UNIT 2: RESEARCH DESIGN

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2.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- discuss the meaning and concept of Research Design
- outline the nature and classification of research designs – Exploratory and Conclusive Research
- describe the different types of exploratory research designs
- describe the different types of descriptive research designs
- describe experimental designs
- describe the errors affecting research design

2.2 INTRODUCTION

This is the second unit of the block and it describes the concepts of reserch design in detail.Having discussed the concept of business research let us now have some idea on reserach design.A research design is the specification of methods and procedures for acquiring the information needed.In the following sections we are going to learn about the various types of research design.

2.3 MEANING OF RESEARCH DESIGN

A **research design** is a framework or blueprint for conducting the marketing research project. It gives details of the procedures necessary for obtaining the information needed to identify or solve marketing research problems. Although a broad approach to the problem has already been discussed in the previous Unit I, the research design specifies the details of implementing that approach. The design process begins by defining the business research problem (Step 1 of the business research process). Next comes the approach to the problem consisting of a framework and models, research questions and hypotheses, and the information needed (Step 2 of the business research process). The research design is based on the results of these first two steps and in the third step of the marketing research process. Yet the process is iterative, with feedback from research design to the earlier steps. A research design lays the foundation for conducting the project. Many different designs might be appropriate for a given marketing research problem. A good research design ensures that the information collected will be relevant and useful to the management and that all of the necessary information will be obtained. Typically, a research design involves the following components or tasks:

1. Analysis of secondary and syndicated data
2. Qualitative research
3. Survey and observation research
4. Experimental research
5. Measurement and scaling procedures
6. Design and pretest of a questionnaire (interviewing form) or an observation form for data Collection.

7. Sampling process and sample size determination

8. Development of a preliminary plan of data analysis.

Steps Leading to the Formulation of a Research Design

Step 1: Defining the Business Research Problem

Step 2: Developing an Approach to the Problem

Step 3: Formulating the Research Design

Depending on the nature of the research project, not all of the eight tasks may be involved, and the order or the sequence in which these tasks are performed could also vary. Each of these components will be discussed in great detail in the subsequent chapters. First, we must further our understanding of research design with a classification of the basic types.



CHECK YOUR PROGRESS

Q.1: Define Research Design.

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Q.2: What are the different steps involved in formulating a research Design

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2.4 TYPES OF RESEARCH DESIGN

Reserach designs have been classified by various authors in different ways.Different types of reserch designs have emerged on account of the differnt perspective from which a research study can be viewed. Research designs are of two broad types: exploratory and conclusive. Conclusive designs are either descriptive or causal. Exploratory, descriptive, and causal are the basic research designs we examine in this unit (see Figure 2.1). Descriptive designs can be further categorized as either cross sectional or longitudinal.

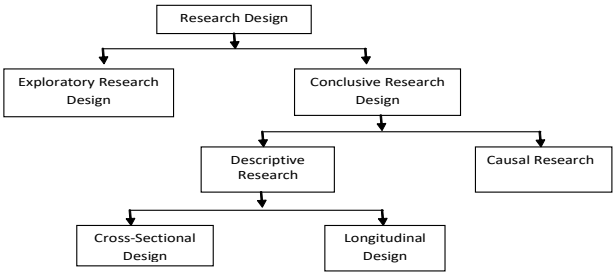


Fig 2.1 Classification of Marketing Research Design

Let us discuss the various types of research designs in the following sections:

2.5 EXPLORATORY RESEARCH

The primary objective of exploratory research is to provide insights into, and an understanding of, the problem confronting the researcher. Exploratory research is used in cases when you must define the problem more precisely, identify relevant courses of action, or gain additional insights before an approach can be developed. The information needed is only loosely defined at this stage, and the research process that is adopted is flexible and unstructured. For example, it may consist of personal interviews with a few industry experts. The sample, selected to generate maximum insights, is small and non representative. The primary data are qualitative in nature and are analyzed accordingly. Given these characteristics of the research process, the findings of exploratory research should be regarded as tentative. Typically, such research is followed by further exploratory or conclusive research. Thus, it is a good idea to begin a marketing research project by first conducting exploratory research and then some form of conclusive research. Sometimes, exploratory research is all the research that is conducted. In these cases, caution should be exercised in utilizing the findings. Secondary data including social media (discussed later) and qualitative research are the main methods of exploratory research.

The insights gained from exploratory research might be verified by conclusive research because the objective of conclusive research is to test specific hypotheses and examine specific relationships. This requires that the information needed is clearly specified.

The following are some of the methods of explorarotry reserach designs:

i) Secondary Resource Analysis : The information that researchers obtain from decision makers and industry experts should

be supplemented with available secondary data. **Secondary data** are data collected for some purpose other than the problem at hand, such as data available from trade organizations, the Census Bureau (www.census.gov), and the Internet. In contrast, **primary data** are originated by the researcher for the specific problem under study, such as survey data. Secondary data include information made available by business and government sources, social media and computerized databases. Secondary data are an economical and quick source of background information. Analyzing available secondary data is an essential step in the problem-definition process and should always precede primary data collection. Secondary data can provide valuable insights into the problem situation and lead to the identification of innovative courses of action. In the case of Harley-Davidson, secondary data revealed that the vast majority of motorcycle owners also owned automobiles such as cars, SUVs, and trucks. As another example, the Department of Labor says that the median age of the Indian Labor force is increasing. This is, in part, the result of the maturation of the "baby bust" generation (those born between 1965 and 1976), which will cause a decline in the number of young (age 16 to 24) workers available to fill entry-level positions. This potential shortage of young workers has caused many marketers, particularly those in the service industries, to investigate the problem of consumer response to self-service. Some companies, such as fast-food restaurants, have switched from a high-touch to a high-tech service orientation. By using high-tech equipment, consumers now perform many of the services formerly done by workers, such as placing their own orders by entering them directly into the electronic terminal. Given the tremendous importance of secondary data, this topic will be discussed in detail in Unit 4.

(ii) Case Study Method : Case Studies involve an intensive examination of a few selected cases of the phenomenon of interest. The cases should be consumers, stores, firms or a variety of other

units such as markets, Web sites and so on. The data are obtained from the company, external secondary sources and by conducting lengthy unstructured interviews with people knowledge about the phenomenon of interest. In a department store project, valuable insights into factors affecting store patronage were obtained in a case study comparing the five best stores with the five worst stores.

(iii) Expert Opinion Survey : Interviews with industry experts and individuals, knowledgeable about the firm and the industry may help formulate the marketing research problem. These experts may be found both inside and outside the firm. Typically, expert information is obtained by unstructured personal interviews, without administering a formal questionnaire. It is helpful, however, to prepare a list of topics to be covered during the interview. The order in which these topics are covered and the questions to ask should not be predetermined but decided as the interview progresses. This allows greater flexibility in capturing the insights of the experts. The purpose of interviewing experts is to help define the marketing research problem rather than to develop a conclusive solution. In the Harley-Davidson Case Study, discussions with industry experts indicated that brand loyalty was a major factor in the purchase of motorcycles. Thus, the investigation of brand loyalty became a major component of the problem definition.

Interviews with experts are more useful in conducting marketing research for industrial firms and for products of a technical nature, where it is relatively easy to identify and approach the experts. This method is also helpful in situations where little information is available from other sources, as in the case of radically new products.

Researchers can also use the Internet to enhance their ability to obtain information from experts in a specific industry. One approach to finding experts is to use newsgroups. Due to the large amount of information available, searching through the newsgroups for specific information can be an arduous task. A good place to start is Google Groups (groups.google.com), which provides categorized lists of newsgroups. After finding a relevant newsgroup, access the newsgroup and search for postings about the topics in which you are interested. Surveying the postings in a newsgroup would provide

a good starting point for making contacts with the experts in that industry.

(iv) Focus Group Discussions : A **focus group** is an interview conducted by a trained moderator in an unstructured and natural manner with a small group of respondents. The moderator leads the discussion. The main purpose of focus groups is to gain insights by listening to a group of people from the appropriate target market talk about issues of interest to the researcher. The value of the technique lies in the unexpected findings often obtained from a free-flowing group discussion. Focus groups are the most important qualitative research procedure. They are so popular that many marketing research practitioners consider this technique synonymous with qualitative research. Given their importance and popularity, we describe the salient characteristics of focus groups in detail.

The differences between exploratory and conclusive research are summarized in Table 2.1.

2.6 CONCLUSIVE RESEARCH

Conclusive research is typically more formal and structured than exploratory research. It is based on large, representative samples, and the data obtained are subjected to quantitative analysis. The findings from this research are considered to be conclusive in nature in that they are used as inputs into managerial decision making.As shown in Figure 2.1, conclusive research designs may be either descriptive or causal.Before going into the concept of descriptive and causal research design in deatil, let us first discuss about the difference between Exploratory and Conclusive Research.

Table 2.1 Difference between Exploratory and Conclusive Research

	Exploratory	Conclusive
Objective	To provide insights and understanding	To test specific hypothesis and examine relationships
Characteristics	Information needed is defined only loosely Research process is flexible and unstructured Sample is small and non representative	Information needed is clearly defined Research process is formal and structured Sample is large and representative
Findings Outcome	Data analysis is qualitative Tentative Generally followed by further exploratory or conclusive research	Data analysis is quantitative Conclusive Findings used as input into decision making

2.6.1 Descriptive Research

As the name implies, the major objective of **descriptive research** is to describe something— usually the characteristics of relevant groups, such as consumers, salespeople, organizations, or market areas. For example, we could develop a profile of the "heavy users" (frequent shoppers) of prestigious department stores like Pantaloons and Big Bazaars. A vast majority of marketing research studies involve descriptive research, which makes use of surveys and observations as major methods. **Surveys** involve questioning of respondents by administering a questionnaire. **Observations** involve recording people's behaviour without asking them questions. Descriptive research can be further classified into cross-sectional and longitudinal research (Figure 2.1).

a. Cross-sectional designs: It involve the collection of information from any given sample of population elements only once. For example, a survey may be conducted at a given point in time, the data are analyzed, and a report is prepared. The cross-sectional study is the most frequently used descriptive design in marketing research.

b. Longitudinal designs: In longitudinal designs, a fixed sample of population elements is measured repeatedly (two or more times) on the same variables. A longitudinal design differs from a cross-sectional design in that the sample remains the same over time. In other words, the same people are studied over time and the same variables are measured. In contrast to the typical cross-sectional design, which gives a snapshot of the variables of interest at a single point in time, a longitudinal study provides a series of pictures that give the changes that take place over time. Thus, a longitudinal design enables us to examine changes over time.

For example, the question, "How did the Indian people rate the Indian Economy at the beginning of 2014?" would be addressed using a cross-sectional design. A survey of a representative sample of the Indian population will have to be conducted only at the beginning of 2014. However, a longitudinal design would be used to address the question, "How did the Indian people change their view of the Indian economy during 2014?" A survey of a representative sample of the Indian population will have to be conducted at the beginning of 2014, and the same survey will have to be repeated on the same sample at

the end of 2014. Longitudinal designs can be implemented using panels. Sometimes, the term *panel* is used interchangeably with the term longitudinal design. A panel consists of a sample of respondents, generally households that have agreed to provide information at specified intervals over an extended period. Panels are maintained by marketing research firms, and panel members are compensated for their participation with gifts, coupons, information, or cash.

2.6.2 Causal Research

Causal research is used to obtain evidence of cause-and-effect (causal) relationships. Marketing Managers continually make decisions based on assumed causal relationships. These assumptions may not be justifiable, and the validity of the causal relationships should be examined via formal research. For example, the common assumption that a decrease in price will lead to increased sales and market share does not hold in certain competitive environments. Like descriptive research, causal research requires a planned and structured design. While descriptive research can determine the degree of association or correlation between variables (i.e., the two variables vary together or are related), it is not appropriate for examining causal relationships (i.e., one variable is a cause of the other variable). Such an examination requires a causal design (Figure 2.2). The main method of causal research is experimentation, which is discussed later.

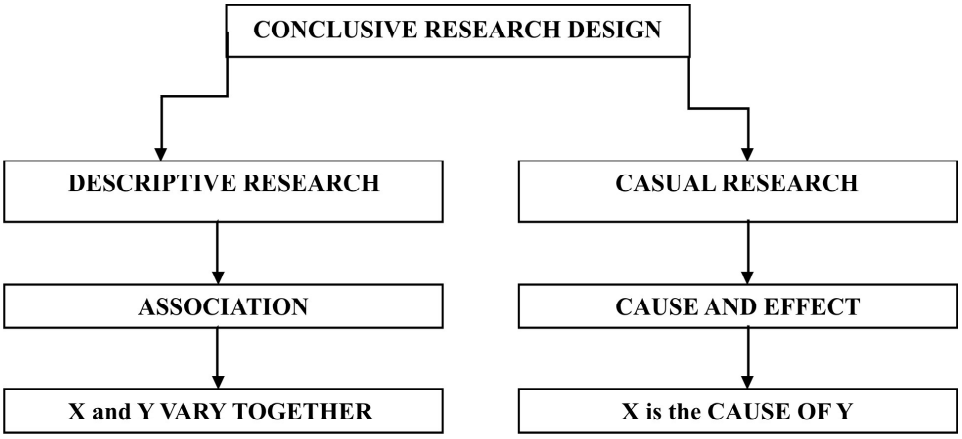


Figure 2.2 Conclusive reserach design



CHECK YOUR PROGRESS

Q.3: Define Exploratory Research and Conclusive Research

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Q.4: Write the two types of Conclusive Research

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Q.5: What is a Focus Group Interview?

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2.7 EXPERIMENTAL RESEARCH DESIGN

Experimentation is the research technique used in causal research. It is the primary method for establishing cause-and-effect relationships in marketing. As seen, experiments can be conducted in the field or in the laboratory. A field experiment involves measurement of behavior, attitudes, or perceptions in the environment in which they occur. Thus, field experiments are conducted in natural settings.

On the other hand, a laboratory experiment is conducted is an artificial environment. Advertising testing and test kitchens in central-location theaters are examples of laboratory experiments used in marketing research. Experiments can be described in terms of independent, dependent, and extraneous variables; test units; and random assignment to experimental and control groups.

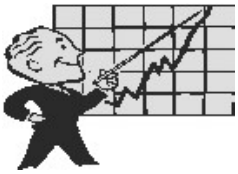
Experiment: An is formed when the researcher manipulates one or more independent variables and determines their effect on one or more dependent variables measured on the test units, while controlling for the effect of extraneous variables.

Experimental Design: An experimental design is a set of procedures specifying (1) the test units and how these units are to be divided into homogeneous subsamples, (2) what independent variables or treatments

are to be manipulated, (3) what dependent variables are to be measured, and (4) how the extraneous variables are to be controlled.

Classification of Experimental Designs

The three broad categories of experimental designs are pre-experimental, true experimental and statistical design. Pre-experimental designs are characterized by a lack of randomization. In true experimental designs, the researcher can randomly assign subjects and experimental groups. Therefore, these designs provide a larger degree of control over extraneous variables. A statistical design is a series of basic experiments that allows for statistical control and analysis of extraneous variables. Statistical designs are classified on the basis of their characteristics and use.



CHECK YOUR PROGRESS

Q.6: What is an Experiment?

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Q.7: What is an Experimental Design?

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Q. 8: Classify the different Experimental Designs?

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2.8 ERRORS AFFECTING RESEARCH DESIGN

Several potential sources of error can affect a research design. A good research design attempts to control the various sources of error. These errors are discussed below. The **total error** is the variation between the true mean value in the population of the variable of interest and the observed mean value obtained in the marketing research project.

(i) Random Sampling Error – Random Sampling Error occurs because the particular sample selected is an imperfect representation of the population of interest.

Random Sampling Error is the variation between the true mean value in the population and the true mean value for the original sample.

(ii) **Non Sampling Error - Non Sampling Error** can be attributed to sources other than sampling and they maybe random or nonrandom. The result from a variety of reasons, including errors in problem definition, approach, scales, and questionnaire design interviewing methods and data preparation and analysis. For example, a researcher designs a poor questionnaire, which contains several questions that lead the respondents to give biased answers.

Non Sampling Error consists of Response Error and Non Response Error.

(iii) **Non Response Error – Non Response Error** arises when some of the respondents included in the sample do not respond. The primary cause of non response are refusals and not-at-homes. Non response will cause the net or resulting sample to be different in size or composition from the original sample. Non response error is defined as the variation between the true mean value of the variable in the original sample and the true mean value in the net sample.

(iv) **Response Error – Response Error** arises when respondents give inaccurate answers or their answers are misrecorded or misanalyzed. Response error is defined as the variation between the true mean value of the variable in the net sample and the observed mean value obtained in the marketing research project. Response errors can be made by ***Researchers, Interviewers or Respondents.*** Errors made by researchers include ***Surrogate Information, Measurement, Population Definition, Sampling Frame and Data Analysis Errors***.

(v) **Surrogate Information Error –** It may be defined as the variation between the information needed for the marketing research problem and the information sought by the researcher. For example, instead of obtaining information on consumer choice of a new brand , the researcher obtains

information on consumer preferences since the choice process cannot be easily observed.

(vi) **Measurement Error** maybe defined as variation between the information sought and the information generated by the measurement process employed by the researcher. While seeking to measure consumer preferences, the researcher employs a scale that measures perceptions rather than preferences.

(vii) **Population Definition Error** may be defined as the variation between the actual population relevant to the problem at hand and the population as defined by the researcher.

(viii) **Sampling Frame Error** maybe be defined as the variation between the population defined by the researcher and the population as implied by the sampling frame (list) used. For example, the telephone directory used to generate a list of telephone numbers does not accurately represent the population of total potential consumers because of unlisted, disconnected and new numbers in service.

(ix) **Data Analysis Error** encompasses errors that occur while raw data from questionnaires are transformed into research findings. For example, an inappropriate statistical procedure is used, resulting in incorrect interpretation and findings.

Response Errors made by interviewers include ***Respondent Selection, Questioning, Recording and Cheating Errors.***

(x) **Respondent Selection Error** occurs when interviewers select respondents other than those specified by the sampling design or in a manner inconsistent with the sampling design. For Example in a Readership survey, a nonreader is selected for the interview but is classified as a reader of the ***India Today*** Magazine in the 15-19 yrs age category in order to meet a difficult quota requirement.

(xi) **Questioning Error** denotes errors made in asking questions of the respondents or in not probing when more information is needed. For example, while asking questions an interviewer does not use the exact wording given in the questionnaire.

(xii) **Recording Error** arises due to errors in hearing, interpreting and recording the answers given by the respondents. For example, a respondent indicates a neutral response (undecided), but the interviewer misinterprets that to mean a positive response (would buy the new brand).

(xiii) **Cheating Error** arises when the interviewer fabricates answers to a part or the entire interview. For example, an interviewer does not ask sensitive questions related to the respondent's debt but later fills in the answers based on personal assessment.

Respondent Errors include ***Inability Errors and Unwillingness Errors.***

(xiv) **Inability Error** results from the respondents' inability to provide inaccurate answers. Respondents may provide inaccurate answers because of unfamiliarity, fatigue, boredom, faulty recall, question format / content, etc. For example a respondent cannot recall a brand of curd purchased four weeks ago.

(xv) **Unwillingness Error** arises from the respondent's unwillingness to provide inaccurate information. Respondents may intentionally misreport their answers because of a desire to provide socially acceptable answers , avoid embarrassment or please the interviewer. For example, a respondent intentionally misreports reading *Time* magazine in order to impress the interviewer.

Non Sampling Error is likely to be more problematic than **Sampling Error. Sampling Error** can be calculated, whereas many forms of **Non Sampling Error** defy estimation. Moreover, Non Sampling Error has been found to be the major contributor to Total Error, whereas random sampling error is relatively small in magnitude.



CHECK YOUR PROGRESS

Q9: Define Total Error.

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Q10: Define Non sampling Error

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2.9 CASE STUDIES ON RESEARCH DESIGNS

A CASE STUDY OF HARLEY DAVIDSON

The motorcycle manufacturer Harley-Davidson (www.harleydavidson.com) made such an important comeback in the early 2000s that there was a long waiting list to get a bike. Harley-Davidson's revenues were $5.58 billion in 2012, and it was the U.S. market leader in the heavyweight category in 2013. Although distributors urged Harley- Davidson to build more motorcycles, the company was skeptical about investing in new production facilities. Past years of declining sales had taught top management to be more risk-averse than risk-prone. Harley- Davidson was now performing well again, and investing in new facilities meant taking risks. Would the demand follow in the long run or would customers stop wanting Harleys when the next fad came along? The decrease in motorcycles' quality linked to Harley's fast growth had cost the company all its bad years. Top management was afraid that the decision to invest was too early. On the other hand, investing would help Harley-Davidson expand and possibly become the dominant market leader in the heavyweight segment. Discussions with industry experts indicated that brand loyalty was a major factor influencing the sales and repeat sales of motorcycles. Secondary data revealed that the vast majority of motorcycle owners also owned automobiles such as cars, SUVs, and trucks. Focus groups with motorcycle owners further indicated that in the United States, motorcycles were not used primarily as a means of basic transportation but as a means of recreation. The focus groups and social media also highlighted the role of brand loyalty in motorcycle purchase.

Forecasts called for an increase in consumer spending on recreation and entertainment well into the year 2020. Empowered by the Internet and social media, consumers in the twenty-first century had become increasingly sophisticated and value-conscious. Yet brand image and brand loyalty played a significant role in buyer behavior, with well-known brands continuing to command a premium. Clearly, Harley-Davidson had the necessary resources and marketing and technological skills to achieve its objective of being the dominant motorcycle brand on a global basis. This process and the findings that emerged helped define the management decision problem and the marketing research problem. The management decision problem was: Should Harley-Davidson invest to produce more motorcycles? The marketing research problem was to determine if customers would be loyal buyers of Harley-Davidson in the long term. Specifically, the research had to address the following questions:

1. Who are the customers? What are their demographic and psychographic (lifestyle) characteristics?
2. Can different types of customers be distinguished? Is it possible to segment the market in a meaningful way?
3. How do customers feel regarding their Harleys? Are all customers motivated by the same appeal?
4. Are the customers loyal to Harley-Davidson? What is the extent of brand loyalty?

One of the research questions (RQs) examined and its associated hypotheses (Hs) were:

RQ: Can the motorcycle buyers be segmented based on psychographic characteristics?

H1: There are distinct segments of motorcycle buyers.

H2: Each segment is motivated to own a Harley for a different reason.

H3: Brand loyalty is high among Harley-Davidson customers in all segments.

This research was guided by the theory that brand loyalty is the result of positive beliefs, attitude, emotions, and experience with the brand. Both qualitative research and quantitative research were conducted. First, focus groups of current owners, would-be owners, and owners of other brands were conducted to understand their feelings about Harley-Davidson. Then a survey was conducted to get the demographic and psychographic profiles of customers and also their subjective appraisal of Harley.

Some of the major findings follow:

l Seven categories of customers could be distinguished:

(1) the adventure-loving traditionalist,
(2) the sensitive pragmatist,
(3) the stylish status seeker,
(4) the laid-back camper,
(5) the classy capitalist,
(6) the cool-headed loner, and
(7) the cocky misfit. Thus, H1 was supported.

l All customers, however, had the same desire to own a Harley: It was a symbol of independence, freedom, and power. (This uniformity across segments was surprising, contradicting H2.)

l All customers were long-term loyal customers of Harley-Davidson, supporting H3.

Based on these findings, the decision was taken to invest and thus increase the number as well as the quality of Harleys built.

This example shows the importance of correctly defining the marketing research problem and developing an appropriate approach.



2.10 LET US SUM UP

In this unit we discussed the following concepts:

A research design is a framework or blueprint for conducting the marketing research project. It specifies the details of how the project should be conducted. Research designs may be broadly classified as exploratory or conclusive. The primary purpose of exploratory research is to provide insights into the problem. Conclusive research is conducted to test specific hypotheses and examine specific relationships. The findings from conclusive research are used as input into managerial decision making. Conclusive research may be either descriptive or causal.

The major objective of descriptive research is to describe market characteristics or functions. Descriptive research can be further classified into cross-sectional and longitudinal research. Cross sectional designs involve the collection of information from a sample of population elements at a single point in time. In longitudinal designs, repeated measurements are taken on a fixed sample. Causal research is designed for the primary purpose of obtaining evidence about cause-and-effect (causal) relationships.



2.11 FURTHER READING

Malhotra, N.K. and Dash, S. (2011). *Marketing research: An Applied Orientation* (6th edition), New Delhi: Pearson Education.



2.12 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q1:

A research design is a framework or blueprint for conducting the a research project. It gives details of the procedures necessary for obtaining the information needed to identify or solve marketing research problems.

Ans to Q2:

The Steps that leads to the Formulation of a Research Design

Step 1: Defining the Business Research Problem

Step 2: Developing an Approach to the Problem

Step 3: Formulating the Research Design

Ans to Q3:

Exploratory research is to provide insights into, and an understanding of, the problem confronting the researcher. **Conclusive research** is typically more formal and structured than exploratory research. It is based on large, representative samples, and the data obtained are subjected to quantitative analysis.

Ans to Q4:

Conclusive research designs are classified as descriptive or causal.

Ans to Q5:

A **focus group** is an interview conducted by a trained moderator in an unstructured and natural manner with a small group of respondents. The moderator leads the discussion. The main purpose of focus groups is to gain insights by listening to a group of people from the appropriate target market talk about issues of interest to the researcher.

Ans to Q6:

An **experiment** is formed when the researcher manipulates one or more independent variables and determines their effect on one or more dependent variables measured on the test units, while controlling for the effect of extraneous variables.

Ans to Q7:

An **experimental design** is a set of procedures specifying (1) the test units and how these units are to be divided into homogeneous subsamples, (2) what independent variables or treatments are to be manipulated, (3) what dependent variables are to be measured, and (4) how the extraneous variables are to be controlled.

Ans to Q8:

There are three experimental designs they are :Pre-experimental designs, True experimental designs and statistical design

Ans to Q9:

Total error is the variation between the true mean value in the population of the variable of interest and the observed mean value obtained in the marketing research project.

Ans to Q10:

Non Sampling Error can be attributed to sources other than sampling and they maybe random or nonrandom.



2.13 MODEL QUESTIONS

1. Define “research design” in your own words.
2. How does formulating a research design differ from developing an approach to a problem?
3. List the major components of a research design.
4. Differentiate between exploratory and conclusive research.
5. Define Casual Research.
6. Compare and contrast cross-sectional and longitudinal designs.
7. Discuss the different types of Experimental Designs.
8. Discuss the Errors affecting a Good Research Design.

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