboratory experiment

An experiment conducted in a controlled laboratory or laboratory-type setting.

Laddering

See means-end analysis.

Leniency error

Occurs when respondents consistently use the extreme positions on a rating scale with relatively little use of intermediate scale positions.

Likert scale

A balanced rating scale in which a respondent is asked to indicate extent of agreement with a series of statements, using a set of verbal categories from "strongly agree" to "strongly disagree" for response. See also summated scale.

Limited-response category scale

A rating scale in which a respondent is limited to choosing from a predetermined set of response categories.

Logit

A type of multiple regression analysis where the categorical dependent variable is assumed to follow a logistic distribution.

Mail interview

A type of survey where the questionnaire is sent to a respondent by mail and the respondent returns the completed questionnaire by mail.

Make or buy decision

The decision by a research client whether the research is to be done in-house (make) or by an outside supplier (buy).

Mall intercept

Interviews are stationed at selected places in a shopping mall or other centralized public place and they request interviews from people who pass by.

Management summary

See executive summary.

Marketing information system

A “formal” system within an organization for obtaining, processing, and disseminating decision information. Subsystems are marketing research, internal records, marketing intelligence, and information analysis.

Marketing intelligence

A subsystem of a MIS in which a set of procedures and sources are used to provide information about relevant developments in the marketing environment.

Marketing research

The systematic and objective search for, and analysis of, information relevant to the identification and solution of any problem in the field of marketing.

Matching

A control technique where subjects are equated on the variable(s) to be controlled. Also known as balancing.

Maturation

Changes that occur with the passage of time in the people involved in an experimental design.

Mean

The point on a scale around which the values of a distribution balance; it is the sum of all the values divided by the number of respondents.

Means-end analysis

An in-depth one-on-one interviewing technique that identifies the linkages people make between product attributes (means), the benefits derived from those attributes (the consequences), and the values that underlie why the consequences are important (the ends). Also known as “Laddering” and “Means-End Chain.”

Measurement

A way of assigning symbols to represent the properties of persons, objects, events, or states, which symbols have the same relevant relationships to each other as do the things represented.

Measurement error

The difference between the information obtained and the information wanted by the researcher; it is generated by the measurement process itself.

Median

The midpoint of the data in a distribution.

Memory error

Inaccuracy in response that occurs when a respondent gives the wrong factual information because of not remembering an event asked about.

Method of inquiry

The broad approach to conducting a research project and the philosophy underlying the approach. Methods include objectivist, subjectivist, Bayesian, and phenomenologist.

Metric measurement

Direct numerical judgments made by a respondent which are assumed to be either interval- or ratio-scaled.

Metric multidimensional scaling

Multidimensional scaling in which the input data are ratio-scaled.

MIS

See marketing information system.

MIS activities

Discovery, collection, interpretation, analysis, and intra-company dissemination of information.

Misunderstanding error

Inaccuracy in response often due to careless question design.

Mode

The typical or most frequently occurring value in a distribution.

Model

The linking of propositions together in a way that provides a meaningful explanation for a system or process.

Moderator

A person conducting a focus group whose job is to direct the group's discussion to the topics of interest.

Monadic rating scale

Each object is rated by itself independently of any other objects being rated.

Multicollinearity

A condition in multiple regression analysis where the predictor variables show very high correlation among themselves.

Multidimensional scaling

A set of techniques that portray psychological relations among stimuli—either empirically obtained similarities or preferences (or other kinds of orderings)—as geometric relationships among points in a multidimensional space.

Multi-item scale

A scale consisting of a number of closely related individual rating scales whose responses are combined into a single index or composite score or value. See also summated scale.

Multiple choice question

A question that has at least two fixed alternative response categories and the respondents can select k out of n choices.

Multiple correlation analysis

Correlation analysis when the number of independent variables is two or more.

Multiple regression analysis

Regression analysis with two or more independent variables.

Multiplicity sample

See snowball sample.

Multistage sampling

A multilevel probability sample in which a sample is selected of larger areas (or groups), and then a sample is selected from each of the areas (groups) selected at the first level, and so on.

Multitrait Multimethod Matrix

A generalized approach for establishing the validity and reliability of a set of measurements (traits).

Multivariate analysis

Statistical procedures that simultaneously analyze measurements of multiple variables on each individual or object under study.

Natural experiment

An experiment in which the investigator intervenes only to the extent required for measurement, and there is no manipulation of an assumed causal variable. The variable of interest has occurred in a natural setting, and the investigator looks at what has happened.

Nominal scale

A measurement scale that does not possess the characteristics of order, distance, and origin.

Nomological validity

A form of construct validity which attempts to relate measurements to a theoretical model that leads to further deductions, interpretations, and tests.

Nonmetric multidimensional scaling

Multidimensional scaling in which input data are rank order data (ordinally-scaled), but which output is interval-scaled.

Nonparametric statistical methods

Distribution-free methods in which inferences are based on a test statistic whose sampling distribution does not depend upon the specific distribution of the population from which the sample is drawn.

Nonprobability sample

A sample selected based on the judgment of the investigator, convenience, or by some other means not involving the use of probabilities.

Nonresponse error

Noncorrespondence of the obtained sample to the original sample.

Nonsampling error

All errors other than sampling error that are associated with a research project; typically is a systematic error but can have a random component.

Null hypothesis

A hypothesis which states no difference.

Numerical comparative scale

A semantic differential used for multiple object ratings where all objects are evaluated on each scale item using a verbally-anchored numerical scale.

Numerical rating scale

A rating scale that uses a series of integers that may, or may not have verbal descriptions, to represent degrees of some property.

Observation technique

Information on respondents' behavior is obtained by observing it rather than by asking about it.

"One more question" syndrome

The tendency to add an additional question to a survey because the cost is very low to do so.

One-on-one interview

See depth interview.

Online research

Using the Internet as a mode of data collection. Often used in conjunction with e-mail.

Operational definition

Assigns meaning to a variable by specifying what is to be measured and how it is to be measured.

Order

A characteristic of the real number series in which the numbers are ordered.

Ordered-category sorting

A respondent assigns (sorts) a set of stimuli into different categories, which are ordered on the basis of some property.

Ordinal scale

A measurement scale that possesses only the characteristic of order; it is a ranking scale.

Origin

A characteristic of the real number series where there is a unique origin indicated by the number zero.

Paired comparisons

The respondent is asked to choose one of a pair of stimuli on the basis of some property of interest.

Pantry audit

A data collection technique whereby a field worker takes an inventory of brands, quantities, and package sizes that a consumer has on hand.

Parameter

A summary property of a collectivity, such as a population, when that collectivity is not considered to be a sample.

Partially structured indirect interview

An interview using a predevised set of words, statements, cartoons, pictures, or other representation to which a person is asked to respond, and the interviewer is allowed considerable freedom in questioning the respondent to ensure a full response.

Personal interview

An interviewer asks questions of respondents in a face-to-face situation.

Pictogram

A pictorial chart that depicts data with the help of symbols such as stars, stacks of coins, trees, facial expressions, caricatures of people, and so forth.

Pilot study

A small-scale test of what a survey will be, including all activities that will go into the final survey.

Planned information

Exists when a manager recognizes a need and he or she makes a request that information be obtained.

Population

The totality of all the units or elements (individuals, households, organizations, etc.) possessing one or more particular relevant features or characteristics in common, to which one desires to generalize study results.

Population specification error

Noncorrespondence of the required population to the population selected by the researcher.

Popular report

A research report that minimizes technical details and emphasizes simplicity.

Power of a hypothesis test

It is 1 minus the probability of a Type II error ($1-\beta$).

Practical significance

See substantive significance.

Pragmatic validity

See criterion validity.

Precision

Refers to sampling error and the size of the confidence limits placed on an estimate.

Precoding

Coding done before the data are collected.

Predictive validity

See criterion validity.

Predictor variable

See independent variable.

Pre-experimental design

A research design with total absence of control.

Pretesting

The testing of a questionnaire or measurement instrument before use in a survey or experiment.

Probabilistic cause

Any event that is necessary, but not sufficient, for the subsequent occurrence of another event.

Probability sampling

Every element in the population has a known nonzero probability (chance) of being selected for inclusion in a study.

Probit

A type of multiple regression analysis where the categorical dependent variable is assumed to be normally distributed.

Problem formulation

A stage in the research process in which a management problem is translated into a research problem.

Problem-situation model

A conceptual scheme that specifies a measure of the outcome(s) to be achieved, the relevant variables, and their functional relationship to the outcomes(s).

Program Evaluation and Review technique (PERT)

A probabilistic scheduling approach using three time estimates: optimistic, most likely, and pessimistic. See also critical path method (CPM).

Projection

A research technique whereby a respondent projects his/her personality characteristics, etc. to a non-personal, ambiguous situation that he/she is asked to describe, expand, or build a structure around it.

Proportionate stratified sampling

A stratified sample in which the sample that is drawn from each stratum is proportionate in size to the relative size of the stratum in the population.

Proposition

A statement of the relationship between variables, including the form of the relationship.

Protocol

A record of a respondent's verbalized thought processes while performing a decision task or while problem solving (concurrent) or just after the task is completed (retrospective)

Psychogalvanometer

A device for measuring the extent of a subject's response to a stimulus, such as an advertisement.

Purposive sampling

See judgment sample.

Q-sort

A scaling technique in which the respondent is asked to sort a number of statements or other stimuli into a predetermined number categories, formed on the basis of some criterion, with a specified number having to be placed in each category.

Quasi-experimental design

A controlled experiment design where there is manipulation of at least one assumed causal variable but there is not random assignment of subjects to experiment and control groups.

Questionnaire

An instrument for data collection that requests information from respondents by asking questions.

Quota sample

A nonprobability sample in which population subgroups are classified on the basis of researcher judgment and the individual elements are selected by interviewer judgment.

Random-digit-dialing

A probability sampling procedure used in telephone surveys where the telephone number to be called is generated by selecting random digits.

Randomized response technique

A technique for obtaining information about sensitive information.

Random sampling error

See sampling error.

Rank correlation

The correlation between variables that are measured by ranking. Measures used are Spearman rho and Kendall tau.

Ranking

Respondents are asked to order stimuli with respect to some designated property.

Rank order question

A question where the answer format requires the respondent to assign a rank (order) position for the first, second,..., to the nth item to be ordered.

Rating

A measurement method where a respondent places that which is being rated along a continuum or in one of an ordered set of categories.

Ratio scale

A measurement scale possessing all the characteristics of the real number series: order, distance, and origin.

Reactive effects of experimental situation

Effects that may arise from subjects' reacting to the situation surrounding the conduct of an experiment rather than the treatment variable.

Reactive effects of testing

The learning or conditioning of the persons involved in an experimental design as a result of knowing that their behavior is being observed and/or that the results are being measured.

Regression analysis

The mathematical relationship between a dependent variable and one or more independent variables.

Regression coefficient

Represented by b, it shows the amount of change that will occur in the dependent variable for a unit change in the independent variable it represents.

Relevancy of information

Pertinence and applicability of information to the decision.

Reliability

The consistency of test results over groups of individuals or over the same individual at different times.

Repeated measures design

A research design where subjects are measured more than once on a dependent variable. See also cross-over design.

Repertory grid

A partially structured measurement technique that requires the respondent to compare objects along dimensions that he or she selects.

Representative sample

A relatively small piece of the population that mirrors the various patterns and subclasses of the population.

Research design

The specification of methods and procedures for acquiring the information needed to structure or to solve problems. The operational design stipulates what information is to be collected, from which sources, and by what procedures.

Research method

Experimental or non-experimental; the major difference between the two lies in the control of extraneous variables and the manipulation of at least one assumed causal variable by the investigator in an experiment.

Research plan

A formal written document that serves as the overall master guide for conducting a research project.

Research process

A series of interrelated steps that define what a research project is all about, starting with problem formulation and ending with the research report.

Research proposal

A shorter and less technical version of a research plan that is used to elicit the project and gain a commitment of funding.

Research question

States the purpose of the research, the variables of interest and the relationships to be examined.

Research report

The major vehicle by which researchers communicate by a written statement and/or oral presentation research results, recommendations for strategic and tactical action, and other conclusions to management in the organization or to an outside organization.

Respondent

A person who participates in a research project by responding and answering questions verbally, in writing, or by behavior.

Response bias

See response error.

Response error

The difference between a reported value and the true value of a variable.

Robust statistical technique

A technique of analysis whereby if certain assumptions underlying the proper use of the technique are violated, the technique performs okay and can handle such a violation.

Sample

A subset of the relevant population selected for inclusion in a research study.

Sample design

A statement about a sample that specifies where the sample is to be selected, the process of selection, and the size of the sample; it is the theoretical basis and the practical means by which data are collected so that the characteristics of the population can be inferred with known estimates of error.

Sample frame

A means of accounting for the elements in a population, usually a physical listing of the elements, but may be a procedure which produces a result equivalent to a physical listing, from which the sampled elements are selected.

Sampling distribution

The probability distribution of a specified sample statistic (e.g., the mean) for all possible random samples of a given size n drawn from the specified population.

Sampling error

Variable error resulting from the chance specification of population from elements according to the sampling plan. Often called random sampling error, it is the non-correspondence of the sample selected by probability means and the representative sample sought by the researcher.

Sampling unit

A population element which is actually chosen by the sampling process.

Scaling

Generation of a continuum on which measured objects are located.

Scanner data

Data on products purchased in retail stores that are obtained by electronic scanning at checkout of the Universal Product Code (UPC); unit and price information are recorded.

Scree chart

In factor analysis, it is a discrete line chart that relates the amount of variance accounted for by each factor to the factor number (1 ... k).

Secondary information

Information that has been collected by persons or agencies for purposes other than the solution of the problem at hand, and which is available for the project at hand.

Selection error

The sampling error for a sample selected by a nonprobability method. It is also a term used for the effect of the selection procedure for the test (treatment) and control groups on the results of an experimental study.

Semantic differential

A rating procedure in which the respondent is asked to describe a concept or object by means of ratings on a set of bipolar adjectives or phrases, with the resulting measurements assumed to be intervally-scaled.

Sentence completion test

A respondent is given a sentence stem (the beginning phrase) and is asked to complete the sentence with the first thought that occurs to him or her.

Sequential sample

An approach to selecting a sample size whereby a previously determined decision rule is used to indicate when sampling is to be stopped during the process of data collection.

Simple random sample

A probability sample where each sample element has a known and equal probability of selection, and each possible sample of n elements has a known and equal probability of being the sample actually selected.

Simple tabulation

A count of the number of responses that occur in each of the data categories that comprise a variable. Also known as marginal tabulation.

Simulation

A set of techniques for manipulating a model of some real-world process for the purpose of finding numerical solutions that are useful in the real process that is being modeled.

Single-source data

Obtaining all data from one research supplier on product purchases and causal factors such as media exposure, promotional influences, and consumer characteristics from the same household.

Skewness

A measure of a given data distribution's asymmetry.

Snowball sampling

A nonprobability sample in which initial respondents are selected randomly but additional respondents are obtained by referrals or by some other information provided by the initial respondents.

Socioeconomic characteristics

The social and economic characteristics of respondents, including for example, income, occupation, education level, age, gender, marital status and size of family.

Split-half reliability

A measure of internal consistency reliability where the items in a multi-item measure are divided into two equivalent groups and the item responses are correlated.

Standard deviation

A measure of dispersion (variation) around the sample mean, it is the square root of the variance.

Standard error

The standard deviation of the specified sampling distribution of a statistic.

Standard error of the difference

The standard deviation of the sampling distribution of the difference between statistics such as means and proportions.

Standardized interviewing

In a survey using personal or telephone interviewing the interpretation of questions asked is left up to the respondent as the interviewer is not allowed to answer any query.

Stapel scale

An even-numbered balanced nonverbal rating scale that is used in conjunction with single adjectives or phrases.

State of nature

An environmental condition.

Static-group comparison

A quasi-experimental design in which a group exposed to a treatment is compared to a group that was not exposed.

Statistical conclusion validity

Involves the specific question whether the presumed independent and dependent variables are indeed related.

Statistical experimental design

After-only designs in which there are at least two treatment levels. Includes completely randomized, factorial, Latin-Square, randomized block, and covariance designs.

Statistical power

Ability of a sample to protect against the type II error (beta risk).

Statistical regression

The tendency with repeated measures for scores to regress to the population mean of the group.

Stepwise regression

Multiple regression analysis in which the independent variable explaining the most variance is sequentially included one at a time.

Story completion

A qualitative research technique where a respondent is presented with the beginning of a situational narrative and is asked to complete it.

Stratified sampling

A probability sample where the population is broken into different strata or subgroups based on one or more characteristics and then a simple random sample is taken from each stratum of interest in the population.

Structured interview

An interview in which a formal questionnaire has been developed and the questions asked in a prearranged order.

Stub-and-banner table

A table that presents one dependent variable cross-tabulated by multiple independent variables.

Substantive significance

An association that is statistically significant and of sufficient strength.

Sufficiency of information

Degree of completeness and/or detail of information to allow a decision to be made.

Summated scale

A rating scale constructed by adding scores from responses to a set of Likert scales with the purpose of placing respondents along an attitude continuum of interest. See also Likert scale and multi-item scale.

Surrogate information error

Noncorrespondence of the information being sought and that required to solve the problem.

Survey

A research method in which the information sought is obtained by asking questions of respondents.

Survey tracking and address books

Online survey technology that uses imbedded codes to facilitate the identification and tracking of survey respondents and non-respondents.

Syndicated services

Information collected and tabulated on a continuing basis by research organizations for purposes of sale to firms; data are made available to all who wish to subscribe. See commercial data.

Systematic error

See nonsampling error.

Systematic sampling

A probability sample where the population elements are ordered in some way and then after the first element is selected all others are chosen using a fixed interval.

Tabulation

The process of sorting data into previously established categories, making initial counts of responses and using summarizing measures.

Technical report

A research report that emphasizes the methods used and underlying assumptions, and presents the findings in a detailed manner.

Telephone interview

Interviews that are conducted by telephone.

Telescoping

A response error that occurs when a respondent reports an event happening at a time when it did not happen. It may be forward (report it happening more recently than it did) or backward (reporting it happening earlier than it did).

Testing effect

The effect of a first measurement on the scores of a second measurement.

Test of independence

A test of the significance of observed association involving two or more variables.

Test-retest reliability

The stability of response over time.

Thematic Apperception Test (TAT)

A test consisting of one or more pictures or cartoons that depict an ambiguous situation relating to the subject being studied, and research subjects are asked to make up a story about what is happening, or the subject is asked to assume the role of a person in the situation and then describe what is happening and who the others in the scene are.

Third-person technique

A projective qualitative research method in which a respondent is indirectly interviewed by asking for his or her view of what a neighbor or some other person would respond to the interview.

Thurstone Case V Scaling

Based on the Thurstone's Law of Comparative Judgment, this method allows the construction of a unidimensional interval scale using responses from ordinal measurement methods, such as paired comparisons.

Time series design

Data are obtained from the same sample (or population) at successive points in time.

Total study error

Sampling error plus non-sampling error.

Treatment variable

See independent variable.

Trend design

Data are obtained from statistically matched samples drawn from the same population over time.

True experiment

See controlled experiment.

t – test

A test of the difference in means of two groups of respondents that focuses on sample means and variances.

Type I error

The probability that one will incorrectly reject H_0 , the null hypothesis of no difference, or any hypothesis.

Type II error

The probability that one will incorrectly accept a null hypothesis, or any hypothesis.

Unlimited-response category scale

A direct-judgment rating scale where the respondent is free to choose his/her own number or insert a tick mark along some line to represent his/her judgment about the magnitude of the stimulus relative to some reference points.

Unobtrusive measures

Nonreactive measures of behavior, past and present.

Unsolicited information

Information which may, in fact, exist within and be obtainable within the company, but which potential users do not know is available unless they happen to chance upon it.

Unstructured interview

An interview in which there is no formal questionnaire and the questions may not be asked in a prearranged order.

Useful information

Information which is accurate, current, sufficient, available, and relevant.

Validity of measurement

The extent to which one measures what he or she believes is being measured.

VALS

A syndicated segmentation scheme known as Values and Lifestyle segmentation which combines demographic, attitudinal, and psychographic data, according to pre-defined segments,

Variance

A measure of dispersion, it is the mean of the squared deviation of individual measurements from the arithmetic mean of the distribution.

Variation in measurement

Differences in individual scores within a set of measurements that may be due to the characteristic or property being measured (the true difference) and/or the measurement process itself.

Verbal measures

Include spoken and written responses, including responses provided interactively with a personal computer.

Verbal rating scale

A rating scale using a series of verbal options for rating an object.

Warranty form of interview

A type of mail interview where the questions asked are included on the warranty card to be returned to the manufacturer.

Weighting data

Procedures used to adjust the final sample so that the specific respondent subgroups of the sample are found in identical proportions to those found in the population.

Wilcoxon rank sum (T) test

A test of the relationship between two sets of measurements from dependent samples in which the data are collected in matched pairs.

Wilks' lambda

In discriminant analysis it is a multivariate measure of group differences over discriminating variables.

Word association test

A series of stimulus words are presented to a respondent who is asked to answer with the first word that comes to mind after hearing each stimulus word.

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