**Lesson No. 1** **AUTHOR: DR. B. B. SINQLA**

# MARKETING RESEARCH

**STRUCTURE**



## 1.0 OBJECTIVES

After reading this chapter, the reader should be able to:

- Understand the Objective, Role & Scope of Research Methodology.
- Realize the characteristics of Research.
- Comprehend the Research Process.

## 1.1 INTRODUCTION TO RESEARCH METHODOLOGY

Research is derived from the Latin word researcher which means to look for something which is hidden. It is composed of two words Re + search, Re means fact and search means to find.

Conducting research is essential to make suitable and right decisions about specific problems. The best course of action is always dependent on a good amount of organization may take decision to price a product on the basis of market research conducted by a marketing agency but a house wife may decide about the price of the product on the basis of her experience in purchasing commodities. Research is the solution provides to various problems e.g. if the problem is that why India is an under-developed economy. Through research various features of under development will be highlighted like more dependence on agriculture, less developed industrial sector, poor infrastructure etc. and the real course of under development will be highlighted and steps will be taken on the basis of the findings of research to get rid of under development. The questions which are generally tend to answer are what, why how where and who Rudyard (Kipling, a noted English poet wrote a piece of poetry which explains the

insight) of research beautifully. He wrote:

*I put six honest learning men,*
*They thought me all knew,*
*Their names are what and why and when, and how and where and who.*

Def. Redman & Moxy *"Research in systematized effort to gain new knowledge*." Research is effectively used in economics, commerce and management. Henry Ford, the master of famous Ford Motor Company once said, "Research is fundamental to everything we do, so much so that we hardly make any significant decision without the benefit of some kind of market research. The most important managerial value of business research is that it reduces the uncertainly and risk by providing information that improves the number of ways. First it may be used to define problems or to identify opportunities to enrich management efforts. A second reason for using business research is to explain why something went wrong. Detailed information about specific mistakes or failures is frequently sought. The basic objective of seeking answers to such questions is to identify the problems areas for the business.

Different type of research studies are designed for different type of situations and problems. For example, food processing industry introducing a new juice might be interested in knowing whether golden or silver packaging would be more effective. In this situation, the problem is clearly defined and a simple experiment may be designed to get the specific answer. However in some complicated situation, the industry may be totally unaware of a problem. For example, a manufacturer may notice that employee turnover has increased too much but the plant manager may be totally ignorant of the reasons for this trend. In such cases, explanatory search may be necessary to gain insights into the nature of the problem.

## 1.2 CHARACTERISTICS OF RESEARCH

1. Research is directed towards the solution of a problem. The ultimate aim is to discover cause and effect relationships between variables.
2. Research emphasizes upon the development of generalizations, principles or theories that will be helpful in predicting future occurrence.
3. Research is based upon observed experience or empirical evidence.
4. Research demands accurate observations.
5. Research involves gathering of new data from primary or secondary sources or using existing data for a new purpose.
6. Research is more often characterized by carefully designed procedures that apply strict and impartial analysis of data.
7. Research requires expertise.
8. Research strives to objective and logical, applying every possible test to validate the procedures employed, the data collected and conclusions reached. The researcher attempts to eliminate personal biasness.
9. Research involves the quest for answers to unsolved problems.
10. Research is characterized by patient and unhurried activity.
11. Research is carefully recorded and reported,
12. Research sometimes requires courage.

- **SELF CHECK EXERCISE**

**i.** Research is notdirected towards the solution of a problem. (true/false).

**ii.** Research is based upon observed experience or empirical evidence. (true/false).

**iii.** *"Research is _____effort to gain new knowledge*."

(a) Systematized

(b) Unsystematized

(c) Impartial

(d) Strict

**iv.** "Research is fundamental to everything we do, so much so that we hardly make any significant decision without the benefit of some kind of market research. (true/false).

## 1.3 SOME KEY CONCEPTS USED IN RESEARCH

One can understand the process of research methodology and the techniques involved in it lastly of some basic concepts are known to us. The following concepts are the most important :

**(1)** *THEORY* : The word Theory' has also been used in different ways in the different contexts. For our purpose a theory is coherent body of general propositions used as principles or explanation of the relationships of certain observed-phenomena. A key element in the above definition is the term, proposition. So let us see what is a proposition. A proposition is a statement concerned with the relationships among concepts. It has to be based on logic. A proposition states that every want either has a certain property or stands in a certain relationship to other events.

**(2)** *CONCEPT* : A concept is a generalized idea about some occurrences or processes. It is based on empirical events. Concepts are expressed in words that refer to various events or objects. For example, research concepts of 'asset' is an abstract term that may in the concrete world of reality refer to a specific machine. Concepts may be framed at different levels of action. It may be based on propositions or empirical observations. Researchers generally try to explore those concepts which are based upon empirical observations and the theorists translate the conceptualizing of reality into abstract ideas. Only when we explain how concepts are related to other concepts then we begin to construct theories. Thus, the difference between a theory and a concept is that concept it is a single phenomenon whereas a theory is an assimilation of many concepts.

**(3)** *HYPOTHESIS* : It means tentative or assumed statements. A hypothesis is a proposition that is empirically testable. Every research starts with framing of a hypothesis which is nothing but a tentative conclusion. We try to test it with the help of statistical tools and if, it is tested successfully, we accept the hypothesis.

## 1.4 OBJECTIVES AND IMPORTANCE OF RESEARCH

The importance of research can be well analysed from a famous HUDSON Maxim. "All progress is born of enquiry. Doubt is often better than over confidence for it leacs to enquiry and enquiry leads to inventions."

**1.** *To achieve the solution of problem* : The main objective of every type of research is to solve the problem. The whole process of research is concentrated towards giving the solution of the problem.

2. *To achieve new insights* : Research is done to achieve new insights or to know or to explore more and more about problem and have the deeper knowledge of any problem.
3. *To determine the frequency :*Research depicts the frequency or the no. of times any specific thing/problem occurs. With research frequency of problem can be read.
4. *To test the hypothesis :*To solve problem one of the step is to frame the hypothesis. Hypothesis is tentative statements that provide solution to the problem. Whole of the research is concentrated towards approving/disapproving the hypothesis.
5. *Basis of frame for government policies :*Research provides the base for government policies & budget e.g. population policy, industrial policy, agricultural policy, fiscal & monetary policy.

- **SELF CHECK EXERCISE**

**v.** Research is done to achieve new insights or to know or to explore more and more about problem and have the deeper knowledge of any problem. (True/false)

**vi.** A hypothesis is a proposition that doesnot need to be empirically testable. (True/false)

**vii.** In the following, what is not the objective of research.

(a) *To achieve the solution of problem*

(b) *To determine the frequency*

(c) *To determine the amount spend on research*

(d) *To test the hypothesis*

## 1.5 THE PROCESS OF THEORY BUILDING

Many times a question is asked about the generation of theories. Although this is not an easy question to answer but still we can look at the generation of theories through abstract conceptual and empirical lever exploration. At the abstract level a theory may be developed with detective reasoning by going from a general statement to a specificassertion. Detective reasoning is a logical process of deriving a conclusion from something known to be true. For example, we know that all managers are human beings if we know that Mr. X is a manager then we can deduce that Mr. X is a human being also. The empirical level of theory may be developed with inductive reasoning which is a logical process of establishing a general proposition on the basis of observation of particular facts. For example, if a stock broker with 20 years experience of trading in a stock exchange repeatedly notices that the price of gold rises whenever there is some disturbance in the country, the stock broker may project this empirical observation in a generalized way and build a theory that price of gold is related with the political stability in the country. It has been generally found that a theory based on either empirical observation or deductive logic may not be a perfect theory especially in the field of social sciences. These sciences deal with human beings and their behavior is bound to have variations of human nature. In pure sciences, the relationships are fixed, so theory building is more accurate and scientific. For example, two units of oxygen and one unit of hydrogen shall always make water but a good perfect training in management may not create a manager in the

real sense. So, in social sciences, theory construction is often the result of a combination of deductive and inductive reasoning. We draw conclusions on the basis of our experience and then verify these conclusions, known, as Research Methodology.

## 1.6 THE METHODOLOGY OF RESEARCH

It will be useful for you to look at the analytical process or the methodology used by conducting scientific research. It comprises of a series of stages. Here are the following seven steps involved in the process of research:

1. Assessment of existing knowledge.
2. Formulation of concepts and propositions,
3. Statement of hypothesis.
4. Designing research to test the hypothesis.
5. Collection of empirical data.
6. Analysis and evaluation of data.
7. Explanation, statement of solutions and problems raised by the research.

## 1.7 RESEARCH PROCESS

Research is a search for knowledge. To gain this knowledge there are number of steps involved. These steps are not mutually exclusive, nor are they separate and distinct. They do not follow each other in a specific order. However, the following sequence provides useful procedural guidelines regarding the process.

1. Formulating the research problem
2. Extensive literature survey
3. Developing the hypothesis
4. Preparing the research design
5. Determining the sample design
6. Collecting the data
7. Execution of the project
8. Analysis of data
9. Hypothesis testing
10. Generalization and Interpretation
11. Preparation of the report.

First five steps i.e., from setting of the problem till determining the sample design are discussed in this chapter, rest are discussed in the later chapters.

**1. Formulating the Research Problem**

At the first glance, it would seem fairly easy to see and pose a problem for study. But the experience of researchers is summed up in the ad-age "It is often more difficult to find and frame the problem, rather than to solve it. Problem means what the researcher a wants to solve. It is the main concentration of whole of the research work."

The problem is of two types :

- Which relate to state of nature?
- Which relate to relationship between variables?

So whole of the study research is conducted after setting the problem. The problem once

set is not rigid in nature, but problem can change also. So initially the problem is set in a broad way or in a general way after defining/ redefining the problem it can be formulated in a specific way.

Essentially two steps are involved in framing the problem:

(i) Understanding the problem thoroughly

(ii) Refreshing the same into meaningful terms from analytical point of view.

There are number of sources of selecting the problem:

(a) Existing trouble

(b) Literature study

(c) Discussions

(d) Expert advice

(e) Studies already made

**2. Extensive Literature Survey**

Means a broad/wide survey of literature on the selected problem. So, whatever the material on such specific topic or on other related fields sire available are to be surveyed by the researcher. So, for this abstracting and indexing journals bibliographies are the first place to go. Academic journals, conference proceedings, govt, reports, books must be tapped depending on the nature of problem. It should be remembered that in survey of literature one source will lead to other. So, a good library is of immense use at this stage of surveying of literature.

**3. Developing the Hypothesis**

Hypothesis is derived from two words hypo + thesis. Hypo means tentative or assumed, thesis means statements. So hypothesis is a set of declarative statements or sentence which is to be proved or disapproved. So after setting the problem in hypothesis framing answers to such problems are decided in advance. Hypotheses are answered to such problems. After conducting an extensive, literature survey, the researcher should able to state in clear terms the working hypothesis. These are the assumptions made in order to draw out and test its logical consequences. Every hypothesis framed should possess the following features-clarity, simplicity, declarative sentence form, capable of testing etc. The role of hypothesis is to guide the researcher by determining the area of research and to keep him on the right track. It sharpens the thinking and focuses attention on the more important fact of the problem. It also indicates the requirement of type of data.

The hypothesis can be developed by :

- Discussing it with colleagues and experts about the problem, its origin and the objective in seeking the problem.
- Examination of data and records, if available concerning the problem for possible trend, peculiarities and other clues.
- Review of similar studies or related studies.
- Personal, investigation like interviews, surveys etc.

Thus hypothesis arise as a result of prior thinking about the subject, examination of available data and material including related studies and the counsel of experts and interested parties. Working hypothesis are more useful when stated in precise and clearly defined terms.

There are two types of hypotheses framed by researcher :

- Null hypothesis
- Alternative hypothesis.

*Null hypothesis* is that hypothesis which researcher wants to disapprove and *Alternative hypothesis* is one which the researcher wants to prove.

Another important concept in testing hypothesis is level of significance. It is always certain %age chosen with great care. It means the chances of or willingness to take the risk by accepting null hypothesis e.g. if level of significance is 5% it means that there are 5% chances of accepting wrong hypothesis and 95% level of confidence i.e. accepting a true hypothesis.

There are various steps to test a hypothesis :

1. Making a formal statement: Null hypothesis ($H_{f>}$) or Alternative hypothesis (HJ.
2. To select a level of significance.
3. To select the appropriate sampling distribution.
4. To select the random sample and compute appropriate value from sample data.
5. To calculate probability and compare probabilities with the relevant table values. Statisticians have developed several tests of hypotheses. Parametric and Non-parametric tests so by using these tests one can test hypothesis to be true/false.

**4. Preparing the Research Design**

Research design is preparing the blue print for action i.e. how the research will be conducted or to state the conceptual structure within which research will be conducted. The preparation of such a design facilities research to be as efficient as possible yielding maximum information. In other words, the function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money. But how all these can be achieved depend on research purpose. Research purpose may be grouped into four categories :

- Exploration
- Descriptive
- Diagnosis
- Experimental

So research design differs in all cases. A flexible design which provides opportunity for considering many different aspects of problem is considered appropriate if the purpose is that of exploration. But when purpose happens to be accurate description of a situation or of an association between variables, the suitable design will be one that minimizes bias and maximizes the reliability of data collected and analyzed. There are several designs, such as experimental and non-experimental hypothesis testing.

The preparation of research design, appropriate for a particular research problem, involves considering action of the following :

- The means of obtaining the information.
- The availability and skills of the researcher and his staff.
- Explanation of the way in which selected means of obtaining information will be organized and the reasoning leading to the action.
- The time available for research.
- The cost factor relating to the research

**Types of Research Design**

- Exploratory Research Design
- Conclusive Research Design
- Descriptive research Design
- Experimental research Design

**5. Determining the Sample Design**

A sample design is a definite plan for obtaining a sample from a given population. It refers to techniques or procedure or way the researcher will select units. As whole of the units or census method is impossible.

| *Research Design* | *Exploratory* | *Descriptive* |
|---|---|---|
| Overall design | Flexible | Rigid |
| Sampling design | Non-probability | Probability |
| Statistical design | No preplanned | Planned |
| Observational design | Unstructured | Structured |
| Operational design | No fixed decision | Advanced Decisions |

**6. Analysis of Data**

The analysis of data requires a number of operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences.

**7. Preparation of the Report**

Research report is one of the vital aspects of research and is considered a major constituent of the research study, for the research task remains incomplete till the report has been presented and / or written. Writing of report is the last step in a research study and requires a set of skills somewhat different from those called for in respect of the earlier stages of research.

- **SELF CHECK EXERCISE**

**viii.** Research design is preparing the_____for action.

(a) blue print
(b) report
(c) exercise
(d) green print

**ix.** The analysis of data requires a number of operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences. (true/ false)

**x.** Hypothesis arise as a result of prior___ about the subject, examination of available data.

## 1.8 SUMMARY

Conducting research is essential to make suitable and right decisions about specific problems. The most important managerial value of business research is that it reduces the uncertainly and risk by providing information that improves the number of ways. Research is directed towards the solution of a problem. The ultimate aim is to discover cause and effect relationships between variables. Research strives to objective and logical, applying every possible test to validate the procedures employed, the data collected and conclusions reached.

## 1.9 KEYWORDS

- *Research* : It is derived from the Latin word researcher which means to look for

something which is hidden.

- *Hypothesis* : It means tentative or assumed statements. A hypothesis is a proposition that is empirically testable.
- *Null Hypothesis* : is that hypothesis which researcher wants to disapprove.
- *Alternative Hypothesis* : is that hypothesis which the researcher wants to prove.

## 1.10 PRACTICE QUESTIONS

### 1.10.1 SHORT ANSWER QUESTIONS

1. What is research?
2. How to analyze reports?
3. What is the process of theory building?
4. What is null hyposthesis?
5. What is an alternate hypothesis?

### 1.10.2 LONG ANSWER QUESTIONS

1. Explain the various characteristics of Business Research.
2. Describe in detail the Research Process.
3. Explain the objectives of research.

## 1.11 SUGGESTED READINGS

- Kothari C.R., *Research Methodology : Methods and Techniques,* New Age International Publishers, New Delhi, 2nd Edition, 2006.
- Sinha, S. C. & Dhiman, A. K., *Research Methodology.*

## 1.12 ANSWER KEY

| | | | | | |
|---|---|---|---|---|---|
| i. | False | v. | True | ix. | True |
| ii. | True | vi. | false | x. | Thinking |
| iii. | (a) | vii. | (c) | | |
| iv. | True | viii. | (a) | | |

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## MARKETING RESEARCH & MARKETING INFORMATION SYSTEM

**STRUCTURE**



### 2.1 MARKET RESEARCH

Systematic collection and analysis of data relating to sale and distribution of financial products and services. Market research is an early step in the marketing process, and includes an analysis of market demand for a new product, or for existing products, as well as appropriate methods of distributing those products. Techniques in market research include telephone polling and focus group interviews to determine customer attitudes, pricing sensitivity, and willingness to use delivery alternatives. Most large banks have their own market research departments that evaluate not only products, but their Brick and Mortar branch banking networks through which most banking products are sold.

In other words, the term market research encompasses a number of activities that are

designed to connect marketers to consumers through information gathering and evaluation. Market research provides businesses with information about their customers, their competitors, and their overall industry. It is commonly used to identify marketing problems and opportunities, as well as to develop and evaluate the effectiveness of marketing strategies. Small business owners, because of their usually limited financial resources, have a particular need for adequate, accurate, and current information to aid them in making decisions. Market research can help entrepreneurs evaluate the feasibility of a start-up venture before investing a great deal of time and capital, for example, as well as assist them in effectively marketing their goods and services. Employing such marketing strategies as market segmentation and product differentiation would be nearly impossible without first conducting market research.

Although market research can be costly, it is often even more costly to make erroneous decisions based upon bad or inadequate information. In fact, an average business spends between 25 and 50 percent of its annual marketing budget on research activities. Conducting large-scale market research in-house is not possible for many small businesses, since it requires a comprehensive understanding of the problem to be addressed, the market, and the application of research procedures. But there is a great deal of helpful information available to entrepreneurs who know where to look, and there are many consultants, advertising firms, and market research specialists who offer their services to small businesses for a fee.

The information gathered through market re-search can be divided into two main categories. The first category-primary information-generally does not exist in a coherent form before the marketer gathers it in response to a particular question or problem. The most common methods of gathering primary market research information are through direct mail, telemarketing, and personal interviews. The other category-secondary information-has already been compiled and organized by a source other than the marketer. Rather than looking at a specific marketing problem faced by an individual company, secondary information generally tracks trends within a market, an industry, a demographic group, or a geographic region. A great deal of valuable secondary information is available to small business owners at little or no cost. Some possible sources of secondary market research information include government reports, trade association records, newspaper and magazine surveys, university-sponsored research, local chamber of commerce records, on-line services, and competitors' annual reports.

Market research can provide small business owners with the information they need to answer a wide range of questions, including: Who are my customers? Where are they located? How much and how often will they buy? and What product attributes do they prefer? Given the importance of market research-and its potential cost-experts recommend that businesses follow a step-by-step approach in order to gain the most benefits from their research activities.

The first step in the market research process is to define the marketing problem to be addressed. Next, a marketer should determine what information is needed to solve the problem, as well as what sources should be used to acquire the information. Many businesses make a preliminary investigation at this early stage in order to give their definition of the problem more focus and to develop tentative answers that can be tested during the next stage of the process. The third step involves planning the research. This step includes selecting the techniques to be used for gathering data and deciding on an appropriate group, or sample, to be included in the research. Fourth, a marketer actually gathers the necessary data. The fifth step involves analyzing and interpreting the information that has been gathered. Finally, the

marketer reaches a conclusion about the marketing problem and translates the findings into changes in the firm's overall marketing strategy.

There are three general types of market research suppliers that can assist small businesses with one or more steps in the above process. Some firms specialize in conducting overall market research that they release to a variety of clients for a fee. This type of firm includes syndicated services such as A.C. Nielsen and Company, which provides viewershipratings for national television programs. There are also custom market research firms that handle all aspects of the process, from defining the marketing problem and designing research techniques to evaluating results and formulating new marketing strategies. In contrast, smaller, specialty line suppliers usually concentrate on one aspect of the process. Marketers who wish to secure the services of a market research firm usually obtain bids from a number of suppliers. The following sections provide more information about the various types of market research that such suppliers perform.

*Example:* Market research typically includes a detailed data collection phase, whereas market analysis focuses principally on interpreting data that have already been collected.

## 2.2 TYPES OF MARKET RESEARCH

### AUDIENCE RESEARCH

Research on who is listening, watching, and reading is important to marketers of television and radio programs and print publications-as well as to advertisers who wish to reach a certain target audience with their message. Television and radio ratings demonstrate the popularity of shows and determine how much stations can charge for advertising spots during broadcasts. Publication subscription lists, which are audited by tabulating companies to ensure their veracity, are important in determining the per page rate for advertising.

### PRODUCT RESEARCH

Product research includes simple, in-person research such as taste tests conducted in malls and in the aisles of grocery stores, as well as elaborate, long-term "beta testing" of high-tech products by selected, experienced users. The objective of product research can be simple; for example, a company may tweak the taste of an existing product, then measure consumers' reactions to see if there is room in the market for a variation. It can also be more extensive, as when a company develops prototypes of proposed new products that may be intended for market introduction months down the road.

In product research, as in all market research, there is a danger to paying too much attention to the wrong things. For instance, the introduction of New Coke was based on the outcome of taste tests that showed the public wanted a sweeter product. But later an angry public, outraged that Coca-Cola was planning to change the familiar formula, forced the company to ignore its taste tests and leave the original Coke on the market. The company had put too much stock in the results of the taste test studies, and had failed to factor in research that showed consumers were happy with the product as it was.

### BRAND RESEARCH

Brands, the named products that advertising pushes and for which manufacturers can charge consumers the most money, are always being studied. Advertisers want to know if consumers have strong brand loyalty ("I'd never buy another brand, even if they gave me a coupon"); if the

brand has any emotional appeal ("My dear mother used only that brand"); and what the consumer thinks could be improved about the brand ("If only it came in a refillable container").

Brand research, too, has its perils. Campbell's Soup once convened a focus group comprised of its best soup customers. One of the findings was that those customers saw no need for a low-salt alternative soup Campbell's wanted to market. Concerned that the general public seemed to want low-sodium products, Campbell's retested groups other than their bestcustomers. This research found a market interested in a low-sodium soup. The loyal Campbell's customers loved the saltier product, while a larger group of potential customers preferred the low-salt alternative.

**PSYCHOLOGICAL RESEARCH**

Perhaps the most controversial type of market research is psychological research. This type of research tries to determine why people buy certain products based on a profile of the way the consumers live their lives. One company has divided all Americans into more than 60 psychological profiles. This company contends the lifestyles these people have established, based upon their past buying habits and their cultural upbringing, influences their buying decisions so strongly that individual differences can sometimes be negated.

Psychological research is controversial because it measures attitudes about buying rather than the buying itself. Critics point to conflicting information uncovered through other market research studies. In one series of research projects, researchers asked people what they were planning to buy before they entered a store. After the people surveyed left the store, the same researcher examined what was actually in their shopping carts. Only 30 percent of the people bought what they had said they planned to buy just a half hour earlier.

**SCANNER RESEARCH**

In contrast, there is no fooling the checkout scanner at the supermarket or the department store: it records what was actually purchased. This is valuable information an advertiser can use to help plan an ongoing marketing strategy. Scanner technology has changed the way advertisers track the sale of consumer products. Before scanners, advertisers received sales information only when retailers reordered stock, generally every two weeks. This meant that the advertisers had no way to quickly measure the effect of national advertising, in-store sales promotions, or the couponing of similar products by their competitors. Now, computer technology can send scanner information to advertisers within days or even hours.

**DATABASE RESEARCH**

Virtually every type of consumer-credit card holders, smokers, drinkers, car buyers, video buyers-shows up on thousands of lists and databases that are regularly cross- referenced to mine nuggets of marketing research. Database research is growing in popularity among marketers because the raw data has already been contributed by the purchaser. All the marketer has to do is develop a computer program to look for common buying patterns.

Database research can be thought of as the ultimate tool in market segmentation research. For example, from zip code lists, marketers may determine where the wealthy people live in a city. That list can be merged with a list of licensed drivers. The resulting list can be merged with another list of owners of cars of a certain make older than a certain year. The resulting list can be merged with another list of subscribers to car enthusiast magazines. The final list will deliver a potential market for a new luxury car soon to be introduced and profiled

in the car magazines. The people on the potential buyers' list could then be mailed an invitation to come see the new car.

Database research also allows companies to build personal relationships with people who have proven from past purchases that they are potential customers. For example, a motorcycle manufacturer such as Harley Davidson may discover from database research that a family with a motorcycle has a teenage son. That son is a potential new customer for everything from clothes to a new motorcycle of his own. Maintaining a personal relationship with customers also provides businesses with a basis for more detailed and economical market research than might be possible through random sampling.

**POST-SALES OR CUSTOMER SATISFACTION RESEARCH**

Most companies no longer believe that a sale ends their relationship with a customer. Nearly one-third of the research revenues generated by the leading American market research firms concern customer satisfaction. Many companies now wait a few days or weeks, then contact customers with survey questionnaires or telephone calls. Companies want reassurance that the customer enjoyed the buying experience and that the product or service has met the buyer's expectations.

The reason behind post-sales research is to ensure that current customers are happy, will consider themselves future customers, and will spread positive word-of-mouth messages about the product and company. One study found that 70 percent of customers believed it was important for companies to stay in contact with them, but less than one-third of those same customers reported that they had heard from companies whose products they purchased. Nearly 90 percent of those surveyed said they would be more likely to choose a company's products if it stayed in touch with them and sought their satisfaction.

## 2.3 PERSONAL RESEARCH METHODS

**CLOSED-END QUESTIONNAIRE**

A closed-end questionnaire is the type of market research most people have experienced. It includes such common activities as filling out a comment card at a restaurant or responding to a telephone survey. In closed-end questionnaires, the person being surveyed cannot expound on their answers. Such surveys usually ask for "yes'' or "no" responses or for measures of multiple-choice opinion (e.g., "extremely interested, " "somewhat interested, " "not interested"). This type of market research is generally conducted to elicit the opinions and beliefs of the public. It is commonly used for political polling and to determine the awareness or popularity of a product or service.

The inherent problem with multiple-choice questionnaires that ask for clear-cut answers is that many people do not think in a clear-cut fashion. If not carefully prepared, closed-ended questions may elicit answers that do not provide a clear view of the person being surveyed. Sometimes, the company conducting the survey may intentionally or inadvertently write questions that elicit the answers it wants to receive, rather than answers that provide a true picture of what is happening in the marketplace.

**OPEN-ENDED QUESTIONNAIRE**

Over time, market researchers have grown increasingly aware that people often have opinions that do not fit into a multiple-choice questionnaire. To capture these opinions and try to analyze them, researchers are shifting toward open-ended research-asking people to say

exactly what is on their minds. For example, manufacturers are giving customers plenty of space on questionnaires to explain their likes and dislikes about products and services, and telephone researchers will frequently mix closed-end and open-end questions on the same survey to try to delve deeper. A "no" response to whether a person watches a particular cable television station may trigger a follow-up question of "Why not?, " for instance, and the answer will be taken down word for word.

A problem with both closed- and open ended questionnaire research, particularly when conducted over the telephone, is that people gradually become bored or annoyed and stop providing their true opinions. In addition, some studies have shown that a large percentage of Americans refuse to answer marketing research surveys.

**FOCUS GROUPS**

In-person, sit-down discussions around a table with groups of consumers, would-be consumers, never-buyers, or any other demographic group a company wishes to bring together are called focus groups. This can be the least expensive type of market research when handled on a local basis by a small business wanting to get a handle on its customers. Or, it can be one of the most expensive if a major corporation wants to test its plans in various sections of the country. Small, local businesses may invite a focus group to a neighborhood home to sit around the dinner table and discuss how the company can develop new markets. In contrast, most major corporations conduct their focus groups in a controlled environment, usually with a one-way mirror at one end of the room. This allows executives to observe the proceedings unobtrusively or to videotape the session for further study.

The key to gathering good information from a focus group is for the moderator to keep the conversation flowing freely without taking a side. The moderator's job is to involve everyone in the discussion and prevent any individuals from dominating the conversation. Most market research experts agree that focus group research should be accompanied by other types of research and not be the sole basis for launching new products. The reason is that opinions expressed among strangers may not always reflect the way people would react when alone. For example, a focus group discussing low-fat foods may garner an enthusiastic response from people who want to be publicly perceived as being concerned about their health. The same people, however, might say they never buy low-fat products if questioned during an anonymous phone interview.

- **SELF CHECK EXERCISE**

**i.** Scanner technology has changed the way advertisers track the _____ of consumer products.

**ii.** Database research also allows companies to build personal relationships with people who have proven from past purchases that they are potential customers. (true/false)

**iii.** Market research can provide small business owners with the information they need to answer a wide range of questions. (true/false)

**iv.** Conducting large-scale market research in-house is possible for many small businesses. (true/false)

**v.** The information gathered through market re-search can be divided into _____main categories.

## 2.4 MARKETING RESEARCH

Marketing Research evolved as the U.S. economy shifted from a production driven one to a market-driven one. As the American production of goods and services, plus imports, was beginning to satiate American demand, marketers needed to learn how to tailor their products to the needs and likes of an increasingly discerning public. This tailoring resulted in increased market demand and, for successful companies, increased market share.

Formal marketing research was initiated in 1911 when the Curtis Publishing Company appointed its first director of commercial research. Early practitioners were inspired by the efforts of Frederick W. Taylor, famous for his time and motion studies, and others to employ disciplines of "scientific management" to improve business processes and thereby improve results. Marketing research has evolved into an industry consisting of large and small firms worldwide as well as dedicated market research departments in all large and many small companies. Expenditures for marketing research in the United States exceeded $1 billion in 2000.

The American Marketing Association defines marketing research as "the function that links the consumer, customer, and public to the marketer through ... information used to identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process. Marketing research "specifies the information required to address these issues, designs the method for collecting information, manages and implements the data collection process, analyzes the results, and communicates the findings and their implications."

Marketing research consists of gaining consumer input and data. It is the lifeline between companies and customers, and it allows the application of scientific methods to gain knowledge about consumers, buyers, competitors, markets, and marketing.

In general terms, marketing research is either primary research or secondary research. Primary research is either qualitative or quantitative. Qualitative research explores, defines, and describes. It involves in-depth studies of limited samples of people. Use of focus groups is a popular tool of qualitative research. In this format, participants are prescreened to assure that they match the socio demographic profile of the brand or company performing the research (that is, they are either customers or potential target customers). Once screened, groups of eight to twelve customers participate in a group discussion, with a company-hired moderator, to discuss the topic at hand: new products, reaction to advertising or packaging, or assessment of goods or services. Use of one-on-one interviews is another popular tool of qualitative research. Often these are conducted in shopping malls (mall intercepts), where shoppers are approached, screened to match a predetermined sociodemographic profile, and escorted to a facility for a thirty-minute to one-hour interview.

Quantitative research measures, estimates, and quantifies. It generally involves polling of a broad sample of people. This choice is necessary when statistically significant results are required. Large companies and well-known packaged-goods brands use this type of research when they want to be certain that consumer opinions are representative of the population at large. In the last decade especially, political opinion polls have become popular for U.S. presidents and others to assure that they are taking the public's point of view into consideration in policymaking and that they remain popular among their constituents.

Specific research objectives may require a mix of qualitative and quantitative research. Examples include awareness and attitude surveys, brand image surveys, advertising tracking,

promotion testing, media mix evaluation, new products research, marketing optimization research, and customer loyalty evaluation.

Secondary research entails gathering information from already published data and sources. Some applications for secondary research include competitive intelligence (where one company wants to monitor its competitors, their spending, their new product introductions, their staffing, or their financial performance) and trend assessment. As an example, Albing International Marketing, a global home furnishings consultancy, used secondary research data to prepare a market study, Windows on the Millennium-Across the Threshold to the New Century (2001), which cited ten key trends expected to shape and impact the home furnishings industry in the subsequent decade. The trends were listed under the following headings: Home and Family, Leisure, The Aging Population, The Ethnic Influence, The Spiritual Search, Information and Technology, The Environment, The Wealth Effect, Globalization and Nationalism, and The Value Mentality.

New methodologies and new technologies are continually being adopted by the marketing research industry. New research techniques provide deeper insight into buyer behavior, even using predictive models of how their behavior will change under alternative scenarios. The computer has been integrated into nearly every phase of research, fromcomputer-assisted telephone and personal interviews to disk-by-mail data collection to Internet sampling. The Internet has become the key portal for gathering secondary research. In addition to access to public library databases, several sites exist exclusively to sell market research reports on a broad variety of subjects (for example, Profound, Factiva, Market Research.com). It is only a matter of Time until Web-based survey research becomes an industry norm.

**MARKETING RESEARCH**

Marketing research, or market research, is a form of business research and is generally divided into two categories: consumer market research and business-to-business (B2B) market research, which was previously known as industrial marketing research. Consumer marketing research studies the buying habits of individual people while business-to-business marketing research investigates the markets for products sold by one business to another.

Consumer market research is a form of applied sociology that concentrates on understanding the behaviors, whims and preferences, of consumers in a market-based economy, and aims to understand the effects and comparative success of marketing campaigns. The field of consumer marketing research as a statistical science was pioneered by Arthur Nielsen with the founding of the ACNielsen Company in 1923.

Thus, marketing research is the systematic and objective identification, collection, analysis, and dissemination of information for the purpose of assisting management in decision making related to the identification and solution of problems and opportunities in marketing.

## 2.5 MARKETING RESEARCH CHARACTERISTICS

First, marketing research is systematic. Thus, systematic planning is required at all the stages of the marketing research process. The procedures followed at each stage are methodologically sound, well documented, and, as much as possible, planned in advance. Marketing research uses the scientific method in that data are collected and analyzed to test prior notions or hypotheses.

Marketing research is objective. It attempts to provide accurate information that reflects a true state of affairs. It should be conducted impartially. While research is always influenced *by* the researcher's research philosophy, it should be free from the personal or political biases of the researcher or the management. Research which is motivated by personal or political gain involves a breach of professional standards. Such research is deliberately biased so as to result in predetermined findings. The motto of every researcher should be, "Find it and tell it like it is." The objective nature of marketing research underscores the importance of ethical considerations, which are discussed later in the chapter.

Marketing research involves the identification, collection, analysis, and dissemination of information. Each phase of this process is important. We identify or define the marketing research problem or opportunity and then determine what information is needed to investigate it., and inferences are drawn. Finally, the findings, implications and recommendations are provided in a format that allows the information to be used for management decision making and to be acted upon directly. It should be emphasized that marketing research is conducted to assist management in decision making and is not: a means or an end in itself. The next section elaborates on this definition by classifying different types of marketing research.

## 2.6 COMPARISON WITH OTHER FORMS OF BUSINESS RESEARCH

Market research is broader in scope and examines all aspects of a business environment. It asks questions about competitors, market structure, government regulations, economic trends, technological advances, and numerous other factors that make up the business environment (see environmental scanning). Sometimes the term refers more particularly to the financial analysis of companies, industries, or sectors. In this case, financial analysts usually carry out the research and provide the results to investment advisors and potential investors.

- *Product research* - This looks at what products can be produced with available technology, and what new product innovations near-future technology can develop (see new product development).
- *Advertising research* - is a specialized form of marketing research conducted to improve the efficacy of advertising. Copy testing, also known as "pre- testing," is a form of customized research that predicts in-market performance of an ad before it airs, by analyzing audience levels of attention, brand linkage, motivation, entertainment, and communication, as well as breaking down the ad's flow of attention and flow of emotion. Pre-testing is also used on ads still in rough (ripomatic or animatic) form. (Young, pg. 213)

- **SELF CHECK EXERCISE**

**vi.** Quantitative research does notmeasures, estimates, and quantifies. (true/false)

**vii.** Secondary research entails gathering information from already published data and sources. (true/false)

**viii.** Marketing research consists of gaining consumer input and data. (true/false)

**ix.** Qualitative research explores, defines, and describes. It does notinvolves in-depth studies of limited samples of people. (true/false)

## 2.7 CLASSIFICATION OF MARKETING RESEARCH

Organizations engage in marketing research for two reasons: (1) to identify and (2) solve marketing problems. This distinction serves as a basis for classifying marketing research into problem identification research and problem solving research.

*Problem identification research* is undertaken to help identify problems which are, perhaps, not apparent on the surface and yet exist or are likely to arise in the future. Examples of problem identification research include market potential, market share, brand or company image, market characteristics, sales analysis, short-range forecasting, long range forecasting, and business trends research. A survey of companies conducting marketing research indicated that 97 percent of those who responded were conducting market potential, market share, and market characteristics research. About 90 percent also reported that they were using other types of problem identification research. Research of this type provides information about the marketing environment and helps diagnose a problem. For example, a declining market potential indicates that the firm is likely to have a problem achieving its growth targets. Similarly, a problem exists if the market potential is increasing but the firm is losing market share. The recognition of economic, social, or cultural trends, such as changes in consumer behavior, may point to underlying problems or opportunities. The importance of undertaking problem identification research for the. survival and long-term growth of a company is exemplified by the case of PIP printing company.

Once a problem or opportunity has been identified, as in the case of PIP, problem solving research is undertaken to arrive at a solution. The findings of problem-solving research are used in making decisions which will solve specific marketing problems. More than two-thirds of companies conduct problem solving research.

The Stanford Research Institute, on the other hand, conducts an annual survey of consumers that is used to classify persons into homogeneous groups for segmentation purposes. The National Purchase Diary panel (NPD) maintains the largest diary panel in the United States.

*Standardized services* are research studies conducted for different client firms but in a standard way. For example, procedures for measuring advertising effectiveness have been standardized so that the results can be compared across studies and evaluative norms can be established. The Starch Readership Survey is the most widely used for evaluating print advertisements; another well-known service is the [Gallup and Robinson] Magazine Impact Studies. These services are also sold on a syndicated basis.

*Customized services* offer a wide variety of marketing research services customized to suit a client's specific needs. Each marketing research project is treated uniquely. Some marketing research firms that offer these services include Burke Marketing Research, Market Facts, Inc., and Elrick &Lavidge.

*Limited-service suppliers* specialize in one or a few phases of the marketing research project. Services offered by such suppliers are classified as field services, coding and data entry, data analysis, analytical services, and branded products. Field services collect data through mail, personal, or telephone interviewing, and firms that specialize in interviewing are called field service organizations. These organizations may range from small proprietary organizations which operate locally to large multinational organizations with WATS line interviewing facilities. Some organizations maintain extensive interviewing facilities across the

country for interviewing shoppers in malls.

*Coding and data entry services* include editing completed questionnaires, developing a coding scheme, and transcribing the data on to diskettes or magnetic tapes for input into the computer. NRC Data Systems provides such services.

*Analytical services* include designing and pretesting questionnaires, determining the best means of collecting data, designing sampling plans, and other aspects of the research design. Some complex marketing research projects require knowledge of sophisticated procedures, including specialized experimental designs, and analytical techniques such as conjoint analysis and multidimensional scaling. This kind of expertise can be obtained from firms and consultants specializing in analytical services.

*Data analysis services* are offered by firms, also known as tab houses, that specialize in computer analysis of quantitative data such as those obtained in large surveys. Initially most data analysis firms supplied only tabulations (frequency counts) and cross tabulations (frequency counts that describe two or more variables simultaneously). With the proliferation of software, many firms now have the capability to analyze their own data, but, data analysis firms are still in demand.

*Branded marketing research products and services* are specialized data collection and analysis procedures developed to address specific types of marketing research problems. These procedures are patented, given brand names, and marketed like any other branded product.

## 2.8 TYPES OF MARKETING RESEARCH

Marketing research techniques come in many forms, including:

- *Ad Tracking* - periodic or continuous in-market research to monitor a brand's performance using measures such as brand awareness, brand preference, and product usage. (Young, 2005)
- *Advertising Research* - used to predict copy testing or track the efficacy of advertisements for any medium, measured by the ad's ability to get attention, communicate the message, build the brand's image, and motivate the consumer to purchase the product or service. (Young, 2005)
- *Brand equity research* - how favorably do consumers view the brand?
- *Brand name testing* - what do consumers feel about the names of the products?
- *Commercial eye tracking research* - examine advertisements, package designs, websites, etc by analyzing visual behavior of the consumer
- *Concept testing* - to test the acceptance of a concept by target consumers
- *Coolhunting* - to make observations and predictions in changes of new or existing cultural trends in areas such as fashion, music, films, television, youth culture and lifestyle
- *Buyer decision processes research* - to determine what motivates people to buy and what decision-making process they use
- *Copy testing* - predicts in-market performance of an ad before it airs by analyzing audience levels of attention, brand linkage, motivation, entertainment, and communication, as well as breaking down the ad's flow of attention and flow of emotion. (Young, p 213)
- *Customer satisfaction research* - quantitative or qualitative studies that yields an understanding of a customer's of satisfaction with a transaction
- *Demand estimation* - to determine the approximate level of demand for the product
- *Distribution channel audits* - to assess distributors' and retailers' attitudes toward a

product, brand, or company

- *Internet strategic intelligence* - searching for customer opinions in the Internet: chats, forums, web pages, blogs... where people express freely about their experiences with products, becoming strong “opinion formers"
- *Marketing effectiveness and analytics* - Building models and measuring results to determine the effectiveness of individual marketing activities.
- *Mystery Consumer or Mystery shopping* - An employee or representative of the market research firm anonymously contacts a salesperson and indicates he or she is shopping for a product. The shopper then records the entire experience. This method is often used for quality control or for researching competitors products.
- *Positioning research* - how does the target market see the brand relative to competitors? - what does the brand stand for?
- *Price elasticity testing* - to determine how sensitive customers are to price changes
- *Sales forecasting* - to determine the expected level of sales given the level of demand. With respect to other factors like Advertising expenditure, sales promotion etc.
- *Segmentation research* - to determine the demographic, psychographic, and behavioral characteristics of potential buyers
- *Online panel* - a group of individual who accepted to respond to marketing research online
- *Store audit* - to measure the sales of a product or product line at a statistically selected store sample in order to determine market share, or to determine whether a retail store provides adequate service
- *Test marketing* - a small-scale product launch used to determine the likely acceptance of the product when it is introduced into a wider market
    - *Viral Marketing Research* - refers to marketing research designed to estimate the probability that specific communications will be transmitted throughout an individuals Social Network. Estimates of Social Networking Potential (SNP) are combined with estimates of selling effectiveness to estimate ROI on specific combinations of messages and media.

All of these forms of marketing research can be classified as either problem-identification research or as problem-solving research.

A company collects primary research by gathering original data. Secondary research is conducted on data published previously and usually by someone else. Secondary research costs far less than primary research, but seldom comes in a form that exactly meets the needs of the researcher.

A similar distinction exists between exploratory research and conclusive research. Exploratory research provides insights into and comprehension of an issue or situation. It should draw definitive conclusions only with extreme caution. Conclusive research draws conclusions: the results of the study can be generalized to the whole population.

Exploratory research is conducted to explore a problem to get some basic idea about the solution at the preliminary stages of research. It may serve as the input to conclusive research. Exploratory research information is collected by focus group interviews, reviewing literature or books, discussing with experts, etc. This is unstructured and qualitative in nature. If a secondary source of data is unable to serve the purpose, a convenience sample of small size can be collected. Conclusive research is conducted to draw some conclusion about the problem. It is essentially, structured and quantitative research, and the output of this research is the input to management information systems (MIS).

Exploratory research is also conducted to simplify the findings of the conclusive or descriptive research, if the findings are very hard to interpret for the marketing manager.

## 2.9 MARKETING RESEARCH METHODS

Methodologically, marketing research uses the following types of research designs:

Based on questioning

- *Qualitative marketing research* - generally used for exploratory purposes - small number of respondents - not generalizable to the whole population - statistical significance and confidence not calculated - examples include focus groups, in-depth interviews, and projective techniques
- *Quantitative marketing research* - generally used to draw conclusions - tests a specific hypothesis - uses random sampling techniques so as to infer from the sample to the population - involves a large number of respondents - examples include surveys and questionnaires. Techniques include choice modelling, maximum difference preference scaling, and covariance analysis.

Based on observations

- *Ethnographic studies* - by nature qualitative, the researcher observes social phenomena in their natural setting - observations can occur cross-sectionally (observations made at one time) or longitudinally (observations occur over several time-periods) - examples include product-use analysis and computer cookie traces. See also Ethnography and Observational techniques.
- *Experimental techniques* - by nature quantitative, the researcher creates a quasi artificial environment to try to control spurious factors, then manipulates at least one of the variables - examples include purchase laboratories and test markets Researchers often use more than one research design. They may start with secondary research to get background information, then conduct a focus group (qualitative research design) to explore the issues. Finally, they might do a full nation-wide survey (quantitative research design) in order to devise specific recommendations for the client.

## 2.10 MARKETING RESEARCH PROCESS

1. Defining the problem and research objectives
2. Developing the research plan for collecting information
3. Implementing the research plan-collecting and analyzing the data
4. Interpreting and reporting the findings

- **SELF CHECK EXERCISE**

**x.** *Viral Marketing Research* refers to marketing research designed to estimate the probability that specific communications will be transmitted throughout an Social Network.

**(a)** Virtual

**(b)** Group

**(c)** Individuals

**(d)** Expertise

**xi.** *Standardized services* are research studies conducted for different client firms but in a standard way. (true/ false)

**xii.** Exploratory research provides insights into and comprehension of an issue or situation. (true/ false)

## 2.11 BUSINESS TO BUSINESS MARKET RESEARCH

Business to business (B2B) research is inevitably more complicated than consumer research. The researchers need to know what type of multi-faceted approach will answer the objectives, since seldom is it possible to find the answers using just one method. Finding the right respondents is crucial in B2B research since they are often busy, and may not want to participate. Encouraging them to "open up" is yet another skill required of the B2B researcher. Last, but not least, most business research leads to strategic decisions and thi3 means that the business researcher must have expertise in developing strategies that are strongly rooted in the research findings and acceptable to the client.

There are four key factors that make B2B market research special and different to consumer markets:

1. The decision-making unit is far more complex in B2B markets than in consumer markets
2. B2B products and their applications are more complex than consumer products
3. B2B marketers address a much smaller number of customers who are very much larger in their consumption of products than is the case in consumer markets
4. Personal relationships are of critical importance in B2B markets.

## 2.12 MARKETING RESEARCH IN SMALL BUSINESS AND NONPROFIT ORGANIZATIONS

Marketing research does not only occur in huge corporations with many employees and a large budget. Marketing information can be derived by observing the environment of their location and the competitions location. Small scale surveys and focus groups are low cost ways to gather information from potential and existing customers. Most secondary data (statistics, demographics, etc.) is available to the public in libraries or on the internet and can be easily accessed by a small business owner.

## 2.13 INTERNATIONAL MARKETING RESEARCH

International Marketing Research follows the same path as domestic research, *but* there are a few more problems that may arise. Customers in international markets may have very different customs, cultures, and expectations from the same company. In this case, secondary information must be collected from each separate country and then combined, or compared. This is time consuming and can be confusing. International Marketing

Research relies more on primary data rather than secondary information. Gathering the

primary data can be hindered by language, literacy and access to technology.

## 2.14 COMMONLY USED MARKETING RESEARCH TERMS

Market research techniques resemble those used in political polling and sccial science research. Meta-analysis (also called the Schmidt-Hunter technique) refers to a statistical method of combining data from multiple studies or from several types of studies. Conceptualization means the process of converting vague mental images into definable concepts. Operationalization is the process of converting concepts into specific observable behaviors that a researcher can measure. Precision refers to the exactness of any given measure. Reliability refers to the likelihood that a given operationalized construct will yield the same results if re-measured. Validity refers to the extent to which a measure provides data that captures the meaning of the operationalized construct as defined in the study. It asks, "Are we measuring what we intended to measure?'

Applied research sets out to prove a specific hypothesis of value to the clients paying for the research. For example, a cigarette company might commission research that attempts to show that cigarettes are good for one's health. Many researchers have ethical misgivings about doing applied research.

- *Sugging* (or selling under the guise of market research) forms a sales technique in which sales people pretend to conduct marketing research, but with the real purpose of obtaining buyer motivation and buyer decision-making information to be used in a subsequent sales call.
- *Frugging* comprises the practice of soliciting funds under the pretense of being a research organization.

- **SELF CHECK EXERCISE**

**i.** Market research techniques resemble those used in political polling and sccial science research. (true/ false)

**ii.** *Sugging* forms a sales technique in which sales people pretend to conduct marketing research, but with the real purpose of obtaining buyer motivation and buyer decision-making information to be used in a subsequent sales call. (true/ false)

**iii.** Marketing information can be derived by observing the environment of their location and the_____location.

(a) Competitor's

(b) Retailer's

(c) Wholeseller's

(d) Back bencher's

## 2.15 SELECTING A RESEARCH SUPPLIER

A firm that cannot conduct an entire marketing research project in-house must select an

external supplier for one or more phases of the project. The firm should compile a list of prospective suppliers from such sources as trade publications, professional directories, and word of mouth. When deciding on criteria for selecting an outside supplier, a firm should ask itself why it is seeking outside marketing research support. For example, a small firm that needs one project investigated may find it economically efficient to employ an outside source. Or a firm may not have the technical expertise undertake certain phases of a project or political conflict-of-interest issues may determine that a project be conducted by an outside supplier.

When developing criteria for selecting an outside supplier, a firm should keep some basics in mind. What is the reputation of the supplier? Do they complete projects on schedule? Are they known for maintaining ethical standards? Are they flexible? Are their research projects of high quality?

What kind and how much experience does the supplier have? Has the firm had experience with projects similar to this one? Do the supplier's personnel have both technical and nontechnical expertise? In other words, in addition to technical skills, are the personnel assigned to the task sensitive to the client s needs and do they share the client's research ideology? Can they communicate well with the client?

The cheapest bid is not always the best one. Competitive bids should be obtained and compared on the basis of quality as well as price. A good practice is to get a written bid or contract before beginning the project. Decisions about marketing research suppliers, just like other management decisions, should be based on sound information.

## 2.16 CAREERS IN MARKETING RESEARCH

Some of the positions available in marketing research include vice president of marketing research, research director, assistant director of research, project manager, field work director, statistician/data processing specialist, senior analyst, analyst, junior analyst and operational supervisor.

The most common entry-level position in marketing research for people with bachelor's degrees (e.g., BBA) is as operational supervisor. These people are responsible for supervising a well-defined set of operations, including field work, data editing, and coding, and may be involved in programming and data analysis. Another entry-level position for BBAs is assistant project manager. An assistant project manager will learn and assist in questionnaire design, review field instructions, and monitor timing and costs of studies. In the marketing research industry, however, there is a growing preference for people with master's degrees. Those with MBA or equivalent degrees are likely to be employed as project managers.

## 2.17 MARKETING INFORMATION SYSTEM

Marketing information system may be defined as a set of procedures and methods for the regular planned, collection, analysis and presentation of information for use in making marketing decisions. It is a system giving information to marketing managers that will help them making better decisions about pricing, advertising, product policy, sales force effort and so forth. Alternatively market is an organized set of procedures, information handling routines and reporting techniques designed to provide the information required for making marketing decisions. The information is relevant as well as usable both from internal and external

sources. Marketing information system are integrated combinations of information, information processing and analysis equipment, software and information specialists that serve the various analysis, planning and control needs of marketing decision makers. It is a firm's effort to acquire and process information that meets regularly occurring marketing decision needs.

According to American Marketing Association, 'MKIS (MIS) is a set of procedures and methods for the regular, planned collection, analysis and presentation of information for use in marketing decisions'

## 2.18 THE COMPONENTS OF A COMPUTERISED MKIS

- *Data bank* - raw data e.g historical sales data, secondary data
- *Statistical bank* - programmes to carry-out sales forecasts, spending projections
- *A model bank* - stores marketing models e.g. Ansoff s matrix, Boston Matrix
- *Display unit* - VDU and keyboard

## 2.19 STEPS IN MARKETING INFORMATION SYSTEM

Marketing information system consists of People, equipment and procedures to gather, sort, analyze, evaluate, and distribute needed, timely, and accurate information to marketing decision makers.

1. **Assessing Information Needs**
2. **Developing Needed Information**
   - *Internal Databases* : Electronic collections of consumer and market information obtained from data sources within the company network.
   - **Information Analysis**
   - *Marketing Intelligence* : The systematic collection and analysis of publicly available information about competitors and developments in the marketing environment.
   - *Marketing Research* : The systematic design, collection, analysis and reporting of data relevant to a specific marketing situation facing an organization.
3. **Distributing and using Information**

## 2.20 SUMMARY

Marketing research, or market research, is a form of business research and is generally divided into two categories: consumer market research and business-to-business (B2B) market research, which was previously known as industrial marketing research. Consumer marketing research studies the buying habits of individual people while business-to-business marketing research investigates the markets for products sold by one business to another. New methodologies and new technologies are continually being adopted by the marketing research industry. New research techniques provide deeper insight into buyer behavior, even using predictive models of how their behavior will change under alternative scenarios. The computer has been integrated into nearly every phase of research, from computer-assisted telephone and personal interviews to disk-by-mail data collection to Internet sampling. The Internet has become the key portal for gathering secondary research. In addition to access to public library

databases, several sites exist exclusively to sell market research reports on a broad variety of subjects (for example, Profound, Factiva, Market Research.com). It is only a matter of Time until Web-based survey research becomes an industry norm.

## 2.21 KEYWORDS

- *Internal Databases* : Electronic collections of consumer and market information obtained from data sources within the company network.
- *Marketing Research* : The systematic design, collection, analysis and reporting of data relevant to a specific marketing situation facing an organization.
- *Viral Marketing Research* - refers to marketing research designed to estimate the probability that specific communications will be transmitted throughout an individuals Social Network
- *Customized services* offer a wide variety of marketing research services customized to suit a client's specific needs.

## 2.22 PRACTICE QUESTIONS

### 2.22.1 SHORT ANSWER QUESTIONS

1.What do you mean by internal database?
2. What is sugging?
3. what is qualitative research?
4. What is test marketing?

### 2.22.2 LONG ANSWER QUESTIONS

1.Explain careers in marketing research?
2. Explain in detail B2B market research?
3. Explain different methods of marketing research?

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## 2.24 ANSWER KEY

| | | | | | |
|---|---|---|---|---|---|
| i. | Sale | vi. | False | xi. | True |
| ii. | True | vii. | True | xii. | False |
| iii. | True | viii. | True | xiii. | True |
| iv. | False | ix. | False | xiv. | True |
| v. | Two | x. | (c) | xv. | (a) |

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# PROBLEM ANALYSIS, MARKETING RESEARCH OBJECTIVES, DATA COLLECTION-TYPES AND SOURCES

**STRUCTURE**



## 3.0 INTRODUCTION

The process starts by clearly identifying the problem you want to study and considering what possible methods will affect a solution. Then you choose the method you want to test and formulate a hypothesis to predict the outcome of the test.

## 3.1 OBJECTIVE OF PROBLEM ANALYSIS

The major objective of the problem identification stage is to set the overall purpose and objectives of the key areas and to determine the required data. The problem identification is to 'take stock' of the problem for a particular key area, and answer the question :

- What do we think the problem is?
- "What information should be collected and assessed to confirm our understanding of the problem?"

In nutshell, we can say that a research problem is aimed to:

- To clearly identify what aspect of the key areas needs to be addressed.
- To set the objectives of the key area (what will and will not be considered).
- To identify what information needs to be collected, analyzed and assessed.

3.2 **STEPS INVOLVED IN PROBLEM ANALYSIS**

- **Defining the Research Problem* (What Is Your Topic)?**

The research process begins with the researcher selecting a topic - a general area of study or like such issues drug use or domestic violence etc. The choice of a topic or research problem can depend on a number of reasons. Personal interest is one of these and may be shaped by the researcher's own knowledge, experience and circumstances (Bums, 2000:27). All are important reasons for selecting the research problem because these are elements that will sustain the researcher's interest in completing the endeavour.

The complete problem is concerned with the criterion that will determine the superiority of the two methods. The criterion could be:

- Cost
- Efficiency of materials
- Availability of resources, etc.

**There are three aspects of research problem**

(a) The specification of units to be studied.
(b) The identification of the particular units within the scope of study
(c) The specification of the kind of information to be sought.
(d) What would you like to know if information is free and without error?

**RESEARCH PROPOSAL**

Research proposal are necessary for all business research, it may be the internal proposal or it may be the external proposal. But research proposal is not required in case of research studies for Ph.D. or paper presentation as concerned. A proposal is known as a work plan, prospectus, outline, statement of intent, or draft plan. The proposal tells us what, why, how, where, and to whom it will be done.

The proposal of research is :

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

**RESEARCH DESIGN**

Under the research design, there are two fundamental types of research questions :

1. What is going on (descriptive research)?
2. Why is it going on (explanatory research)?

**Descriptive Research**

It encompasses much government sponsored research including the population census, the collection of a wide range of social indicators and economic information such as household expenditure patterns, time use studies, employment and crime statistics and the like. Descriptions can be concrete or abstract. A relatively concrete description might describe the ethnic mix of a community, the changing age profile of a population or the gender mix of a workplace *Explanatory Research*

It focuses on why questions. For example, it is one thing to describe the crime rate in a country, to examine trends over time or to compare the rates in different countries. It is quite a different thing to develop explanations about why the crime rate is as high as it is why some types of crime are increasing or why the rate is higher in some countries than in others.

**DATA COLLECTION -TYPES AND SOURCES**

Once the researcher has decided the 'Research Design', the next job is of data collection. Statistical investigation requires systematic collection of data, so that all relevant groups are represented in the data. Depending upon the sources utilized, whether the data has come from actual observations or from records that are kept for normal purposes, statistical data can be classified into two categories, primary and secondary.

**Primary Data**

Primary data is one, which is collected by the investigator himself for the purpose of a specific inquiry or study. Such data is original in character and is generated by surveys conducted by individuals or research institutions.

Some common types of primary data are :

- Demographic and socioeconomic characteristics
- Psychological and lifestyle characteristics
- Attitudes and opinions
- Awareness and knowledge : for example, brand awareness Intentions: for example, purchase intentions. While useful, intentions are not a reliable indication of actual future behavior.
- Motivation : a person s motives are more stable than his/her behavior, so motive is a better predictor of future behavior than is past behavior.

**Secondary Data**

When an investigator uses the data, which has already been collected by others, such data is called secondary data. The secondary data can be obtained from journals, reports, government publications, publication of professional and research organization and so on. There are several criteria that you should use to evaluate secondary data.

**DATA ANALYSIS-PRELIMINARY STEPS**

Before the analysis can be performed, raw data must be transformed into the right format. Then, it must be edited so that errors can be corrected or omitted. The data must then be coded; this procedure converts the edited raw data into numbers or symbols. A codebook is created to document how the data was coded. Finally, the data is tabulated to count the number of samples falling into various categories. Simple tabulations count the occurrences of each variable independently of the other variables.

- **Hypothesis Testing**

A basic fact about testing hypotheses is that a hypothesis may be rejected but that the hypothesis never can be unconditionally accepted until all possible evidence is evaluated.

In the case of sampled data, the information set cannot be complete. So if a test using such data does not reject a hypothesis, the conclusion is not necessarily that the hypothesis should be accepted.

The null hypothesis in an experiment is the hypothesis that the independent variable has no effect on the dependent variable. The null hypothesis is expressed as HO. This hypothesis is assumed to be true unless proven otherwise. The alternative to the null hypothesis is the hypothesis that the independent variable does have an effect on the dependent variable. This hypothesis is known as the alternative, research, or experimental hypothesis and is expressed as HI. This alternative hypothesis states that the relationship observed between the variables cannot be explained by chance alone.

- **Interpretation of Results**

It is the "so what-? of research. Research is wasted if it is not used in decision making or influencing actions. Not only the results should be interpreted into action recommendations but the recommendations must also be communicated in an understandable manner. Results should be presented in as simple manner as possible.

- **SELF CHECK EXERCISE**

i. The null hypothesis in an experiment is the hypothesis that the independent variable has no effect on the dependent variable. (true/ false)

ii. Simple tabulations cannot count the occurrences of each variable independently of the other variables. (true/ false)

iii. Primary data is one, which is collected by the_____ himself for the purpose of a specific inquiry or study.

iv. The secondary data can be obtained from journals, reports, government publications, publication of professional and research organization and so on. (true/ false)

## 3.3 MARKETING RESEARCH OBJECTIVES

Use of marketing research has grown continuously over the past fifty years, since managers painfully learned the cost of market ignorance. The modern managers must have knowledge of its method and how to use it profitably.

- Before defining marketing research let us determine research.
- Research always starts with a question or a problem.
- Its purpose is to find answers to question through the application of the scientific method.

According to American Marketing Association- "The systematic gathering, recording, and analyzing of data about problems relating to the marketing of goods and services".

Marketing research is the function which links the customer, customer and public to the marketer through information used to identify and define marketing opportunities and problems; generate, refine and evaluate marketing actions; monitor marketing performance; and improve understanding of market as a process.

## 3.4 RESEARCH CAN BE CLASSIFIED INTO TWO BROAD CATEGORIES

- Basic
- Applied

*Basic Research*

Basic research sometimes called fundamental research, theoretical research or pure research. It aims at expanding the frontiers of knowledge and does not directly involve pragmatic problems. The essence of basic research is that it addresses itself to more fundamental question and not to the problems with immediate commercial potential.

*Applied Research*

Also called decisional research on the other hand, proceeds with a certain problem and it specifies alternative solutions and the possible outcomes of each alternative. Unlike basic research, it is prompted by commercial considerations.

Application of marketing research can be divided into two broad areas :

- Strategic
- Tactical

Among the strategic areas, marketing research applications would be demanding forecasting, sales forecasting, segmentation studies, identification of target markets for a given product, and positioning strategies identification. In tactical application, we would have applications such as product testing, pricing research, advertising research, promotional research, distribution and logistics related research.

In other words, it would be including research related to all the P's of marketing: how much to price the product, how to distribute it, whether to package it in one way or another, what time to offer a service, consumer satisfaction with respect to the different element of the marketing mix (product, price, promotion, distribution), and so on.

## 3.5 DATA COLLECTION -TYPES AND SOURCES

The data has come from actual observations or from records that are kept for normal purposes, statistical data can be classified into two categories, primary and secondary. The list of techniques and sources of data are:

Sources of Market Data (Primary Data) Primary data is one, which is collected by the investigator himself for the purpose of a specific inquiry or study. Such data is original in character and is generated by surveys conducted by individuals or research institutions. Some common types of primary data are:

- Demographic and socioeconomic characteristics
- Psychological and lifestyle characteristics
- Attitudes and opinions
- Awareness and knowledge: for example, brand awareness
- Intentions: for example, purchase intentions. While useful, intentions are not a reliable indication of actual future behavior.
- Motivation: a person's motives are more stable than his/her behavior, so motive is a better predictor of future behavior than is past behavior.

Modes of Data Collection

Following are widely used methods for collection of primary data:

- Observation
- Experimentation
- Questionnaire
- Interviewing
- Case Study Method

Sources of Secondary Data When an investigator uses the data, which has already been collected by others, such data is called secondary data. When an investigator uses the data, which has already been collected by others, such data is called secondary data.

- RBI
- Economic Survey
- CSO
- Investment Data
- Foreign Trade

- Survey Data
- Types of Survey Techniques

There are several criteria that you should use to evaluate secondary data.

- Whether the data is useful in the research study.
- How current the data is and whether it applies to time period of interest.
- Errors and accuracy - whether the data is dependable and can be verified.
- Presence of bias in the data.
- Specifications and methodologies used, including data collection method, response rate, quality and analysis of the data, sample size and sampling technique, and questionnaire design.
- Objective of the original data collection.
- Nature of the data, including definition of variables, units of measure, categories used, and relationships examined.

- **SELF CHECK EXERCISE**

**i.** The data has come from actual observations or from records that are kept for normal purposes, statistical data can be classified into two categories, primary and secondary. (true/ false)

ii. Research is not necessarily starts with a question or a problem. (true/ false)

**iii.** Basic research sometimes called_____research.

**iv.** When an investigator uses the data, which has already been collected by others, such data is called _____data

(a) Primary

(b) Secondary

(c) Statistical

(d) Useful

## 3.6 SUMMARY

The process starts by clearly identifying the problem you want to study and considering what possible methods will affect a solution. Then you choose the method you want to test and formulate a hypothesis to predict the outcome of the test. The data has come from actual observations or from records that are kept for normal purposes, statistical data can be classified into two categories, primary and secondary. The list of techniques and sources of data are: sources of Market Data (Primary Data) Primary data is one, which is collected by the investigator himself for the purpose of a specific inquiry or study. Such data is original in character and is generated by surveys conducted by individuals or research institutions.

## 3.7 KEYWORDS

- **Intentions:** for example, purchase intentions. While useful, intentions are not a reliable

indication of actual future behavior.

- **Motivation:** a person's motives are more stable than his/her behavior, so motive is a better predictor of future behavior than is past behavior.

- **Hypothesis Testing:** A basic fact about testing hypotheses is that a hypothesis may be rejected but that the hypothesis never can be unconditionally accepted until all possible evidence is evaluated.

- **Secondary data:** When an investigator uses the data, which has already been collected by others, such data is called secondary data.

## 3.8 PRACTICE QUESTIONS

### 3.8.1 SHORT ANSWER QUESTIONS

(1) What is experimentation?

(2) What do you understand by secondary source of data?

(3) What is hypothesis testing?

(4) What do you understand by case study research?

### 3.8.2 LONG ANSWER QUESTION

(1) Explain the importance of interpretation of results?

(2) Name and briefly discuss the five steps of research process?

(3) Define and state the research problem for the followingcase :"Why is the productivity in Japan so much higher than in India"? Think about problem in a broader sense and narrow down the research problem.

### 3.8.3 CASE STUDY

A local supermarket has experienced a decline in unit _sales and little change in rupee value sales. Profits have almost vanished. The chief executive in searching for ways to revitalize the operation was advised to increase the number of hours the market is open for business. He comes to you for advice n structuring a research problem that will provide relevant information for decision making. Define the problem, taking care to :

a. State the relevant question

b. Enumerate the alternative answers,

c. Clearly define the units of analysis and characteristics of interest.

What are the relevant "states of nature" which would lead to the selection each alternative answer?

## 3.9 REFERENCES


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- Nargundkar R., *Marketing Research Text and Cases* (Tata McGraw- Hill 2002)
- Kothari, C.R., *Research Methodology - Methods and Techniques,* Wiley Eastern Ltd.


## 3.10 ANSWER KEY

| | | | | | |
|---|---|---|---|---|---|
| i. | true | iii. | investigator | v. | true |
| ii. | false | iv. | true | vi. | false |

vii. fundamental viii. (b)

**Lesson No. 4** **AUTHOR : LALIT SINGLA**

# RESEARCH DESIGN AND ITS APPLICATIONS

**STRUCTURE**



## 4.0 OBJECTIVES

In this lesson, you will learn who to design your research project. Research design is the important step in any research project. It ensures the systematic and timely completion of your project. After completion of this lesson you will be able to:

1. Design plan for collection of data
2. Design plan for measurement
3. Design plan for the analysis of data

## 4.1 MEANING OF RESEARCH DESIGN

Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. (Kerlinger) A research is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern or framework of the project that stipulates what information is to be collected from which sources by what procedures. (Green and Tull).

The decisions regarding what, where, when, how much, by what means concerning a research project constitute a research design. "A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure".

In fact, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data.

More explicitly, the design decisions happen to be in respect of :

- What is the study about?
- Why is the study being made?
- Where will the study be carried out?
- What type of data is required?
- Where can the required data be found?
- What periods of time will the study include?
- What will be the sample design?
- What techniques of data collection will be used?
- How will the data be analyzed?
- In what style will the report be prepared?

Keeping in view the above stated design decisions; we may split the Overall research design into the following parts.

- Sampling Design which deals with the method of selecting items It be observed for the given study;
- Observational design which relates to the conditions under which the observations are to be made;
- Statistical design which concerns with the question of how many items are to be observed and how the information and data gathered are to be analyzed;
- Operational design which deals with the techniques by which the procedures specified in the sampling, statistical and observational designs can be carried out.

We can state the important features of a research design as under :

## 4.2 ESSENTIALS OF RESEARCH DESIGNS

1. The design is an activity-and-time-based plan
2. The design is always based on the research question
3. The design guides the selection of sources and types of information
4. The design is a frame work for specifying the relationships among the study's variables
5. The design outlines procedure for every research activity

- **SELF CHECK EXERCISE**

i. Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. (true/false)

ii. The design is not an activity-and-time-based plan. (true/false)

iii. The design is a_____for specifying the relationships among the study's variables

iv. Observational design relates to the conditions under which the observations are to be made. (true/false)

## 4.3 NEED FOR RESEARCH DESIGN (WHY RESEARCH DESIGN IS REQUIRED?)

Research design is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money.

For example, economical and attractive construction of house we need a blueprint (or

what is commonly called the map of the house) well thought out and prepared by an expert architect, similarly we need a research design or a plan in advance of data collection and analysis for our research project.

Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis.

## 4.4 CONCEPTS IN RESEARCH DESIGN

Operational Definitions-is a definition stated in trace of specific testing criteria or operations.

- *Variable* - this is used as a synonym for construct or the property being.
- *Independent - A* variable antecedents to dependent variable are called independent variable
- *Dependent* - If one variable depends upon or is a consequence of other variable, it is a dependent variable.
- *Proposition* - is a statement about concepts that may be judged as true or false if it refers to observable phenomenon. When a proposition is formulated for empirical testing, it is called a hypothesis. The research hypothesis is a predictive statement that relatives an independent variable to deepens variable.
- *Continuous Variable* - A variable which can assume any numerical value within a specific range. Value ever in decimal points e.g. age.
- *Discrete Variable* - A variable for which the individual values fall or. the scale only no of children
- Independent Variable Dependent Variable*: Presumed cause Presumed effect*
  Stimulus Response Predicted from ..... Predicted to .....Antecedent Consequence Manipulated Measured outcome
- *Extraneous Variable* - Some independent variables are not related to purpose of study, but may affect dependent variables are turned as extraneous variable. i.e. the researcher wants to test the hypothesis that there is a relationship between children's gains in social studies achievement and self their self-concepts.
- *Independent Variable* – Self-concept dependent variable - social studies echo intelligence may also affect social studies achievement since it is not related to purpose of studies, intravenous variable.
- *Control* - Minimize effect of extraneous independent variable. In experiment at researches, 'control' is used to refer to restrain experimental conditions.
- *Confounded Relationship* - When the dependent variable is not free from influence of extraneous variables(s), the relation b/w independent variable and dependent variable is said to be confounded by an extraneous variable.
- *Experimental and non-experimental hypothesis testing research* - Research in which the independent variable is manipulated its turned 'experimental hypothesis-testing' research and a research in which an independent variable is not manipulated is called-non-experimental hypotenuse-testing research.
- *Experimental* &*Control Group*: When a group is exposed to usual conditions, it is traced as 'control gap' but when the gap is exposed to some moral or special condition, it is termed as 'experimental gap'.

- *Treatment:* the different conditions under which experimental and control gaps are put are usually referred to as 'treatments'

## 4.5 DIFFERENT RESEARCH DESIGN

Different research designs can be conveniently described if we categorize them as :

1. Research design in case of exploratory research studies;
2. Research design in case of descriptive and diagnostic research studies, and
3. Research design in case of hypothesis-testing research studies.

We take up each category separately

**1. Research design in case of exploratory research studies**

As you know from previous lessons that, exploratory research studies are also termed as formulative research studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypotheses from an operational point of view.

The major emphasis in such studies is on the discovery of ideas and insights. The research design appropriate for such studies must be flexible enough to provide opportunity for considering different aspects of a problem under study. Inbuilt flexibility in research design is needed because the research problem, broadly defined initially, is transformed into one with more precise meaning in exploratory studies, which fact may necessitate
changes in the research procedure for gathering relevant data. Generally, the following three methods in the context of research design for such studies are talked about:

a. the survey of concerning literature;
b. the experience survey and
c. the analysis of 'insight-stimulating'.

We let us discuss each of these methods -

**a.** *Survey of concerning literature:* This method happens to be the most simple and fruitful method of formulating precisely the research problem or developing hypothesis. Hypotheses stated by earlier works may be reviewed and their usefulness be evaluated as a basis for further research. It may also be considered whether the already stated hypotheses suggest new hypothesis. In this way the
. researcher should review and build upon the work already done by others, but in cases where hypotheses have not yet been formulated, his task is to review the available material for deriving the relevant hypotheses from it. Besides, the bibliographical survey of studies, already made in one's area of interest may as well be made by the researcher for precisely formulating the problem. He should also make an attempt to apply concepts and theories developed in different research contexts to the area in which he is himself working. Sometimes the works of creative writers also provide a fertile ground for hypothesis-formulation and as such may be looked into by the researcher.

**b.** *Experience survey* means the survey of people who have had practical experience with the problem to be studied. The object of such a survey is to obtain insight into the relationships between variables and new ideas relating to the research problem. For such a survey people who are competent and can contribute new ideas may be carefully selected as respondents to ensure a representation of different types of

experience. The investigator may then interview the respondents so selected. The researcher must prepare an interview schedule for the systematic questioning of informants. But the Interview must ensure flexibility in the sense that the respondents should be allowed to raise issues and questions that the investigator has not previously considered. Generally, the experience-collecting interview is likely to be long and may last for few hours. Hence, it is often considered desirable to send a copy of the questions to be discussed to the respondents well in advance.

Thus, an experience survey may enable the research to define problem more concisely and help in the formulation of the research hypothesis. This survey may as well provide information about the practical possibilities for doing different types of research.

**c.** *Analysis of 'insight-stimulating'* : It is also a fruitful method for suggest hypothesis for research. It is particularly suitable in areas where there is little experience to serve as a guide. This method consists of the intensive study of selected instances of the phenomenon in which one is interested. For this purpose the existing records, if any, may be examined, the unstructured interviewing may take place, or some other approach may be adopted. Attitude of the investigator, the intensity of the study and the ability of the researcher to draw together diverse information into a unified interpretation are the mainfeatures, which make this method an appropriate procedure for evoking insights.

Now, what sort of examples is to be selected and studied? There is no clear-cut answer to it. Experience indicates that for particular problems certain types of instances are more appropriate than others. One can mention few examples of 'insight stimulating' cases such as the reactions of strangers, the reactions of marginal individuals, the study of individuals who are in transition from one stage to another, the reactions of individuals from different social strata and the like.

Thus, in an exploratory or formulative research study which merely leads to insights or hypotheses, whatever method or research design outlined above is adopted, the only thing essential is that it must continue to remain flexible so that many different facets of a problem may be considered as and when they arise and come to the notice of the researcher.

**2. Research design in case of descriptive and diagnostic research studies**

Now another type of research studies are descriptive research studies, those studies which are concerned with describing the characteristics of a particular individual, or of a group whereas diagnostic research studies determine the frequency with which something occurs or its association with something else. The studies concerning whether certain variables are associated are examples, diagnostic research studies, As against this, studies concerned with specific predication, with narration of facts and characteristics concerning individuals or group or situation are all examples of descriptive research studies.

**Most of the Group or Search Comes Under this Category**

From the point of view of the research design, the descriptive as well as diagnostic studies share common requirement, and as such we may group together these two types of research studies. In descriptive as well as in diagnostic studies, the researcher must be able to

define clearly, what he wants to measure and must find adequate methods for measuring it along with a clear cut definition of population he wants to study. Since the aim is to obtain complete and accurate information the said studies, the procedure to be used must be carefully planned. The research design must make enough provision for protection against bias and must maximize reliability, with due concern for the economical completion of research study. The design in such studies must be rigid and not flexible and must focus attention on the following:

*a.* Formulating the objective of the study
b. Designing the methods of data collection
c. Selecting the sample (how much material will be needed?)
d. Collecting the data (where can the required data be found and with what time period should the data be related?)
e. Processing and analyzing the data.
f. Reporting the findings.

**3. Research design in case of hypothesis-testing research studies**

Hypothesis-testing research studies (generally known as experimental studies) are those where the researcher tests the hypotheses of causal relationships between variables. Such studies require procedures that will not only reduce bias and increase reliability, but will permit drawing inferences about causality. Usually experiments meet this requirement. Hence, when we talk of research design in such studies, we often mean the design of experiments. Professor R.A. Fisher's name is associated with experimental designs. The study of experimental designs has its origin in agricultural research. Professor Fisher found that by dividing agricultural fields or plots into different blocks and then by conducting experiments in each of these blocks, whatever information is collected and inferences drawn from them, happens to be more reliable.

This fact inspired him to develop certain experimental designs for testing hypotheses concerning scientific investigations. Today, the experimental designs are being used in research relating to phenomena of several disciplines. Now let us discuss the basic principles of experimental designs.

**Basic Principles of Experimental Designs**

There are three principles of experimental designs :

1. Principle of Replication;
2. Principle of Randomization
3. Principle of Local Control

Now let us discuss each one of these experimental design

- *Principle of Replication* : In this design, the experiment should be repeated more than once. Thus, each treatment is applied in many experimental units instead of one. By doing so the statistical accuracy of the experiments is increased. For example, suppose we are to examine the effect of two varieties of rice. For this purpose we may divide the field into two parts and grow one variety in one part and the other variety in the other part. We can then compare the yield of the two parts and draw conclusion on that basis. But if we are to apply the principle of replication to this

experiment, then we first divide the field into several parts, grow one variety in half of these parts and the other variety in the remaining parts. We can then collect the data of yield of the two varieties and draw conclusion by comparing the same.

The result so obtained will be more reliable in comparison to the conclusion we draw without applying the principle of replication. The entire experiment can even be repeated several times for better results. Conceptually replication does not present any difficulty, but computationally it does. For example, if, an experiment requiring a two-way analysis of variance is replicated, it will then require a three-way analysis of variance since replication itself may be a source of variation in the data. However, it should be remembered that replication is introduced in order to increase the precision of a study; that is to say, to increase the accuracy with which the main effects and interactions can be estimated.

- *Principle of Randomization:* This principle indicates that we should design or plan the experiment in such a way that the variations caused by extraneous factor can all be combined under the general heading of "chance." For example - if grow one variety of rice, say, in the first half of the parts of a field and the other variety is grown in the other half, then it is just possible that the soil fertility may be different in the first half in comparison to the other half. If this is so our results would not be realistic. In such a situation, we may assign the basis of somevariety 'sampling technique, i.e., we may apply randomization principle and random ourselves against the effects of the extraneous factors (soil fertility processes) in the given case.
- *The Principle of Local Control:* is another important principle of experimental designs. Under it the extraneous factor, the known source of variability, is made to vary deliberately over as wide a range as necessary and this need to be done in such a way that the variability it causes can be measured and hence eliminated from the experimental error. This means that we should plan the experiment in a manner that we can perform a two-way analysis of variance, in which the total variability of the data is divided into three components attributed to treatments (varieties of rice in our case), the extraneous factor (soil fertility in our case) and experimental error.

In other words, according to the principle of local control, we first divide the field into several homogeneous parts, known as blocks, and then each such block is divided into parts equal to the number of treatments. Then the treatments are randomly assigned to these parts of a block.

- **SELF CHECK EXERCISE**

i. Descriptive research studies, those studies which are concerned with describing the characteristics of a particular individual, or of a group. (true/ false)

ii. There are_____principles of experimental designs.

iii. An experience survey may not enable the research to define problem more concisely and help in the formulation of the research hypothesis. (true/ false)

iv. Some independent variables are not related to purpose of study, but may affect variables are turned as extraneous variable

(a) Independent

(b) External

(c) Internal

(d) Dependent

**4.6 SUMMARY**

Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance. (Kerlinger) A research is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern or framework of the project that stipulates what information is to be collected from which sources by what procedures. (Green and Tull). The decisions regarding what, where, when, how much, by what means concerning a research project constitute a research design. "A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure". In fact, the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data.

**3.11 KEYWORDS**

- *Principle of Randomisation*: This principle indicates that we should design or plan the experiment in such a way that the variations caused by extraneous factor can all be combined under the general heading of "chance.
- *The Principle of Local Control:* is another important principle of experimental designs. Under it the extraneous factor, the known source of variability, is made to vary deliberately over as wide a range as necessary and this need to be done in such a way that the variability it causes can be measured and hence eliminated from the experimental error.
- *Principle of Replication:* In this design, the experiment should be repeated more than once.
- *Control:* Minimize effect of extraneous independent variable. In experiment at researches, 'control' is used to refer to restrain experimental conditions.
- *Confounded Relationship:* When the dependent variable is not free from influence of extraneous variables(s), the relation b/w independent variable and dependent variable is said to be confounded by an extraneous variable.

**3.12 PRACTICE QUESTIONS**

**3.12.1 SHORT ANSWER QUESTIONS**

(1) What do you understand by confounded relationships?
(2) What is locus of control?
(3) What is replication?
(4) Define research design.

**3.12.2 LONG ANSWER QUESTIONS**

(1) Explain basic principles of experimental design.
(2) Eludicate different research designs.
(3) Why there is any need for preparing research design.
(4) Explain various concepts in research design.

**4.9REFERENCES**


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**4.10 ANSWER KEY**

| | | | | | |
|---|---|---|---|---|---|
| i. | True | iv. | True | vii. | False |
| ii. | False | v. | True | viii. | (d) |
| iii. | Framework | vi. | Three | | |

Lesson No. 5 AUTHOR:RAJPREET KAUR SIDHU

# SAMPLING DECISIONS - TECHNIQUES AND DETERMINATION OF SAMPLE SIZE

**STRUCTURE**



## 5.0 OBJECTIVES

After reading this chapter, the student should be able to:

- Understand the various sampling techniques.
- Know which technique is suitable for particular research.
- State what should be the appropriate sample size.

## 5.1 INTRODUCTION

When secondary data are not available for the problem under study, data has to be collected afresh and we call such data as primary data. Primary data can be collected in two ways - census and sample method. In census method data are collected for each and every unit of the population or universe under study. But in practice it is generally not possible to cover each and every item in the survey therefore we have to resort to sample method. In this method only part of the universe is studied. The respondents selected out of the population constitute the sample and the selection procedure is called the sampling technique. Sampling decisions in a research process involve decisions like- how can a suitable sample be chosen? What is the appropriate size of the sample for the research undertaken? Etc. a sample must have the following characteristics in order to have worthwhile results:

**i.** *Representativeness* - a sample should be selected in a manner such that it truly represents the universe, otherwise the results may be misleading.

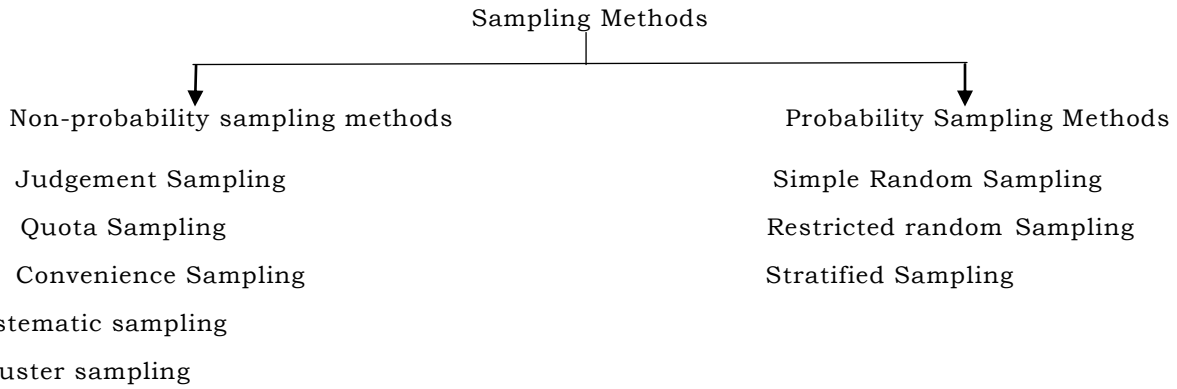
**ii.** *Adequacy* - the size of the sample must be adequate; else it may not represent the characteristics of the universe.

**iii.** *Independence* - all the items of the sample must be selected independently of one another i.e. all items of the universe should have the same chance of being selected in the sample.

**iv.** *Homogeneity* - it means there should be no basic difference in the nature of units of the universe and that of sample.

## 5.2 SAMPLING TECHNIQUES

The procedures or techniques or methods adopted by the researcher in selecting items for a sample are called sampling techniques. The sampling techniques may be unrestricted or restricted. In case of unrestricted sampling, each item is drawn individually from the population and in all other cases sampling is restricted. But the most commonly categorized sampling techniques are:




PROBABILITY SAMPLING

It is also known as random or chance sampling. In this technique every item of the universe has equal chance of being selected in the sample. This means that selection of items is independent of the person making the study. It ensures the law of statistical regularity, which states that if on an average the sample chosen is a random one, the sample will have the same composition and characteristics as the universe. The types of probability sampling techniques are:

**A.** *Simple random sampling:* in this technique each and every unit of the population has an equal opportunity of being selected in the sample. In this method which items get selected is a matter of pure chance. When a sample of size 'n' is drawn from a population of 'n' elements the sample is a simple random sample if any of the following is true:

- All 'n' items of the sample are selected independently of one another and all N items of the population have the same chance of inclusion in the sample.
- At each selection, all remaining items of the population have the same chance of being drawn. If sampling is done without replacement, the probability of selection of each item remaining in the population at the first draw is 1/N, at the second draw is 1/N-1 and so on.
- All the possible samples of a given size 'n' are equally likely to be selected.

**B.** *Restricted Random sampling:* in this technique the population is arranged or divided in a particular manner before selecting items for the sample. This technique encompasses the following:

a. *Stratified Random Sampling:*if population from which sample is to be drawn does not constitute a homogeneous group, stratified sampling technique is adopted to obtain a

representative sample. In this method, the population is divided into sub-populations called strata that are individually more homogeneous than the total population. This method involves two steps-

- The universe to be sampled is stratified into groups, which are mutually exclusive and include all items in the universe.
- A simple random sample is then chosen independently from each group. Some of the issues involved in a stratified random sampling are:

**i.** *Base of stratification* - the strata are formed in such a way as to ensure elements being most homogeneous within each stratum and most heterogeneous between different strata. Strata are created on the basis of a variable, which is related to the characteristics of the population and characteristics to be estimated.

**ii.** *Number of strata* • practically, number of strata are limited by the feasibility and the costs of adding more strata i.e. cost of increasing number of strata should not outrun the benefits.

**iii.** *Sample size within strata* - method of proportional allocation is usually followed in which, the sizes of the samples from the different strata are kept proportional to the relative weight of those strata or size of strata. In disproportional allocation an equal number of items are selected from each stratum regardless of how the stratum is represented in the universe

**Merits**

- A more representative sample is secured in case of a heterogeneous population.
- Since strata are created to include all the items in the universe and are homogeneous, this method ensures greater accuracy.
- The units from different strata may be selected in a way that all of them are localized in one geographical area, thus ensuring greater geographical concentration.

**Limitations**

- If proper stratification is not done, the sample may not represent the population and results may be misleading.
- This method is more expensive than simple random sampling.
- Stratification of population requires highly skilled sampling supervisors.

b. *Systematic random sampling:*in this method the first unit is selected at random and after that additional units are selected at evenly spaced intervals until the sample is formed. This method is particularly used when a complete list of the population from which sample is to be drawn is available. The list may be prepared in alphabetical, geographical or numerical or in any other order. The items are serially numbered and first item is randomly selected and subsequent ones are selected after every kth item where k is the sampling interval or sampling ratio which is the ratio of population size (N) to the size of sample (n) i.e. k = N/n.

**Merits**

- It is simple and convenient to use.
- The element of randomness is also introduced and hence the sample is representative of the population.
- Relatively less time and work is involved.

**Limitations**

- It is inefficient in case we are dealing with populations having hidden periodicities e.g., if we are to select 4% sample of the items and every 25th item is defective then we would get either all defective or all good items in our sample.
- The researcher may order the items in the population according to his own will thus eliminate the factor of randomness.

c. *Cluster Sampling:* if the total area of interest is quite large then a convenient way in which a sample can be taken is to divide the area into a number of smaller non-overlapping areas and then to randomly select a number of these smaller areas (called clusters) with the ultimate sample consisting of all units in these small areas or clusters. Therefore, in this technique the total population is divided into a number of relatively small subdivisions, which are clusters of still smaller units, and then some of these clusters are randomly selected for inclusion in the sample. If the population is divided on the basis of geographical area, then cluster sampling is called as area sampling. The main advantage of this method is that it reduces cost by concentrating surveys in selected clusters.

## II. NON-PROBABILITY SAMPLING

This technique does not provide any basis for estimating the probability that each item has of being selected in the sample. It is also known as deliberate or purposive or judgmental sampling. The selection process here is subjective as the researcher purposively chooses the particular items of the universe for constituting the sample on the basis that the sample selected will be typical or representative of the population. Therefore, the judgement of the investigator plays a major role in this technique. There are three types of non-probability sampling:

**a.** *Judgement sampling:* In this method the choice of sample items depends exclusively on the judgement of the researcher. The researcher includes those items in the sample, which he thinks are most typical of the universe with regard to characteristics under investigation. It is very useful when there is small number of sampling units in the universe, to study some unknown traits of the population. But this method is not scientific as population units to be sampled are affected by the personal bias of the researcher. At the same time this method provides no objective way of evaluating the reliability of sample results. The success of this method depends on the excellence in the judgement.

**b.** *Quota sampling;* it is the most commonly used sampling technique in non-probability category. In this technique quotas are set up according to some specified characteristics like so many in each of several income groups, in each age and so many with certain political or religious affiliation and so on. Each interviewer then interviews a certain number of persons, which constitutes his quota. Within the quota the selection of sample items (persons to be interviewed) depends upon personal judgement.

Quota sampling is compared with stratified sampling as in both methods the universe is divided into parts and total sample is allocated among parts. But the two are different, as in quota sampling, the sampling within each quota is not done

at random and depends on researcher's judgement and in stratified random sampling, the sample within each stratum is chosen at random. Quota sampling is often used in public opinion studies but there are numerous opportunities for bias, which invalidates the results.

**c.** *Convenience sampling:* the method of convenience sampling is also called the chunk. A chunk refers to that fraction of the population being investigated which is selected neither by probability nor by judgement but by convenience. *A* sample obtained from readily available lists such as automobile registrations, telephone directories, etc is a convenience sample. The results obtained by following convenience sampling method can hardly be representative of the population and is subject to biasness by its very nature of selecting elements which are convenient to choose. But convenience sampling is often used for making pilot studies.

- **SELF CHECK EXERCISE**

i. The method of convenience sampling is also called the _____

ii. In which method the choice of sample items depends exclusively on the judgement of the researcher

(a) Quota sampling

(b) Convenience sampling

(c) Judgement sampling

(d) Cluster sampling

iii. The strata are formed in such a way as to ensure elements being most homogeneous within each stratum and most heterogeneous between different strata. (true/ false)

iv. the size of the sample must be _____

(a) adequate

(b) inadequate

(c) random

(d) homogeneous

v. _____ is particularly used when a complete list of the population from which sample is to be drawn is available.

(a) Quota sampling

(b) Convenience sampling

(c) Judgement sampling

(d) Systematic random sampling

## 5.3 SIZE OF SAMPLE

One of the most important sampling decision is about the size of the sample. Size of the sample means the number of sampling units selected from the population for investigation. It may be pointed out that mere size alone does not ensure representativeness. *A* smaller but well selected sample may be superior to a larger but badly selected sample. If the size of the sample is small, it may not represent the universe and the inference drawn about the population may be misleading. On the other hand, if the size of the sample is very large, it may be too burdensome financially, require lot of time and may be difficult to manage. Hence the sample size should neither be too small nor too large, it should be 'Optimum*. According to parten, optimum sample size is one that fulfills the requirements of efficiency, representativeness, reliability and flexibility. The following factors should be considered while deciding the sample size:

i. The size of the universe- the larger the size of the universe, the bigger should be the sample size.
ii. The resources available- resources constitute a big constraint on sample size. If resources available are vast, a larger sample size could be taken.
iii. The degree of accuracy or precision desired- the greater the degree of accuracy desired, the larger should be the sample size. But it is not necessary that larger sample always ensure greater precision. If a sample is selected by experts by following scientific method, it may ensure better results even when it is small.
iv. Nature of study- for an intensive and continuous study a small sample may be suitable. But for studies, which are not likely to be repeated and are quite extensive in nature, it may be necessary to take a larger sample size.
v. Method of sampling adopted- if random sampling method is adopted; it necessitates a bigger sample size. But if stratified random sampling is used a small sample is also useful.
vi. Homogeneity or heterogeneity of the Universe- if the universe consists of homogeneous units, a small sample may serve the purpose but if the universe consists of heterogeneous units, a large sample size is required.
vii. Nature of respondents- where it is expected that a large number of respondents will not co-operate and send back questionnaire, a large sample should be selected.

## 5.4 SUMMARY

There are many techniques of drawing a sample out of the population. These techniques have their own advantages and disadvantages. But generally simple random sampling is preferred because it has no room for biasness and sampling errors can be estimated. But there are many other situations where judgement sampling is the only best technique to be adopted. Other important sampling decision is regarding the size of the sample. There are many factors, which must be considered before deciding the optimum sample size.

## 5.5 KEYWORDS

- Adequacy*:* the size of the sample must be adequate; else it may not represent the characteristics of the universe.
- Chunk: A chunk refers to that fraction of the population being investigated which is selected neither by probability nor by judgement but by convenience.
- Independence*:* all the items of the sample must be selected independently of one another i.e. all items of the universe should have the same chance of being selected in the sample.

## 5.6 PRACTICE QUESTIONS

### 5.6.1 SHORT ANSWER QUESTIONS

1) what is systematics random sampling?
2) What is convenience sampling?
3) What do you mean by a sample?
4) What is population?

### 5.6.2 LONG ANSWER QUESTIONS

1) What are various types of probability sampling techniques?
2) Under what circumstances would you recommend- a probability sample, a non-probability sample, a stratified and a cluster sample?
3) How is the most suitable size of the sample decided?

## 5.7 REFERENCES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## 5.8 ANSWER KEY

i. chunk
ii. (c)
iii. true
iv. (a)
v. (d)

**Lesson No. 6** **AUTHOR : SHILPI GOYAL**

# MEASUREMENT PROCESS

**STRUCTURE**



## 7.0 OBJECTIVES

After reading this chapter, the student should be able to:

- Understand the importance and process of measurement in marketing.
- Discuss the concepts of validity and reliability of the measuring instruments.

## 6.1 INTRODUCTION TO PROJECT FINANCING

Measurement means assigning numbers or other symbols to characteristics of objects according to certain prespecified rules. What we measure is not the object, but some characteristics of it. Thus, we do not measure consumers - only their perceptions, attitudes, preferences, or other relevant characteristics. In marketing research, numbers are usually assigned for one of the two reasons. First, numbers permit statistical analysis of the resulting data. Second, numbers facilitate the communication of measurement rules and results.

The most important aspect of measurement is the specification of rules for assigning numbers to the characteristics. The assignment process must be isomorphic: there must be one-to-one correspondence between the numbers and the characteristics being measured. Only then can numbers be associated with specific characteristics of the measured object, and vice versa. In addition, the rules for assigning numbers should be standardized applied uniformly. They must not change over objects or time.

Scaling may be considered an extension of measurement. Scaling involves creating a continuum on which measured objects are located.

## 6.2 MEASUREMENT IN MARKETING

In order to establish a comprehensive and integrated marketing perspective, marketing organizations must have the discipline to measure in a rigorous fashion. These measurements lay the foundations for performance improvement.

The leading marketers recognize that there are a few essential objectives they must set and meet if they are to produce valid measures on an ongoing basis and successfully rely on them to drive action. These three principles must guide a measurement-driven performance culture:

1. Measurement must be relevant
2. Measurement must be visible
3. Measurement must drive improvement

**Measurement Must Be Relevant**

The most highly sought-after financial outcomes may include increased shareholder value, revenue, or profit growth. Marketing must target more immediate performance objectives, however, in order to deliver on such financial targets. Therefore, it must make causal linkages between key measures such as customer satisfaction, cross-selling, or campaign response rates and the financial results it seeks to produce.

**Measurement Must Be Visible**

Essential to the continuing success of today's marketing organization is its ability to determine and clearly communicate the impact of its actions. While it is clear that most companies have important benefits to gain from smart marketing measurement, it is hardly certain what the most relevant metrics of marketing performance might be from one company to another.

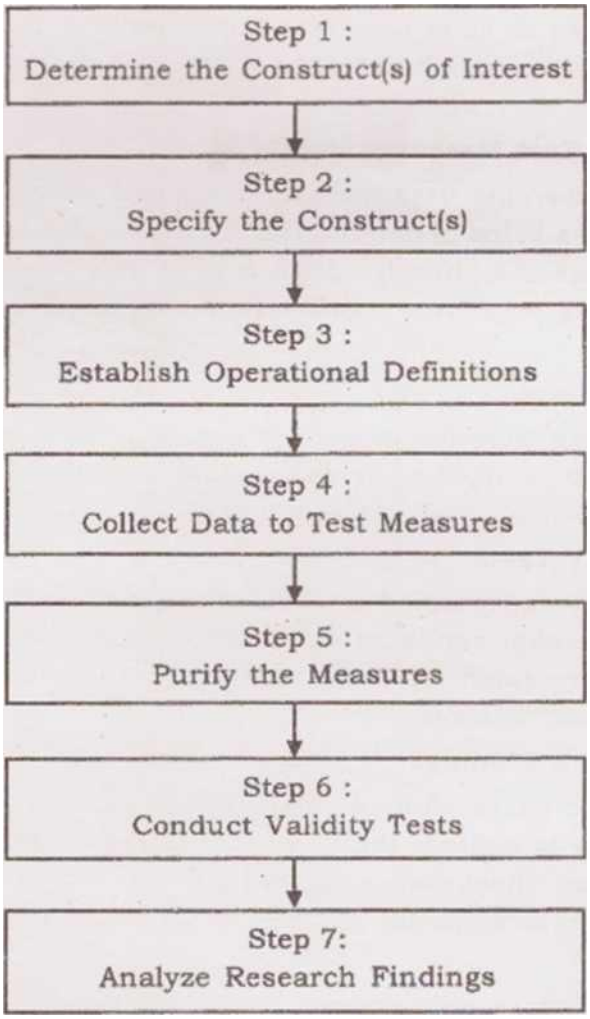
The level of resources that must be devoted to the measurement task will, of course, vary too. It will depend on industry dynamics, the size of marketing budgets overall, and each organization's existing proficiency in measurement. Marketers must put their best effort into measuring the outcomes of their current activities and investments. *Measurement Must Drive Improvement*

Measurement is not simply about accountability. Measures should enable us to better determine how investments have played out and assess whether we are addressing our objectives. More importantly, however, marketing measurements should drive new improvements and performance gains. Such measures can help us generate growth in customer value and take the actions necessary to ensure that the marketing organization is performing at peak levels.

## 6.3 THE MEASUREMENT PROCESS

Information gained from conducting marketing research contributes to better decision making by reducing risk, which can happen only if researchers are able to collect information that accurately represents the phenomenon under study. When it is appropriate to measure that phenomenon, that is, attach numbers to reflect the amount of attribute inherent in that object of interest, then the researcher must try to ensure that the process he uses to take those measures is trustworthy and can indeed reduce the risk of decision making. The following steps may be considered in the measurement process:

**Figure 1 : The Measurement Process**




**Step 1: Determine the Construct(s) of Interest**

Constructs are abstract 'constructions' that are of interest to the researchers. Some examples of constructs of interest to the marketing researchers are customer satisfaction, heavy users, channel conflict, brand loyalty, marketing orientation, etc. Since these constructs have no tangible reality, they are generally not directly observable. A researcher cannot see customer satisfaction, but can indirectly observe it by asking customers a series of questions that he believes reveal how satisfied customers are with his firm in specific areas.

**Step 2: Specify the Construct's Domain**

A researcher must take care that he is accurately capturing what should be included in the definition of that construct. A construct's domain is specified by providing a constitutive definition for the construct. A constitutive definition defines a construct by using other

constructs to identify conceptual boundaries, showing how it is discernable from other similar but different constructs.

**Step 3 : Establish operational Definitions**

The constitutive definition makes it possible to better define the construct's domain byuse of an operational definition. An operational definition indicates what observable attributes of the construct will be measured and the process that will be used to attach numbers to those attributes so as to represent the quantity of the attributes. An operational definition helps to move the constructs from the world of abstract concepts to the world where they can be measured.

**Step 4 : Collect Data to Test Measures**

In this step, the researcher uses the operationalized measures to collect data from the target population. This data helps to determine if the researcher is on the right track with his operationalized measures, i.e. has he done a good job in developing the operational definitions and measuring processes so that they accurately represent his constructs of interest.

**Step 5 : Purify the Measures**

In this step, the data collected is used to determine which item statements are to be retained and which are to be rejected from the final item list. This is done by conducting reliability tests.

**Step 6 : Conduct Validity Tests**

Once the scale has been purified by eliminating item statements that fail to pass the reliability tests, the researcher conducts another test to determine how much faith he can place in the results of his research. Here, the researcher is testing for validity - did he actually measure what he was trying to measure?

**Step 7 : Analyze Research Findings**

If the researcher has successfully developed measures that are reliable and valid, he is ready to analyze the data to achieve the objectives of his research study: answer research questions, test hypotheses, check for cause & effect relationships, describe the extent to which a population behaves in a specific manner, etc. A report can then be written that states the results of the research.

- **SELF CHECK EXERCISE**

i. A researcher must take care that he is accurately capturing what should be included in the definition of that construct. (true/ false)

ii. The constitutive definition doesnot makes it possible to better define the construct's domain by use of an operational definition. (true/ false)

iii. Information gained from conducting marketing research contributes to better decision making by reducing

(a) Cause
(b) Effect
(c) Risk
(d) Validity

iv. In order to establish a comprehensive and integrated marketing perspective, marketing organizations must have the discipline to measure in a rigorous fashion. (true/ false)

## 6.4 DIFFICULTIES IN MEASUREMENT

1. **Applying Rocket Science to Garbage Data**

Measurement requires data, and the organizations may have plenty of it. But what matters is whether the organization has the right data. Measurement-inspired marketers often try to mould data into something worthy of brilliantly conceived metrics.

2. **The New Math: Speed > Accuracy > Relevance**

Getting a "right" answer soon has become more important than exploring the possibilities thoroughly. On top of this, Web-based research now surveys a population of pseudo-target consumers faster and more cost-effectively than ever before.

Relevance, unfortunately, has become equated with antiquated times, and the loss of relevance in our research makes it more difficult to tease out the subtle causalities between success and failure.

3. **IT Enthusiasts Control the Agenda**

IT people are living their glory days. In an increasingly data-driven marketing era, IT is responsible for collecting and storing data, mining customer files to build profiles of the most profitable buyers, and sending and receiving messages in record time. The people who groove on all of this monopolize the corporation's agenda; they make progress and success all about the technology.

But a spreadsheet on an intranet doesn't make a business run. To get any attention and respect for marketing, we have to get the decision process right, and only then apply technology to facilitate it.

4. **Researchers and Analysts Suffer the Dangerfleld Syndrome: They Get No respect**

Researchers and analysts typically receive poor pay and have no career path. They need to act as thought leaders within the organization, leveraging the thought and data models they build in marketing and in all of the business functions it touches.

When researchers rise in stature, they encourage the use of facts and data to make smart decisions.

5. **Training in Measurement Is Rare**

Very few midsize-to-large marketing departments have comprehensive skill-building programs in place.

6. **Delegating Measurement Strategy**

In selecting the right marketing metrics, the decision maker has to have not only a big-picture perspective but also the clout to negotiate marketing's new science v/ithin the organization. Mid-level managers can't do this. Only a person at the top can assess how much change marketing can take in one step and in which direction the group must move.

Plus, when measurement strategy is delegated, truth and insight often take a back seat to rationalization and justification. Measurement requires leadership that ensures every person in the organization is focused on being creative, being supportive, taking initiative, and performing as a team player

## 6.5 CONCEPTS OF RELIABILITY AND VALIDITY

### 6.5.1 RELIABILITY

The reliability of an instrument is an index of the extent to which repeated measurements yield consistent results. It is assessed by determining the proportion of systematic variation in the instrument. This is done by determining the association between scores obtained from different administrations of the instrument. If the association is high, the

instrument yields consistent results and is therefore reliable. Approaches for assessing reliability include the test-retest, alternative forms, and internal consistency methods. *Test-Retest Reliability*

In this method, the respondents are administered identical sets of the instrument at two different times under as nearly equivalent conditions as possible. The time interval between the tests or administrations is typically, two or four weeks. The degree of similarity between the two measurements is determined by computing a correlation coefficient. The higher is the correlation coefficient, the greater is the reliability.

**Alternative - Forms Reliability**

In this method, two equivalent forms of the instrument are constructed. The same respondents are measured at two different times, usually two to four weeks apart. The scores from the administrations of the alternative forms are correlated to assess reliability.

**Internal Consistency Reliability**

This is used to assess the reliability of a summated scale in which several items are summed to form a total score. In a scale of this type, each item measures some aspect of the construct measured by the entire scale, and the items should be consistent in what they indicate about the characteristic. This measure of reliability focuses on the internal consistency of the set of items forming the scale.

The simplest measure of internal consistency is split-half reliability. The items on the scale are divided into two halves and the resulting half scores are correlated. High correlations between the halves indicate high internal consistency.

### 6.5.2 VALIDITY

The validity of a scale may be defined as the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured.

For a scale to be considered valid evidence is needed that it does indeed measure whatever it is that it purports to measure. Researchers may assess content validity, criterion validity and construct validity.

**Content validity**

Content validity, sometimes called face validity, is a subjective but systematic evaluation of how well the content of a scale represents the measurement task at hand. The researcher examines whether the scale items adequately cover the entire domain of the construct being measured.

**Criterion validity**

It reflects whether a scale performs as expected in relation to other variables selected as meaningful criteria. Criterion variable may include demographic and psychographic characteristics, attitudinal and behavioral measures, or scores obtained from other scales. Based on the time period involved, criterion validity can take two forms: concurrent and predictive validity.

*Concurrent validity* is assessed when the data on the scale being evaluated and the criterion variables are collected at the same time.

*Predictive validity* is the extent to which we could predict the future status of individuals on the basis of an attitude measure.

**Construct Validity**

*Construct Validity* addresses the question of what construct or characteristic the scale is, in fact, measuring. When assessing construct validity, the researcher attempts to answer about why the scale works and what deductions can be made concerning the underlying theory. Thus,

construct validity requires a sound theory of the nature of the construct being measured and how it relates to other constructs. It includes convergent, discriminant and nomological validity.

*Convergent Validity* is the extent to which the scale correlates positively with other measures of the same construct.

*Discriminant Validity* is the extent to which a measure does not correlate with other constructs with which it is supposed to differ.

*Nomological Validity* is the extent to which the scale correlates in theoretically predicted ways with measures of different but related constructs.

- **SELF CHECK EXERCISE**

i. *Construct Validity* addresses the question of what construct or characteristic the scale is. (true/ false)

ii. *Convergent Validity* is the extent to which the scale correlates ____with other measures of the same construct.
   (a) Negatively
   (b) Positively
   (c) Equally
   (d) none

iii. The validity of a scale may be defined as the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured. (true/ false)

iv. *Discriminant Validity* is the extent to which a measure correlate with other constructs with which it is supposed to differ. (true/ false)

## 6.6 SUMMARY

The chapter focused on the importance of measurement process in marketing. Measurement is the process of assigning numbers or others symbols to characteristics of objects according to certain pre specified rules. The measurement should be relevant, visible and should drive improvement. The steps in the measurement process have been described.The various difficulties in measurement in marketing have also been discussed. Theimportance of reliability and validity of a measuring instrument has been stated.

## 6.7 KEYWORDS

- **Concurrent validity:**is assessed when the data on the scale being evaluated and the criterion variables are collected at the same time.
- **Predictive validity:** is the extent to which we could predict the future status of individuals on the basis of an attitude measure.
- **Convergent Validity:** is the extent to which the scale correlates positively with other measures of the same construct.
- **Discriminant Validity:**is the extent to which a measure does not correlate with other

constructs with which it is supposed to differ.

- **Nomological Validity:** is the extent to which the scale correlates in theoretically predicted ways with measures of different but related constructs.
- **Measurement** - assigning numbers or other symbols to characteristics of objects according to certain pre specified rules.
- **Reliability** - an index of the extent to which repeated measurements with a measurement instrument yield consistent result
- **Validity**- the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured.

## 6.8 PRACTICE QUESTIONS

### 6.8.1 SHORT ANSWER QUESTIONS

1. What is convergent validity?
2. What do you understand by validity?
3. What do you mean by alternative form reliability?
4. What is concurrent validity?

### 6.8.2 LONG ANSWER QUESTIONS

1. Discuss the importance of measurement in marketing. Explain the measurement process in detail.
2. The instrument used for measurement should be reliable and valid. Discuss.
3. Explain in detail various types of reliability.
4. Elucidate various types of validity.

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## 6.10 ANSWER KEY

| | | | | | |
|---|---|---|---|---|---|
| i. | True | iv. | True | vii. | True |
| ii. | False | v. | True | viii. | False |
| iii. | (c) | vi. | (b) | | |

Lesson No. 7 AUTHOR : SHILPI GOYAL

# PROJECT FINANCING

**STRUCTURE**



## 8.0 OBJECTIVES

After reading this chapter, the student should be able to:

- Understand the importance of measurement of attitudes in marketing.
- Get an insight into the various techniques used to measure attitudes.

## 7.1 INTRODUCTION

One of the most important phenomena for a social marketer to understand is that of 'attitudes'. This is not a straightforward issue as there is much disagreement about the nature of attitudes, how they are formed, and how they determine our behavior. Attitude theory research is a key focus for consumer behavior theorists and derives from the field of psychology.

## 7.2 THE IMPORTANCE OF ATTITUDES IN MARKETING

Interest in consumer attitude measurement is at an all-time peak. Attempts to "position" products in certain markets niches are often based on estimates of the attitudes if different market segments towards similar products. Most of the strategy of market segmentation is

based on attitudinal segmentation. Attitude measurement is also a key factor in the increased efforts to measure the effectiveness of advertising. To measure the effectiveness of advertising, it is necessary to measure changes in attitudes which may be caused by the advertising. A knowledge of attitudes helps the marketer predict consumer reactions to products and to advertising messages about products.

Customer attitudes are important factors for the following reasons:

- Attitudes explain how ready one is to do something.
- Attitudes do not change much over time.
- Attitudes produce consistency in behavior.
- Attitudes can be related to preferences.

## 7.3 NATURE OF ATTITUDES

Attitudes may be defined as "the predisposition of the individual to evaluate some symbol or object or aspect of his world in a favorable manner" (Katz, 1970).

There are also differences of opinion as to what comprises an attitude. The three main elements on which theorists focus are:

- Cognitive component (beliefs/knowledge).
- Affective component (feelings).
- Conative component (behavioral).

In other words, we believe/know (cognitive component) something, for example, recycling is good for the environment. We also believe that looking after the environment is a good thing. This forms our positive feelings (affect) towards recycling behavior. We are therefore more likely to intend to engage in recycling behavior (conative factor) and ultimately to engage in the behavior itself.

Differences of opinion relate to which of the three components are actually part of attitude, i.e.:

1. Some (e.g., Fishbein, 1970) view attitude as a relatively simple unidimensional construct referring to the amount of affect for or against a psychological object (in other words the feeling element only).
2. Others (e.g., Bagozzi and Bunkrant, 1979) describe attitude as a two dimensional construct including the cognitive and affective component.
3. Others (e.g., Katz and Stotland, 1959) describe attitude as a complex multi-dimensional concept consisting of an affective, cognitive and behavioral component.

In one sense the above distinction does not matter too much since all approaches recognize the three components; it is important, however, when we come to measure attitudes to be clear as to what exactly is being measured. It is important to understand the three components and how they combine to determine behavior. Most of the research in this area is based on Fishbein and Ajzen's (1985) theory of reasoned action described in the model below.

### The theories of reasoned action and planned behavior

The extended Fishbein model, based on the theory of reasoned action, includes the following components to explain behavior.

1. Attitude to the behavior comprising:
   a. The strength of the expectancy (beliefs) that the act will be followed by a consequence.
   b. The value of that consequence to the individual.

   This is the basic *expectancy value* approach.
2. Subjective norms (i.e., the socio-cultural norms of other persons, groups or society)

and the individuals' desire/motivation to conform to these norms.

3. Perceived control (i.e., situational or internal obstacles to performing the behavior). This addition has resulted in a new model - 'the theory of planned behavior.

A key question, for both commercial and social marketers, is: Why do actual behavior and reported intentions often differ?

The purpose of social marketing is to effect behavior change. Attitude models often record behavioral intentions rather than actual behavior. One of the purposes of research is to assess how people will behave in the future, for example in response to new stimuli suchas additional resources - help lines, clinics, etc. One of the problems, however, is that reported behavioral intentions often don't match up to actual behavior.

Marketing theory and research support that consumers' attitudes toward product attributes influence their purchasing behavior toward those products. Consumers form those attitudes based on their image of the product from the dual perspectives of its tangible and symbolic attributes.

Attitudes are defined as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein & Ajzen, 1975). Attitudes can be defined as representing covert feelings of favorability or unfavorability toward an object, person, issue, or behavior. (Lutz ,1981). People learn attitudes over time by being in contact with the object directly (experience) or through receiving information about the object. Consumers use learned attitudes as a guide to their overt behavior with respect to the attitude object, giving rise to consistently favorable or unfavorable patterns of responses. Attitude measurement can provide understanding of purchase predisposition for a particular brand or service. Attitudes are assumed to be precursors of behavior. If a person is favorably predisposed toward a brand or service, that favorable predisposition should lead to favorable behaviors with respect to the brand, service, or program.

*Tangible attributes* are defined as the evaluative criteria used in decision making that are functional, utilitarian, or performance-oriented, i.e., they are means to higher ends. For example, tangible attributes of the marketing education program may include such considerations as the level of difficulty of the subject matter, the level of intellectual challenge required, or expected financial awards.

*Symbolic attributes* are defined as the evaluative criteria used in decision making that are value expressive, i.e., that reflect or express one's self-concept. For example, symbolic attributes of the marketing education program may include such considerations as the extent to which participation will reflect certain image characteristics of the students, such as being business-like, entrepreneurial, money-hungry, sociable, intelligent, ambitious, or greedy.

### 7.3.1 PROPERTIES OF ATTITUDES

The following are some important properties of attitudes:

**1. Hypothetical or latent variable**

An attitude is not directly observable but rather is inferred. An attitude cannot be diagnosed from any one particular act or response but rather is abstracted from a large number of related acts or responses.

**2. Measurement based on Response Consistency or Covariation**

The concept of attitude involves a consistency or predictability of responses. Furthermore, covariation among responses is basic to all the methods used to measure attitudes. Cainpbell proposed the following as an operational definition of attitude:

**...a social attitude is (or is evidenced by) by consistency in response to social objects.**

Response may be measured by self-reports of past behavior toward the object of the attitude or by written or verbal agreements of statements about beliefs, feelings, or intentions involving the object presented in an interview or self-administered questionnaire. Regardless of the procedure used, the existence of a pattern of interrelation- ships among responses is typically the evidence used to diagnose an attitude.

**3. Uni-dimensional Concept**

The bipolarity implicit in most definitions of attitude suggests a simple unidimensional concept - like-dislike, favorable-unfavorable evaluation, pro-con action tendency. This is not to say that attitudes may not be multidimensional. Rather, researchers typically begin with a unidimensional conception of attitude and in developing measuring instruments they aspire to a one-dimensional scale, and treat the scale score as a measure of a single variable. If a scale is unidimensional, then people with the same score will have about the same attitude. However, if the scale measures say two components, then the same score can be obtained in several different ways. Whether or not a given attitude domain or scale is unidimensional is an empirical question that the researcher must consider.

**4. Attitudes are learned or "residues of experience."**

Attitudes are acquired through the process of social learning, classical conditioning, instrumental conditioning, observational learning and through social comparison.

- **SELF CHECK EXERCISE**

**i.** An attitude is not directly observable but rather is inferred. (true/ false)

**ii.** Marketing theory and research does not support that consumers' attitudes toward product attributes influence their purchasing behavior toward those products. (true/ false)

**iii.** attributesare defined as the evaluative criteria used in decision making that are functional, utilitarian, or performance-oriented, i.e., they are means to higher ends.

**iv.** attributesare defined as the evaluative criteria used in decision making that are value expressive, i.e., that reflect or express one's self-concept.

## 7.4 MEASUREMENT OF ATTITUDES

There are four primary scales of measurement: nominal, ordinal, interval and ratio.

### 7.4.1 Nominal Scale

A nominal scale is a figurative labeling scheme in which the numbers serve only as labels or tags for identifying and classifying objects. When a nominal scale is used for the purpose of identification, there is strict one-to-one correspondence between the number and the objects. Each number is assigned to only one object and each object has only one number assigned to it. For example, the numbers assigned to respondents in a study constitute a nominal scale. When used for classification purposes, the nominally scaled numbers serve as labels for classes or categories. All objects in the same class have the same number and no two

classes have the same number. The numbers in a nominal scale do not reflect the amount of characteristic possessed by the objects. The only permissible operation on the numbers in a nominal scale is counting. Only a limited number of statistics, which are based on frequency counts, such as, percentages, mode, chi-square, and binomial tests etc. arc permissible.

### 7.4.2 Ordinal Scale

An ordinal scale is a ranking scale in which numbers are assigned to objects to indicate the relative extent to which the objects possess some characteristic. An ordinal scale allows a researcher to determine whether an object has more or less of a characteristic than some other object, but not how much more or less. Thus, an ordinal scale indicates relative position, not the magnitude of the difference between the objects. Common examples of ordinal scales include quality rankings, ranking of teams in a tournament, socioeconomic class, and occupational status etc. in addition to the counting operation allowable for nominal scale data, ordinal scale permits the use of statistics such as median, percentile, quartile, rank-order correlation etc.

### 7.4.3 Interval Scale

In an interval scale, numerically equal distances on the scale represent equal values in the characteristic being measured. An interval scale contains all the information of an ordinal scale but it also allows a researcher to compare the differences between objects. The difference between any two scale values is identical to the difference between any other two adjacent values of an interval scale. There is a constant or equal interval between scale values. The difference between 1 and 2 is the same as the difference between 2 and 3, which is the same as the difference between 5 and 6. A common example in everyday life is a temperature scale.

In an interval scale, the location of the zero point is not fixed. Both the zero point and the units of measurement are arbitrary. The statistical techniques that may be used on interval scale data include all of those that can be applied to nominal and ordinal data in addition to the arithmetic mean, standard deviation, product-moment correlations etc.

### 7.4.4 Ratio Scale

A ratio scale possesses all the properties of the nominal, ordinal, and interval scales, and, in addition, an absolute zero point. Thus, a ratio scale allows a researcher to identify or classify objects, rank order the objects, and compare intervals or differences. It is also meaningful to compute ratios of scale values. Common examples of ratio scales include height, weight, age etc. all statistical techniques can be applied to ratio data. These include specialized statistics such ass geometric mean, harmonic mean, and coefficient of variation.

## 7.5 METHODS TO MEASURE ATTITUDES

Attitudes can also be measured using the following procedures:

- *Self-reporting* - subjects are asked directly about their attitudes. Self-reporting is the most common technique used to measure attitudes.
- *Observation of behavior* - assuming that one's behavior is a result of one's attitudes, attitudes can be inferred by observing behavior. For example, one's attitude about an issue can be inferred by whether he/she signs a petition related to it.
- *Indirect techniques* - use unstructured stimuli such as word association tests.
- *Performance of objective tasks* - assumes that one's performance depends on one's attitude. For Example, the subject can be asked to memorize the arguments of both sides of an issue. He/she is likely to do a better job on the arguments that favour his/her stance.

- *Physiological reactions* - subject's response to a stimuli is measured using electronic or mechanical means. With this method, though the intensity can be measured, it is difficult to know whether the attitude is positive or negative.
- *Multiple measures* - a mixture of techniques can be used to validate the findings, especially worthwhile when self-reporting is used.
- *Depth Interviews* - the most commonly used technique that makes no attempt to disguise the subject of interest and uses no structural framework for eliciting information. In such an interview, the respondent is asked to talk about the subject of interest - for example, coffee and the interviewer attempts to explore the respondents' attitudes in depth by probing extensively into any area which may come up.

- **SELF CHECK EXRECISE**

v. Multiple measures are a mixture of techniques can be used to validate the findings, especially worthwhile when self-reporting is used. (true/ false)

vi. Self-reporting is the most common technique used to measure attitudes. (true/ false)

vii. In an interval scale, numerically equal distances on the scale represent…….values in the characteristic being measured.

(a) Equal
(b) Unequal
(c) Same
(d) Different

viii. An ordinal scale is a not ranking scale in which numbers are assigned to objects to indicate the relative extent to which the objects possess some characteristic. (true/ false)

## 7.6 ATTITUDE RATING SCALES

There are several types of attitude rating scales:

- *Equal appearing interval scaling:* a set of statements are assembled. These statements are selected according to their position on an interval scale of favorableness. Statements are chosen that have a small degree of dispersion. Respondents are then asked to indicate with which statements they agree.
- *Likert method of summated ratings* - a statement is made and the respondents indicate their degree of agreement or disagreement on a five-point scale (Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, Strongly Disagree)
- *Semantic Differential scale* - a scale is constructed using phrases describing attributes of the product to anchor each end. For example, the left end of the statement may state, "Hours are inconvenient" and the right end may state" Hours are convenient". The respondent then marks one of the seven blanks between the statements to indicate his/her opinion about the attribute.
- *Staple scale* - similar to the semantic differential scale except that
  - — Points on the scale are identified by numbers
  - — Only one statement is used and if the respondent disagrees, a negative number should be marked and
  - — There are ten positions instead of seven.

  This scale does not require the development of bipolar objectives and it can be

administered by telephone.

- *Q-sort technique* - the respondent is forced to construct a normal distribution by placing a specified number of cards in one of the eleven stacks according to how desirable he/she finds the characteristics written on the cards.

## 7.7 SUMMARY

Attitudes are complex and not completely understood. They are a composite of such elements such as beliefs, preferences, and readiness to respond behaviorally. Measurement of consumer attitudes is a major concern of marketing researchers. The techniques used vary from completely unstructured to highly structured, from disguised to completely open, from simple and direct to highly complex.

## 7.8 KEYWORDS

- *Attitude* - the predisposition of the individual to evaluate some symbol or object or aspect of his world in a favorable manner
- *Nominal Scale* - a scale whose numbers serve only as labels or tags for identifying and classifying objects with a strict one-to-one correspondence between the numbers and the objects.
- *Ordinal Scale* - a ranking scale in which numbers are assigned to objects to indicate the relative extent to which some characteristic is possessed.
- *Interval Scale* - a scale in which the numbers are used to rate objects such that numerically equal distances on the scale represent equal distances in the characteristics being measured.
- *Ratio Scale* - it allows the researcher to identify, rank order the objects and compare intervals or differences.

## 7.9 PRACTICE QUESTIONS

### 7.9.1 SHORT ANSWER QUESTIONS

1. How many types of scales are there to measure attitude?
2. What do you understand by staple scale?
3. What is Q-sort technique?
4. What do you understand by self-reporting?

### 7.9.2 LONG ANSWER QUESTIONS

1. Define the term attitudes. Discuss the importance of attitude measurement in marketing.
2. Discuss the various techniques used in the measurement of attitudes.
3. Explain several types of attitude rating scales.
4. Elucidate the importance of attitudes in marketing. Explain their nature and properties.

## 7.9 REFERENCES

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## 7.10 ANSWER KEY

| | | | |
|---|---|---|---|
| i. | True | v. | True |
| ii. | False | vi. | True |
| iii. | Tangible | vii. | (a) |
| iv. | Symbolic | viii. | False |

**Lesson No. 8** **AUTHOR: VIKAS SINGLA**

**ATTITUDE MEASUREMENT**



## 8.0 OBJECTIVES

This chapter aims to define and underscore the significance of attitude in marketing research. It delves into measurement and scaling concepts, exploring various attitude rating scales and evaluating the accuracy of attitude measurement through validity, reliability, and sensitivity. The objectives also include understanding the components of attitude, such as cognitive, affective, and intention, and mastering different scaling techniques like Likert, Thurstone, and semantic-differential scales for effective application in diverse marketing research scenarios.

## 8.1 INTRODUCTION

Most questions in marketing research surveys are designed to measure attitudes. For example, each of the following situations involves the measurement of some aspect of a respondent's attitude:

1. An appliance manufacturer wants to know how many potential buyers are aware of a brand name. (What brand names do they think of in connection with dishwashers?)
2. Administrators concerned with formulating an energy policy want to know what proportion of voters agree that car buyers should pay an extra tax of several hundred dollars on cars that get poor gasoline mileage.
3. A food manufacturer is interested in the intentions of a sample of consumers to buy a possible new product after the concept has been described to them.

## 8.2 DEFINITION OF ATTITUDE

What is attitude? How can it be measured for marketing research purposes? Attitude is psychological constructs, a way of conceptualizing the intangible. Attitudes can't really be observed or measured directly because their existence is inferred from their consequences. On the other hand, people's values and beliefs may dictate or affect their purchasing decisions. Values and beliefs in retrospect are influenced by a person's attitude; conversely, values are the determinants of attitudes and belief involves evaluation.

A person with more positive than negative beliefs toward a psychological object is judged to have a positive attitude. Attitude measurement techniques are generally systematic methods for abstracting the effective component of belief systems in order to generate-an attitude score. Attitudes are the essence of the "human change agent" that all marketers strive to influence, but without the right tools to effectively measure attitude, attitudinal research has little to offer.

Attitudes are mental states used by individuals to structure the way they perceive their environment and guide the way they respond to it. There is general acceptance that there are three related components that form an attitude: a cognitive or knowledge component, a liking or affective component, and an intentions or actions component. Each component provides a different insight into a person's attitude.

- **Cognitive or Knowledge Component**

The cognitive or knowledge component represents a person's information about an object. This information includes awareness of the existence of the object, beliefs about the characteristics or attributes of the object, and judgments about the relative importance of each of the attributes. Consider the knowledge people might bring to planning a ski vacation in the Rockies. They might remember the names of several ski areas without prompting: Aspen, Snowmass, Alta, and Park City, for example. This is unaided recall awareness. The names of additional ski areas are likely to be remembered when the travel agent mentions them. This is aided recall awareness.

- **Affective or Liking component**

The affective or liking component summarizes a person's overall feelings toward an object, situation, or person, on a scale of like-dislike or favorable-unfavorable. When there are several alternatives to choose among liking is expressed in terms of preference for one alternative over another. Preferences can be measured by asking which is "most preferred" or the "first choice," which is the "second choice" and so forth.

- **Intention or Action Component**

The intention or action component refers to a person's expectations of future behavior toward, an object. Is he or she "very," "somewhat" or "not at all" likely to go to Aspen for a ski week next winter? Intentions usually are limited to a distinct time period that depends on buying habits and planning horizons. The great advantage of an intentions question is that it incorporates information about a respondent's ability or willingness to pay for the object, or otherwise take action.

## 8.3 THE CONCEPT OF MEASUREMENT AND SCALING

Measurement can be defined as a standardized process of assigning numbers or other symbols to certain characteristics of the objects of interest, according to some prespecified

rules. For a measurement process to be a standardized process of assignment, two characteristics are necessary. First, there must be one-to-one correspondence between the symbol and the characteristic in the object that is being measured. Second, the rules for assignment must be invariant over time and the objects being measured. Scaling is the process of creating a continuum on which objects are located according to the amount of the measured characteristic they possess. An illustration of a scale that is often used in research is the dichotomous scale for sex. The object with male (or female) characteristics is assigned the number 1 and the object with the opposite characteristics is assigned the number 0. This scale meets the requirements of the measurement process in that the assignment is one to one and it is invariate with respect to time and object. Measurement and scaling are basic tools used in the scientific method and are used in almost every marketing research situation.

### 8.3.1 Properties of Measurement Scales

The assignment of numbers is made according to rules that should correspond to the properties of whatever is being measured. The rule may be very simple, as when a bus route is given a number to distinguish it from other routes. Here, the only property is identity, and any comparisons of numbers are meaningless. This is a nominal scale. At the other extreme is the ratio scale, which has very rigorous properties. In between the extremes are ordinal scales and interval scales. Attitude variables, such as beliefs, preferences, and intentions, are also measured using rating scales. These scales provide respondents with a set of numbered categories that represent the range of possible judgments or positions. An attitude scale involves measurement in the same sense that a thermometer measures temperature or a ruler measures distance. In each of these cases, measurement means the assignment of numbers to objects or persons to represent quantities of their attributes. For example, the attributes of a person include his or her income, social class, attitude, and so forth. Therefore, it is very important to understand the differences among the types of scales and to be able to identify them in practice, for their properties put significant restrictions on the interpretation and use of the resulting measurements.

- *Nominal Scale*: In a nominal scale, objects are assigned to mutually exclusive, labeled categories, but there are no necessary relationships among the categories; that is, no ordering or spacing is implied. If one entity is assigned the same number as another, they are identical with respect to a nominal variable. Otherwise, they are just different. Sex, geographic location, and marital status are nominally scaled variables. The only arithmetic operation that can be performed on such a scale is a count of each category.
- *Ordinal Scale*: An ordinal scale is obtained by ranking objects or by arranging them in order with regard to some common variable. The question is simply whether each object has more or less of this variable than some other object. The scale provides information as to how much difference there is between the objects. Because we do not know the amount of difference between objects, the permissible arithmetic operations are limited to statistics such as the median or mode (but not the mean). For example, suppose a sample of 1,000 consumers ranked five brands of frozen mixed vegetables according to quality. The results for were as follows:

| | |
|---|---|
| Highest | 150 |
| Second | 300 |
| Third | 250 |

| | |
|---|---|
| Fourth | 200 |
| Lowest | 100 |
| Total | 1000 |

The "second" quality category is the mode; the "third" category is the median; however, it is not possible to compute a mean ranking, because the differences between ordinal scaled values are not necessarily the same. Similarly, brands of frozen vegetables can be ranked according to quality, from highest to lowest.

- *Interval Scale*: In an interval scale the numbers used to rank the objects also represent equal increments of the attribute being measured. This means that differences can be compared. The difference between 1 and 2 is the same as between 2 and 3, but is only half the difference between 2 and 4. The location of the zero point is not fixed, since zero does not denote the absence of the attribute. Interval scales have very desirable properties, because virtually the entire range of statistical operations can be employed to analyze the resulting number, including addition and subtraction. Consequently, it is possible to compute an arithmetic mean from interval-scale measures. A recurring question regarding most attitude measures is whether or not they are interval scales. Usually, it is doubtful that the intervals between categories are exactly equal, but they may not be so unequal as to preclude treating the whole as an interval scale. A good example is a "willingness to buy" scale with 10 categories labeled from 1 to 10. If this were an interval scale, we could say that two people with scores of 2 and 4, respectively, differed by the same degree of "willingness[1]' as two other people with

  scores of 8 and 10. Further, only ratios of the differences in scale values cam be meaningfully interpreted, not ratios of the absolute scale values. For example, the difference between 8 and 10 is twice the difference between 2 and 3, but 6 on the "willingness" scale does not represent three times the value of 2 in terms of the degree of willingness.
- *Ratio Scale*: A ratio scale is a special kind of interval scale that has a natural zero point. With such a scale-of weight, market share, or dollars in savings accounts, for example-it is possible to say how many times greater or smaller one object is than another. This is the only type of scale that permits us to make comparisons of absolute magnitude. For example, we can say that an annual income of $80,000 is two times as large as an income of $40,000.

- **Self-Check Exercise**

I. What is the primary characteristic of an interval scale?

   a) It has a natural zero point
   b) Differences between values can be compared
   c) It only allows counting operations
   d) It is used for measuring nominal variables

II. What is the cognitive component of attitude concerned with?

   a) Future behavior
   b) Overall feelings
   c) Information about an object
   d) Preferences

III. A _____ scale has a natural zero point and allows comparisons of absolute magnitude.
IV. An _____ scale is obtained by ranking objects or arranging them in order with regard to some common variable.
V. The overall feelings or emotional response toward an object represent which component of attitude.
VI. The affective or liking component of attitude is measured on a scale of .....

## 8.4 TYPES OF ATTITUDE RATING SCALES

There are many ways to present a respondent with a continuum of numbered categories that represent the range of possible attitude judgments. They can be generally classified as single-item and multiple-item scales.

### 8.4.1 Single-Item Scales

As the name itself suggests, single-item scales are those that have only one item to measure a construct. Under the single-item scales, the itemized category scale is the most widely used by marketing researchers. In some situations, comparative scales, rank-order scales, or constant-sum scales have advantages. Each of these major types of rating scales will be discussed in turn.

- *Itemized-Category Scales*: The following scale is an itemized-category scale. There are four categories from which respondents can choose to indicate their overall level of satisfaction with their present health insurance plan:
  - Very satisfied - Quite satisfied - Somewhat satisfied - Not at all satisfied
  This satisfaction scale has the following characteristics:
  1. All categories are labeled.
  2. The respondent is forced to make a choice; there is no provision for neutral opinion or "don't know" responses.
  3. There are more favorable than unfavorable categories, so the scale is unbalanced.
  4. There is no explicit comparison of the respondent's present plan with other health insurance plans.

The design of the satisfaction scale requires decisions along several dimensions. Another feature of this scale is that there is no attempt to make the intervals between categories evens approximately the same.

- *Comparative Scales*: Another version of the preceding scale would label the categories "excellent", "very good," "good," "fair/' and "poor," thereby eliminating the implicit comparison. The problem with a comparative scale is that the reference point is unclear and different respondents may use different reference points or standards. Are private doctors rated "excellent" or "very good" because, they are superior to the existing alternatives, or because they measure up to an ideal form of medical care provider? In marketing studies where competitive alternatives are being evaluated, some form of explicit or implicit comparison should be built into the scale. A recent review of research on the question of the appropriate number of response categories concluded:
  - Scales with two or three response alternatives generally are inadequate in that they are incapable of transmitting very much information and they tend to frustrate and

stifle respondents.

- There is little to be gained from using more than nine categories.
- An odd rather than an even number of categories is preferable when the respondent legitimately can adopt a neutral position.

- *Rank Order Scales*: Rank order scales require the respondent to arrange a set of objects with regard to a common criterion: advertisements in terms of interest, product features in terms of importance, or new-product concepts with regard to willingness to buy in the future. The result is an ordinal scale with the inherent limitations of weak scale properties. Ranking is widely used in surveys, however, because it corresponds to the choice process occurring in a shopping environment where a buyer makes direct comparisons among competing alternatives (brands, flavors, product variations, and so on). Rank-order scales are not without problems. Ranking scales are more difficult than rating scales because they involve comparisons, and hence require more attention and mental effort.
- *Q-Sort Scaling*: When the number of objects or characteristics that are to be rated or ranked is very large, it becomes rather tedious for the respondent to rank order or do a pairwise comparison. If the respondent is forced to do a rank ordering or a pairwise comparison, a number of problems and biases creep into the study. To deal with such a situation, the Q-sort scaling process is used. In Q-sort scaling the respondents are asked to sort the various characteristics or objects that are being compared into various groups, such that the distribution of the number of objects or characteristics in each group follows a normal distribution. For example, let us take the case of a toy manufacturing company such as Toys 'R' Us developing a new product. After a marathon brain-storming session, the new-product team has come up with a hundred different products, each with minor variations in features, and wants to test and find out from consumers which feature combination is the most preferred and will generate the maximum sales. The best scaling procedure that can be used in this context is Q-sort scaling. The procedure to be adopted is as follows.

  Each respondent is handed 100 cards, each containing a product with various features. The respondent is then asked to sort the cards into 12 different piles in such a way that one pile contains what they feel is the most preferred among the products that have been developed, and another pile contains the least preferred of the products that have been developed. The other 10 piles will contain cards with products that vary gradually from those with higher preference to those with lower preference. In this particular case, only five cards can be placed in the most and the least preferred product piles. After placing all the cards in the piles, the respondent is asked to rank-order only those products in the most preferred pile or in the top few sets of piles.
- *Constant-Sum Scales*: Constant-sum scales require respondents to allocate a fixed number of rating points (usually 100) among several objects, to reflect the relative preference for each object. It is widely used to measure the relative importance of attributes, as in the following example.

  Please divide 100 points among the following characteristics so the division reflects the relative importance of each characteristic to you in the selection of a health care plan. Ability to choose a doctor Extent of coverage provided Quality of medical careMonthly cost of the plan, Distance to clinic or doctor from your home.
- *Pictorial Scales*: In pictorial scales the various categories of the scale are depicted

pictorially. The respondents are shown a concept or read an attitudinal statement and are asked to indicate their degree of agreement or interest by indicating the corresponding position on the pictorial scale. Therefore, in designing a format, it is of prime importance to design one that the respondent will comprehend and that will enable him or her to respond accurately. Commonly used pictorial scales are the thermometer scale and the funny faces scale. Pictorial scales are used mainly when the respondents are young children or other people who are illiterate.

- *Paired-Comparison Scales*: The brands to be rated were presented two at a time, so each brand in the category was compared once to every other brand. In each pair the respondents were asked to divide 10 points among the brands, on the basis of how much they liked one compared to the other. A score was then totaled for each brand. Although this scale performs well on the criteria, it is cumbersome to administer. Another possible limitation is that the frame of reference is always the other brands in the set being tested. These brands may change over time.

### 8.4.2 Multiple-Item Scales

Attitudes toward complex objects such as health plans, automobiles, credit instruments, or transportation modes have many facets. Thus, it is often unrealistic to attempt to capture the full picture with one overall attitude-scale question. For example, the public appears to support the general idea of income tax reform but opposes the elimination of the most popular tax loopholes. While beliefs in any specific issue, aspect, or characteristic are useful indicators of the overall attitude, there may be unusual reasons that make the single belief unrepresentative of the general position. To cope with this problem, a variety of methods have been developed to measure a sample of beliefs-toward the attitude objects (such as agreement or disagreement with a number of statements about the attitude object) and combine the set of answers into some form of average score. The most frequently employed of these methods are Likert, Thurstone, and semantic-differential scales.

- *Likert Scale*: Likert scales require a respondent to indicate a degree of agreement or disagreement with a variety of statements related to the attitude or object. They are also called summated scales, because the scores on the individual items are summed to produce a total score for the respondent. A Likert scale usually consists of two parts, the item part and the evaluative part. The item part is essentially a statement about a certain product, event, or attitude. The evaluative part is a list of response categories ranging from "strongly agree" to "strongly disagree." An important assumption of this scaling method is that each of the items (statements) measures some aspect of a single common factor; otherwise, the items cannot legitimately be summed. In other words, the resulting scale is unidimensional. The Likert scaling method, then, refers to the severed steps in the procedure for culling out "the items that do not belong. The result is a series of 5 to 20 or more statements and questions, of which those given below are illustrative.
- *Thurstone Scale*: The procedure of Thurstone scales is also known as the method of equal-appearing intervals, since the objective is to obtain a unidimensional scale with interval properties. The first step is to generate a large number of statements or adjectives reflecting all degrees of favorableness toward the attitude objects. Then, a group of judges isgiven this set of items (as many as 75 to 100 in all) and asked to

classify them according to their degree of favorableness or unfavorableness. Usually, this is done with an 11-category bipolar scale, with "very favorable" at one end, "very unfavorable" at the other, and a neutral position in the middle. The judges are instructed to treat the intervals between categories as equal and to make evaluations of each item without expressing their own attitudes. The scale value of each item is the median position to which it is assigned by the judges. Items that have been placed in many different categories are discarded as ambiguous because there was no consensus among the judges. The resulting scale consists of 10 to 20 items that are distributed uniformly along the scale of favorability. The scale then is administered as part of a survey by asking each respondent to select those statements which best reflect his or her feelings toward the attitude object. The respondent's attitude score is the average of the scale scores of the chosen statements.

Because of the two-stage procedure, a Thurstone scale is both time consuming and expensive to construct; however, the scale itself is easy to administer and requires a minimum of instructions. Because there is not an explicit response to each item in the scale, it does not have as much diagnostic value as a Likert scale.

- *Semantic-Differential Scale*: Semantic-differential scales are used widely to describe the set of beliefs that comprise a person's image "of an organization or brand. The procedure is also an insightful procedure for comparing the images of competing brands, stores, or services. Respondents are asked to rate each attitude object in turn on a number of five-or seven-point rating scales, bounded at each end by polar adjectives or phrases. Some researchers prefer unipolar scales, while others use bipolar scales. In either case, the respondent chooses the end point only if that adjective is closely descriptive to that object. However, the midpoint of the scale has two different meanings, depending on the type of scale. With unipolar scales, the midpoint is simply a step on the scale from "sweet" to "not sweet," whereas on a bipolar scale it is a neutral point.

**The characteristics of the semantic differential scales:**

1. The pairs of objects or phrases are selected carefully to be meaningful in the market being studied and often correspond to product or service attributes. Exploratory research generally is required to ensure that important attributes are represented and described in words that are familiar to respondents.
2. The negative or unfavorable pole is sometimes on the right side and sometimes on the left. This rotation is necessary to avoid the halo effect, in which the location of previous judgments on the scale affects subsequent judgments because of respondent carelessness.

## 8.5 ACCURACY OF ATTITUDE MEASUREMENT

Attitude measures, in common with all measures used in marketing, must be both accurate and useful. In this section, the focus is on those aspects of attitude measures that contribute to accuracy: validity, reliability, and sensitivity.

❖ ***Validity***: An attitude measure has validity if it measures what it is supposed to measure. If this is the case, then differences in attitude scores will reflect differences among the objects

or individuals on the characteristic being measured. This is a very troublesome question; for example, how is a researcher to know whether measured differences in the attitudes of managers, consumer activists, and consumers toward marketing practices; regulation, and the contribution of the consumer movement are true differences? There havebeen three basic approaches to this question of validity assessment.

- *Face or consensus validity* is invoked when the argument is made that the measurement so self-evidently reflects or represents the various aspects of the phenomenon that there can be little quarrels with it. For instance, buyers' recognition of advertisements is usually accepted at face value as an indication of past ad exposure. This faith typically is supported by little more than common sense, despite evidence that recognition scores are influenced by reader interest.
- *Criterion validity* is more defensible, for it is based on empirical evidence that the attitude measure correlates with other "criterion" variables. If the two variables are measured at the same time, concurrent validity is established. Better yet, if the attitude measure can predict some future event, then predictive validity has been established. A measure of brand preference or buying intentions is valid if it can be shown through sales records to predict future sales. This is the most important type of validity for decision-making purposes, for the very nature of decisions requires predictions of uncertain future events.

  While face, concurrent, and predictive validity provide necessary evidence of overall validity, often they are not sufficient. The characteristic of these three approaches is that they provide evidence on *convergent validity.* That is, an attitude measure can adequately represent a characteristic or variable if it correlates or "converges" with other supposed measures of that variable. Unfortunately, an attitude measure may converge with measures of other variables in addition to the one of interest. Thus, it is also necessary to establish discriminant validity through low correlations between the measure of interest and other measures that are supposedly not measuring the same variable or concept. Advertising recognition measures often fail this second test. While they correlate or converge with past ad exposure, which is what we want, they also are correlated with number of magazines read and product interest.
- *Construct validity* can be considered only after discriminant and convergent validity have been established. It is achieved when a logical argument can be advanced to defend a particular measure. The argument aims first to define the concept or construct explicitly and then to show that the measurement, or operational definition, logically connects the empirical phenomenon to the concept. The extreme difficulty of this kind of validation lies in the unobservable nature of many of the constructs (such as social class, personality, or attitudes) used to explain marketing behavior. For example, is occupation a good operational definition of social class, or does it measure some other characteristic? One way to assess construct validity is to test whether or not the measure confirms hypotheses generated from the theory based on the concepts. Since theory development is at a youthful stage in marketing, the theory itself may be incorrect, making this approach hazardous. This is one reason why little construct validation is attempted in marketing. A more significant reason is the lack of well-established measures that can be used in a variety of circumstances. Instead, marketing researchers tend to develop measures for each specific problem or survey and rely on face validity.

❖ **Reliability**

So far, we have been talking about systematic errors between an observed score (Xo,) and a true score (Xt,), which will determine whether a measure is valid. However, the total error of a measurement consists of this systematic error component (Xs,) and a random error component (Xr,). Random error is manifested by lack of consistency (unreliability) in repeated or equivalent measures of the same object or person. As a result, any measurement can be expressed as a function of several components:

Xo = Xt + Xs + Xr

Observed score - true score + systematic error + random error

To interpret this equation, remember that a valid measure is one that reflects the true score. In this situation, Xo = Xt, and both Xs, and Xr, are zero. Thus, if we know the measure is valid, it has to be reliable. The converse is not necessarily true. A measure may be highly reliable, Xr - 0, and still have a substantial systematic error that distorts the validity. If the measure is not reliable, then it cannot be valid since at a minimum we are left with Xo = Xt + Xr. In brief, reliability is a necessary but not a sufficient condition for validity.

Although reliability is less important, it is easier to measure, and so receives relatively more emphasis. The basic methods for establishing reliability can be classified according to whether they measure stability of results over time or internal consistency of items in an attitude scale.

Stability over time is assessed by repeating the measurement with the same instrument and the same respondents at two points in time and correlating the results. To the extent that random fluctuations result in different scores for the two administrations, this correlation and hence the reliability will be lowered. The problems of this test-retest method are similar to those encountered during any pretest-posttest measurement of attitudes. The first administration may sensitize the respondent to the subject and lead t6 attitude change. The likelihood of a true change in attitude (versus a random fluctuation) is increased further if the interval between the test and the retest is too long. For most topics, this would be more than two weeks. If the interval is too short, however, there may be a carryover from the test to the retest: attempts to remember the responses in the first test, boredom or annoyance at the imposition, and so forth. Because of these problems, a very short interval will bias the reliability estimate upward, whereas longer periods will have the opposite effect.

❖ **Sensitivity**

The third characteristic of a good attitude measure is sensitivity, or the ability to discriminate among meaningful differences in attitudes. Sensitivity is achieved by increasing the number of scale categories; however, the more categories there are, the lower the reliability will be. This is because very coarse response categories, such as "yes" or "no," in response to an attitude question can absorb a great deal of response variability before a change would be noted using the test-retest method. Conversely, the use of a large number of response categories when there are only a few distinct attitude positions would be subject to a considerable, but unwarranted, amount of random fluctuation.

❖ **Generalizability**

Generalizability refers to the ease of scale administration and interpretation in different

research settings and situations. Thus, the generalizability of a multiple item scale is determined by whether it can be applied in a wide variety of data collection modes, whether it can be used to obtain data from a wide variety of individuals and under what conditions it can be interpreted.

- **Self-Check Exercise**

VII. Q-sort scaling is used when:
   a) There are few objects or characteristics to rate
   b) The number of objects to rate is very large
   c) Respondents prefer pairwise comparisons
   d) The rating involves a continuum

VIII. Semantic-differential scales are commonly used to describe:
   a) Multiple-choice questions
   b) Beliefs about attitude objects
   c) Comparative scales
   d) Nominal scales

IX. Single-item scales allow for neutral or "don't know" responses.

X. Comparative scales eliminate the need for an implicit comparison in attitude measurement.

XI. Reliability is assessed by measuring the _____ of results over time or the internal consistency of items in a scale.

XII. Semantic-differential scales use _____ adjectives or phrases at each end of the rating scale.

## 8.6 SUMMARY

In this chapter, the focus is on defining and emphasizing the significance of attitude in marketing research. It covers the intricate concepts of measurement and scaling, exploring various attitude rating scales, and evaluating the accuracy of attitude measurement through validity, reliability, and sensitivity. The chapter delves into the components of attitude—cognitive, affective, and intention—providing insights into their measurement. Various scaling techniques, such as Likert, Thurstone, and semantic-differential scales, are discussed for effective application in diverse marketing research scenarios. The types of attitudes rating scales, including single-item and multiple-item scales, are thoroughly examined, with detailed insights into their properties and applications. The chapter concludes by addressing the accuracy of attitude measurement through validity, reliability, and sensitivity, highlighting their importance in ensuring the effectiveness of attitude measures in marketing research.

## 8.7 KEYWORDS

1. **Attitude Measurement**: The process of quantifying and evaluating individuals' attitudes, opinions, or perceptions towards a particular object, concept, or situation. It involves using various measurement scales and techniques to capture the cognitive, affective, and behavioral components of attitudes.
2. **Measurement and Scaling:** The standardized process of assigning numerical values or symbols to characteristics of objects, such as attitudes, according to pre-specified rules. Scaling refers to creating a continuum on which objects are located based on the amount of the measured characteristic they possess.
3. **Rating Scales:** Tools used in attitude measurement that provide respondents with a set of numbered categories to express their judgments or positions. Examples include Likert scales, Thurstone scales, and semantic-differential scales.
4. **Likert Scale:** A type of rating scale commonly used in surveys, where respondents indicate their level of agreement or disagreement with a series of statements related to a particular attitude or concept. The scores on individual items are then summed to create a total score.

## 8.8 PRACTICE QUESTIONS

### 8.8.1 Short Answer Type Questions

Q 1. What is the primary goal of attitude measurement in marketing research?
Q 2. Briefly explain the concept of scaling and its role in attitude measurement
Q 3. Name two commonly used tools in attitude measurement and describe one key characteristic of each.
Q 4. In the context of Likert scales, what is the significance of summing scores on individual items
Q 5. Define reliability in the context of attitude measurement and provide one method used to assess it.

### 8.8.2 Long Answer Type Questions:

Q 1. Elaborate on the Likert scale as a method of attitude measurement. Discuss its structure, usage, and the considerations in designing effective Likert scale items.
Q 2. Explain the importance of validity in attitude measurement. Provide examples of face, criterion, and construct validity and discuss their relevance in marketing research.
Q 3. Discuss the concept of scaling and its various types.
Q 4. Detail the role of rating scales in attitude measurement.
Q 5. Describe the factors influencing the reliability of attitude measurements.

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## 8.10 ANSWER KEY (SELF CHECK EXERCISES)

I. B, II.C, III. Ratio, IV. Ordinal, V. Affective, VI. Like-Dislike or Favorable-Unfavorable VII. B, VIII B., IX. True, X. False, XI. Stability, XII. Polar

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# MULTIVARIATE ANALYSIS



## 9.0 OBJECTIVES

This chapter aims to provide a comprehensive understanding of Discriminant Analysis and Factor Analysis in data analysis and classification. For Discriminant Analysis, the objectives include identifying distinct groups, discerning pivotal variables, and showcasing its dual role in prediction and description. In Factor Analysis, goals involve revealing underlying constructs, reducing variables for manageability, and exploring methodologies like principal component and common factor analysis. Common objectives for both analyses include grasping the derivation of linear combinations, comprehending centroid analysis, and recognizing methodological limitations, with suggestions for result validation. The chapter aims to offer a concise yet thorough exploration of these analytical techniques and their applications.

## 9.1 INTRODUCTION

Embarking on the exploration of Discriminant Analysis and Factor Analysis, this chapter unravels the intricacies of data analysis and classification. A gateway to understanding classification techniques, it unveils the significance of discerning distinct groups and

underlying constructs. The introductory section primes readers for a journey into predictive and descriptive analytics, shedding light on the pivotal role played by Discriminant Analysis.

## 9.2 WHAT IS DISCRIMINANT ANALYSIS

Discriminant analysis techniques are used to classify individuals into one of two or more alternative groups (or populations) on the basis of a set of measurements. The populations are known to be distinct, and each individual belongs to one of them. These techniques also can be used to identify which variables contribute to making the classification. Thus, prediction and description, as in regression analysis, are the two major uses of Discriminant analysis.

As an example, consider a mortgage company loan officer who wishes to decide whether to approve an applicant's mortgage loan. This decision is made by determining whether the applicant's characteristics are more like those of persons in the past who repaid loams successfully than like those of persons who defaulted. Information on these two groups, available from past records, would include factors such as age, income, marital status, outstanding debt, and ownership of certain durable goods. Similarly, a researcher interested in business failures may be able to group firms according to whether they eventually failed or did not fail, on the basis of independent variables such as location, financial ratios, or management changes. The challenge is to find the discriminating variables to use in a predictive equation that will produce better-than-chance assignment of the individuals to the two groups.

### 9.2.1 OBJECTIVES

Discriminant analysis has four major objectives:

- Determining linear combinations of the predictor variables to separate the groups by maximizing between-group variation relative to within-group variation (objects in different groups are maximally separated).
- Developing procedures for assigning new objects, firms, or individuals, whose profiles but not group identity is known, to one of the two groups.
- Testing whether significant differences exist between the two groups, based on the group centroids.
- Determining which variables count most in explaining inter group differences.

### 9.2.2 METHODOLOGY

Discriminant analysis involves deriving the linear combination of the two (or more) independent variables that will discriminate best between the a priori defined groups. This is achieved by the statistical criteria of maximizing the between-group variance relative to the within-group variance. The linear combination (known as the discriminant function or axis) for a discriminant analysis is derived from an equation that takes the form

$$Z - bjXj + bjXj + b,X_2 + b_3X_3 + \ldots\ldots\ldots + b_nX_n$$

Where, Z « discriminant score b discriminant weights X = predictor (independent) variables Discriminant analyses (and ANOVA) are the appropriate statistical techniques for testing the hypotheses that the group means of two or more groups are equal. In discriminant analysis one multiplies each independent variable by its corresponding weight and adds these products together. The result is a single composite discriminant score for each individual in the

analysis. By averaging the discriminant scores for all of the individuals within a particular group, we arrive at the group mean. This group mean is referred to as a centroid. The number of centroids corresponds to the number of groups. The centroids indicate the most typical location of an individual from a particular group, and a comparison of the group centroids shows how far apart the groups are along the discriminant function being tested.

The test for the statistical significance of the discriminant function is a generalized measure of the distance between the group centroids. It is computed by comparing the distribution of the discriminant scares for two or more groups. If the overlap in the distribution is small, the discriminant function separates the groups well; if the, overlap is large, the function is a poor discriminator between the groups.

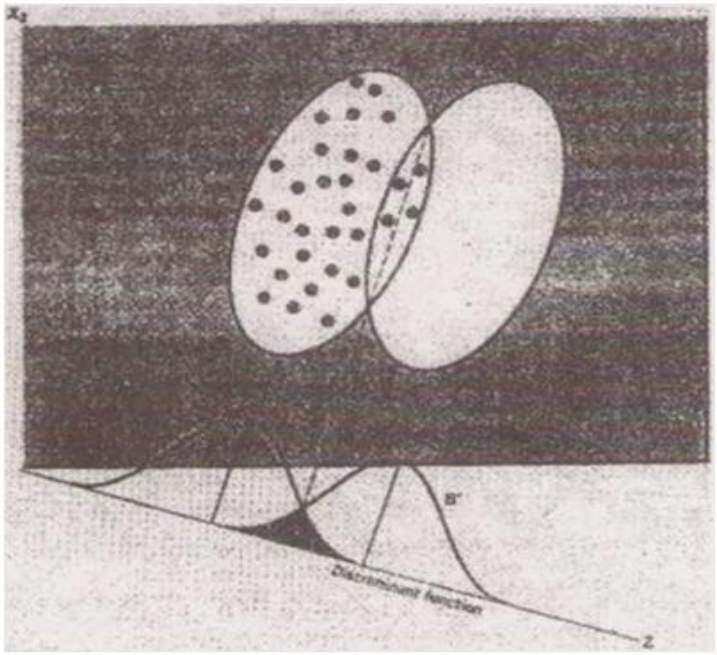

**Figure 2.1**

Figure 2.1 is a scatter diagram and projection that shows what happens when a two group discriminant function is computed. Let's assume that we have two groups, A and B, and two measurements, X, and $X_2$ on each member of the two groups. We can plot in a scatter diagram the association of variable XI with variable $X_2$ for each member of the two groups. Group membership is identified by the use of large dots and small dots. In this figure the small dots represent the variable measurements for the members of group B, and the large dots represent the variable measurements for group A. The ellipses around the large and small dots would enclose some prespecified proportion of the points, usually 95 percent or more in each group. If we draw a straight line through the two points where the ellipses intersect and then project the line to a new Z axis, we can say that the overlap between the univariate distributions A' and B* (represented by the shaded area) is smaller than would be obtained by

any other line drawn through the ellipses formed by the scatter plots. The important thing to note about Figure 2.1 is that the Z axis expresses the two- variable profiles of groups A and B as single numbers (discriminant scores). By finding a linear combination of the original variables XI and X2 we can project the result as a discriminant function. For example, if the dots and circles are projected onto the new Z axis as discriminant Z scores, the result condenses the information about group differences (shown in the X1X2 plot) into a set of points (Z-scores) on its single axis. The mean value for the discriminant Z-scores for a particular category or group is the centroid. A two-group discriminant analysis has two centroids, one for each of the groups.

- **Self-Check Exercise**

I. Discriminant analysis techniques are used to classify individuals into one of two or more alternative groups (or populations) on the basis of _____.

II. Discriminant analysis involves deriving the linear combination of the two (or more) _____that will discriminate best between the a priori defined groups.

III. What is a centroid in Discriminant Analysis?
   a) A type of variable
   b) A statistical criterion
   c) The most typical location of an individual from a group
   d) A method of principal component analysis

IV. The primary aim of Discriminant Analysis is to minimize within-group variation.

V. The challenge in Discriminant Analysis is to find variables that do not contribute to classification.

VI. Discriminant Analysis involves determining which _____ count most in explaining intergroup differences.

## 9.3 FACTOR ANALYSIS

### 9.3.1 Purpose

Researchers can use factor analysis for two primary functions in data analysis. One is to identify underlying constructs in the data. A second role of factor analysis is simply to reduce the number of variables to a more manageable set. In reducing the number of variables, factor analysis procedures attempt to retain as much of the information as possible and make the remaining variables meaningful and easy to work with.

### 9.3.2 Methodology

The two most commonly employed factor analytic procedures in marketing applications are principal component and common factor analysis. When the objective is to summarize information in a larger set of variables into fewer factors (our second purpose), principal component analysis is used. On the other hand, if the researcher is attempting to uncover underlying dimensions surrounding the original variables (first purpose), common factor analysis is used. So, the researcher's objective dictates which procedure will be used. Conceptually, principal component analysis is based on the total information in each variable, whereas common factor analysis is concerned only with the variance shared among all the variables. In general, factor analysis can be summarized as a method of transforming the original variables into new, noncorrelated variables, called factors. Each factor is a linear

combination of the original variables. One measure of the amount of information conveyed by each factor is its variance. For this reason, the factors are arranged in order of decreasing variance. Thus, the most informative factor is the first, and the least informative is the last. In other words, the objective of the principal components is to generate a first factor that will have the maximum explained variance. Then, with the first factor and its associated loadings fixed, the principal components will
locate a second factor that maximizes the variance it explains. The procedure continues until there are as many factors generated as there are variables, or until the analyst concludes that the number of useful factors has been exhausted.

9.3.3 Principal Component Analysis

A (hypothetical) study was conducted by a bank to determine if special marketing programs should be developed for several key segments. One of the study's research questions concerned attitudes toward banking. The respondents were asked their opinion on a 0-to-9, agree-disagree scale, on the following questions:

1. Small banks charge less than large banks.
2. Large banks are more likely to make mistakes than small banks.
3. Tellers do not need to be extremely courteous and friendly; it's enough for them simply to be civil.
4. I want to be known personally at my bank and to be treated with special courtesy.
5. If a financial institution treated me in an impersonal or uncaring way, I would never patronize that organization again.

For illustrative purposes, assume that a pilot study was conducted using 15 respondents. An actual pilot study probably would have a sample size of 100 to 400 respondents. The correlation matrix has unities in the diagonal, implying that the researcher is interested in the total variance as opposed to the shared variance. A factor analysis program usually starts by calculating the variable-by-variable correlation matrix. In fact, it is quite possible to input the correlation matrix directly, instead of the raw data. In any case, the factor analysis program will provide the correlation matrix as one of its outputs.

9.3.4 What Is a Factor?

The input variables very likely will contain redundancies. Several variables may be measuring in part the same underlying construct. This underlying construct is what is termed a factor. A factor is thus simply a variable or construct that is not directly observable but that needs to be inferred from the input variables. It also might be viewed as a grouping of those input variables that measure or are indicators of the factor. In the factor model just as in the regression model, there is a small set of independent variables, here termed factors, which are hypothesized to explain or cause the dependent variable. The regression coefficients, here termed factor loadings, link the factors to the variables and are used to help interpret the factors. In this context, the factor loadings are the correlations between the factors and the variables. The error term in both the factor and regression models absorbs measurement error and variation in the dependent variable that are not caused or explained by the factors. The source of the unexplained variation in the dependent variable is an important concept in both factor analysis (percentage of variance explained and communality) and regression analysis.

9.3.5 How Many Factors?

Since factor analysis is designed to reduce many variables to a smaller number of underlying factors or constructs, a central question is: How many factors are involved in the model? It is always possible to keep generating factors until there are as many factors as original variables, but that would defeat one of the primary purposes of the technique.

Theoretically, the answer to the question is clear. There is a certain number of constructs that the input variables are measuring. These constructs are identified before the analysis, from theory and our knowledge of the situation; then the data are factor analyzed until these constructs emerge as factors. Unfortunately, theory is rarely that well defined. We therefore add some rules of thumb to the theoretical answer. The rule of thumb we rely on most heavily in factor analysis studies is that all included factors (prior to rotation) must, explain at least as much variance as an "average variable." The logic is that if a factor is meaningful and capable of representing one or more of the variables, it should absorb at least as much, variance as an average original input variable.

*Eigenvalue Criteria*: An eigenvalue represents the amount of variance in the original variables that is associated with a factor. Here, only factors with eigenvalues greater than 1.0 are retained; the other factors are not included in the model. In other words, the sum of the square of the factor loadings of each variable on a factor represents the eigenvalue, or the total variance explained by that factor. Hence, only factors with eigenvalues greater than 1.0 are included. A factor with an eigenvalue less than 1.0 is no better than a single variable, since, due to standardization, each variable has a variance of 1.0. Therefore, a factor should explain at least the amount of variance in one variable; otherwise, it is better to have the original variable.

*Percentage of Variance Criteria*: In this approach the number of factors extracted is determined so that the cumulative percentage of variance extracted by the factors reaches a satisfactory level The level of variance that is, satisfactory depends on the problem. However, a criterion of factors explaining at least 70 percent of the variance is not uncommon.

*Communality*: Each of the five original input variables has associated with it a variance that reflects the differences among the respondents. Communality is the percentage of a variable's variance that contributes to the correlation with other variables or is "common" to other variables.

*Variance Explained*: The percentage of variance explained is a summary measure indicating how much of the total original variance of all five variables the factor represents. The percentage-of-variance-explained statistic can be useful in evaluating and interpreting a factor.

*Factor Rotation*: Factor analysis can generate several solutions (loadings and factor scores) for any data set. Each solution is termed a particular factor rotation and is generated by a factor rotation scheme. Each time the factors are rotated, the pattern of loadings changes, as does the interpretation of the factors. Geometrically, rotation means simply that the dimensions are rotated. There are many such rotation programs, such as varimax rotation (for orthogonal rotation) and Promax (for oblique rotation). In varimax rotation, each factor tends to load high (1 or 1) on a smaller number of variables and low, or very low (close to zero), on other variables, to make interpretation of the resulting factors easier. In other words, the variance explained by each unrotated factor is simply rearranged by the rotation. The total variance explained by the rotated factors still remains the same. Here, the first rotated factor will no longer necessarily account for the maximum variance. The amount of variance each factor accounts for has to be

recalculated.

9.3.6 Limitations of Factor Analysis:

The greatest limitation of factor analysis is that it is a highly subjective process. The determination of the number of factors, their interpretation, and the rotation to select (if one set of factors displeases the analyst, rotation may be continued indefinitely) all involves subjective judgment. A related limitation is that no statistical tests are regularly employed in factor analysis. As a result, it is often difficult to know if the results are merely accidental or really reflect something meaningful. Consequently, a standard procedure of factor analysis should be to divide the sample randomly into two or more groups and independently run a factor analysis of each group. If the same factors emerge in each analysis, then one may be more confident that the results do not represent a statistical accident.

- **Sel-Check Exercise**

VII. An eigenvalue represents the amount of _____ in the original variables that is associated with a factor.

VIII. Which factor analytic procedure is used when the objective is to summarize information into fewer factors?

IX. Eigenvalues less than 1.0 are retained in the factor analysis model. (True/False)

X. How are factors arranged in Factor Analysis?

XI. What is one of the primary functions of factor analysis?

a) Conducting regression analysis Identifying
b) linear combinations
c) Reducing the number of variables
d) Maximizing within-group variation

XII. What does communality represent in factor analysis?

a) The variance explained by a factor
b) The percentage of variance extracted by factors
c) The correlation with other variables
d) The total original variance of variables

## 9.4 SUMMARY

This chapter acts as a guide to two powerful tools in data analysis: Discriminant Analysis and Factor Analysis. Discriminant Analysis functions like a skilled detective, aiding in classifying data into distinct groups based on specific measurements. It not only predicts but also identifies key variables crucial for classification, making it a valuable analytical tool. Factor Analysis, on the other hand, serves a dual purpose. Firstly, it uncovers hidden patterns within data, and secondly, it simplifies complex datasets by reducing the number of variables.

The chapter delves into methodologies such as principal component and common factor analyses, providing insights into how Factor Analysis operates effectively. Covering aspects from discriminant functions to factor rotations, this chapter serves as a comprehensive exploration of these analytical tools. It also addresses the limitations of Factor Analysis, emphasizing its subjective nature and suggesting result verification. In essence, this chapter serves as an entry point into the realm of Discriminant and Factor Analysis, offering insights into their functionalities, applications, and cautious considerations.

## 9.5 KEYWORDS

1. **Discriminant Analysis**: Discriminant Analysis is a statistical technique used for classifying a set of observations into predefined categories based on measured features. The method aims to maximize the differences between the categories, making it a valuable tool in predicting group membership.
2. **Factor Analysis:** Factor Analysis is a data reduction technique that explores the underlying structure of a set of variables, identifying common factors that explain the observed correlations. It aids in simplifying complex datasets by capturing shared variance among variables.
3. **Linear Combination:** A linear combination refers to a mathematical expression where variables are multiplied by specific weights and then summed. In the context of Discriminant and Factor Analysis, linear combinations are used to create composite variables that effectively represent relationships between observed variables.
4. **Centroid Analysis:** Centroid Analysis involves calculating the mean values for groups or categories in a multivariate analysis, such as Discriminant Analysis. It provides a central reference point (centroid) for each group, aiding in the interpretation of differences between groups based on the discriminating variables

## 9.6 PRACTICE QUESTIONS

### 9.6.1 Short Answer Type Questions:

Q 1. What is the main purpose of Discriminant Analysis?

Q 2. Give an example of a situation where Discriminant Analysis can be applied in decision-making.

Q 3. How does Factor Analysis help in simplifying a set of variables?

Q 4. Explain the concept of Eigenvalue in Factor Analysis.

### 9.6.2 Long Answer Type Questions:

Q 1. Describe the steps involved in the methodology of Discriminant Analysis.

Q 2. Provide a real-world example of how Discriminant Analysis can be utilized for predictive purposes.

Q 3. Differentiate between principal component analysis and common factor analysis.

Q 4. Discuss the potential challenges or drawbacks associated with Factor Analysis, considering its application in practical scenarios.

## 9.7 REFERENCES


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## 9.8 ANSWER KEY

I. Set of measurements, II.Independent variables, III. C, IV. False, V. False, VI. Variables, VII. Variance, VIII. Principle component analysis, IX. False, X. Decreasing, XI. C, XII. C

*Lesson No. 10* *AUTHOR: DEEPIKA JINDAL*

***REPORT WRITING AND PRESENTATION***



## 10.0 OBJECTIVES

After reading this chapter, the reader should be able to:

- Understand the importance and need for Report writing.
- Types of reports and the guidelines for writing a report.
- The fundamental structure of a Business Research Project Report.

## 10.1 INTRODUCTION

As part of the research proposal, the sponsor and the researcher agree on what types of reporting will occur both during and at the end of the research project. Depending on the budget for the project, a formal presentation may not be part of the reporting. A research sponsor, however, is sure to require a written report and a poorly presented report can destroy a research project. This fact prompts researchers to make special efforts to communicate clearly and effectively their findings, analysis of findings, interpretations, conclusions and recommendations.

### 10.1.1 SIGNIFICANCE OF REPORT WRITING

Research report is one of the vital aspects of research and is considered a major constituent of the research study, for the research task remains incomplete till the report has been presented and / or written. As a matter of fact, even the most brilliant hypotheses, highly well designed and conducted research study, and the most striking generalization and findings are of little value unless they are effectively communicated to others. The purpose of research is not well served unless the findings are made known to others,

Writing of report is the last step in a research study and requires a set of skills somewhat different from those called for in respect of the earlier stages of research.

### 10.1.2 TYPES OF RESEARCH REPORTS

Depending on its intended audience, the research report may be either technical or popular in orientation. While both approaches describe the research study, its methodology, findings, conclusions and recommendation, they can differ considerable in terms of detail, writing style, use of technical terms and length. In general, the higher the executive status of the audience, the shorter the report will tend to be.

- Technical Report

The technical report is generally intended for other researchers, or for research managers. The report should enable another researcher to critique methodology, check calculations and accuracy and to follow everything which is done on a step-by-step basis. A brief definition of every technical term should be given.

A general outline of a technical report can be as follows:

1. Summary of Results
2. Nature of the Study
3. Methods Employed
4. Data
5. Analysis of Data and Presentation of Findings
6. Conclusions
7. Bibliography
8. Technical Appendices
9. Index

- Popular Report

The popular report is intended for a more general audience, one that is not that conversant with the details of research methods and terminology. Compared to the technical report, the presentation will be a bit livelier with increased attention to headlines, flow diagrams, charts, tables and occasional summaries for the purpose of stressing major points. A popular report gives emphasis on simplicity and attractiveness, practical aspects and policy implications.

A general outline of a popular report can be as follows:

1. Findings and their Implications
2. Recommendations for Actions
3. Objectives of the Study
4. Methods Employed
5. Results
6. Technical Appendices

As different kinds of audiences may be interested in the results of the same research study, it is sometimes necessary to write both a technical report and a popular report.

## 10.2 GUIDELINES FOR WRITING A REPORT

Researchers who are effective in report writing agree that there are a series of guidelines which should be followed:

Such guidelines can be enumerated as under:

- ***Consider the Audience*:** Make the report clear; use only words familiar to the readers and define all technical terms. To make the comparison of figures easier, use percentages, rounded off figures, ranks or ratios; put the exact data in a table within the text or in the appendix. Use graphic aids (charts, graphs, pictures, etc.) wherever they help clarify the presentation of data.
- ***Address the Information Needs***: Remember the research report is designed to communicate information to decision makers. Make sure that it clearly relates the research findings to the objectives of the management.
- ***Be Concise, Yet Complete*:** Most managers will not want to read about the details of a research report. Knowing what to include and what to leave out is a difficult task. It is up to you, the researcher, to take into account the information needs of the decision maker when writing your report.
- ***Be Objective***: you will probably face at least one situation in which you know that the client will not easily accept the results. The findings may conflict with the decision maker's experience and judgment or they may reflect unfavorably on the wisdom of previous decisions. In these circumstances, there is a strong temptation to start the report by making the result more acceptable to the management. A professional researcher, however, will present the research findings in an objective manner (i.e., without bias) and will defend their validity if they are challenged by the client.
- ***Style*:** The style of writing a research report is important because it shows a way of presentation.

Here are a few tips to help you write a report that is easy to read.

- Write in brisk, business-like English
- Use short words and sentences.
- Be concise.

- Use the active voice.
- Consider appearance - space makes a long report easier to read.
- Write in present tense.

- **Self-Check Exercise:**

I. In a popular research report, what aspect is given emphasis:
   a) Technical terms and methodology
   b) Simplicity and attractiveness
   c) Detailed calculations
   d) Extensive use of graphs and charts

II. What is a key consideration when addressing the audience in a research report?
   a) Use complex technical terms
   b) Define all technical terms
   c) Exclude percentages and ratios
   d) Avoid graphic aids

III. What is the primary purpose of a technical research report?
   a) To entertain the audience
   b) To inform decision-makers
   c) To attract a general audience
   d) To highlight policy implications

IV. Why is the style of writing important in a research report?
   a) It adds unnecessary complexity
   b) It showcases the researcher's vocabulary
   c) It demonstrates effective presentation
   d) It disregards the appearance of the report

## 10.3 SUGGESTED STRUCTURE

Most writers agree with Robson (2002) on the general structure to adopt for a project report that is the end product of your research. These are:

- Title Page
- Table of Contents
- List of Tables/Figures/Graphs etc.
- Executive Summary/Abstract
- Introduction
- Literature Review
- Methodology
- Results
- Limitations
- Conclusions and Recommendations
- References
- Appendices

This suggested structure should not inhibit anyone from adopting something different. The precise structure to be adopted is important than the necessity for the reader to be absolutely clear what the report is saying and to meet the assessment criteria. The structure should have a logical flow. Above all, the structure adopted should enable the reader, having read the report, to identify the storyline clearly.

Following are the broad sections outlining their purpose and content.

**1.** TITLE PAGE

The title page should contain a title which conveys the essence of the study, the data, name of the organization submitting the report and the name of the recipient organization.

**2.** TABLE OF CONTENTS

The table of contents sequentially lists the topics covered in the report along with their page references, its purpose is to help readers find the particular sections of the report that are of most concern to them.

**3.** LIST OF TABLES / FIGURES / GRAPHS ETC

This table lists the titles and the page numbers of all visual aids i.e. tables, figures, diagrams, graphs, etc. It can be placed either on the same page with the table of contents or on a separate page.

**4.** EXECUTIVE SUMMARY / ABSTRACT

The Executive Summary or the Abstract is probably the most important part of the report because it may be the only part that some persons will read. It is a short summary of the complete content of the project report.

For those who intend to read the whole report the abstract prepares them for what is to come. It should contain four short paragraphs with the answers to the following questions:

1. What were my research questions, and why were these important?
2. How did I go about answering the research questions?
3. What did I find out in response to my research questions?
4. What conclusions do I draw regarding my research questions?

Smith (1991) lists five principles for the writing of a good abstract. He argues that:

1. It should be short. Try to keep it to a maximum of two sides of A4.
2. It must be self-contained. It must summaries the complete content of your report.
3. It must satisfy your reader's needs. Your reader must be told about the problem, or central issue, that the research addressed and the method adopted to pursue the issue. It must also contain a brief statement of the main results and conclusions.
4. It must convey the same emphasis as the report, with the consequence that the reader should get an accurate impression of the report's contents from the abstract.

. 5. It should be objective, precise and easy to read. The project report contents page should give you the outline structure for the abstract. Summarizing each section

should give you're an accurate resume of the content of the report. Do ensure that you stick to what you have written in the report. The abstract is not the place for elaborating any of your main themes. Be objective.

Writing a good abstract is difficult. The obvious thing to do is to write it after finishing the report. It is suggested that it should be drafted at the start of writing so that you have got your storyline abundantly clear in your mind. You can then amend the draft when you have finished the report so that it conforms to the five principles above.

**5.** INTRODUCTION

The introduction should give the reader a clear idea about the central issue of concern in your research and why you thought that this was worth studying. It should also include a full statement of your research question(s) and research objectives. This will give brief details of the content of each chapter and present an overview of how your storyline unfolds.

This will usually be a fairly brief chapter, but it is vitally important. The nature of the introduction is conditioned by the diversity of the audience and their familiarity with the research project. The more the diverse the audience, the more extensive the introduction. The introduction must clearly explain the nature of the decision problem and the research objective. Background information should be provided on the product(s) or service(s) involved and the circumstances surrounding the decision problem.

**6.** LITERATURE REVIEW

The critical literature review forms the foundation on which the research is built. Its main purpose is to help develop an understanding and insight into the relevant previous research and the trends that have emerged. The main purposes of your literature review are to set your study within its wider context and to show the reader how your study supplements the work that has already been done on your topic. The literature review, therefore, may inform directly any specific hypotheses that your research was designed to test. These hypotheses will also suggest a particular research approach, strategy and data collection methods. Following are some of the other purposes that a literature review is supposed to accomplish:

1. To help refine further the research questions and objectives
2. To highlight possibilities that have been overlooked implicitly in research to date
3. To discover explicitly recommendations for further research
4. To help avoid simply repeating work that has already been done
5. To sample current opinions in newspapers, professional and trade journals
6. To discover and provide an insight into research approaches, strategies and techniques that may be appropriate to your research

**7.** METHODOLOGY

This should be a detailed chapter giving the reader sufficient information to make an estimate of the reliability and validity of your methods. Following table is a useful list of the points that you should include in the method chapter.

POINTS FOR INCLUSION IN THE METHOD

CHAPTER Setting

- What was the research setting?
- Why did you choose that particular setting?
- What ethical issues were raised by the study, and how were these addressed?

*Participants*

- How many?
- How were they selected?
- What were their characteristics?
- How were refusals handled?

Materials

- What tests/scales/interview or observation schedules / questionnaires were used?
- How were purpose made instruments developed?
- How were the resulting data analyzed?

Procedures

- What were the characteristics of the interviewers and observers, and how were they trained?
- How valid and reliable do you think the procedures were?
- What instructions were given to participants?
- How many interviews / observations / questionnaires were there; how long did they last; where did they take place?
- When was the research carried out?

**8.** RESULTS

It may well be that your report well contains more than one results chapter. The question you should ask yourself is: Is more than one results chapter necessary to communicate my findings clearly? The results chapter or chapters are probably the most straightforward to write. It is your opportunity to report the facts that your research discovered. This is where your will include such tables and graphs that will illustrate your findings (do not put these in the appendices). The chapter may also contain verbatim quotes from interviewees, or sections of narrative account that illustrate periods of unstructured observation.

There are two important points to bear in mind when writing your results. The first is to stress that the purpose is to present facts. It is normally not appropriate in this chapter to begin to offer opinions on the facts. This is for the following chapter. Many of us become confused about the difference between findings and conclusions. One way of overcoming the confusion is to draw up a table with two columns. The first should be headed 'what I found out' and the second 'what judgments I have formed as a result of what I found out'. The first list is entirely factual (for example, 66per cent of respondents indicated they preferred receive email messages rather than paper memos) and therefore the content of your findings chapter. The

second list will be your judgments based on what you found our (for example, it appears that electronic forms of communication are preferred to traditional and therefore the content of your conclusions section.

The second point links to the first. Drawing up a table will lead you to a consideration of the way in which you present your findings. The purpose of your project report is to Communicate the answer to your research question to your audience in as clear a manner as possible. Therefore, you should structure your findings in a clear, logical and easily understood manner. There are many ways of doing this. One of the simplest is to return to the research objectives and let these dictate the order in which you present your finding in a clear, logical and easily understood manner. There are many ways of doing this. One of the simplest is to return to the research objectives and let these dictate the order in which you present your findings. Alternatively, you may prefer to report your findings thematically. You could present the themes in descending order of importance.

**9.** LIMITATIONS

The limitation section of the report presents a dilemma. Every research project has short comings which need to be communicated in a clear and a concise manner. The purpose of this section is not to undermine the quality of the research project but rather to enable the reader to judge the validity of the research study results. The limitations in a marketing project generally involve sampling, non-response, inadequacies and methodology weaknesses.

**10.** CONCLUSIONS AND RECOMMENDATIONS

Logically, for each finding there should be at least one conclusion. This suggests that the conclusions chapter should be at least as long as the findings chapter(s). This is certainly the case. It is your conclusions that will demonstrate whether you have answered the research question and show the degree of insight that you exhibit in reaching your conclusions. It is the second major opportunity in the research process to demonstrate real originality of thought. In the conclusions you rare making judgments rather than reporting facts. The key questions to - ask of each of the findings are: 'So what?' and importantly, 'To what extent have answered my research question(s) and met my research objective(s)?'

You may find that the clearest way to present your conclusion is to follow a similar structure to the one used in your findings section. If that structure reflects the research objectives, then it should make certain that your conclusions would address the research question(s)

You may also have a final section in your conclusion chapter(s) called' discussion' alternatively you may make this a separate chapter with this general heading. Here you would turn to your conclusions and ask such questions as: What does this mean?' What are the implications for organizations? What are the implications for the current state of knowledge of the topic?. How does it add to the literature? What are the implications for future research? The conclusions chapter should not include new material but the discussion may do so, as long

as it is germane to the point you are making about your conclusions.

**Using a matrix in the planning of the content for the results and conclusion chapters**

**Table. 1**

| Research questions | Results (what factual information did I discover in relation to the specific research questions?) | Conclusions (what judgments can I make about the results in relation to the specific research questions?) |
|---|---|---|
| What are the operational differences between different shifts in the production plant? | Cases of indiscipline in the last six months have been twice as frequent on the night shift as on the day | The night shift indiscipline problems may be due to the reluctance of operators to work on this shift |

In a management report this would normally form the content of a chapter specifically devoted to recommendations. Even if you do not specify any practical implications of your research you may comment in the conclusions chapter on what your research implies for new future research. This is a logical extension of a section in the conclusions chapter that should be devoted to the limitations of your research. These limitations may be the size of sample, the snapshot nature of the research, or the restriction to one geographical area of an organization. Virtually all research has its limitations. This section should not be seen as confession of your weaknesses, but as a mature reflection on the degree to which your findings and conclusions can be said to be the truth.

**11.** REFERENCES

A range of conventions are used to reference the material of other writers' material that you have cited in your text.

For books and pamphlets, the order may be as under:

1. Name of author, last name first.
2. Title, underlined to indicate italics.
3. Place, publisher, and date of publication.
4. Number of volumes.

EXAMPLE

Kothari, C. R., *Research Methodology: Methods and Techniques,* New Age International Publishers, New Delhi, 2007

For magazines and newspapers, the order may be as under:

1. The Name of the Author, Last Name First.
2. The Title of Article, in Quotation Marks.

3. The Name of Periodical in Italics,
4. The Volume / Issue and Number.
5. The Date of the Issue.
6. The Pagination.

EXAMPLE

Rossa, Robert V., *Coping with Short-term International Money Flows,* The Banker, London, Vol - 3, No, 2, September, 1971, pp. 28-30.

The above examples are just the samples for bibliography entries and may be used, but one should also remember that they are not the only acceptable forms. The only thing important is that, whatev3r method one selects, it must remain consistent.

**12.** APPENDICES

In general, appendices should be kept to the minimum. Your project report will stand or fall on the quality of the main text. However, your appendices should include a blank copy of your questionnaire, interview or observation schedule, where these have been conducted in a language different from that in which you write your submitted project report will need to submit both this version and the translation.

The Management Report

In the typical management report this may be the most important section. The hard-pressed executive reading your report may turn to your recommendations first to see what action needs to be taken to tackle the issue.

Whether you include a recommendation section depends on the objectives of you research. If you are doing exploratory research, you may well write recommendations, among which will be suggestions for the pursuit of further research. However, if your research is designed to explain or describe, recommendations are less likely,

Length of the Project Report

You will probably have guidelines on the number of words your project report should contain. Reports that exceed the word limit are usually excessively verbose. It is more difficult to be succinct. Do not fall into the trap of writing a long report because you did not have the time to write a shorter one.

**10.4 Common Grammatical Errors**

**Table.2**

| | OFTEN WE WRITE | THE CORRECT WAY 18 |
|---|---|---|
| 1. | Each pronoun should agree with their antecedent. | Each pronoun should agree with its antecedent |
| 2. | Just between you and I, case is important | Just between you and me, case is important |
| 3. | A preposition is a poor word to end a sentence with | A preposition is a poor word with which to end a sentence |
| 4. | Verbs has to agree with their subject. | Verbs have to agree with their subject. |
| 5. | Do not use no double negatives | Do not use double negatives. |
| 6. | Remember to never split an infinitive. | Remember never to split an infinitive. |
| 7. | When dangling, do not use participles. | Do not use dangling participles |
| 8. | Avoid cliches like the plague | To avoid cliches like the plague. |
| 9. | Do not write a run-on sentence it is difficult when you got to punctuate it so it makes sense when the reader reads what you wrote. | Do not write a run-on sentence. It is difficult to punctuate it, so that it makes sense to the reader. |
| 10. | About data is included in this section, | What about sentence fragments? |
| 11. | The data is included in this section. | The data are included in this section. |

**10.5 CHECKLIST FOR EVALUATING THE FIRST DRAFT**

- Is there a clear structure?
- Is there a clear storyline?
- Does your abstract reflect accurately the whole content of the report?
- Does your introduction state clearly the research question(s) an objective?
- Does your literature review inform the later content of the report?
- Are your methods clearly explained?
- Have you made a clear distinction between findings and conclusions in the two relevant chapters?
- Have you checked all your references and presented these in the required manner?
- Is there any text material that should be in the appendices or vice versa?
- Does your title reflect accurately your content?

- Have you divided up your text throughout with suitable, headings?
- Does each chapter have a preview and a summary?
- Are you happy that your writing is clear, simple and direct?
- Have you eliminated all jargon?
- Have you eliminated all unnecessary quotations?
- Have you checked spelling and grammar?
- Have you checked for assumptions about gender?
- Is your report in a format that will be acceptable to the assessing body?

- **Self-Check Exercise**

V. The _____is probably the most important part of the report because it may be the only part that some persons will read.

VI. The purpose of the Limitations section is to enable the reader to judge the _____of the research study results.

VII. The Introduction chapter should be extensive if the audience is diverse. (True/ False)

VIII. The Abstract is the place for elaborating on main themes and providing additional details. (True / False)

IX. What should the Methodology chapter include?

a) Conclusions drawn from the research
b) Theoretical framework
c) Detailed information to estimate the reliability and validity of methods
d) Recommendations for future research

X. What is the primary purpose of the Results chapter?

a) To present facts and findings
b) To offer opinions on the facts
c) To discuss limitations
d) To provide recommendations

## 10.6 ORAL PRESENTATION

At times oral presentation of the results of the study is considered effective, particularly in cases where policy recommendations are indicated by project results. The merit of this approach lies in the fact that it provides an opportunity for give and take decisions which generally lead to a better understanding of the findings and their implications but the main demerit of this sort of presentation is the lack of any permanent record concerning the research details and it any be just possible that the findings may fade away from people's

memory even before an action is taken. In order to overcome this difficulty, a written report may be circulated before the oral presentation and referred to frequently during the discussion. Oral presentation is effective when supplemented by various visual devices. Use of slides, wall charts and blackboards are quite helpful in contributing to clarity and in reducing the boredom, if any. Distributing a board outline, with a few important tables and charts concerning the research results, makes the listeners attentive who have a ready outline on which to focus their thinking. This very often happens in academic institutions where the researcher discusses his research findings and policy implications with others either in a seminar or in a group discussion.

## 10.7 PRECAUTIONS FOR WRITING RESEARCH REPORTS

Research report is a channel of communicating the research findings to the readers of the report. A good research report is one which does this task efficiently and effectively. Following are some of the precautions which can be kept in view while writing a research report:

1. While determining the length of the report, one should keep in view the fact that it should be long enough to cover the subject but short enough to maintain interest.
2. A research report as far as possible should not be dull, and try to sustain interest of the reader throughout.
3. Abstract terminology and technical jargon should be avoided in a research report and the report should be able to convey the matter as simply as possible
4. Readers are often interested in acquiring a quick knowledge of the main findings and as such the report must provide a ready availability of the findings. For this purpose, the charts, graphs and the statistical tables may be used for the various results in the main report in addition to the summary of the findings.
5. The layout of the report should be well thought out and must be appropriate and in accordance with the objective of the research problem.
6. The report should be free from grammatical mistakes and errors, and must be prepared strictly in accordance with the techniques of composition of report writing such as the use of quotations, footnotes, documentation, proper punctuation and use of abbreviations in footnotes and the like
7. The report must present the logical analysis of the subject matter. It must reflect a structure wherein the different pieces of analysis relating to the research problem fit well
8. A research report should show originality and should necessarily be an attempt to solve some intellectual problem.
9. Towards the end, the report must also state the policy implications relating to the problem under consideration.
10. Appendices should be enlisted in respect of all the technical data in the report.
11. Bibliography of sources consulted is a must for a good report and as such must be

prepared and appended at the end.

12. Index is also considered as essential part of a good report and as such must be prepared and appended at the end.
13. Report must be attractive in appearance, neat and clean, whether typed or printed.
14. Calculated confidence limits must be mentioned and the various constraints experienced in conducting the research study may also be stated in the report.
15. Objective of the study, the nature of the problem, the methods employed and the analysis techniques adopted must all be clearly stated in the beginning of the report in the form of introduction.

- **Self-Check Exercise:**

XI. What is a useful method for providing quick access to main findings in a report?

a) Detailed text
b) Charts, graphs, and statistical tables
c) Avoiding any technical jargons
d) Appendices

XII. What is essential towards the end of a research report?

a) Only originality
b) Stating policy implications and an index
c) Lengthy appendices
d) Excluding a bibliography

XIII. Bibliography of sources consulted and an index are considered essential parts of a good research report. (True/False)

XIV. Appendices in a research report should be extensive to enhance the main text. (True/False)

XV. The report must present the _____of the subject matter.

## 10.8 SUMMARY

Research report is one of the vital aspects of research and is considered a major constituent of the research study, for the research task remains incomplete till the report has been presented and / or written. Writing of report is the last step in a research study and requires a set of skills somewhat different from those called for in respect of the earlier stages of research. Research report is a channel of communicating the research findings to the readers of the report. A good research report is one which does this task efficiently said effectively. A research report as far as possible should not be dull, and should try to sustain interest of the reader throughout. The layout of the report should be well thought out and must be appropriate and in accordance with the objective of the research problem. The report must present the logical analysis of the subject matter. It must reflect a structure wherein the different pieces of analysis relating to the research problem fit well.

## 10.9 KEYWORDS:

1. ***Report*:** An account or statement to relate, as to what has been learned by observation or investigation.
2. ***Executive Summary / Abstract***: A short summary of the complete content of the project report.
3. ***Literature Review***: Text that helps develop an understanding and insight into the relevant previous research and the trends that have emerged.
4. ***Reference***: A note in a publication referring the reader to another passage or source, footnote used to direct a reader elsewhere for additional information.
5. ***Bibliography*:** A list of source materials that are used or consulted in the preparation of a work or that are referred to in the text, which includes the description and identification of the editions, dates of issue, authorship, and typography of books or other written material.
6. ***Appendix*:** Supplementary material at the end of a book, article, document.

## 10.10 PRACTICE QUESTIONS

10.10.1 Short Answer Type Questions

**Q 1.** What is the significance of report writing in the context of research studies?

**Q 2.** Differentiate between a technical report and a popular report.

**Q 3.** Why is the Executive Summary or Abstract considering the most important part of a project report?

**Q 4.** Explain the purpose of the Literature Review in a research project.

**Q 5.** What precautions should researchers consider while writing research reports.

10.10.2 Long Answer Type Questions

Q 1. Explain the types of reports and the guidelines for writing a report.

Q 2. Explicate in detail, with illustrations, the structure of a Business Research Project Report.

Q 3. What are the Precautions to be kept in mind or the Errors which can creep in, while writing report?

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**10.12ANSWER KEY (SELF CHECK EXERCISES)**

I. B, II. B, III. B, IV. C, V. Abstract, VI. Validity, VII. True, VIII. False, IX. C, X. A, XI. B, XII. B, XIII True, XIV. False, XV. Logical analysis

**Lesson NO. 11** **AUTHOR: DEEPIKA JINDAL**

# USE OF SPSS IN MARKETING RESEARCH



## 11.0 OBJECTIVES

After reading this chapter, the student should be able to:

- Understand the steps used in manipulating data with SPSS.
- Identify how to use SPSS in certain quantitative statistical calculations and help in better presentation of research report.

## 11.1 INTRODUCTION

Researchers differ in the way they prepare a research report. Research report is considered a major component of the research study for the research task remains incomplete till the report has been presented and /or written. The purpose of research is not well served unless the findings are made known to others. Research results must invariably enter the general store of knowledge. All this explains the significance of writing research report. Writing of report is the last step in a research study and requires a set of skills somewhat from those called for in respect of the earlier stages of research. This task should be accomplished by the researcher with utmost care; he may seek the assistance and guidance of experts for this

purpose. Now a days, there are many statistical packages available to help the researcher to carry out a detailed analysis and present the research report in a better way. SPSS is one of the most commonly used packages.

## 11.2 SPSS - STATISTICAL PACKAGE FOR SOCIAL SCIENCES

SPSS stands for Statistical Package for the Social Sciences. SPSS is a statistical and data management package for analysts and researchers. It provides us with a broad range of capabilities for the entire analytical process. SPSS is a full-range package that provides all levels of statistical analysis, data manipulation, graphical representation and report writing, among other features. With SPSS, we can generate decision-making information quickly using powerful statistics, understand and effectively present our results with high-quality tabular and graphical output, and share our results with others using a variety of reporting methods, including secure web publishing. Results from our data analysis enable us to make smarter decisions more quickly by uncovering key facts, patterns, and trends. SPSS is available for Windows only. Programs and data created and used in SPSS can be transported and used in SPSS running on other platforms, though some modifications may need to be made in programs written under one version and used under a different version.

SPSS is the statistical package most widely used by political scientists. The several reasons why:

1. Force of habit: SPSS has been around since the late 1960s.
2. Of the major packages, it seems to be the easiest to use for the most widely used statistical techniques;
3. One can use it with either a Windows point-and-click approach or through syntax (i.e., writing out of SPSS commands
4. Many of the widely used social science data sets come with an easy method to translate them into SPSS; this significantly reduces the preliminary work needed to explore new data.

There are also two important limitations that deserve mention at the outset:

1. SPSS users have less control over statistical output than, for example, Stata or Gauss users. For novice users, this hardly causes a problem. But, once a researcher wants greater control over the equations or the output, she or he will need to either choose another package or learn techniques for working around SPSS limitations;
2. SPSS has problems with certain types of data manipulations, and it has some built in quirks that seem to reflect its early creation. The best-known limitation is its weak lag functions, that is, how it transforms data across cases. For new users working off of standard data sets, this is rarely a problem. But, once a researcher begins wanting to significantly alter data sets, he or she will have to either learn a new package or develop greater skills at manipulating SPSS.

Overall, SPSS is a good first statistical package for people wanting to perform quantitative research in social science because it is easy to use and because it can be a good starting point to learn more advanced statistical packages.

## 11.3 STARTING UP SPSS

SPSS is usually part of the general network available in the computer labs and residence halls of most college campuses. To activate SPSS, sign-on to the network with your username and password. Then click the Start icon in the lower left-hand corner of the screen followed by *Network Programs* > *Academic Applications* > *SPSS for Windows.* If SPSS is not found on the "Network Programs" group, it may be installed as a "local program" in which case the proper sequence is *Start* >*Programs* >*SPSS for Windows* > [If you encounter an "Empty" button at this point look down the list for another "SPSS for Windows."]
*SPSS 10.0 for Windows.* Another possibility is that a shortcut already exists on the desktop, in which case double-clicking it will open the SPSS program.

## 11.4 THE SPSS PROGRAM

After clicking the SPSS icon, there is a short wait and the SPSS program appears. SPSS 9.0 for Windows begins with two windows. The top window offers several options which may be useful eventually, but the easiest thing to do is close the top window which then gives access to the main program. At this point one of the most sophisticated and popular data analysis programs is available. Thanks to a user-friendly interface, it is possible to do almost anything from the simplest descriptive statistics to complex multivariate analyses with just a few clicks of the mouse. The program is also quite "smart** in that it will not execute a procedure unless the necessary information has been provided. Although it can be frustrating when working with complex procedures, it saves a lot of time in the long run because the feedback is immediate and corrections can be made on the spot.

## 11.5 DATA INPUT FOR SPSS

SPSS appears on the screen looking like most other Windows programs. Two windows are initially available: the data input window and the output widow. When SPSS first comes up, it is ready to accept new data. To begin entering data, look at the menu options across the top of the screen:

File Edit View Data Transform Analyze Graphs Utilities Window Help

Clicking on one of these options opens a menu of related options, many of which will not be available until enough information has been provided to allow the procedure to run. To begin the process of a computing a correlation in SPSS Release 9.0, click on the *Data* option, then click on *Define Variable.* This will open an input window that, allows you to define the first variable by giving it a name and other information that will make it easier to use the variable in statistical analyses and interpret the output. When this window is opened the default name for the variable is displayed and highlighted. Just type a name for the first variable that uses less than eight characters. For example, the first variable in the above example could be called COLGPA, a name that is less than eight characters and gives a good indication of the nature of the variable (college GPA). It is also useful to have more information about the variable and this can be done by clicking on the Labels... button which appears at the bottom of the window. This button opens another window which allows you to add more information about the variable, including an extended label, such as College GPA for 1999. You can also add what are called value labels using this same window. Value labels allow you to give names to particular values of a nominal or categorical variable. For example, most studies have a

variable called Sex that can take on two values, 1 * Female or 2 = Male. The value labels option allows you to have these labels attached to all the output from statistical analyses which simplifies interpretation and reporting. Entering value labels also means you don't need to remember how the variable was coded (i.e., whether males were coded 1 or 2) when you view the output. After entering a variable name and value labels for the first variable, close the Labels... input window by clicking the Continue button. Then click the OK button on the Define Variable window. The next step is to use the mouse and left mouse button or the arrow keys to reposition the cross to the first cell in the second column of the data input spreadsheet. Then define the second

variable using the same process. Continue defining variables until all the variables have been defined. Release 10.0 has a different approach to entering information about the variables. At the bottom of the SPSS window are two tabs, Data View and Variable View. If you are using Release 10.0, click on the Variable View tab and another spreadsheet will appear. This spreadsheet contains detailed information about each variable. To enter new information, double-click on the first box in the "Name" column and type in the name you are assigning to the variable (limited to 8 characters). Other information about the variables can be entered by adding or changing the information in the other columns. An extended, more informative, variable label can be added to the "Label" column and value labels can be added using the "Values" column. To enter value labels, click on the box corresponding to the variable and then click the grey button. A window for adding variable labels will then appear.

- Once the variables have been defined, the data can be entered into the spreadsheet. (These tasks can be done in the opposite order, as well.) This requires working with the new data or spreadsheet window. Release 10.0 requires clicking the Data View tab at the bottom of the screen to bring up this view. To begin, make sure the cursor is flashing at the top of the spreadsheet window and that the upper left cell of the spreadsheet is highlighted. To highlight a cell, use the mouse to move the cross to the desired cell of the spreadsheet and click the left mouse button. The arrow keys also work well to navigate around the spreadsheet. Now begin entering data by typing the first piece of data. In the above example the first entry would be 1.8. This number will appear at the top of the spreadsheet. Hit <ENTER> to move the data into the correct cell. Notice that after hitting <ENTER> the second cell in the first column is now highlighted. The next piece of data (3.9) can be entered using the same procedure. Thus, data is automatically entered vertically. Continue until all the data for the first column have been entered. After entering all the data for the first column, use the mouse or arrow keys to highlight the first cell in the second column and begin entering the second column of data using the same technique. If a piece of data is missing (e.g., the participant did not answer one or more of the questions on a survey), simply hit <ENTER> when the input cell at the top of the spreadsheet is empty. This will cause a dot to appear in the spreadsheet cell which is interpreted by SPSS as missing data. SPSS has very flexible options for handling missing data. Usually, the default or standard option is the best one to use.

In larger studies with a lot of variables, it may be more convenient to go across or horizontally, entering all the data for the first participant followed by all the data for the second participant, continuing until all the data have been entered. In order to do this, it will be necessary to make more frequent use of the mouse and left button or the arrow keys to highlight the next cell going across. When data for a large study is being entered, it is best to work with a partner. One person can read the data and the other car. type. This greatly increases speed and accuracy.

- **Self-Check Exercise**

I. What does SPSS stand for?
   a) Statistical package for Social Sciences
   b) Social Package for Statistical Sciences
   c) Scientific Process for Statistical Software
   d) Statistical Protocol for Social Systems

II. How is missing data typically represented in SPSS?
   a) Blank cells
   b) Dots in cells
   c) "N/A" in cells
   d) "MISS" in cells

III. What is the major limitation of SPSS mentioned?
   a) Limited control over statistical output
   b) Inability to run basic statistical techniques
   c) Compatibility issues with Windows
   d) Difficulty in defining variables

IV. SPSS provides capabilities only for basic statistical analysis and data manipulation. (True/False)

V. Value labels in SPSS are used to give names to specific values of a continuous variable. (True/False)

VI. To add extended information about a variable in SPSS, you can click on the _____ button.

VII. In SPSS Release 10.0, you can access detailed information about each variable by clicking on the _____ tab.

## 11.6 ADVANCED DATA ENTRY AND FILE HANDLING

Sometimes a researcher has data stored in a text file that was created manually or by optical scanning. A text file may be in either fixed width format (each variable aligned in fixed-width columns) or delimited format (each variable delimited or separated by a specific character such as a comma or tab). Data in a fixed width format consists of a constant number of lines for each participant or case with each case beginning on a newline. Each variable should be in the same location for each participant (i.e., biological sex could be coded in the fifth column of the second line for each participant). Missing data should be designated by blanks so the remaining data remains aligned in the correct location, and for convenience in setting up the SPSS file. Data stored in the delimited format has a specific character (comma, semicolon, tab, etc.) separating each variable for each participant.

To convert text data into an SPSS file, click File > Read Text Data, select the data file to be read, click the Open button, and then follow the six steps of the SPSS Test Import Wizard.

*Step 1* asks whether the format is one that has been used previously to read data into an SPSS file. If this is the first time you have used the Text Import Wizard, click the No button and then Next.

*Step 2* requires identifying the type of file format, fixed or delimited, and whether variable names are at the top of the file. After clicking the appropriate buttons,

click Next.

*Step 3* allows you to indicate which line of the text file is the first line of the data allowing exclusion of any file labels or other extraneous identifiers at the beginning of the text file. If the data are in fixed column format, indicate the number of lines per case and the number of cases to import.

*In Step 4,* follow the directions to indicate where each variable is located by inserting break lines at the appropriate positions. Note that this needs to be done once for each line of data that makes up a case.

*In Step 5,* variable names and formats are assigned.

*In Step 6,* the file and syntax may be saved. The procedure is similar when the delimited format has been used.

Data may also be captured or imported from database programs by following the steps under *File> Database Capture.*

## 11.7 COMPUTING THE PEARSON CORRELATION

After entering the data, the next step is to order the program to actually compute the correlation coefficient for you. Use the mouse to go to the top of the screen and click on the following sequence: Analyze > Correlate > Bivariate. This will open another input window. You will see two boxes with the one on the left containing the complete list of variables for the study. (Note: The variables will appear in alphabetical order which is the default variable display. However, it can often be more convenient to display the variables in the same order as they appear on the spreadsheet or input window. The display order can be changed by clicking Edit > Options. Then change "Alphabetical to 'File" by clicking the empty circle next to "File" under “Variable Lists." Unfortunately, SPSS will need to be exited and then reloaded before this option will take effect.) The box on the right will be empty. In between the boxes is a right-pointing arrow. The sequence for computing a correlation is to highlight variables from the list on the left and then use the mouse to click the right-pointing arrow. This will cause each highlighted variable to jump to the box on the right. Each variable in the box on the right will be included in the correlation matrix computed by SPSS. Thus, in order to compute the correlation between COLGPA and STUDYHRS, move both variables over to the box on the right. A variable can be removed from the box on the right by highlighting it and clicking the arrow in the

middle which will now face in the opposite direction. Once the variables you want to correlate are in the right-hand box, the OK button could be clicked which would cause the correlations to be computed and appear in an Output window. However, there are a couple of additional points worth considering.

First, it can be extremely helpful to click the Options button which appears at the bottom of the input window. This will cause another input window to appear. Generally, all options can be left on their default settings. However, one option allows you to print means and standard deviations for each variable in the analysis by just clicking the box. This is worth doing. The other options should be left alone unless you have a specific reason for changing one. At this point you must click the Continue button in order to close this box and move on with your task. The next step is simply to click the OK button. After a short delay, an Output window will appear with the results of your analysis. The information in the output file can be viewed or saved to a disk using standard Windows conventions. Additional analyses can be

performed and their results will be appended to the end of the current output window so the results of a complex series of analyses can be contained in one output window. Be sure to give this file a name that will remind you of its contents. The results for the correlation example are shown below:

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| COLGPA | 2.9455 | .7285 | 11 |
| STUDYHRS | 23.8182 | 13.4001 | 11 |

**Correlations**

| | | COLGPA | STUDYHRS |
|---|---|---|---|
| COLGPA | Pearson Correlation | 1.0000 | .868** |
| | Sig. (2-tailed) | • | .001 |
| | N | 11 | 11 |
| STUDYHRS | Pearson Correlation | .868** | 1.0000 |
| | Sig. (2-tailed) | • | .001 |
| | N | 11 | 11 |

**. Correlation is significant at the 0.01 level (2-tailed).

To interpret the output, look at the table labeled Correlations. This is a correlation matrix with three numbers for each correlation. The top number is the actual Pearson correlation coefficient which will range from -1.00 to +1.00. The further away the correlation is from zero, the stronger the relationship. The correlation between study hours and college GPA in this fictional study was .868 which represents an extremely strong relationship. The next number is the probability. Remember, you are looking for probabilities less than .05 in order to reject the null hypothesis and conclude that the correlation differs significantly from a correlation of zero. The third number is the sample size, in this case 11. Correlation coefficients that cannot be computed will be represented as a dot.

Another nice thing to do when computing a correlation is to look at the scatter diagram. To produce a scatter-plot, click *Graphs* >*Scatter* >*Define* >. Use the same technique as before to transfer variables to the x-axis and y-axis boxes. Then click OK and the graph will appear in the Output window. To insert the plot in another document, click on *File* > *Copy,* open your word processing document, and *paste* it into the document.

## 11.8 SAVING OUTPUT AND DATA FILES

If you attempt to close either the data input or data output windows of SPSS, the program will respond with another window prompting you to save the file with either a user-

supplied name or a generic name. Output files are given the extension, .spo, and data files are given the extension, .sav. The usual Windows conventions with respect to saving and reopening files apply using commands under the *File* menu.

## 11.9 OTHER HELPFUL FEATURES OF SPSS

There are a number of additional features available in SPSS that can be extremely helpful for the beginning researcher. These features will be described briefly.

### 11.9.1 TRANSFORMATIONS

Two particularly valuable features are available from the *Transform* menu: *Recode,* and *Compute.* The purpose of a recode is very simple. Imagine a variable that is coded from 1 to 5. Sometimes extreme values are not selected by very many individuals. Thus, it may be desirable to combine individuals who responded with either a 4 or a 5 into a single category such as 4. The recode feature is the way to do this. Another situation that often calls for a recode is when a variable is part of a scale but the scoring needs to be reversed before it can be added to other items to make a total score. This is also accomplished with the recode command. To do a recode, click *Transform* > *Recode* > *Into Same Variables...* or *Into Different Variables...* and enter the required information. The choice of recoding into the Same or Different Variables is a question of whether it is desirable to preserve the old data. By doing the recode into a Different variable, the old data can be preserved in case a mistake is made or another recoding procedure is tried.

The *Compute...* command is also under the Transformations menu. This command allows the researcher to construct an equation for changing the scale of a variable. The main usefulness of the procedure is for remedying the situation where the raw data do not meet statistical assumptions. A transformation using the Compute... command can often bring the data back into conformity with statistical assumptions. Most statistics books have a discussion of the various common types of transformations and their potential benefits. The *Compute...* option can also be used for computing new variables. For example, a new variable can be computed that represents the sum of scores on several other variables. This feature is useful when adding the scores on individual items of a test or personality measure to obtain a total score.

### 11.9.2 EXPLORATORY DATA ANALYSIS

Exploratory data analysis is a process of carefully examining data prior to performing inferential statistical tests. Access to exploratory data analysis techniques can be obtained by clicking *Analyze* > *Descriptive Statistics* > *Explore...* which leads to plots (boxplots; stem and leaf) and descriptive statistics that can help greatly in the early stages of data analysis. Distributions can also be tested for normality.

### 11.9.3 HELP FEATURES

The Help menu provides access to information about specific *Topics,* a *Tutorial,* a *Statistics Coach,* and other useful features. It is also possible to click the right mouse button while pointing to a term of interest which will result in a display of the definition of that term. The dialog or input boxes also have context-specific *Help* buttons.

### 11.9.4 RELIABILITY ANALYSIS

Reliability is one of the most important characteristics of good psychological measures.

To compute the standard measure of internal consistency, coefficient alpha, click *Analyze* >*Scale* >*Reliability Analysis....* The variables that make up the scale to be analyzed should be transferred to the *Items* box. Then click the *Statistics...* button and request all the descriptive statistics plus the inter-item correlations.

**11.9.5** MOVING OUTPUT TO OTHER APPLICATIONS

Often, it will be desirable to move output to another application such as a word-processing file. This operation will prove especially useful in research methods courses. To do this, copy the table, chart, or plot that you wish to move using the *Edit* menu. Then open up the target application (for example a word processing file into which you would like to copy the item) and select *Paste* or *Paste Special...* from the *Edit* menu. This is the simplest method of including SPSS output in another file. There are other methods which enable you to update the table or chart with SPSS. You can learn more about these processes by searching the Help files in SPSS. Transferring information from one program to another is often one of the most difficult tasks to accomplish with modern technology so it is wise to seek consultation when difficulties are encountered.

- **Self-check Exercise**

VIII. What does the Pearson correlation coefficient range from?

a) 0 to 1
b) -1 to 0
c) -1 to 1
d) 0 to 100

IX. What are the two file formats for text data that can be imported into SPSS?

a) Binary and Hexadecimal
b) Fixed width and Delimited
c) Compressed and Encrypted
d) ASCII and Unicode

X. Which menu sequence should you follow to compute the Pearson correlation in SPSS?

a) Analyze > Statistics > Correlation
b) Analyze > correlate> Bivariate
c) Transform > Compute > Correlation
d) Data > Compute > Pearson

XI. To compute the standard measure of internal consistency in SPSS, use Analyze > Scale > _____.

XII. In exploratory data analysis, plots like boxplots and stem-and-leaf diagrams can be accessed through Analyze > Descriptive Statistics > _____.

## 11.10 SUMMARY

These directions in this lesson describe some basic analyses and point the way toward more advanced procedures. Very complex analyses can also be easily performed with the help of this package. The best way to learn the advanced features of SPSS for Windows is to explore the program using data from an original study. SPSS is much faster, convenient, and accurate than computing the analysis by hand. Moreover, it is a powerful tool for researchers, offering a

user-friendly interface to input, process, and analyze data efficiently. From data entry to advanced statistical calculations, the chapter covers key functionalities, such as computing the Pearson correlation, saving output and data files, and utilizing helpful features like transformations and exploratory data analysis. The significance of SPSS in enhancing the presentation of research reports becomes evident, making it a valuable asset in the research process.

## 11.11 KEYWORDS

1. *Report* - A structured written presentation directed to interested readers in response to some specific purpose, aim or request.
2. *SPSS* - A full-range package that provides all levels of statistical analysis, data manipulation, graphical representation and report writing, among other features
3. Pearson Correlation: A statistical method used to measure the strength and direction of a linear relationship between two variables.
4. Transformations: Operations in SPSS that involve recoding variables or computing new variables based on mathematical operations.

## 11.12 PRACTICE QUESTIONS

11.12.1 Short Answer Type Questions

**Q 1.** What is the primary purpose of the "Transformations" menu in SPSS?

**Q 2.** How is missing data typically represented in SPSS?

**Q 3.** What does the Pearson correlation coefficient measure, and what is its possible range?

**Q 4.** How can exploratory data analysis be accessed in SPSS, and what techniques does it involve?

11.12.2 Long Answer Type Questions

**Q 1.** Explain the significance of SPSS in preparation of a research report.

**Q 2.** Discuss the steps used in operating SPSS to compute various statistical tools.

**Q 3.** Walk through the steps involved in computing the Pearson correlation coefficient in SPSS, including any additional options that can enhance the analysis.

**Q 4.** Explain the features under the "Transformations" menu in SPSS, with a focus on how researchers can benefit from using the Recode and Compute commands.

## 11.13 REFERENCES

1. SPSS Instruction Manual
2. www.idrc.ca/en/ev-56466-201-l-DO-TOPIC.html
3. Field, A. (2013). Discovering statistics using IBM SPSS Statistics.
4. Pallant, J. (2016). SPSS Survival Manual.

## 11.14 ANSWER KEY (SELF-CHECK EXERCISE)

I. A, II. B, III. A, IV. False, V. False, VI. Labels, VII. Variable view, VIII. C, IX. A, X. B, XI. Reliability Analysis, XII. Explore

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# APPLICATIONS OF MARKETING RESEARCH



## 12.0 OBJECTIVES

In this chapter we will learn about demand measurement and forecasting. Both terms are different from each other as demand analysis refer to the analysis of actual demand results while forecasting concerned with the actual performance of sales and not with what they are likely to be at a future date. Here in this chapter, we will learn about, method of estimating current demand and forecasting process and method of forecasting:

- The concept of market potential.
- Methods of estimating current demand.
- Forecasting process.
- Method of forecasting.
- Manager's guide to forecasting.

## 12.1 INTRODUCTION

Demand measurement and forecasting provides a comprehensive understanding of essential concepts and methodologies crucial for effective business planning. By exploring market potential, estimating current demand, and delving into forecasting processes and methods, this will equip managers with the tools necessary to make informed decisions in a dynamic business environment. Through a careful examination of subjective and quantitative forecasting techniques, readers gain valuable insights into selecting the most suitable methods based on factors such as time horizon, cost, data availability, and the desired level of accuracy.

This serves as a strategic guide for managers seeking to optimize their forecasting practices and enhance overall business performance.

## 12.2 THE CONCEPT OF MARKET POTENTIAL

Market potential has been defended as "the maximum demand response possible for a given group of customers within a well-defined geographic area for a given product or service over a specified period of time under well -defined competitive and environmental conditions.

"Another condition on which the concept of market potential depends is a set of relevant coursers of the product or service. It is not merely the present consumer who is to be included by also the potential consumer as maximum possible demand is to be achieved. Market potential will vary depending on which particular group of consumers is of interest. Further, the geographic area which market potential is to be determined should be well defined. It should be divided into mutually exclusive subsets of consumers so that the management can assign a sales force and supervise and control the activities in different territories without much difficulty. Another relevant aspect in understanding the concept of market potential is to clearly known the product or service for which market potential is to be estimated. Especially in those cases where the product in question can be substituted by other. It is desirable to have market potential for the product class rather than that particular product. For example, tea is subjected to a high degree of cross elasticity of demand with coffee. It is necessary to specify the time period for which market potential is to be estimated. The time period should be so chosen that it coincides with planning periods in a firm. Both short and long -time periods can be used depending on the requirements of the firm. Finally, a clear understanding of environmental and competitive conditions relevant in case of a particular product or service is necessary if market potential is to be useful. What is likely to be the external environment? What is likely to be the nature and extent of competition? These are relevant questions in the context of any estimate of market potential since are the factors over which the firm has no control. It may be emphasized that market potential is not the same thing as sales potential and sales forecast. It is only when a market is saturated can the industry sales forecast be considered equivalent to market potential. Such a condition is possible in case of well-established and mature products. Generally, the industry sales forecast will be less than the market potential. Likewise, a company's sales forecast will be less than its sales potential. The former is a point estimate of the future sales. While the latter represents a boundary condition which the sales might reach in an ideal situation. "It the latter sense, sales potential is to a firm what market potential is to product class both represent maximum demand response and are boundary conditions."

## 12.3 METHODS OF ESTIMATING DEMAND

There are two types of estimates of current demand which may be helpful to a company. These are total market potential and territory potential. Total market potential is the maximum number of sales that might be available to all the firms in an industry during a given period under a given level of industry marketing effort and given environmental conditions. Where Q- total market potential N- number of buyers in the specific product/ market under the given assumption.

Q » quantity purchased by an average buyer P= price of an average unit of the components n.q and p in the above formula, the most difficult component to estimate is q. one can start with a broad concept of q, gradually reducing it. For example, if we are thinking of readymade shirts for him consumption, we may first take the total male population eliminating that in rural areas. From the total male urban population, we may eliminate the age groups which are not likely to buy readymade shirts. Thus, the number of boys below 20 may be eliminated. Further eliminations on account of low income may be made. In this way we can arrive at the prospect pool of those who are likely to but shirts.

The concept of market potential is helpful to the firm as it provides a benchmark against which actual performance can be measured. In addition, it can used as a basis for allocation decisions regarding marketing effort. The estimate of total market potential is helpful to the company when it is in a dilemma whether to introduce a new product or drop an existing one. Such an estimate will indicate whether the prospective market is large enough to justify the company entering it. Since it is impossible for a company to have the global market exclusively to itself, it has to select those territories where it can sell its products well. This means that companies should know the territorial potentials so that they can select markets most suited to them, channelize their marketing effort optimally among these markets and also evaluate their sale performance in such markets. There are two methods for estimating territorial potential:

1. market buildup method and
2. index -of -buying - power method. In the first method, several steps are involved. First, identify all the potential buyers for the product in each market. Second estimate potential purchases by each potential buyer.
3. Third, sum up the individual figures in step (ii) above.

However, in reality the estimation is not that simple as it is difficult to identify all potential buyers. When the product in question is an industrial, product, directories of manufactures of a particular product or group of products or group alternatively, the standard industrial classification if manufacturers of a particular product or group of products are used.

The second method involves the use of a straight forward index. Suppose a textile manufacturing company is interested in knowing the territorial potential for its cloth in a certain territory.

Symbolically, Bi - 0.5 Yi + 0.2ri + 0.3pi Bi =

percentage of total national buying power in territory i.

Yi = percentage of national disposable personal originating in territory i.

ri = percentage of national retail sales in territory i.

It may be noted that be noted that such estimates indicate potential for the industry as a whole rather than for to individual company. In order to arrive at a company potential, the concerned company has to make certain adjustments in the above estimate on the basis of one or more other factors that have not been covered in the estimation of territorial potential. These factors could be the company's brand share, number of salespersons, number and type of competitions, etc.

- **Self-Check Exercise:**

I. How is the concept of market potential helpful to a firm?

a) It provides historical sales data

b) It serves as a benchmark for measuringperformance
c) It determines short-term sales forecasts
d) It focuses on individual product sales

II. What is the purpose of estimating territorial potential?
a) To analyze current demand
b) To evaluate market competition
c) To guide marketing efforts in specific regions
d) To determine historical sales trends

III. Which method involves identifying potential buyers and estimating their purchases in each market?
a) Index-of-buying-power method
b) Market buildup method
c) Forecasting process
d) guide to forecasting

IV. Market potential is the same as sales potential and sales forecast. (True/False)

V. Total market potential represents the maximum number of sales available to a specific firm. (True/False)

VI. The index-of-buying-power method involves a straightforward index for estimating territorial potential. (True/False)

**12.4 FORECASTING PROCESS**

After having described the methods of estimating the current demand, we now turn to forecasting. There are five steps involved in the forecasting process. These are mentioned below:

*First,* one has to decide the objective of the forecast. The marketing researcher should know as to what will be the use of the forecast he is going to make.

*Second,* the time period for which the forecast is to be made should be selected. Is there forecast short-term, medium-term or long-term? Why should a particular period of forecast be selected?

*Third,* the method or technique or forecasting should be selected. One should be clear as to why a particular technique from amongst several techniques should be used.

*Fourth,* the necessary date should be collected. The need in specific data will depend on the forecasting technique to be used.

*Finally*: the forecast is to be made. This will involve the use for computational procedures.

In order to ensure that the forecast is really useful to the company, there should be good understanding between management and research. The management should clearly spell out the purpose of the forecast and how it is going to help the company. It should also ensure that the researcher has a proper understanding of the operations of the company. It environment, past performance in terms of key indicators and their relevance to the future trend. If the researcher is well-informed with respect to these aspects, then he is likely to make a more realistic and more useful forecast for the management.

**12.5 METHODS OF FORECASTING**

The methods of forecasting can be divided into two broad categories, viz. subjective or qualitative methods and objective or quantitative methods. These can be further divided into several methods. Each of these methods is discussed below.

12.5.1 SUBJECTIVE METHODS

There are four subjective methods-field sales force, jury of executives, users* expectation and Delphi. These are discussed here briefly.

- Field Sales Force

Some companies ask their salesmen to indicate the most likely sales for a specified period in the future. Usually, the salesman is asked to indicate anticipated sales for each account in his territory. These forecasts are checked by district managers who forward them to the company's head office. Different territory forecasts are then combined into a composite forecast at the head office. This method is more suitable when a short-term forecast is to be made as there would be no major changes in this short period affecting the forecast. Another advantage of this method is that it involves the entire sales force which realizes its responsibility to achieve the target it has set for itself. A major limitation of this method is that sales force would not take an overall or board perspective and hence may overlook some vital factors influencing the sales. Another limitation is that salesmen may give somewhat low figures in their forecasts thing in that it may be easier for them to achieve those targets However, this can be offset to a certain extent by district managers who are supposed to check the forecasts.

- Jury of Executives

Some companies prefer to assign the task of sales forecasting to executives instead of a sales force. Given this task each executive makes his forecast for the next period. Since each has his own assessment of the environment and other relevant factors, one forecast is likely to be different from the other. In view of this, it becomes necessary to have an average of these varying forecasts. Alternatively, steps should be taken to narrow down the difference in the forecasts. Sometimes this is done by organizing a discussion between the executives so that they can arrive at a common forecast. In case this is not possible, the chief executives so that they can arrive at a common forecast. In case this is not possible, the chief executive may have to decide which of this forecast is acceptable as a representative one. This method is simple, At the same time, it is based on a number of different viewpoints as opinions of different executives are sought. One major limitation of
this method is that the executive' opinions are likely to be influenced in one direction on the basis of general business conditions.

- Users' Expectations

Forecasts can be based on users' expectations or intention to purchase goods and services. It is difficult to use this method when the number of users is large. Another limitation of this method is that though it indicates users' 'intention' to buy, the actual purchases may be far less at a subsequent period. It is most suitable when the number of buyers is small such as in case of industrial products.

- The Delphi Method

This method too is based on the experts' opinions. Here, each expert has access to the same information that is available. A feedback system generally keeps them informed of each other' forecasts but no majority opinion is disclosed to them. However, the experts are not brought together. This is to ensure that one or more vocal experts do not dominate other experts. The experts are given an opportunity to compare their own previous forecasts with those of the others and revise them.

After three or four rounds, the group of experts arrives at a final forecast. The method may involve a large number of experts and this may delay the forecast considerably, generally it involves a small number of participants ranging from l0 to 40. It will be seen that both the jury of executive opinion and the Delphi method are based on a group of experts. They differ in that in the future, the group of experts meet, discuss the forecasts, and try to arrive at a commonly agreed while in the latter the group of experts never meet. As mentioned earlier, this is to one person dominates the discussion thus influencing the forecast. In other words, the Delphi method retains the wisdom of a group and at the same time reduces the effect of group pressure., An appropriate when long-term forecasts are involved. In the subjected methods, judgment is an important ingredient. Before attempting a forecast, the basic assumptions regarding environmental conditions as also competitive behavior must be provided to people involved in forecasting. An important advantage of subjective methods is that they are easily understood. Another advantage is that the cost involved in forecasting is quite low. As against these advantages, subjective methods have certain limitations also. One major limitation is the varying perceptions of people involved in forecasting. As a result, wide variance is found in forecasts. Subjective methods are suitable when forecasts are to be made for highly technical products which have a limited number of customers. Generally, such methods are used for industrial products. Also, when cost of forecasting is to be kept minim, subjective methods may be more suitable.

### 12.5.2 QUANTITATIVE OR STATISTICAL METHODS.

Based on statistical analysis, these methods enable the researcher to make forecasts on a more objective basis. It is difficult to make a wholly accurate forecast for there is always an element of uncertainty regarding the future. Even so, statistical methods are likely to be more useful as they are more scientific and hence more objective.

- Time Series

In time-series forecasting, the past sales data are extrapolated as a linear or a curvilinear trend. Even if such data are plotted on a graph, on can extrapolate for the desire time period. Extrapolation can also be made with the help of statistical techniques. It may be noted that time-series forecasting is most suitable to stable situations where the future trends will largely be an extension of the past. Further, the past sales data should have distinctive tends from the random error component for a timeseries forecasting to be suitable. Before using the time-series forecasting one has to decide how far back in the past one can go. It may be desirable to use the more recent data as conditions might have been different in the remote past. Another issue pertains to weighing of time-series data. In other words, should equal weight be given to each time period or should greater weightage be given to more recent data? Finally, should the data be decomposed into different components, viz. trend, cycle, season and error? We now discuss three methods, viz, moving averages, exponential smoothing and

decomposition of time series.

- Moving Average

This method used the last 'n' data points to compute a series of average in such a way that each time the latest figure is used and the earliest one dropped. For example, when we have to calculate a five monthly moving average, we first calculate the average January, February, March, April and May by adding the figures of these months, and dividing the sum by five. This will give on figure. In the next calculation, the figure for June will be included and that for January dropped thus giving a new average. Thus, a series of averages is computed. The method is called as 'moving' average as it uses a new data point each time and drops the earliest one. In a short - term forecast, the random fluctuations in the data are of major concern. One method of minimizing the influence of random error is to use an average of several past data points. This is achieved by the moving average method. It may be noted that in a 12-month moving average, the effect of seasonality is removed from the forecast as data points for every season are included before computing the moving average.

- Exponential Smoothing

A method which has been receiving increasing attention in recent years is known as exponential smoothing. It is type of moving average that smooth' the time -series. When a large number of forecasts are to the made for a number of items, exponential smoothing is particularly suitable as it combines the advantages of simplicity of computation and flexibility.

This method uses differential weights to time-series data. The heaviest weight is assigned to the most recent data and the least weight to the most remote data in the time series. A fraction known as 'smoothing' constants is used to smooth the data.

In case there are very small fluctuations in the time series, then we would like a to be small so as to maintain the effect of earlier data. However, in case of wide fluctuations a should be large so that our forecast is more realistic on account of its being responsive to these changes. The main difficulty in exponential smoothing is how to ascertain the value of
a. where using this method, it is advisable to try out several values of a and ascertain the extent of forecast error in each case. The value of a which gives the minimum forecast error should be then chosen for smoothing the time-series. This method consists of measuring the four components of a time series

(i) Trend
(ii) Cycle
(iii) Season and
(iv) Erratic movement.

The trend competent indicates long term effects on sales they are caused by such factors as income, population, industrialization the technology. The time period for a trend
function varies considerably from a business cycle (which averages at 4-5 years). The cyclical component indicates some sort of a periodicity in the general economic activity. When the data are plotted, they yield a curve with peaks and troughs, indicating and falls in the given series with a certain periodicity. A careful study of the impact of a business cycle must be made on the sale of each product. Cyclical forecasts are likely to be more accurate for the long term than for the short term. The seasonal component reflects changes in sales levels due to factors such as weather, festivals, holidays, tec. There is consistent reflects changes in sales levels due to factors such as weather, festivals, holidays, etc. there is a consistent pattern of sales for period

within a year. Finally, the erratic movements in data arise on account of events such as strikes, lockouts, price wars, etc. the decomposition of time enable identification of events such as sticks, lockouts, price wars, etc. the decomposition of time series enables of the error component from the trend, cycle and season which are systematic components.

- Causal or Explanatory Methods

Causal or explanatory methods are regarded as the most sophisticated methods of forecasting sales. These methods yield realistic relevant data are available on the major variables influencing changes in sales. There are three advantages of causal methods. First, turning points in sales can be predicted more accurately by these methods than by time- series methods. Second, the use of these methods reduces the magnitude of the random component far more than it may be possible with the time series methods. Third, the use of such methods provides greater insight into causal relationships. This facilitates the management in marketing decision making. Isolated sales forecasts on the basis of time series methods would not be helpful in this regard. Casual methods can be either

(i) leading indicators or
(ii) regression models.

These are briefly discussed here.

- *Leading Indicators*: Sometimes one finds that changes in sales of a particular product or service are preceded by changes in one or move leading indicators. In such cases, it is necessary to identify indicators and to closely observe changes in them. One example of a leading indicator is the demand for various household appliances which follows the construction of new houses. Likewise, the demand for many durables is preceded by an increase in disposable income. Yet another example is of number of births. The demand for baby food and other goods needed by infants can be ascertained by the number of births in a territory. It may be possible to include leading indicators in regression models.
- *Regression Models*: Linear regression analysis is perhaps the most frequently used and the most powerful method among causal methods. As we have discussed regression analysis in detail in the preceding chapters on Bivariate Analysis and Multivariate Analysis, we shall only dwell on a few relevant points. First, regression models indicate linear relationships within the range of observations and at the times when they were made. For example, if a regression analysis of sales is attempted on the basis of independent variables of population sizes of 15 million to 30 million and per capita income of Rs 1000 to Rs 2500, the regression model shows the relationships that existed between these extremes in the two independent variables. If the sales forecast is to be made on the basis of values of independent variables falling outside the above ranges, then the relationships expressed by the regression model may not hold good. Second, sometimes there may be a legged relationship between the dependent and independent variables. In such cases, the values of dependent variables are to be related to those of independent variables for the preceding month or year as the case may be. The search for factors with a lead lag relationship to the sales of a particular product is rather difficult. One should try out several indicators before selecting the one which is most satisfactory. Third, it may happen that the data required to establish the ideal relationship, do not exist or are inaccessible or, if available, are not useful.

Therefore, the researcher has to be careful in using the data. He should be quite familiar with the varied sources and types of data that can be used in forecasting. He should also know about their strengths and limitations. Finally, regression model reflects the association among variables. The causal interpretation is done by the researcher on the basis of his understanding of such an association. As such, he should be extremely careful in choosing the variables so that a real causative relationship can be established among the variables chosen.

- Input -Output Analysis

Another method that is widely used for forecasting is the input -output analysis. Here, the researcher takes into consideration a large number of factors, which affect the outputs which affect the outputs he is trying to forecast. For this purpose, an input - output, table is prepaid where the inputs are shown horizontally may be mentioned that by themselves input-output flows are of little direct use to the researcher. It is the application of an assumption as to how the output of an industry is related to its use of various inputs that makes an input-output analysis a good method of forecasting. The assumption states that as the level of an industry's output changes, the use of inputs will change proportionately, implying that there is no substitution in production among the various inputs. This may or may not hold good. The use of input-output analysis in sales forecasting is appropriate for products sold to governmental, institutional and industrial marks as they have district patterns of usage. It is seldom used for consumer products and services. It would be most appropriate when the levels and kinds of inputs required to achieve certain levels of outputs need to be known. A major constraint in the use of this method is that it needs extensive data for a large number of items which may not be easily available. Large business organizations may be in a position to collect such data on a continuing basis so that they can use input-output analysis for forecasting. However, that is not possible in case of small industrial organizations on account of excessive costs involved in the collection of comprehensive data. It is for this reason that input-output analysis is less widely used than most analysis initially expected. A could discussion of input-output analysis is beyond the scope of this book.

- Econometric Model

Econometric is concerned with the use of statistical and mathematical techniques to verify hypotheses emerging in economic theory." An econometric model incorporates functional relationships estimated by these techniques into an internally consistent and logically self-contained framework." Econometric models use both exogenous and endogenous variables. Exogenous variables are used as inputs into the system but they themselves are determined outside the model.

These variables include policy variables and uncontrolled events. In contrast, endogenous variables are those which are determined within the system. The use of econometric models is generally found at the macro level such as forecasting national income and its components. Such models show how the economy or any of its specific segment operates. As compared to an ordinary regression equation they bring out the causalities involved more distinctly. This merit of econometric models enables them to predict turning points more accurately. However, their use at the microlevel for forecasting has so far been extremely limited.

## 12.6 IMPORTANT FACTORS TAKEN IN BEFORE USING A PARTICULAR FORCASTING METHOD FORCASTING

This is an extremely difficult task which the management has to perform. Manager should be given broad guidelines to help them decided on the most appropriate forecasting method. David M.Gorgoff and Robert G. Murdick have developed a chart that groups and profiles as many as 20 forecasting methods and arrays them against 16 important evaluative dimensions. Their chart can be useful to managers in two ways. The first is in electing the best possible method for a given forecasting situations. The second is in deciding two to combine two or more forecasting methods to obtain batter forecasts. There are several important factors which must be considered by managers before they finally decide to use a particular forecasting method. These are briefly discussed below.

- Time Horizon

One reason why this is important is that the relative importance of different sub patterns change as the time horizon of planning changes. Thus, in the immediate term, the randomness: in the short term, the seasonal factor; in the medium term, the cyclical component; and in the long term, and trend component; dominate. Normally managers would like the forecast results to extend as far as possible into the future. However, if the period is too long, there are likely to be more complexities in the selection of a proper forecasting techniques. It is because of this fact that some techniques are more suitable in a short span of time while others are not. Technical Sophistication; Manager may have to improve their skills in understanding the forecast results generated through the use of advanced computers and mathematic.

- Cost

There are three main elements of cost in a forecasting technique: development costs, data storage costs and costs of repeated applications. The relative importance of these elements varies with the technique of forecasting as well as the situation. A technique which is extremely costly may not be used even if it gives better forecasts. A point worth noting is that the cost of any method is more important at the beginning when it is being developed and installed.

- Data Availability

It is advisable for the manger to ensure that the data needed by a particular forecasting method are available and reliable. Sometimes one may find that a particular method needs extensive data that are not available.

- Variability and Consistency of Data

Like the availability of data, the manager must also satisfy himself regarding thevariability and consistency of data to be used in a forecasting method. In case the company expects a change to take place in some established relationship, the forecaster may apply his judgment in a quantitative method. Alternatively, it may be advisable to use a qualitative method of forecasting.

- Amount of Detail Necessary

Very often managers have to determine sales quotas or allocate resources to different territories. In such cases, aggregate forecasts alone are not sufficient. In view of this, managers

may go in for a forecasting method that can first accurately predict individual components which can be combined subsequently into an overall for east.

- Accuracy

The managers must aim at maximum accuracy of the forecast, and in the majority of forecasting situations accuracy is indeed regarded the most important criterion for selecting a forecasting technique. It may also be noted that some other are also frequently reflected in accuracy. For example, a less accurate forecast may be due to inadequate data or an inappropriate technique. Although there is no single universally accepted measure of accuracy, the following method is commonly used.

- **Self-Check Exercise:**

VII. In forecasting, what does the time horizon refer to?
   a) The total cost
   b) The period for which the forecast is made
   c) The availability of data
   d) The number of variables

VIII. What is a major advantage of subjective forecasting methods?
   a) High accuracy
   b) Low cost
   c) Objectivity
   d) Ease of understanding

IX. What does the Delphi method involve?
   a) Sales force opinions
   b) Executive judgments
   c) Expert opinions without group meetings
   d) User expectations

X. Which statistical method uses differential weights for time-series data?
   a) Moving average
   b) Exponential smoothing
   c) Regression analysis
   d) Input-Output analysis

XI. In econometric models, what are exogenous variables?
   a) Variables determined within the system
   b) Variables used as inputs but determined outside the model
   c) Variables reflecting time-series trends
   d) Variables with causal relationships

XII. The _____ method involves opinions of a group of experts without group meetings.

XIII. Econometric models incorporate statistical and mathematical techniques to verify _____.

XIV. Subjective forecasting methods are more suitable for highly technical products. (True / False)

XV. Moving average is a method that uses a fixed set of past data points for calculation. (True / False)

## 12.7 SUMMARY

Market potential if the maximum demand response possible for a given group of customers within a well-defined geographic area for a given product or service over a specified period of time under well-defined competitive and environmental conditions. The are two different of demand forecasting which are 'Subjective Methods' or 'Quantitative Methods*. Subjective methods may further be classified into following categories:

- Field Sales Force Method.
- Jury of Executives.
- User's expectation.
- Delphi Technique
- Quantitative or Statistical methods may be classified as follows:
- Time Series
- Moving Average
- Exponential Smoothing
- Time-series decomposing
- Causal or Explanatory Methods
- Leading Indicators
- Regression Models
- Input-Output Analysis
- Econometric Model
- A manager needs to keep following points in view while making forecast:
- Time Horizon
- Technical Sophistication
- Cost
- Data Availability
- Variability and Consistency of Data
- Amount of Detail Necessary

## 12.8 KEYWORDS

1. **Market Potential:** The maximum demand achievable for a specific product or service within a defined geographic area over a specified period, considering competitive and environmental conditions.
2. **Forecasting Methods:** Techniques used to predict future demand and sales performance, including subjective methods based on judgment and quantitative methods utilizing statistical analysis.
3. **Time Series Analysis:** Examination of historical sales data to identify patterns and trends over time, aiding in short to medium-term forecasting through methods like moving averages and exponential smoothing.
4. **Causal or Explanatory Methods:** Forecasting approaches that focus on understanding cause-and-effect relationships influencing sales, including leading indicators and regression models.

## 12.9 PRACTICE QUESTIONS

### 12.9.1 Short Answer Type Questions

Q 1. Define the concept of market potential and outline its practical implications for businesses.

Q 2. Briefly describe the steps involved in the forecasting process and highlight its significance.

Q 3. Identify one subjective method for forecasting and explain its application in business contexts.

Q 4. What are the key considerations managers should keep in mind when deciding on a forecasting method?

### 12.9.2 Long Answer Type Questions

Q 1. Elaborate on the factors influencing market potential and how businesses can leverage this concept for strategic decision-making.

Q 2. Compare and contrast subjective and quantitative forecasting methods, discussing their respective advantages and limitations.

Q 3. Explore the practical application of time series analysis in forecasting, providing examples of its relevance in business scenarios.

Q 4. Discuss the challenges managers face in selecting an appropriate forecasting method and how these decisions impact overall business planning.

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## 12.11 ANSWER KEY (SELF CHECK EXERCISE)

I. B, II. C, III. B, IV. False, V. False, VI. True, VII. B, VIII. D, IX. C, X. B, XI. B, XII. Delphi, XIII. Hypotheses, XIV. True, XV. True

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**APPLICATIONS OF MARKETING RESEARCH**



## 13.0 OBJECTIVE

In this chapter, we will discuss the utility of Marketing research for the purpose of New Product Development and Test Marketing the new product. We will also study the application of Marketing Research in the field of Advertising research.

## 13.1 INTRODUCTION

A Company may find itself in a situation where it may be advisable to develop a new product. When sales of its current range of products have been declining over the past few years or when it receives complaints about its products from customers, distributors, retailers, it may have to find the possible reasons for the same. This may lead to the improvement of the existing product or the development of an altogether new product. As we know, the concept of

product life cycle suggests that a product passes through different stages. When a company finds that some of its products have entered the declining stage, it may have to take concrete measures to replace them. This can be achieved in two ways: acquisition and innovation. We are concerned here with the latter which can be broadly of two types: internal innovation and contract innovation. New product development can be carried out in one of the following ways: New products features can be developed by adapting, modifying, magnifying, minimizing, substituting, rearranging or combining the existing features of a product. Different quality versions of the existing product can be developed so that the needs of different markets can be met. Additional models and size of the existing product can be brought out. If the company purses the policy of internal innovation, it implies that it has its own research and development department which is engaged in the development of new products including modifications and improvements in the existing ones. If, on the other hand, the company pursues contract innovation it implies that it has engaged the services of outside researchers or new-product-development agencies for introducing new products for the company. Sometimes the company may prefer acquisition while at other times it may follow the strategy of innovation. There is a dilemma faced by the management with respect to new product development. On the one hand, the company finds that it is necessary to develop new products, on the other, the stake involved in the new product development is very high on account of research and development activity being highly capital intensive. If the new product fails in the market, the company has to sustain a heavy loss. It is, therefore, necessary that new product development be carried out with extreme caution. New product development is an extremely difficult and time-consuming process. The role of marketing research in new product development is not a straightforward as it might appear. Unforeseen situations may arise which may force the company to abandon its project mid-way. Such situations arise not infrequently. On has to be fully informed about the market and product opportunities before venturing into a new product development project. It is desirable project. It is desirable to proceed step-by-step in this process.

## 13.2 NEW PRODUCT DEVELOPMENT

The development of new products involves the following stages:

(i) Idea generation,
(ii) Concept development and testing,
(iii) Product evaluation and development,
(iv) Business analysis, and
(v) Commercialization.

In all these stages, marketing research techniques can be applied though they would vary in each stage. In the section that follows, these stages and the major marketing research techniques used therein are discussed.

### 13.2.1 IDEA GENERATION

The objective of this stage is to obtain

(a) New ideas for products,
(b) New attributes for the existing products, and
(c) New uses of the existing products.

There are several sources of new- product ideas such as customers, company salesmen, dealers, scientists, competitors, top management, industrial consultants, advertising agencies marketing research firms, industrial publications, universities and commercial laboratories. Several methods can be used to generate new ideas. These are briefly discussed below.

- Attribute Listing

Major attributes of an existing product, are listed. Then, one is asked to imagine how each of these attributes can be modified so that the product will improve. In this connection, Osborn suggested the new ideas can be generated with reference to a particular product: can it be put to the other uses? Can we adapt? modify? minify? substitute? rearrange? reverse? combine?

- Forced Relationships

This technique involves listing of several objects and then trying to find how each object can be combined with the other objects. For example, a bed and a sofa set, two separate products, were combined into one-bed-cum-sofa set-fulfilling a felt need' of using furniture in a limited space.

- Morphological Analysis

This term refers to a variety of techniques which are similar to forced relationships and attribute listing. Although there are several variations, a simple method of morphological analysis consists of the following stages. First, the parameters of the situation are listed. Second, each parameter is subdivided into its smallest parts. Third, these parts are represented in a matrix. Finally, all possible combinations of parameters and their subparts are examined. In this way, morphological analysis will enable identification of the components of current successful products and find new combinations of attractive
features. Such an analysis has been extremely successful in the development of new technologies. No doubt, morphological analysis is time consuming. But the time spent is justified. A through search of all the possible combinations would not be possible without morphological analysis.

- Problem Analysis

Here, the consumers are approached to find out if they have experienced any problem while using a particular product or product category. One can then select one or two major problems from such a list on the basis of their importance, the frequency of their occurrence, and the cost of effecting improvement in the product.

- Brainstorming

This technique involves the use of a small number (usually between six and ten) of consumers who are asked to participate in a 'brainstorming' session. The purpose of such a session is to generate a number of new product ideas. In order to ensure that a brainstorming session is most effective, it is necessary to comply with certain rules suggested by Osborn. These are:

(a) No criticism of any new idea should be made
(b) Freewheeling is welcomed, indicating that the wilder the idea, the better it is.
(c) A good number of ideas must be generated. (Quantity is important at this stage.)
(d) Participants should suggest how or more ideas can be combined into still another

idea.

- Synectics

Some authors feel that a major limitation of brainstorming session is that it produces solutions too quickly before developing some perspectives. Instead of defining the problem specifically as in brainstorming sessions, the Synectics approach suggests by Gordon, defines the problem so broadly that the participants in the group have no idea of the specific problem. In such exercise, the participants give their viewpoints and as more and more facts are gradually interjected, their discussion tends to move towards specificity.

### 13.2.2 CONCEPT DEVELOPMENT AND TESTING

It should be obvious that the new product ideas generated, cannot be pursued. This may be on account of several reasons. The company may find that a particular new product idea is incompatible with its major objectives. Further, it may not have the requisite production or marketing skills. Another possible reason for not pursuing a new product idea is that it may not be technologically feasible. Thus, a preliminary screening will eliminate a number of new products ideas. Those which survive this screening are then pursued further through concept testing:

- To get the reaction of consumers' view of the new product idea.
- To give direction regarding the development of the project.
- To choose the most promising concepts for development.

To ascertain whether the product in question has adequate potential for its commercialization. The concept test can take three different forms. First, it can be entirely verbal-a statement about what it does. Second, it can be visual-in form of a photograph or drawing. Third, a mockup of the product may be used. This is merely a dummy product to get across the idea.

- Focus-group Interviews

The focus-group technique, as discussed earlier, is used for concept testing as well. Focus-group interviews are conducted with 8 to 12 participants where the moderator gives the group discussion a more specific direction than is the case in an idea generating session. The main objectives are to have a deeper insight so that the concepts can be further refined.

- Monadic Tests

In monadic testing, a respondent evaluates a single item in isolation from the other alternatives. The respondents are divided into groups, the number of groups depends on the number new product concepts. Thus, there are as many groups as there are new product concepts to be tested. Each respondent evaluates only on concept on uniform dimensions as are used with respect to other concepts. Although the scale for recording the evolutions could be any of the attitude rating scales discussed in Chapter 8, the numeric rating scale is generally used. When each respondent has given his rating on the specified dimensions, an average score for each product is calculated. The new product concept that obtains the highest score is chosen for further evaluation. If the groups are not comparable with respect to age, education etc., then their ratings to product concepts might be biased, bias would be more when characteristics such as age and education have a bearing on the product concepts to be tested.

In such a case, monadic tests will not be reliable.

- Paired Comparison Tests

The method has been questioned on its ability to be a true preference testing. This is because it provides a measure of the respondent's attitude towards an item rather than a comparison with all the other items. Paired comparison tests are an improvement over monadic test. Instead of examining only one product concept as in the preceding method, the respondent examines two product concepts at a time indicating which of the two is preferable. Paired comparison tests have been discussed earlier in Chapter 8 on Scaling Techniques and are not repeated here. An alternative to a paired comparison test is a sequential monadic or non-direct comparison test. Here, each respondent is exposed to each product concept, separately. After he has been exposed to all the product concepts, he is asked to give his ratings. The one which secures the highest score is obviously selected for further evaluation. A major advantage of this method is that it is more in conformity with the actual marketplace. Respondents evaluate products after they have been exposed to them at different time periods in the market. Moreover, respondents are no 'forced' to select a product concept over another one just because they have been asked to do. This method may lead to a bias on account of the use of a particular order or presentation of the product concepts. This problem can be overcome by the process of randomization in sequencing the product concepts across respondents.

- Conjoint Analysis

Another technique known as conjoint analysis can be used in testing new product concepts. This method attempts to ascertain the joint effects of two or more nominal independent variables on the ordering of a dependent variable. Here, respondents give their ratings on two or more attributes at a time. The use of conjoint analysis will not only indicate the relative importance of product attributes but also the manner in which they are related to each other. This will enable the researcher to identify the best combination of product attributes. There are instances where the concepts testing has proved to be extremely helpful in successful marketing a new product. Paramount Products launched a new nail polish under their umbrella name 'Shingar' but the launch was unsuccessful on account of confusion of image-Indian name versus 'foreign' product concept. However, as a result of concept testing, a new positioning based on consumer beliefs and expectations was arrived at. The product was given a new name 'Tips a Toes' and advertising was geared to exploit this new name. Tips and Toes was then accepted by retailers and consumers.

### 13.2.3 PRODUCT EVALUATION AND DEVELOPMENT

Product testing involves almost the same process used in concept development and testing. The objective of product testing is to ascertain the market response to the proposed product so that the management can decide whether or not the product should be carried forward. It may be emphasized that product testing, being a subsequent step to concept development and testing, is expected to yield more reliable results. This would involve a more realistic plan for the product exposure. Another major difference between the product testing stage and the concept development and testing stage is that the former involves the trial use of the product by a group of respondents while the latter attempts to measure only the initial interest in the proposed product. Hence, some king of usage test is undertaken to find out

whether the respondents would be interested in it and whether they would subsequently buy it if it were available in the market.

13.2.4 USAGE TEST

The new product can be tested in different types of usage situation. There are two usage tests: laboratory usage tests and consumer usage tests. In the format test, R and D people may test a new product with respect to one or more attributes. For example, a car manufacturing unit will have its R and D department whose task is to effect improvements in the car, say, economy in fuel consumption. R and D personnel may evaluate the proposed vehicle by undertaking test drives under varying conditions. Generally, laboratory testing is found to be more rigorous for ensuring that performance norms come up to a certain level. A point worth noting is that a consumer usage test and the laboratory test may give different evaluations of the same product. This is because consumers' perception may be different and accordingly, they may attach importance to those attributes which were not considered by the R and D department. In a consumer usage test, a small number of consumers are given a sample of the new product. They are asked to use it in a normal fashion and later indicate their reaction to it as also the defects that they have noticed. A variant of the consumer usage test is the blind usage test. In such a test, the consumer is given the product in question without disclosing its brand name or advertisement. This method is particularly useful when a new formulation of an established brand is to be tested. In usage tests, the researcher should ensure that respondents have actually used the new product and that their responses are free from bias. This is important as many a time respondents indicate their willingness to buy the new product without eventually doing so. This would give a highly favorable picture of the product (which ultimately does not turn out to be so.

13.2.5 BUSINESS ANALYSIS AND COMMERCIALISATION

New product ideas that survive the product evaluation and development stage are then taken up for an in-depth analysis to ascertain their business attractiveness. For this purpose, it is necessary to project the future sales, costs and profit, and if such estimates are reasonably good, the product in question is commercialized. However, as new information becomeavailable, the estimates of sales, costs and profit may have to be revised. In order to carry out business analysis and commercialization of the new product, two important techniques- test marketing and simulated test marketing - are used. Both these techniques are based on application of experimental and quasi-experimental designs. The increasing use of these designs shows that they are dependable and yield reasonably good results. When a new product concept has scored high in a business analysis, it is passed on to the R and D department which develops one or more physical versions of the accepted product concept. It develops a prototype that satisfies the predetermined criteria.

- **Self-Check Exercise:**
  I. Which technique involves listing major attributes of an existing product and imagining how each attribute can be modified for improvement?
     a) Brainstorming
     b) Morphological Analysis
     c) Forced Relationships

d) Problem Analysis

II. What is the main purpose of Concept Development and Testing?
   a) Evaluate product prototypes
   b) Obtain consumer reactions
   c) Preliminary screening of ideas
   d) Conduct usage tests

III. In monadic testing, how does a respondent evaluate new product concepts?
   a) Comparing two concepts at a time
   b) Evaluating a single item in isolation
   c) Giving ratings on multiple attributes
   d) Participating in focus-group interviews

IV. What is the purpose of a usage test in new product development?
   a) Evaluate initial interest in the product
   b) Measure market response to the proposed product
   c) Assess consumer perceptions
   d) Project future sales and costs

V. The technique that involves a small number of consumers suggesting new product ideas in a session is called _____.

VI. The stage where the new product is introduced to a small section of the target market to gauge its market potential is called _____.

VII. The technique used for testing new product concepts that aims to identify the best combination of product attributes is _____.

## 13.3 IMPORTANCE OF ADVERTISING

A study done by the Centre for Media Studies emphasizes the phenomenal growth in advertising that has taken place in India in recent years. It observes: "By any count 1986- 88 years will go down as a turning point in the Indian advertising industry." A number of factors have contributed to this growth. First, advertising expenditure has crossed the Rs.1000 crore mark. Second, advertising through TV has become a force to reckon with. Third, consolidation and realignment of advertising agencies has taken place. Fourth, newspapers and magazines have to woo advertisers and advertising agencies. Fifth, advertising expenditure is no longer questioned following the new buoyancy in the market. Another study - shows that five consumer megatrends have swept across the urban landscape in India. These are: the new individualism, the growing multi-culture orientation, the search for status a harder look at brand values, and the new aspirations among the consumers. These mega trends have emerged as a result of four forces of change in the Indian society. These forces are: more purchasing power with consumers, availability of wide variety of products and brands, availability of greater information about products and brands, and changes in the socio-economic environment in the country. In view of these developments, advertising has assumed more importance in recent years. This rising trend will continue on account of a number of factors such as increase in urbanization, expansion of education, increase in per capita income, etc. This would mean that companies will give far more attention to their advertising efforts, use

more sophisticated and improved advertising techniques and be more concerned about knowing the impact of their advertising efforts.

## 13.4 NEED FOR ADVERTISING RESEARCH

The role of research in advertising can be seen in various stages of advertising planning. First, what should be the objectives of advertising? Unless the objectives are clear, advertising cannot be useful. Research would enable the company to be clear in its objectives of advertising. Second, advertising research should be used for developing a strategy for marketing the product in question. Further, the selection of the target audience can be facilitated by advertising research. In this connection, mere demographic classification will not be adequate. It may be equally necessary to pay attention to product usage behavior. Another aspect where research can be useful is the selection of message that an advertisement should carry and through what media it should be conveyed. This is a major area of advertising research. Finally, research has to concern itself with the evaluation of advertising in order to find out whether the expenditure on advertising has been justified or not. If not, the reasons should be ascertained so that in improvement in advertising can be made in the future. In short, research can be instrumental in increasingthe efficiency of advertising as a result of which the pay-off from advertising expenditure will increase.

## 13.5 ADVERTISING RESEARCH

Further, the selection of the target audience can be facilitated by advertising research. In this connection, mere demographic classification will not be adequate. It may be equally necessary to pay attention to product usage behavior. Another aspect where research can be useful is the selection of message that an advertisement should carry and through what media it should be conveyed. This is a major area of advertising research. Finally, research has to concern itself with the evaluation of advertising in order to find out whether the expenditure on advertising has been justified or not. If not, the reasons should be ascertained so that in improvement in advertising can be made in the future. In short, research can be instrumental in increasing the efficiency of advertising as a result of which the pay-off from advertising expenditure will increase.

- **Self-Check Exercise:**

VIII. Demographic classification alone is sufficient for selecting the target audience. (True/False)

IX. Research plays a negligible role in determining the message and media for an advertisement. (True/false)

X. The pay-off from advertising expenditure is independent of research efficiency. (True/False)

XI. The new individualism, growing multi-culture orientation, search for status, a harder look at brand values, and new aspirations are referred to as consumer _____.

XII. Research can facilitate the selection of the target audience by paying attention to

product usage behaviour, not just mere _____ classification.

## 13.6 MEDIA RESEARCH

The main issues in media research are:

a) How to choose amongst media types - television, radio and newspapers?
b) How to decide on a specific insert within a particular type of media, say, television?

In order to decide on these two issues, it is necessary to have some data. The Advertising Research Foundation (ARF) suggested the following type of data for thispurpose:

1. *Media vehicle distribution:* the circulation number for a magazine or newspaper or the number of television or radio sets available to carry the advertising.
2. *Media vehicle audience*: the number of people exposed to the media vehicle. This would be larger than the number in (1) above as more than one person reads the same newspaper/ magazine or watches on the same television set.
3. *Advertising exposure*: the number of people exposed to a specific advertisement in the media vehicle. This number would be less than the number in (2) above as all those who are exposed to a newspaper/magazine may not notice a particular advertisement.
4. *Advertising perception*; the number of people who perceived the advertisement in question. This number would be less than that in (3) above. The people may perceive an advertisement because of several factors such as its large size, use of attractive colors or its positioning in the media vehicle or on account of the product involved.
5. *Advertising communication*: the number of people who comprehend specific things about the advertising. This number would obviously be less than the number of people who perceived.
6. *Sales response*: the number of people who buy the product in question as a result of advertising. This number would be far less than that in (5) above.

It may be noted that of these six categories, there is an interaction of media and message in the last four categories. This makes it difficult to obtain the numbers for media alone in respect of these categories. Accordingly, media vehicle data are generally obtained for the first two categories, viz. media vehicle distribution and media vehicle audience.

### 13.6.1 Media Audiences

Media research comprises, inter alia, the measurement of the size and break-up of individual vehicle audience. We will discuss this under two heads - print media and radio and television.

### 13.6.2 Print Media

Prior to the reports of the Audit Bureau of Circulation (ABC), the measures regarding the individual vehicle audiences were those which the media themselves claimed. Such measures were rather inflated as any individual media vehicle would suggest that its circulation is far and wide. Since the ABC's reports are now available, these inflated measures have ceased. The ABC compiles its report which gives the size of circulation of a newspaper/ magazine on the basis of certified audits. This information while being useful, it’s not sufficient. It is difficult to

estimate precisely the size of audience for a particular publication. The data collected by merely asking respondents as to whether they have looked at a particular copy would be unreliable. This is because some respondents may regard reading a particular magazine as a status symbol and hence, they may report exaggerated readership. Likewise, reading of some magazines may be regarded as below one's status and hence their readership may be reported to be much less than in reality. Another important aspect in determining the audience size for print media is the extent of duplication between magazines. This is because readership of three or more magazines among respondents is quite common. But the data on readership seldom give the extent of duplication. The problem is how to get the size of 'unduplicated' audience. A detailed study is determining the duplication among a large number of magazines would obviously be very expensive, not to mention the time it would involve.

13.6.3 Radio and Television

There are four methods to measure the size of the audience for any radio and television program. These methods are discussed briefly below.

- Coincidental Method

First of all, a sample of households having a telephone is selected. This is followed by an inquiry on telephone as to whether a particular program on radio is being listened or being watched on television. Other information such as the name of the sponsor and the product being advertised is also collected. The main advantages of this method are that it is quick and economical. It has some limitations though. First, the method has to be confined to only those households which own telephones. In a country like India, a large number of households do not have telephones and hence they have to be excluded. Second, since the enquiry has to be conducted while a particular program is in progress only a limited number of households can be contacted in this short duration. Finally, it is extremely difficult to undertake an enquiry with respect to late night programs.

- Roster Recall

As the same names implies, a roster or list of programs is used to facilitate respondents to recall what programs were listened to or watched. Respondents are contacted personally by interviewers. This method has some major limitations. First, the responses are dependent upon memory. Second, depending on the status or popularity or otherwise of a particular program, respondents may give their replies regardless of whether they have listened to a program (or seen it). Third, the method is unable to provideinformation on a continuing basis. Finally, it is not possible to estimate duplication in the audience as respondents are approached for program within a short estimate duplication in the audience as respondents are approached for program within a short time period. It is possible to estimate the number of persons who watch both programs, falling within the same time span on which respondents are being contacted.

- Diary Method

As the name implies, this method uses a diary for estimating the number of persons listening to or watching different programs. A diary, especially designed for this purpose, is issued to respondents who have agreed to furnish the desired information. Each respondent records his radio listening or television viewing, along with personal data such as age and sex in this diary. If respondents accurately record their radio listening or television viewing, this method would give accurate and complete information, eliminating the errors that may arise

due to memory lapse and interviewer bias. Further, it is cheaper than other methods involving personal interviewing and recall. However, in practice, one may find that respondents are not so careful in listing the programs listened to or viewed by them. Besides, there is a lack of continuity in the flow* of information as the diary method is unable to provide the estimate of an audience, say, minute-by-minute. Apart from this, some respondents in the panel may stop giving the information sought or move to another address. In such a case, how far the panel will remain representative of the population is a moot question.

- The Audiometer

As Audiometer is an electronic machine attached to a television set. As soon as the television set is turned on, the machine records it on the tape. In advanced countries, this method is frequently used. The audiometer ensures a continuous flow of information which is not possible in any of the earlier methods. This is its main advantage. Another advantage of this method is that there is complete objectivity in the information thus collected. Moreover, it is possible to have a cumulative estimate of the audience since the audiometer sample will be almost the same from month to month. The method suffers from some limitations as well. First, turning a set on does not necessarily mean that the program in question is being watched. Second, the method cannot indicate as to who is watching a program.

### 13.6.4 Copy Testing

Another important area in advertising research is copy testing. The word 'copy' is used to denote an entire advertisement, including the message, pictures, colors, etc., regardless of the medium in which the advertisement has appeared. As Shirley Young says: “Copy testing is troublesome for almost everybody. Most advertisers and agencies have a checkered history of its use and often differ on both what and how to measure. This continued dissatisfaction, with copy testing has led to a never-ending search for the next new technique to embrace. “Methods of copy testing can be divided into two categories, viz. 'before' tests and 'after' tests. The former category includes all those tests that are used in ascertaining the suitability or otherwise of an advertisement before it is finally released. Their purpose is to effect improvements in the copy or advertisement. The latter category includes tests to measure the effectiveness of an advertisement after it has been formally released. Despite this distinction, at times the difference between the two types of method gets blurred. This is because some 'before' methods require that an advertisement should be run one or two media. A number of pre-test methods are used for copy testing. In this section, we will discussthe following methods:

(i) Consumer jury,
(ii) Portfolio tests,
(iii) Rating scales,
(iv) Physiological methods,
(v) Inquiries, and
(vi) Laboratory testing.

- Consumer Jury

In this method, a sizeable number of consumers from the target audience are shown a set of rough and unfinished advertisements. With respect to these advertisements, they are asked such questions as: Which copy would you prefer to read? Which one would induce you to buy the product? Which headline is the most interesting? Paired comparisons or ranking may

be used by respondents. The assumption in this method is that at least one of the advertisements shown will be liked by them.

- Portfolio Tests

According to this method, a number of alternative copies that are to be tested are placed in a portfolio. At times, the copies are placed in dummy copies of magazines or newspapers. Respondents are given the portfolio and asked to go through it. After they have done so they are asked to recall the copies from memory. Such a recall may be either unaided or aided. The interviewer may facilitate recall by asking about specific advertisements. The interviewer may further ask the respondent to recall the advertisement as much as possible. The extent of recall will indicate the strength of the copy.

- Rating Scales

This method involves the use of certain standards against which a copy is tested. They copy is rated on the basis of scale values. As a result, a numerical score is obtained. It may be added that weights may be assigned to different factors or items on the basis of which a copy is to be tested, depending on their relative importance or relevance. This method is generally used by professional advertising agencies which are able to 'rate' advertisements without any difficulty. This method has one major advantage as it provides a list of factors against which a copy is to be tested. However, there are certain limitations. First, the problem is how eights are to be assigned to different items. Second, different respondents will rate the items differently. It is difficult to say who is right in his rating. Third, an overall high score of a copy does not necessarily mean a superior copy. This is because that copy might have scored high ratings with respect to several items and low ratings with respect to only a few items. It is these few items which may be extremely relevant in judging the copy.

- Psychological Tests

This method uses a number of psychological techniques to find out the reactions of respondents to a given advertisement. Techniques such as word association, sentence completion, depth interviewing and storytelling are used by trained psychological to find out what respondent see in a given advertisement and the influence it has on them. As it is extremely difficult to interpret the information obtained on the basis of psychological tests, only trained persons should be appointed to carry out this test. In view of this, only a small sample can be used for such tests.

- Inquiry Tests

Some advertisements may invite several inquiries from the readers about a given product or service. However, it is questionable whether a large number of inquiries can be regarded as a good yardstick for a successful advertisement. Inquiry tests can take several forms. One way could be to place the same offer in different copies in different issues of the same magazine/newspaper. These offers are keyed to a specific advertising copy. If the number appeals more to readers. Another variant could be to give the same offer in different advertising copies that appear in different newspapers or magazines. This assumes that there are only negligible differences among different media. However, this may not be the case. Sometimes, the same offer is made through two pieces of copy. One piece of copy is carried in half the copies of the newspaper or magazine and the second piece of copy is carried in the remaining half.

Inquiries received are then linked to the two pieces of copy. Inquiry tests can be developed in the form of controlled experiments to ascertain the impact of an advertisement copy. However, one has to exercise great care in isolating the effect of other factors from that of advertising.

- Laboratory Testing

This method uses mechanical devices to measure the respondent's psychological responses to a given advertisement. The commonly used tests are the galvanic skin response and the eye movement. As regards the former, a device is used to measure changes in the amount of perspiration in the hands. This may be taken as a measure of emotional change as a response to an advertisement. However, the test is unable to indicate whether such an emotional change is favorable or unfavorable to an advertisement. In the latter test an eye camera registers the continuous movement of the eye as it reads an advertisement. However, the results obtained from an eye camera are difficult to interpret. For example, if the eye was fixed on a certain point could it be interpreted that the respondent was interested in the advertisement or that he was confused?

13.6.5 Simulated Sales Tests

These tests expose prospective consumers to different pieces of copy through point- of-purchase displays or direct mail. Thus, one may select two groups of similar stores where two alternative pieces of copy are displayed at the entrance or at some other place in the store. Sales of the product in question are measured both before and after the display of copy in the two groups of stores. The copy in those stores which have registered a higher increase in the sale of the product over time is regarded as a better copy. Likewise, comparisons can be made between two pieces of copy using direct mail. While these tests are both more economical and simpler than actual sales tests, one major limitation is that there is no certainty that the advertisement when actually given will have the same result as at the time of the test.

13.6.6 Day-after Recall Tests

These tests are generally undertaken for television commercials. The test involves an on-air exposure of a commercial in a couple of cities. This is followed by a telephonic enquiry of the respondents to find out if they can recall the message. The aggregate recall score that is arrived at is compared with a standard score based on similar studies. If the score given by the commercial is higher than the standard score, it is inferred that theadvertisement is useful and should be telecast on a larger television network. The main advantage of this test is that it is performed in a natural setting. Moreover, a proper sample design can be used jr. this method. In contrast, the major limitation is that it turns out to be a test of the respondent's ability to remember. This does not necessarily establish that the respondent will behave in a different way as a result of watching the commercial on television. How far can be recall be related to a change in the respondent's attitude and behavior? This is a pertinent question which is difficult to answer in the context of day-after recall tests.

There are three methods that are frequently used to test an advertisement after its formal release. These are recognition test, recall test and sales test. They are described below.

- **Recognition Tests**

These tests are carried out with respect to a printed advertisement and commonly referred to as a readership study. Here, the respondents are asked if they have read a

particular issue of a magazine. They are further asked as to what they saw and read Generally, the respondent is shown a particular page of the magazine and then the following measures of recognition are taken

1. Noted - the percentage of readers who have seen the advertisement earlier.
2. Seen-Associated - the percentage or readers who read a part of the advertisement which indicates the brand or advertiser.
3. Read Most * the percentage of readers who read a major part of the advertisement.

Scores are assigned to these three measures and overall scores are determined for all the advertisements contained in a particular issue of the magazine. These scores are then related to the expenditure incurred on the advertisement. In this way, cost ratios can be determined. The recognition method has certain limitations. Some respondents may confuse specific advertisements with similar or identical advertisements seen elsewhere. Respondents may forge: having seer an advertisement earlier or falsely claim that they have seen it.

- **Recall Tests**

In this method respondents arc asked to recall specifics of the advertisement in the foreign countries, there are some advertising agencies that offers a post-testing readership service. To begin with, copies of test magazines are sent to a sample of respondents who are asked to read them in a normal manner. Telephone interviews are held on the following day. Respondents are read out a list of advertisements and asked to identify those they remember and the extent to which they are able to recall. Thus, scores are assigned to the ability of the respondent to remember the name of the product, the underlying message contained in the advertisement and their favorable attitude regarding the advertisement. Recall tests, no doubt, go beyond recognition tests but it is difficult to say that recall scores indicate the desired consumer behavior. Recall scores may be high and yet there may not be any perceptible change in the consumer behavior with respect to the product in question.

- **Sales Tests**

This method measures the effect of an advertisement on the sale of the product. The assumption is that changes in sales are as a result of the advertisement. However, as there are several factors influencing sales, one has to be extremely careful in establishing a relationship between advertising and sales. It is desirable to isolate the influence of other factors while determining the impact of an advertisement on the sale of the product. Experimental studies can be designed to study the impact of an advertisement on sale. An experimental study of this type is explained in Example 2 in the chapter on Experimental Designs. After having discussed the 'before' and 'after' tests, we now turn to two recent studies on advertising research in the Indian context.

- **Self-Check Exercise:**

XIII. According to the Advertising Research Foundation (ARF), what type of data is suggested for deciding on media types and specific inserts within media?

a) Demographic data
b) Advertising perception data
c) Media vehicle distribution and audience data
d) Sales response data

XIV. What is the main advantage of the Audimeter method in measuring the audience size for radio and television?

a) It is quick and economical
b) It ensures complete objectivity
c) It provides information on advertising perception
d) It measures sales response accurately

XV. What is the purpose of 'before' tests in copy testing?

a) To measure sales response
b) To ascertain the suitability of an advertisement before release
c) To evaluate consumer jury preferences
d) To conduct simulated sales tests

XVI. Which copy testing method uses techniques like word association and sentence completion?

a) Consumer jury
b) Portfolio tests
c) Psychological tests
d) Laboratory testing

XVII. Day-after recall tests are generally undertaken for which type of advertisement?

a) Print media
b) Radio commercials
c) Television commercials
d) Outdoor advertising

## 13.7 SUMMARY

This chapter discusses the process of new product development, which is essential for a company facing declining sales or customer complaints. The development can be achieved through internal innovation (in-house research and development) or contract innovation (engaging outside researchers or agencies). The chapter outlines the stages of new product development, including idea generation, concept development and testing, product evaluation and development, business analysis, and commercialization. Marketing research plays a crucial role at each stage. The chapter also highlights the transformative growth of advertising in India, particularly during the pivotal years of 1986-88, attributing this surge to factors such as increased spending, the emergence of TV as a powerful advertising medium, and shifts in consumer trends. It underscores the importance of advertising research throughout the planning process, from defining objectives to evaluating effectiveness. The discussion extends to media research, exploring audience measurement methods for print and electronic media. Additionally, the chapter delves into diverse copy testing techniques, recognizing the challenges inherent in gauging advertising impact and consumer responses. Overall, it provides a holistic view of the advertising landscape, emphasizing the crucial role of research and addressing complexities within the field.

## 13.8 KEYWORDS

1. **Advertising Expenditure:** The total amount of money spent by companies and businesses on promotional activities to communicate their messages to the target audience through various media channels.
2. **Consumer Megatrends:** Broad, long-term shifts in consumer behaviour and preferences that significantly influence market dynamics. These megatrends, such as new individualism, multicultural orientation, and changing brand values, shape the overall consumer landscape.
3. **Media Research:** The systematic study and analysis of media-related issues, including the selection of media types, specific inserts within media channels, and the effectiveness of media vehicles in reaching and influencing target audiences.
4. **Business Analysis**: It refers to the comprehensive and thorough assessment of the commercial feasibility and viability of a new product or business venture. This process involves a detailed examination and evaluation of various factors, including market dynamics, projected sales, anticipated costs, and expected profits.

## 13.9 PRACTICE QUESTIONS

### 13.9.1 Short Answer Type Questions

Q 1. Explain the brainstorming technique and its key rules for effectiveness.
Q 2. How does monadic testing differ from paired comparison tests in concept testing?
Q 3. What is the purpose of business analysis in the new product development process?
Q 4. What are the four methods used to measure the size of the audience for radio and television programs?
Q 5. Briefly describe the consumer jury method in copy testing

### 13.9.2 Long Answer Type Questions

Q 1. Discuss in detail the New Product Development Process.
Q 2. Evaluate the challenges and risks associated with new product development and discuss why caution is necessary in the process.
Q 3. Discuss the five consumer megatrends that have emerged in urban India and the forces of change driving them.
Q 4. How can simulated sales tests be employed to evaluate the effectiveness of advertising, and what are their limitations in predicting actual sales impact?

## 13.10 REFERENCES

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**13.11 ANSWER KEY (SELF-CHECK EXERCISE)**

I. B, II. C, III. B, IV. C, V. Brainstorming, VI. Test Marketing, VII. Conjoint, VIII. False, IX. False, X. False, XI. Megatrends, XII. Demographic, XIII. C, XIV. B, XV.B, XVI. C, XVII. C

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**APPLICATIONS OF MARKETING RESEARCH**



## 14.0 OBJECTIVE

Today we will learn about sales analysis and forecasting. Both terms are different from each ether as sales analysis refer to the analysis of actual sales results while sales forecasting concerned with the actual performance of sales and not with what they are likely to be at a future date. Here in this chapter, we will learn about sales analysis, method of estimating current demand and forecasting process and method of forecasting.

- Sales analysis
- The concept of market potential.
- Methods of estimating current demand.
- Forecasting process.
- Method of forecasting.
- Manager's guide to forecasting.

## 14.1 INTRODUCTION

Sales analysis and forecasting are crucial aspects of business strategy, providing insights into actual performance and aiding in predicting future trends. While sales analysis involves examining real sales results, sales forecasting is concerned with predicting future sales performance. The study will delve into the key components of sales analysis, exploring methods for analyzing sales by territory, product, customer, and size of order. Additionally, we will touch upon the concept of market potential and the forecasting process, equipping managers with valuable tools for strategic decision-making.

## 14.2 SALES ANALYSIS

The terms 'sales analyses' refer to the analysis of actual sales results. This if; different from sales forecasting as it is concerned with the actual performance of sales not with what they are likely to be at a future date. Since sales analysis a company to identify the areas where its sales performance has been good or mediocre. Customers who have brought in bulk, products with high and law sales volume, etc., it is in the company to analyze its sales periodically. A systematic, comprehensive and periodical sales analysis will bs helpful to a company to reinforce. Its sales effort where it is most needed. In this way, it can achieve the best possible results. Our discussion of sales analysis is on the basis of four major types, *viz.* by territory, by product, by customer, and by size of order.

## 14.3 SALES ANALYSIS BY TERRITORY

In order to undertake sales by territory one must decide on

1. The territorial unit to be taken for such an analysis, and
2. What specific information should be collected for this purpose.

As regards the territory, the district level is the appropriate choice. Later on, by pooling district data, one may undertake a state or region -wise analysis, depending on one's need. r\s regards the data, information on the product sold, such as quantity, price per unit, and total value should be available. This information along with the name and address of the customer is available in the invoice. Thus, it provides the essential data on seals and it is not necessary to collect any data separately. However, if additional information is needed, it can be collected through the invoice by incorporating additional items in it. Once the territory wise sales data are available, it is possible to compare these with the previously set sales target. By such a comparison, territories where actual sales have fallen below the sales target, can be identified. One may probe further into the possible reasons for this poor performance. Is it because these territories face severe competition? Or because sufficient sales effort has not been made in these territories? Answers to these questions will enable the company to boost its sales in weak territories.

## 14.4 SALES ANALYSIS BY PRODUCT

Sales analysis by product will enable a company to identify its strong or weak products. It is advisable to undertake an analysis on the basis of a detailed break-up of products such as product variation by size, color, etc. This is because if an analysis is based on a broad break-up, it may not reveal important variations. When a company finds that a particular product is doing poorly, two options are open to it. One is, it may concentrate on that product to ensure improve sales. Or alternatively, it may gradually withdraw the product and eventually drop it altogether. However, it is advisable to decide on the latter course on the basis of additional information such as trends in the market share, contribution margin, effect of sales column on product profitability. Etc. in case the product in question has complementarily with other items sold by the company, the decision to abandon the product in question has complementarily with other items sold by the company, the decision to abandon the product must be made with care and caution. Combining sales analysis by product with that by territory will further help in providing information on which products are doing better in which areas.

### 14.5 SALES ANALYSIS BY CUSTOMERS

Another way to analyze sales data is by customers. Such an analysis would normally indicate that a relatively small number of customers accounts for a large proportion of sales. To put it differently: a large percentage of customers' accounts for a relatively small parentage of aggregate sales class. An analysis of this type will enable the company to devote relatively more time to those customers who collectively account for proportionately larger sales. Sales analysis by customer can also be combined with analysis both by area and product. Such an analysis will prove to be more repealing. For example, it may indicate that in some areas sales are not increasing with a particular type of customer though they have grown fast in other areas. Information of this type will be extremely useful to the company as it identifies the weak spots where gather effort is called for.

### 14.6 SALES ANALYSIS BY SIZE OF ORDER

Sales analysis by size of order may show that a large volume of sales is accompanied by low profit and vice versa. In case cost accounting data are available by size of order, this would help in identifying sales where the costs are relatively high and the company is incurring a loss. Sales analysis by size of order can also be combined with that by products, areas and types of customers. Such a perceptive analysis would reveal useful information to the company and enable it to make a more rational and effective and effective efforts in maximizing it return from sales.

- **Self-Check Exercise**

I. Sales analysis primarily deals with:
   a) Future projections
   b) Actual sales results
   c) Marketing research
   d) Production planning

II. What does sales analysis by territory help identify?
   a) Future trends
   b) Weak products
   c) Areas of poor sales performance
   d) Market potential

III. Sales analysis by customer indicates:
   a) Equal customer contributions
   b) Few customers account for a large portion of sales
   c) Irrelevant customer data
   d) Random customer preferences

IV. Sales analysis by size of order can reveal:
   a) Profitable sales with high costs
   b) Consistent profit across all orders
   c) Low sales volume
   d) Unnecessary data

V. Sales forecasting is concerned with future sales projections. (True/False)

VI. Sales analysis by product is more effective with a broad product breakdown. (True/False)
VII. Sales analysis by territory involves comparing actual sales with set targets. (True/False)
VIII. Sales analysis by customer is irrelevant since all customers contribute equally. (True/False)
IX. Sales analysis by _____ helps identify strong or weak products.
X. Sales analysis by _____ enables prioritization of high-sales customers.
XI. The district level is commonly chosen for sales analysis by _____.
XII. Sales analysis by _____ is useful for resource allocation decisions.

## 14.7 SUMMARY

Salesanalysis serves as a critical tool for companies seeking to enhance their performance and maximize returns. By systematically evaluating sales by territory, product, customer, and size of order, businesses gain actionable insights for strategic decision-making. Understanding market potential and incorporating forecasting processes equips managers with the knowledge to navigate the dynamic landscape of sales, ensuring sustained success in the competitive business environment.

## 14.8 KEYWORDS

1. **Territory:** A defined geographic area or region assigned to a salesperson or team for the purpose of managing and promoting sales activities within that specific location.
2. **Product Variation:** The categorization and examination of different versions, sizes, colors, or features of a product to understand their individual sales performance and impact on overall product success.
3. **Customer Prioritization:** The process of assessing and ranking customers based on their contribution to sales, allowing businesses to focus resources and efforts on key clients that significantly impact overall revenue.

## 14.9 PRACTICE QUESTIONS

### 14.9.1 Short Answer Type Questions

Q 1. Why is sales analysis important for businesses?
Q 2. How does sales analysis by territory aid in sales strategy improvement?
Q 3. What role does sales analysis by customer play in enhancing customer relationships?

### 14.9.2 Long Answer Type Questions

Q 1. Explain the importance of detailed product analysis in sales. Provide examples of decisions influenced by this analysis.
Q 2. Discuss how businesses can strategically prioritize customers using sales analysis. Share practical applications
Q 3. Explore the implications of sales analysis by order size. How does it assist in maximizing returns and resource allocation decisions? Provide examples of resulting strategies.

## 14.10 REFERENCES

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## 14.11 ANSWER KEY

I. B, II. C, III. B, IV. A, V. True, VI. False, VII. True, VIII. False, IX. Product, X. Customers, XI. Territory, XII. Size of order