

Block 2: Research design

Research design is a set of advanced decisions which make up the master plan specifying the methods and procedures for collecting and analysing the required *information*. There is a huge array of alternative research designs which can satisfy research objectives. The key is to create a design which enhances the value of the information obtained, whilst reducing the cost of obtaining it. A research design is a *framework* or plan for conducting the market research project. It *details the procedures* necessary for obtaining the information needed to structure or solve market research problems. There are basic market research designs which can be successfully matched to given problems and research objectives, and they serve the researcher much like the blueprint serves the builder.

Learning Objectives

- Define research design, classify various research designs and explain the differences between exploratory and conclusive research designs
- Compare the basic research designs: exploratory, descriptive and causal
- Describe how participants or the subjects of research design affect research design choices
- Explain the strengths and weaknesses of key research designs
- Describe the major sources of errors in a research design, including random sampling error and the various sources of non-sampling error.

Reading List

Malhotra, N.K., D. Nunan and D.F. Birks. Marketing Research: An Applied Approach. (Pearson, 2017) 5th edition [ISBN 9781292103129] Chapter 3.

2.1 Research design

For each section of *Research Design*, use the LSE ELearning resources to test your knowledge with the Key terms and concepts flip cards.

Types of research design

There are three traditional categories of research design, which are:

- Exploratory research
- Descriptive research
- Causal research.

The choice of the most appropriate design depends largely on the objectives of the research and how much is known about the problem and research objectives, as summarised in Table 2.1.

Research objective	Appropriate design
To gain background information, to define terms, to clarify problems and hypotheses, to establish research priorities	Exploratory
To describe and measure marketing phenomena	Descriptive

To determine causality, to make 'if-then' statements	Causal
--	--------

Research objectives and appropriate designs

[Figure 3.3 of the textbook](#) provides a classification of market research designs. The differences between exploratory and conclusive research design are summarised below.

	Exploratory	Conclusive
Objectives	To provide insights and understanding of the nature of marketing phenomena. To understand.	To test specific hypothesis and examine relationships. To measure.
Characteristics	Information needed may be loosely defined. Research process is flexible, unstructured and may evolve. Samples are small. Data analysis can be qualitative or quantitative.	Information needed is clearly defined. Research process is formal and structured. Sample is large and aims to be representative. Data analysis is quantitative.
Findings/results	Can be used in their own right. May feed into conclusive research. May illuminate specific conclusive findings.	Can be used in their own right. May feed into exploratory research. May set a context to exploratory findings.
Methods	Expert surveys. Pilot surveys. Secondary data. Qualitative interviews. Unstructured observations. Quantitative exploratory multivariate methods.	Surveys. Secondary data. Databases. Panels. Structured observations. Experiments.

Differences between exploratory and conclusive research design

Responses to interviewing vary in terms of the type of research design as shown in [Figure 3.1 of the textbook](#).

Exploratory research

Exploratory research is usually conducted when the researcher does not know much about the problem. It is usually conducted at the outset of research projects.

Research objective	Appropriate design
To gain background information, to define terms, to clarify problems and hypotheses, to establish research priorities	Exploratory
To describe and measure marketing phenomena	Descriptive
To determine causality, to make 'if-then' statements	Casual

Research objectives and appropriate designs

There are many questions, many sources. We use exploratory research to define the problem - to get a 'feel' for the problem.

Potential uses of exploratory research are:

- **Gain background information** - for example, what is a bank image study?
- **Define terms** - for example, which terms are used?
- **Clarify problems and hypotheses** - for example, which type of bank customers? Retail? Commercial?
- **Establish research priorities.**

Several methods are available to conduct exploratory research.

- **Secondary data analysis:** what has been previously collected?
- **Experience surveys:** for example, talk to those who have experience such as those who adopted Vista early, those who make biodiesel, those who have taken an online course etc.
- **Case analysis:** was there a similar situation in the past (for example, Windows XP)?
- **Focus groups:** talk to a few persons in the population.
- **Projective techniques:** used for topics which are sensitive or difficult to articulate (for example, personal hygiene or status-seeking topics!).

A summary of the uses of exploratory research designs is as follows.

- **Background information** - obtain background information where absolutely nothing is known about the problem area.
- **Formulate hypotheses** - for further investigation and/or quantification.
- **Concept identification** - explore concepts when developing new products or forms of marketing communications.

- Screening - reduce a large number of possible projects into a smaller number of probable ones, such as in new-product development.
- Salient behaviour and attitude patterns - develop structures of these constructs.
- Belief and attitude structures - develop an understanding of these to assist with the interpretation of data structures in multivariate data analyses.
- Explore statistical differences - investigate the reasons which lie behind statistical differences between groups which may emerge from secondary data or surveys.
- Sensitive issues - explore sensitive or personally embarrassing issues from the perspective of the participant and/or interviewer.
- Difficult to articulate - explore issues which are difficult to rationalise and/or articulate.
- Data mine - explore quantitative data to reveal unknown connections between different measured variables.

Descriptive research

Descriptive research is undertaken to describe answers to questions of who, what, where, when and how. Descriptive research is desirable when we wish to project a study's findings to a larger population, *if the study's sample is representative*.

There are two basic classifications:

- **Cross-sectional design**
- **Longitudinal design.**

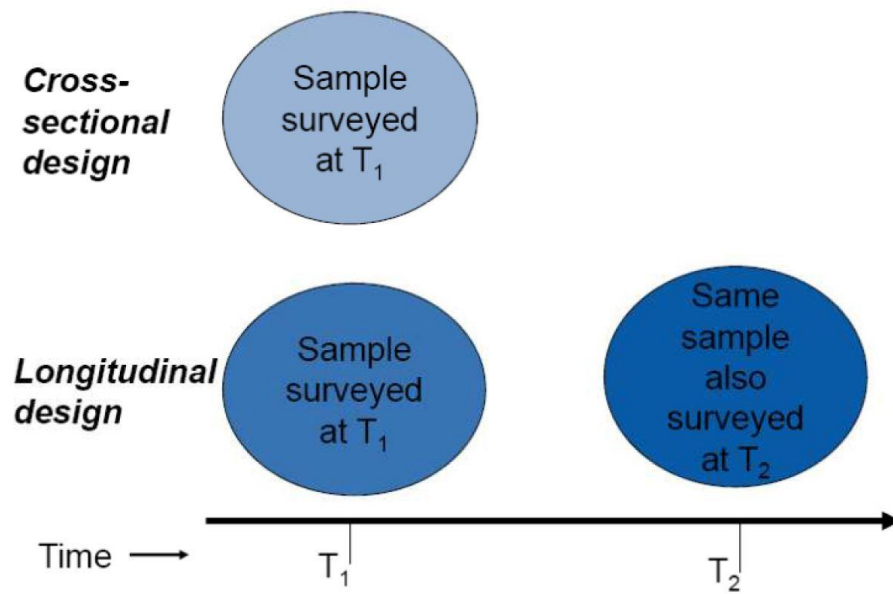
Cross-sectional studies measure units from a sample of the population *at only one point in time*. **Sample surveys** are cross-sectional studies whose samples are drawn in such a way as to be *representative* of a specific population. These studies are usually presented with a *margin of error*. Cross-sectional studies take '*snapshots*' of the population at a point in time.

In a **single cross-sectional design** there is only one sample of participants, and information is obtained from this sample only once. In a **multiple cross-sectional design** there are two or more samples of participants, and information from each sample is obtained only once. Often, information from different samples is obtained at different times.

Cohort analysis consists of a series of surveys conducted at appropriate time intervals, where the cohort serves as the basic unit of analysis. A cohort is a group of participants who experience the same event within the same time interval.

A **longitudinal design** repeatedly measures the same sample units of a population *over time*. Longitudinal studies often make use of a **panel** which represents sample units who have agreed to answer questions at periodic intervals. Many large research firms maintain panels of consumers.

A schematic showing the difference between a cross-sectional design and a longitudinal design.

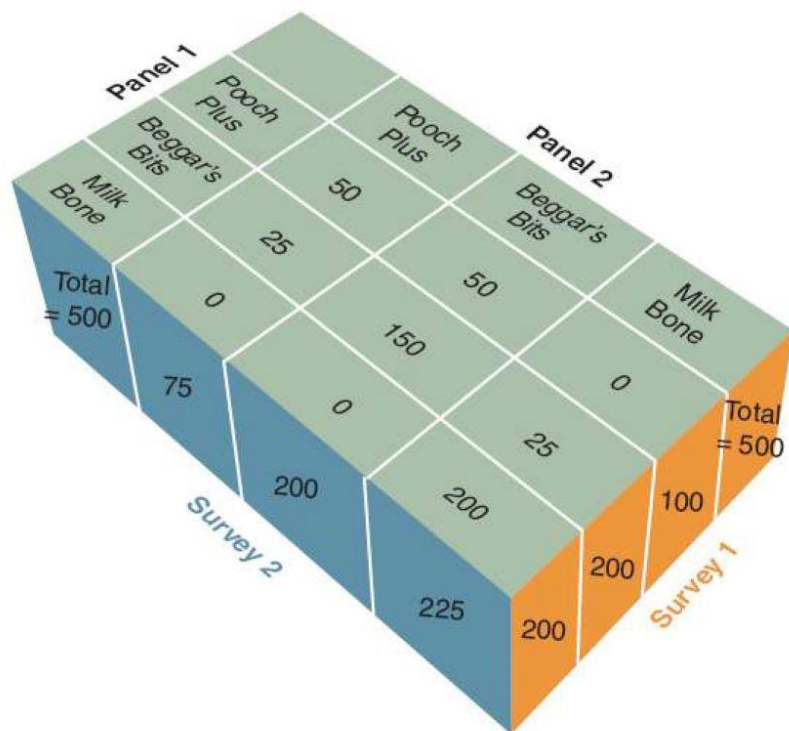


The relative advantages and disadvantages of cross-sectional and longitudinal designs.

Evaluation criteria	Cross-sectional design	Longitudinal design
Detecting change	-	+
Large amount of data collection	-	+
Accuracy	-	+
Representative sampling	+	-
Response bias	+	-

Note: A '+' indicates a relative advantage over the other design, whereas a '-' indicates a relative disadvantage.

Consider the following example:



The frequency counts (number of families) across two panels and two surveys investigating market shares of different dog foods.

When viewed as changes from two cross-sectional studies:

- Pooch Plus dropped from 100 to 75 families.
- Beggar's Bits remained the same at 200 families.
- Milk Bone increased from 200 to 225 families.

Conclusion: Pooch Plus is losing **market share** to Milk Bone, so *target* Milk Bone with a strategy to win back market share.

However, when viewed as a longitudinal study:

- Pooch Plus kept 50 families and lost 50 families to Beggar's Bits.
- Pooch Plus gained 25 former Beggar's Bits families.
- Milk Bones gained 25 former Beggar's Bits families.

Conclusion: *Beggar's Bits* is the **competition** ... not *Milk Bone*!

Market research panels and potential sources of error

Continuous panels ask panel members the same questions on each panel measurement.

Discontinuous panels vary questions from one panel measurement to the next. They are sometimes referred to as *omnibus* ('including or covering many things or classes').

Continuous panels are used quite differently from discontinuous panels in that one may use data from continuous panels to *gain insights into changes in consumers' purchases, attitudes etc.* For

example, *brand-switching studies* are used to illustrate how consumers change brands, and *market-tracking studies* track some variable of interest over time.

Discontinuous panels have the advantage of being able to *access large groups* of people who have made themselves available for research. Discontinuous panels represent sources of information which may be *quickly accessed* for a wide variety of purposes.

Be aware that in market research data there are many potential sources of error. These are summarised in [Figure 3.4 of the textbook](#) and below.

- **Total error** - the variation between the true mean value in the population of the variable of interest and the observed mean value obtained in the market research project.
- **Random sampling error** - the error arising because the particular sample selected is an imperfect representation of the population of interest. It may be defined as the variation between the true mean value for the sample and the true mean value of the population.
- **Non-sampling error** - an error which can be attributed to sources other than sampling and which can be random or non-random.
- **Non-response error** - a type of non-sampling error which occurs when some of the participants included in the sample do not respond. This error may be 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.
- **Response error** - a type of non-sampling error arising from participants who do respond but who give inaccurate answers or whose answers are mis-recorded or mis-analysed. It may be defined as a variation between the true mean value of the variable in the net sample and the observed mean value obtained in the market research project.

Causal research

Causality may be thought of as understanding a phenomenon in terms of conditional statements of the form 'if xx, then yy'. Causal studies are conducted through the use of **experiments**.

An experiment is defined as manipulating an independent variable to see how it affects a dependent variable, while also *controlling for the effects of additional extraneous variables*.

Independent variables are those variables which the researcher has control over and wishes to manipulate, i.e. in market research the 4 '**p**'s (product, price, placement and promotion). For example: product features, product price, level of advertising expenditure, type of advertisement appeal etc.

Dependent variables are those variables which we have little or no direct control over, yet in which we have a strong interest. Examples would be return on investment, net profits, market share, customer satisfaction.

Extraneous variables are those variables which may have some effect on a dependent variable, yet are not independent variables. Extraneous variables must be *controlled for* through a proper experimental design.

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

We define the following:

- O = measurement of a dependent variable

- X = manipulation, or change, of an independent variable
- R = random assignment of subjects to experimental and control groups
- E = experimental effect
- Time is on the horizontal axis.

Pre-test refers to the measurement of the dependent variable taken *prior* to changing the independent variable. **Post-test** refers to measuring the dependent variable *after* changing the independent variable.

A 'true' experimental design is one which truly isolates the effects of the independent variable on the dependent variable, while controlling for the effects of any extraneous variables. That is, a change in a dependent variable may be attributed *solely* to the change in an independent variable.

Example: An experiment to assess the effects of the display position on the sales of apples.

- **After-only design:** X, O_1 . Did apple sales increase or decrease? We do not know the 'effect' the change in the independent variable (display position) had on the dependent variable (apple sales).
- **One-group, before-after design:** O_1 , X, O_2 . We know how much apple sales changed, but was the change due to the change in display position? Could other (extraneous) variables have accounted for the change?
- **Before-after with control group:** experimental group: O_1 , X, O_2 ; control group: O_3 , O_4 ; hence $E = (O_2 - O_1) - (O_4 - O_3)$ $E = (O_2 - O_1) - (O_4 - O_3)$. This equation confirms that this design is a 'true' experiment. Below, E = change in the dependent variable due to the change in the independent variable, i.e. a true experiment!

$$\frac{\begin{array}{l} \text{change from } O_2 - O_1 \\ - \text{change from } O_4 - O_3 \end{array}}{\text{then } E} = \frac{\begin{array}{l} \text{independent var} + \text{extraneous var} \\ \text{extraneous var} \end{array}}{\text{independent var!}}$$

Laboratory experiments are those in which the independent variables are manipulated and measurements of the dependent variable are taken in a contrived, artificial setting for the purpose of controlling the many possible extraneous variables which may affect the dependent variable.

Field experiments are those in which the independent variables are manipulated and the measurements of the dependent variable are made on test units in their natural setting.

Test marketing is the phrase commonly used to indicate an experiment, study or test which is conducted in a field setting. Uses of test markets include:

- To test the sales potential of a new product or service
- To test variations in the marketing mix of a product or service.

Questions, solutions and case study

To access the solutions to these questions and case study, [click here](#) to access the printable Word document or [click here](#) to go to LSE's Elearning resources.

Questions on the block's topics

How may 'operational data' held in organisations help to build up an understanding of customer behaviour?

Describe the benefits to the *marketing decision-maker* of being able to capture data which identify characteristics of consumers and their shopping behaviour in a store.

Describe the benefits to the *market researcher* of being able to capture data which identify characteristics of consumers and their shopping behaviour in a store.

What is a geodemographic classification of consumers?

How does the compilation of different types of data help to build a strong 'picture' of consumer characteristics?

Case study: Subaru

Subaru wishes to profile and target female drivers. It may help to browse the Subaru website to explore the brand.

How could Subaru's survey analyses and internal and external secondary data collection help them to profile and target female drivers?

Learning outcomes checklist

Use this to assess your own understanding of the chapter. You can always go back and amend the checklist when it comes to revision!

- Appreciate how different types of company databases have developed into powerful means to understand customer behaviour
- Understand how geodemographic information systems can help in integrating and displaying customer data
- Appreciate how different sources of customer data and market research can build up behavioural and attitudinal profiles of target markets.

Block 2: Research design

Solutions to Questions on the block's topics

1. Operational data are data which represent the daily activities and transactions of a business. Transactions may be held in different departments such as sales, accounts or human resources and stored in different ways. The use of operational data has presented opportunities to researchers for as long as businesses have been recording their daily transactions. Even in the days of transactions being recorded manually, it was the task of market researchers to track down different sources of data and analyse them. Locating and analysing internal sources of secondary data can be the starting point in many market research projects. The main reasons are that, as these data have already been collected, there are no additional data collection costs, there should be no access problems (although individual managers may make access difficult for personal or political reasons) and the quality of the data should be easier to establish (in comparison to externally-generated data).
Most organisations have a wealth of in-house information even if they are not marketing- or customer-focused, so some data may be readily available. In building up an understanding of customer behaviour, operational data from invoices, for example, could answer the following questions.
 - Which products do customers buy?
 - Which types of customers buy the most products?
 - Which types of customers repeat purchases?
 - Which types of customers appear only when there are special offers?
 - Where are these customers located?
 - How do these customers pay - by cash or credit?
 - Which types of customers are the most profitable?
 - Are there seasonal patterns of purchasing behaviour by product types and customer types?
2. The benefits are the following:
 - Profiles of customers can be built up. The types of individuals who are being attracted to a store can be monitored. The returns and contributions made by particular types of customers can be measured. Profiles of the 'ideal' customer type can be built up, and plans developed to attract this type of customer.
 - Products used and not used. The types of products which are being bought or not bought can be monitored. From the customer profile, other types of products can be added to the range offered. Cross-selling of related products can be undertaken. Linked to the customer profile, actual customer behaviour can be understood more fully.
 - Communications which have worked and not worked. Merchandising displays, money-off coupons, 'three for the price of two' or a clip-out coupon from a local newspaper, for example, can be linked to individuals and products. The effectiveness of particular types of communication for particular types of consumer can be developed. Reassurance that the customer has made the right decision can be given where the size of purchase warrants it.

- Distribution methods can be tailored. Certain customer types may prefer the convenience of a small store which they visit more than once per week for small purchases of ‘staple’ goods. Other customer types may shop once per month for the whole household. Retailers can have different shop formats for different customers, may develop home delivery programmes, or even develop online shopping platforms.
3. The benefits are the following:
- *One big laboratory.* Experiments can be conducted. The monitoring of customers, markets and interrelated marketing mix activities allows many causal inferences to be established. For example, what is the effect, and on whom, of raising the price of Häagen-Dazs ice cream by 10%? What is the effect of inserting a cut-out coupon to give a discount on sun lotion, placed in Cosmopolitan magazine?
 - *Refining the marketing process.* With time series of responses to planned marketing activities, statistical models of consumer responses can be built with associated probabilities of a particular outcome. Likewise, models of consumers over their lifetimes can be built. Again, statistical models can be built with associated probabilities of particular types of product being bought at different stages of a consumer’s life.
 - *Developing a clear understanding of ‘gaps’ in a firm’s knowledge of its consumers.* The barcode scanner and loyalty card electronically observe behaviour but do not encapsulate attitudinal data. The nature and levels of satisfaction, what is perceived as good quality service, and what brand image is associated with a particular brand of vodka, are examples of attitudinal data. The use of the database helps to identify target populations to measure and the attitudinal data which needs to be collected. In all, there can be much greater clarity in the nature of primary market research which tackles attitudinal issues.
 - *Linkages between behavioural and attitudinal data.* If attitudinal data are elicited from consumers, the data gathered can be analysed in their own right. It is possible, however, to link the gathered data back to the behavioural data in the database. The term ‘fusing’ the data from different sources is used. The key to the fusing lies in identifying individual participants so that one large dataset is built up. The notion of fusing together databases and survey data from different sources is at the heart of building a strong understanding of consumers.
4. At a base level, a geodemographic information system matches geographical information with demographic information. This match allows subsequent data analyses to be presented on thematic maps. Other information may be included, depending on what is available in a particular country and the data protection laws of that country. With the variables chosen for a particular country, i.e. the types of data which are available to build a geodemographic information system, cluster analyses are performed. These analyses help create consumer classifications, based on the types of property they live in and the propensity of consumers to have certain lifestyles and behave in particular ways. The analyses ensure that each of the descriptions used is reasonably homogeneous in terms of demographic measurements and consumer behaviour. As well as being able to discriminate and describe distinctive groups of consumers, the analyses have to produce ‘pictures’ of consumers which are meaningful to marketing decision-makers.
5. Using the example of ‘psychographics’ or lifestyle measurements, data may be generated from electronic point of sale (EPOS) systems or surveys. In the case of EPOS collection, the

purchasing of particular types of products can indicate characteristics of a lifestyle. In a more direct manner, questions in a survey can help build a profile of lifestyle behaviour. In its own right, 'lifestyle' can be a valid means to segment a market, perhaps positioning products and services to consumers who aspire to a particular lifestyle. However, being able to combine demographic measurements, broader behavioural characteristics and knowledge of where these consumers live, helps to build a 'picture' of consumers which facilitates strong marketing decision-making support.

To say that a market is primarily female, aged 25-40 and living in a detached property with a mortgage, starts to build a 'picture' of target consumers. To add details of their media behaviour, the array of products and services they buy, characteristics of their lifestyle and their expectations, helps to build up a rich and, for decision-makers, very useful 'picture' of target consumers.

Examining the variety of data sources which can be used in the interrelated variables which build market profiles, it is clear to see a role for traditional survey work, scanned data, customer data, externally-generated secondary data and the use of loyalty cards. There is a clear interdependence among the different data sources with the increased sophistication of decision support systems which allow the 'fusing' of data to be conducted.

Solution to Case study: Subaru

Market research can play an important role in helping Subaru understand the devotion of consumers to its brand. It can help Subaru understand the motivations, perceptions and preferences of different types of consumers in its market. It can also provide Subaru with a profile of different types of customers. Census data could be a valuable source of secondary data for Subaru. It could help to realise the size and demographics of its market and realise if Subaru is underperforming in terms of reaching out to female drivers. Internal secondary data, i.e. sales data, should show the gender of buyers and where different dealerships are performing well or not in reaching out to this group. Secondary data would not give specific information which would relate to the motivations, perceptions and preferences of female drivers. This could be overcome through other available secondary data or market intelligence which may address an industry-wide problem with attitudes to connecting with the specific demands of female drivers. Research questions in primary data research designs could include the following.

- What criteria do female drivers use to evaluate cars? And car dealerships (in terms of selling the car and looking after their needs beyond the sale)?
- How do female drivers evaluate the Subaru brand and competing brands on criteria identified as important to female drivers?
- What is the geodemographic, demographic, psychographic and behaviour profile of female drivers loyal to Subaru?
- Is there a profitable potential market of untapped female drivers which matches the psychological criteria and profile of loyal female Subaru drivers?
- Which characteristics differentiate Subaru female drivers from those loyal to other brands?

One of the main problems in the approach discussed above is the distinction between 'buyers' and 'users' in the definition of drivers and how this definition is tackled in internal and external secondary data sources.