

GLOSSARY



- A posteriori contrasts** Contrasts made after conducting the analysis. These are generally multiple comparison tests.
- A priori contrasts** Contrasts determined before conducting the analysis, based on the researcher's theoretical framework.
- Action research** A team research process, facilitated by a professional researcher(s), linking with decision-makers and other stakeholders who together wish to improve particular situations.
- Agglomerative clustering** A hierarchical clustering procedure where each object starts out in a separate cluster. Clusters are formed by grouping objects into bigger and bigger clusters.
- Alpha error (α)** See Type I error.
- Alternative hypothesis** A statement that some difference or effect is expected. Accepting the alternative hypothesis will lead to changes in opinions or actions.
- Alternative-forms reliability** An approach for assessing reliability that requires two equivalent forms of the scale to be constructed and then the same respondents to be measured at two different times.
- Analysis of covariance (ANCOVA)** An advanced analysis of variance procedure in which the effects of one or more metric-scaled extraneous variables are removed from the dependent variable before conducting the ANOVA.
- Analysis of variance (ANOVA)** A statistical technique for examining the differences among means for two or more populations.
- Analysis sample** Part of the total sample used to check the results of the discriminant function.
- Analytical model** An explicit specification of a set of variables and their interrelationships designed to represent some real system or process in whole or in part.
- Analytical services** Companies that provide guidance in the development of research design.
- Area sampling** A common form of cluster sampling in which the clusters consist of geographic areas such as counties, housing tracts, blocks or other area descriptions.
- Association techniques** A type of projective technique in which respondents are presented with a stimulus and are asked to respond with the first thing that comes to mind.
- Asymmetric lambda** A measure of the percentage improvement in predicting the value of the dependent variable given the value of the independent variable in contingency table analysis. Lambda also varies between 0 and 1.
- Audit** A data collection process derived from physical records or performing inventory analysis. Data are collected personally by the researcher, or by representatives of the researcher, and are based on counts usually of physical objects rather than people.
- Back translation** A translation technique that translates a questionnaire from the base language by a translator whose native language is the one into which the questionnaire is being translated. This version is then retranslated back into the original language by someone whose native language is the base language. Translation errors can then be identified.
- Balanced scale** A scale with an equal number of favourable and unfavourable categories.
- Bar chart** A chart that displays data in bars positioned horizontally or vertically.
- Bayesian approach** A selection method where the elements are selected sequentially. The Bayesian approach explicitly incorporates prior information about population parameters as well as the costs and probabilities associated with making wrong decisions.
- Beta error (β)** See Type II error.
- Bibliographic databases** Databases composed of citations to articles in journals, magazines, newspapers, marketing research studies, technical reports, government documents, and the like. They often provide summaries or abstracts of the material cited.
- Binominal test** A goodness-of-fit statistical test for dichotomous variables. It tests the goodness of fit of the observed number of observations in each category to the number expected under a specified binominal distribution.
- Bivariate regression** A procedure for deriving a mathematical relationship, in the form of an equation, between a single metric-dependent variable and a single metric-independent variable.
- Branching question** A question used to guide an interviewer (or respondent) through a survey by directing the interviewer (or respondent) to different spots on the questionnaire depending on the answers given.
- Branded market research products** Specialised data collection and analysis procedures developed to address specific types of marketing research problems.
- Broad statement of the problem** The initial statement of the marketing research problem that provides an appropriate perspective on the problem.
- Call disposition** Call disposition records the outcome of an interview call.

- Carryover effects** Where the evaluation of a particular scaled item significantly affects the respondent's judgement of subsequent scaled items.
- Cartoon tests** Cartoon characters are shown in a specific situation related to the problem. Respondents are asked to indicate the dialogue that one cartoon character might make in response to the comment(s) of another character.
- Case study** A detailed study based upon the observation of the intrinsic details of individuals, groups of individuals and organisations.
- Casewise deletion** A method for handling missing responses in which cases or respondents with any missing responses are discarded from the analysis.
- Category equivalence** A construct equivalence issue that deals specifically with whether the categories in which brands, products and behaviour are grouped are the same in different countries.
- Causal research** A type of conclusive research where the major objective is to obtain evidence regarding cause-and-effect (causal) relationships.
- Causality** Causality applies when the occurrence of X increases the probability of the occurrence of Y.
- Census** A complete enumeration of the elements of a population or study objects.
- Centroid method** A variance method of hierarchical clustering in which the distance between two clusters is the distance between their centroids (means for all the variables).
- Characteristic profile** An aid to interpreting discriminant analysis results by describing each group in terms of the group means for the predictor variables.
- Chi-square distribution** A skewed distribution whose shape depends solely on the number of degrees of freedom. As the number of degrees of freedom increases, the chi-square distribution becomes more symmetrical.
- Chi-square statistic** The statistic used to test the statistical significance of the observed association in a cross-tabulation. It assists us in determining whether a systematic association exists between the two variables.
- Classification information** Socio-economic and demographic characteristics used to classify respondents.
- Cluster sampling** A two-step probability sampling technique where the target population is first divided into mutually exclusive and collectively exhaustive sub-populations called clusters, and then a random sample of clusters is selected based on a probability sampling technique such as simple random sampling. For each selected cluster, either all the elements are included in the sample, or a sample of elements is drawn probabilistically.
- Codebook** A book containing coding instructions and the necessary information about the questions and potential answers in a survey.
- Coding** Assigning a code to represent a specific response to a specific question along with the data record and column position that the code will occupy.
- Coding and data entry services** Companies whose primary service offering is their expertise in converting completed surveys or interviews into a usable database for conducting statistical analysis.
- Coding data** Breaking down qualitative data into discrete chunks and attaching a reference to those chunks of data.
- Coefficient alpha** A measure of internal consistency reliability that is the average of all possible split-half coefficients resulting from different splittings of the scale items.
- Coefficient of variation** A useful expression in sampling theory for the standard deviation as a percentage of the mean.
- Cohort analysis** A multiple cross-sectional design consisting of surveys conducted at appropriate time intervals. The cohort refers to the group of respondents who experience the same event within the same interval.
- Common factor analysis** An approach to factor analysis that estimates the factors based only on the common variance. Also called principal axis factoring.
- Comparative scales** One of two types of scaling technique in which there is direct comparison of stimulus objects with one another.
- Complete linkage** A linkage method that is based on maximum distance of the farthest neighbour approach.
- Completion rate** The percentage of qualified respondents who complete the interview. It enables researchers to take into account anticipated refusals by people who qualify.
- Completion technique** A projective technique that requires respondents to complete an incomplete stimulus situation.
- Conceptual equivalence** A construct equivalence issue that deals with whether the interpretation of brands, products, consumer behaviour and the marketing effort are the same in different countries.
- Conclusive research** A research design characterised by the measurement of clearly defined marketing phenomena.
- Concomitant variation** A condition for inferring causality that requires that the extent to which a cause, X, and an effect, Y, occur together or vary together is predicted by the hypothesis under consideration.
- Concurrent validity** A type of validity that is assessed when the data on the scale being evaluated and on the criterion variables are collected at the same time.
- Confidence intervals** The range into which the true population parameter will fall, assuming a given level of confidence.

- Confounding variables** Variables used to illustrate that extraneous variables can confound the results by influencing the dependent variable; synonymous with extraneous variables.
- Conjoint analysis** A technique that attempts to determine the relative importance consumers attach to salient attributes and the utilities they attach to the levels of attributes.
- Conjoint analysis model** The mathematical model expressing the fundamental relationship between attributes and utility in conjoint analysis.
- Consistency checks** A part of the data cleaning process that identifies data that are out of range, logically inconsistent, or have extreme values. Data with values not defined by the coding scheme are inadmissible.
- Constant sum scaling** A comparative scaling technique in which respondents are required to allocate a constant sum of units such as points, euros, chits, stickers or chips among a set of stimulus objects with respect to some criterion.
- Construct equivalence** A type of equivalence that deals with the question of whether the marketing constructs have the same meaning and significance in different countries.
- Construct validity** A type of validity that addresses the question of what construct or characteristic the scale is measuring. An attempt is made to answer theoretical questions of why a scale works and what deductions can be made concerning the theory underlying the scale.
- Construction technique** A projective technique in which respondents are required to construct a response in the form of a story, dialogue or description.
- Content analysis** The objective, systematic and quantitative description of the manifest content of a communication.
- Content validity** A type of validity, sometimes called face validity, that consists of a subjective but systematic evaluation of the representativeness of the content of a scale for the measuring task at hand.
- Contingency coefficient** A measure of the strength of association in a table of any size.
- Contingency table** A cross-tabulation table. It contains a cell for every combination of categories of the two variables.
- Continuous rating scale** A measurement scale that has respondents rate the objects by placing a mark at the appropriate position on a line that runs from one extreme of the criterion variable to the other. The form may vary considerably. Also called graphic rating scale.
- Contrasts** In ANOVA, a method of examining differences among two or more means of the treatment groups.
- Contrived observation** Observing behaviour in an artificial environment.
- Controlled test market** A test-marketing programme conducted by an outside research company in field experimentation. The research company guarantees distribution of the product in retail outlets that represent a predetermined percentage of the market.
- Convenience sampling** A non-probability sampling technique that attempts to obtain a sample of convenient elements. The selection of sampling units is left primarily to the interviewer.
- Convergent validity** A measure of construct validity that measures the extent to which the scale correlates positively with other measures of the same construct.
- Cookie technology** A group of letters and numbers stored in a Web surfer's browser that identify their computer.
- Correspondence analysis** An MDS technique for scaling qualitative data that scales the rows and columns of the input contingency table in corresponding units so that each can be displayed in the same low-dimensional space.
- Covariance** A systematic relationship between two variables in which a change in one implies a corresponding change in the other (COV_{xy}).
- Covariate** A metric-independent variable used in ANCOVA.
- Cramer's V** A measure of the strength of association used in tables larger than 2×2 .
- Criterion validity** A type of validity that examines whether the measurement scale performs as expected in relation to other selected variables as meaningful criteria.
- Critical request** The target behaviour being researched.
- Cross-cultural analysis** A type of across-countries analysis in which the data could be aggregated for each country and these aggregate statistics analysed.
- Cross-sectional design** A type of research design involving the collection of information from any given sample of population elements only once.
- Cross-tabulation** A statistical technique that describes two or more variables simultaneously and results in tables that reflect the joint distribution of two or more variables that have a limited number of categories or distinct values.
- Cross-validation** A test of validity that examines whether a model holds on comparable data not used in the original estimation.
- Customer database** A database that details characteristics of customers and prospects that can include names and addresses, geographic, demographic and buying behaviour data.
- Customised services** Companies that tailor research procedures to best meet the needs of each client.

- Data analysis services** Firms whose primary service is to conduct statistical analysis of quantitative data.
- Data assembly** The gathering of data from a variety of disparate sources.
- Data cleaning** Thorough and extensive checks for consistency and treatment of missing responses.
- Data display** Involves summarising and presenting the structure that is seen in collected qualitative data.
- Data mining** The process of discovering meaningful correlations, patterns and trends by sifting through large amounts of data stored in repositories, using pattern recognition as well as statistical and mathematical techniques.
- Data reduction** The organising and structuring of qualitative data.
- Data verification** Involves seeking alternative explanations of the interpretations of qualitative data, through other data sources.
- Datawarehouses** This may be seen as a 'super database', but more specifically it may be defined as a process of gathering disparate data from database and survey sources, and converting it into a consistent format that can aid business decision-making.
- Debriefing** After a disguised experiment, informing test subjects what the experiment was about and how the experimental manipulations were performed.
- Decision support system (DSS)** An information system that enables decision-makers to interact directly with both databases and analysis models. The important components of a DSS include hardware and a communication network, database, model base, software base and the DSS user (decision-maker).
- Decomposition of the total variation** In one-way ANOVA, separation of the variation observed in the dependent variable into the variation due to the independent variables plus the variation due to error.
- Deduction** A form of reasoning in which a conclusion is validly inferred from some premises, and must be true if those premises are true.
- Demand artefacts** Responses given because the respondents attempt to guess the purpose of the experiment and respond accordingly.
- Dependence techniques** Multivariate techniques appropriate when one or more of the variables can be identified as dependent variables and the remaining ones as independent variables.
- Dependent variables** Variables that measure the effect of the independent variables on the test units.
- Depth interview** An unstructured, direct, personal interview in which a single respondent is probed by an experienced interviewer to uncover underlying motivations, beliefs, attitudes and feelings on a topic.
- Derived approaches** In MDS, attribute-based approaches to collecting perception data requiring respondents to rate the stimuli on the identified attributes using semantic differential or Likert scales.
- Descriptive research** A type of conclusive research that has as its major objective the description of something, usually market characteristics or functions.
- Design control** A method of controlling extraneous variables that involves using specific experimental designs.
- Determinism** A doctrine espousing that everything that happens is determined by a necessary chain of causation.
- Diary media panels** A data gathering technique composed of samples of respondents whose television viewing behaviour is automatically recorded by electronic devices, supplementing the purchase information recorded in a diary.
- Diary purchase panels** A data gathering technique in which respondents record their purchases in a diary.
- Dichotomous question** A structured question with only two response alternatives, such as yes and no.
- Direct approach** A type of qualitative research in which the purposes of the project are disclosed to the respondent or are obvious given the nature of the interview.
- Direct method** An approach to discriminant analysis that involves estimating the discriminant function so that all the predictors are included simultaneously.
- Directory databases** Databases that provide information on individuals, organisations and services.
- Discriminant analysis** A technique for analysing marketing research data when the criterion or dependent variable is categorical and the predictor or independent variables are interval in nature.
- Discriminant analysis model** The statistical model on which discriminant analysis is based.
- Discriminant function** The linear combination of independent variables developed by discriminant analysis that will best discriminate between the categories of the dependent variable.
- Discriminant validity** A type of construct validity that assesses the extent to which a measure does not correlate with other constructs from which it is supposed to differ.
- Disordinal interaction** The change in the rank order of the effects of one factor across the levels of another.
- Divisive clustering** A hierarchical clustering procedure where all objects start out in one giant cluster. Clusters are formed by dividing this cluster into smaller and smaller clusters.
- Double cross-validation** A special form of validation in which the sample is split into halves. One half serves as the estimation sample and the other as a validation sample. The roles of the estimation and validation halves are then reversed and the cross-validation process is repeated.

- Double sampling** A sampling technique in which certain population elements are sampled twice.
- Double-barrelled question** A single question that attempts to cover two issues. Such questions can be confusing to respondents and result in ambiguous responses.
- Dummy variables** A re-specification procedure using variables that take on only two values, usually 0 or 1.
- Editing** A review of the questionnaires with the objective of increasing accuracy and precision.
- Elbow criterion** A plot of stress versus dimensionality used in MDS. The point at which an elbow or a sharp bend occurs indicates an appropriate dimensionality.
- Electronic observation** An observational research strategy in which electronic devices, rather than human observers, record the phenomena being observed.
- Element** An object that possesses the information sought by the researcher and about which inferences are to be made.
- Empiricism** A theory of knowledge. A broad category of the philosophy of science that locates the source of all knowledge in experience.
- Estimated or predicted value** The value $Y_i = a + b_x$, where a and b are, respectively, estimators of β_0 and β_1 , the corresponding population parameters.
- Ethnography** A research approach based upon the observation of the customs, habits and differences between people in everyday situations.
- Euclidean distance** The square root of the sum of the squared differences in values for each variable.
- Evolving research design** A research design where particular research techniques are chosen as the researcher develops an understanding of the issues and respondents.
- Experiment** The process of manipulating one or more independent variables and measuring their effect on one or more dependent variables, while controlling for the extraneous variables.
- Experimental design** The set of experimental procedures specifying (1) the test units and sampling procedures, (2) the independent variables, (3) the dependent variables, and (4) how to control the extraneous variables.
- Experimental group** An initial focus group run to test the setting of the interview, the opening question, the topic guide and the mix of respondents that make up a group.
- Exploratory research** A research design characterised by a flexible and evolving approach to understand marketing phenomena that are inherently difficult to measure.
- Expressive techniques** Projective techniques in which respondents are presented with a verbal or visual situation and are asked to relate the feelings and attitudes of other people to the situation.
- External analysis of preferences** A method of configuring a spatial map such that the ideal points or vectors based on preference data are fitted in a spatial map derived from the perception data.
- External data** Data that originate outside the organisation.
- External suppliers** Outside marketing research companies hired to supply marketing research services.
- External validity** A determination of whether the cause-and-effect relationships found in the experiment can be generalised.
- Extraneous variables** Variables other than dependent and independent variables which may influence the results of an experiment.
- Eye tracking equipment** Instruments that record the gaze movements of the eye.
- F distribution** A frequency distribution that depends upon two sets of degrees of freedom: the degrees of freedom in the numerator and the degrees of freedom in the denominator.
- F statistic** The ratio of two sample variances.
- F test** A statistical test of the equality of the variances of two populations.
- Factor** An underlying dimension that explains the correlations among a set of variables.
- Factor analysis** A class of procedures primarily used for data reduction and summarisation.
- Factor scores** Composite scores estimated for each respondent on the derived factors.
- Factorial design** A statistical experimental design used to measure the effects of two or more independent variables at various levels and to allow for interactions between variables.
- Factors** Categorical independent variables in ANOVA. The independent variables must all be categorical (non-metric) to use ANOVA.
- Field environment** An experimental location set in actual market conditions.
- Field force** Both the actual interviewers and the supervisors involved in data collection.
- Field notes** A log or diary of observations, events and reflections made by a researcher as a study is planned, implemented and analysed.
- Field services** Companies whose primary service is offering their expertise in collecting data for research projects.
- Filter question** An initial question in a questionnaire that screens potential respondents to ensure they meet the requirements of the sample.
- Fixed-response alternative questions** Questions that require respondents to choose from a set of predetermined answers.
- Focus group** A discussion conducted by a trained moderator among a small group of respondents in an unstructured and natural manner.

- Forced rating scale** A rating scale that forces respondents to express an opinion because a 'no opinion' or 'no knowledge' option is not provided.
- Frequency distribution** A mathematical distribution whose objective is to obtain a count of the number of responses associated with different values of one variable and to express these counts in percentage terms.
- Friendship pair** A technique used to interview children as two friends or classmates together.
- Frugging** The use of marketing research to deliberately disguise fundraising activities.
- Full-service suppliers** Companies that offer a full range of marketing research activities.
- Full-text databases** Databases that contain the complete text of secondary source documents comprising the database.
- Functional equivalence** A construct equivalence issue that deals specifically with whether a given concept or behaviour serves the same role or function in different countries.
- Funnel approach** A strategy for ordering questions in a questionnaire in which the sequence starts with the general questions, which are followed by progressively specific questions, to prevent specific questions from biasing general questions.
- Galvanic skin response** Changes in the electrical resistance of the skin that relate to a respondent's affective state.
- Gamma** A test statistic that measures the association between two ordinal-level variables. It does not make an adjustment for ties.
- Generalisability** The degree to which a study based on a sample applies to the population as a whole.
- Geodemographic classification** This groups consumers together based on the types of neighbourhood in which they live. If a set of neighbourhoods are similar across a wide range of demographic measures, they may also offer similar potential across most products, brands, services and media.
- Geodemographic information system (GIS)** At a base level, a GIS matches geographic information with demographic information. This match allows subsequent data analyses to be presented on maps.
- Graphic rating scale** See Continuous rating scale.
- Graphical models** Analytical models that provide a visual picture of the relationships between variables.
- Grounded theory** Theory derived from data, systematically gathered and analysed.
- Hierarchical clustering** A clustering procedure characterised by the development of a hierarchy or treelike structure.
- Histogram** A vertical bar chart in which the height of the bars represents the relative or cumulative frequency of occurrence.
- History** Specific events that are external to the experiment but that occur at the same time as the experiment.
- Hit ratio** The percentage of cases correctly classified by the discriminant analysis.
- Hybrid conjoint analysis** A form of conjoint analysis that can simplify the data collection task and estimate selected interactions as well as all main effects.
- Hypertext markup language (HTML)** The language of the Web.
- Hypothesis** An unproven statement or proposition about a factor or phenomenon that is of interest to the researcher.
- Identification information** A type of information obtained in a questionnaire that includes name, address and phone number.
- Implicit alternative** An alternative that is not explicitly expressed.
- Implicit assumptions** An assumption that is not explicitly stated in a question.
- Imputation** A method to adjust for non-response by assigning the characteristic of interest to the non-respondents based on the similarity of the variables available for both non-respondents and respondents.
- Incidence rate** The rate of occurrence of persons eligible to participate in the study expressed as a percentage.
- Independent samples** Two samples that are not experimentally related. The measurement of one sample has no effect on the values of the second sample.
- Independent variables** Variables that are manipulated by the researcher and whose effects are measured and compared.
- Indirect approach** A type of qualitative research in which the purposes of the project are disguised from the respondents.
- Induction** A form of reasoning that usually involves the inferences that an instance or repeated combination of events may be usually generalised.
- Instrumentation** An extraneous variable involving changes in the measuring instrument, in the observers, or in the scores themselves.
- Interaction** When assessing the relationship between two variables, an interaction occurs if the effect of X_1 depends on the level of X_2 , and vice versa.
- Interactive testing effect** An effect in which a prior measurement affects the test unit's response to the independent variable.
- Interdependence technique** A multivariate statistical technique in which the whole set of inter-dependent relationships is examined.
- Interdependence techniques** Multivariate statistical techniques that attempt to group data based on underlying similarity and thus allow for interpretation of the data structures. No distinction is made as

to which variables are dependent and which are independent.

Internal analysis of preferences A method of configuring a spatial map such that the spatial map represents both brands or stimuli and respondent points or vectors and is derived solely from the preference data.

Internal consistency reliability An approach for assessing the internal consistency of the set of items, where several items are summated in order to form a total score for the scale.

Internal data Data available within the organisation for whom the research is being conducted.

Internal supplier Marketing research department located within a firm.

Internal validity A measure of accuracy of an experiment. It measures whether the manipulation of the independent variables, or treatments, actually caused the effects on the dependent variable(s).

Internet databases Databases that can be accessed, searched and analysed on the Internet. It is also possible to download data from the Internet and store it on the computer or an auxiliary device.

Internet services Companies which specialise in the use of the Internet to collect, analyse and distribute marketing research information.

Interquartile range The range of a distribution encompassing the middle 50% of the observations.

Interval scale A scale in which the numbers are used to rank objects such that numerically equal distances on the scale represent equal distances in the characteristic being measured.

Intra-cultural analysis Within-country analysis of international data.

Item equivalence Use of the same instrument in different countries.

Itemised rating scale A measurement scale having numbers or brief descriptions associated with each category. The categories are ordered in terms of scale position.

Judgemental sampling A form of convenience sampling in which the population elements are purposely selected based on the judgement of the researcher.

k-sample median test A non-parametric test used to examine differences among more than two groups when the dependent variable is measured on an ordinal scale.

Kolmogorov-Smirnov (K-S) one-sample test A one-sample non-parametric goodness-of-fit test that compares the cumulative distribution function for a variable with a specified distribution.

Kolmogorov-Smirnov (K-S) two-sample test Non-parametric test statistic that determines whether two distributions are the same. It takes into account any differences in the two distributions, including median, dispersion and skewness.

Kruskal-Wallis one-way analysis of variance A non-metric ANOVA test that uses the rank value of each case, not merely its location relative to the median.

Kurtosis A measure of the relative peakedness of the curve defined by the frequency distribution.

Laboratory environment An artificial setting for experimentation in which the researcher constructs the desired conditions.

Laddering A technique for conducting depth interviews in which a line of questioning proceeds from product characteristics to user characteristics.

Latin square design A statistical design that allows for the statistical control of two non-interacting external variables in addition to the manipulation of the independent variable.

Leading question A question that gives the respondent a clue as to what the answer should be.

Least squares procedure A technique for fitting a straight line into a scattergram by minimising the vertical distances of all the points from the line.

Level of significance The probability of making a type I error.

Lifestyles Distinctive patterns of living described by the activities people engage in, the interests they have, and the opinions they hold of themselves and the world around them.

Likert scale A measurement scale with five response categories ranging from 'strongly disagree' to 'strongly agree' that requires respondents to indicate a degree of agreement or disagreement with each of a series of statements related to the stimulus objects.

Limited-service suppliers Companies that specialise in one or a few phases of a marketing research project.

Line chart A chart that connects a series of data points using continuous lines.

Linguistic equivalence The equivalence of both spoken and written language forms used in scales and questionnaires.

Linkage methods Agglomerative methods of hierarchical clustering that cluster objects based on a computation of the distance between them.

Longitudinal design A type of research design involving a fixed sample of population elements measured repeatedly. The sample remains the same over time, thus providing a series of pictures that, when viewed together, portray a vivid illustration of the situation and the changes that are taking place.

Loyalty card At face value, a sales promotion device used by supermarkets, pharmacists, department stores, petrol stations and even whole shopping centres and towns to encourage repeat purchases. For the marketing researcher, the loyalty card is a device that can link customer characteristics to actual product purchases.

- Mahalanobis procedure** A stepwise procedure used in discriminant analysis to maximise a generalised measure of the distance between the two closest groups.
- Mail panel** A large and nationally representative sample of households that have agreed to participate in periodic mail questionnaires, product tests and telephone surveys.
- Main testing effect** An effect of testing occurring when a prior observation affects a later observation.
- Mann-Whitney *U* test** A statistical test for a variable measured on an ordinal scale, comparing the differences in the location of two populations based on observations from two independent samples.
- Marketing decision problem** The problem confronting the marketing decision-maker, which asks what the decision-maker has to do.
- Marketing information systems (MkIS)** A formalised set of procedures for generating, analysing, sorting and distributing pertinent information to marketing decision-makers on an ongoing basis.
- Marketing intelligence** Qualified observations of events and developments in the marketing environment.
- Marketing research** A key element within the total field of marketing information. It links the consumer, customer and public to the market through information which is used to identify and define marketing opportunities and problems; to generate, refine and evaluate marketing actions; and to improve understanding of marketing as a process and of the ways in which specific marketing activities can be made more effective.
- Marketing research problem** A problem that entails determining what information is needed and how it can be obtained in the most feasible way.
- Marketing research process** A set of six steps which define the tasks to be accomplished in conducting a marketing research study. These include problem definition, developing an approach to the problem, research design formulation, fieldwork, data preparation and analysis, and report generation and presentation.
- Matching** A method of controlling extraneous variables that involves matching test units on a set of key background variables before assigning them to the treatment conditions.
- Mathematical models** Analytical models that explicitly describe the relationship between variables, usually in equation form.
- Maturation** An extraneous variable attributable to changes in the test units themselves that occur with the passage of time.
- Mean** The average; that value obtained by summing all elements in a set and dividing by the number of elements.
- Measure of location** A statistic that describes a location within a data set. Measures of central tendency describe the centre of the distribution.
- Measure of variability** A statistic that indicates the distribution's dispersion.
- Measurement** The assignment of numbers or other symbols to characteristics of objects according to certain pre-specified rules.
- Measurement error** The variation in the information sought by the researcher and the information generated by the measurement process employed.
- Median** A measure of central tendency given as the value above which half of the values fall and below which half of the values fall.
- Metric data** Data that are interval or ratio in nature.
- Metric equivalence** See Scalar equivalence.
- Metric MDS** A multidimensional scaling method that assumes that input data are metric.
- Metric scale** A scale that is either interval or ratio in nature.
- Missing responses** Values of a variable that are unknown because the respondents concerned provided ambiguous answers to the question or because their answers were not properly recorded.
- Mode** A measure of central tendency given as the value that occurs with the most frequency in a sample distribution.
- Moderator** An individual who conducts a focus group interview, by setting the purpose of the interview, questioning, probing and handling the process of discussion.
- Monadic scale** See Non-comparative scale.
- Mood board** A collage created in a focus group setting. Focus group respondents are asked to snip words and pictures from magazines that they see as representing the values a particular brand is perceived to have. In some circumstances, collages can also be made up from audio and video tapes.
- Mortality** An extraneous variable attributable to the loss of test units while the experiment is in progress.
- Multicollinearity** A state of high intercorrelations among independent variables.
- Multidimensional scaling (MDS)** A class of procedures for representing perceptions and preferences of respondents spatially by means of a visual display.
- Multiple comparison tests** *A posteriori* contrasts that enable the researcher to construct generalised confidence intervals that can be used to make pairwise comparisons of all treatment means.
- Multiple cross-sectional design** A cross-sectional design in which there are two or more samples of respondents, and information from each sample is obtained only once.

- Multiple discriminant analysis** Discriminant analysis technique where the criterion variable involves three or more categories.
- Multiple regression** A statistical technique that simultaneously develops a mathematical relationship between two or more independent variables and an interval-scaled dependent variable.
- Multiple regression model** An equation used to explain the results of multiple regression analysis.
- Multiple time series design** A time series design that includes another group of test units to serve as a control group.
- Multiple η^2** The strength of the joint effect of two (or more) factors, or the overall effect.
- Multivariate analysis of variance (MANOVA)** An ANOVA technique using two or more metric dependent variables.
- Multivariate techniques** Statistical techniques suitable for analysing data when there are two or more measurements on each element and the variables are analysed simultaneously. Multivariate techniques are concerned with the simultaneous relationships among two or more phenomena.
- Mystery shopper** An observer visiting providers of goods and services as if they were really a customer, and recording characteristics of the service delivery.
- n*-way analysis of variance** An ANOVA model where two or more factors are involved.
- Natural observation** Observing behaviour as it takes place in the environment.
- 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.
- Nomological validity** A type of validity that assesses the relationship between theoretical constructs. It seeks to confirm significant correlations between the constructs as predicted by a theory.
- Non-comparative scale** One of two types of scaling techniques in which each stimulus object is scaled independently of the other objects in the stimulus set. Also called monadic scale.
- Non-hierarchical clustering** A procedure that first assigns or determines a cluster centre and then groups all objects within a pre-specified threshold value from the centre.
- Non-metric analysis of variance** An ANOVA technique for examining the difference in the central tendencies of more than two groups when the dependent variable is measured on an ordinal scale.
- Non-metric correlation** A correlation measure for two non-metric variables that relies on rankings to compute the correlation.
- Non-metric data** Data derived from a nominal or ordinal scale.
- Non-metric MDS** A type of multidimensional scaling which assumes that the input data are ordinal.
- Non-metric scale** A scale that is either nominal or ordinal in nature.
- Non-parametric tests** Hypothesis testing procedures that assume that the variables are measured on a nominal or ordinal scale.
- Non-probability sampling** Sampling techniques that do not use chance selection procedures but rather rely on the personal judgement of the researcher.
- Non-response bias** Bias caused when actual respondents differ from those who refuse to participate.
- Non-response error** A type of non-sampling error that occurs when some of the respondents 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.
- Non-sampling error** An error that can be attributed to sources other than sampling and that can be random or non-random.
- Null hypothesis** A statement in which no difference or effect is expected. If the null hypothesis is not rejected, no changes will be made.
- Numeric databases** Databases containing numerical and statistical information that may be important sources of secondary data.
- Objective evidence** Perceived to be unbiased evidence, supported by empirical findings.
- Oblique rotation** Rotation of factors when the axes are not maintained at right angles.
- Offline databases** Databases that are available on diskette or CD-ROM.
- Omega squared (ω^2)** A measure indicating the proportion of the variation in the dependent variable that is related to a particular independent variable or factor.
- Omnibus survey** A distinctive form of survey that serves the needs of a syndicated group. The omnibus survey targets particular types of respondents such as those in specific geographic locations, e.g. Luxembourg residents, or consumers of particular types of products, e.g. business air travellers. With that target group of respondents, a core set of questions can be asked, with other questions added as syndicate members wish.
- One-group pre-test–post-test design** A pre-experimental design in which a group of test units is measured twice.
- One-shot case study** A pre-experimental design in which a single group of test units is exposed to a treatment **X**, and then a single measurement of the dependent variable is taken.
- One-tailed test** A test of the null hypothesis where the alternative hypothesis is expressed directionally.

- One-way analysis of variance** An ANOVA technique in which there is only one factor.
- Online databases** Databases, stored in computers, that require a telecommunications network to access.
- Operational data** Data generated about an organisation's customers, through day-to-day transactions.
- Operational equivalence** A type of equivalence that measures how theoretical constructs are operationalised in different countries to measure marketing variables.
- Operationalised** The derivation of measurable characteristics to encapsulate marketing phenomena, e.g. the concept of 'customer loyalty' can be operationalised through measurements such as frequency of repeat purchases or the number of years that a business relationship has existed.
- Optimising partitioning method** A non-hierarchical clustering method that allows for later reassignment of objects to clusters to optimise an overall criterion.
- Order bias (position bias)** A respondent's tendency to choose an alternative merely because it occupies a certain position or is listed in a certain order.
- Ordinal interaction** An interaction where the rank order of the effects attributable to one factor does not change across the levels of the second factor.
- Ordinal scale** A ranking scale in which numbers are assigned to objects to indicate the relative extent to which some characteristic is possessed. Thus, it is possible to determine whether an object has more or less of a characteristic than some other object.
- Orthogonal rotation** Rotation of factors in which the axes are maintained at right angles.
- Paired comparison scaling** A comparative scaling technique in which a respondent is presented with two objects at a time and asked to select one object in the pair according to some criterion. The data obtained are ordinal in nature.
- Paired samples** In hypothesis testing, the observations are paired so that the two sets of observations relate to the same respondents.
- Paired samples *t* test** A test for differences in the means of paired samples.
- Pairwise deletion** A method for handling missing responses in which all cases or respondents with any missing responses are not automatically discarded; rather, for each calculation, only the cases or respondents with complete responses are considered.
- Pan-cultural analysis** Across-countries analysis in which the data for all respondents from all the countries are pooled and analysed.
- Panel** A sample of respondents who have agreed to provide information at specified intervals over an extended period.
- Pantry audit** A type of audit where the researcher inventories the brands, quantities and package sizes of products in a consumer's home.
- Paradigm** A set of assumptions consisting of agreed-upon knowledge, criteria of judgement, problem fields and ways to consider them.
- Parallel threshold method** A non-hierarchical clustering method that specifies several cluster centres at once. All objects that are within a pre-specified threshold value from the centre are grouped together.
- Parallel translation** A translation method in which a committee of translators, each of whom is fluent in at least two languages, discusses alternative versions of a questionnaire and makes modifications until consensus is reached.
- Parametric tests** Hypothesis testing procedures that assume that the variables of interest are measured on at least an interval scale.
- Part correlation coefficient** A measure of the correlation between *Y* and *X* when the linear effects of the other independent variables have been removed from *X* (but not from *Y*).
- Partial correlation coefficient** A measure of the association between two variables after controlling or adjusting for the effects of one or more additional variables.
- Perceived respondent anonymity** The respondents' perceptions that their identities will not be discerned by the interviewer or researcher.
- Personal observation** An observational research strategy in which human observers record the phenomenon being observed as it occurs.
- Phi coefficient (Φ)** A measure of the strength of association in the special case of a table with two rows and two columns (a 2×2 table).
- Picture response technique** A projective technique in which respondents are shown a picture and are asked to tell a story describing it.
- Pie chart** A round chart divided into sections.
- Pilot-testing** Testing the questionnaire on a small sample of respondents for the purpose of improving the questionnaire by identifying and eliminating potential problems.
- Population** The aggregate of all the elements, sharing some common set of characteristics, that comprise the universe for the purpose of the marketing research problem.
- Position bias** See Order bias.
- Positivism** A philosophy of language and logic consistent with an empiricist philosophy of science.
- Post-test-only control group design** Experimental design in which the experimental group is exposed to the treatment but the control group is not and no pre-test measure is taken.

- Power of a statistical test** The probability of rejecting the null hypothesis when it is in fact false and should be rejected.
- Pre-coding** In questionnaire design, assigning a code to every conceivable response before data collection.
- Predictive validity** A type of validity that is concerned with how well a scale can forecast a future criterion.
- Pre-experimental designs** Designs that do not control for extraneous factors by randomisation.
- Pre-test–post-test control group design** An experimental design in which the experimental group is exposed to the treatment but the control group is not. Pre-test and post-test measures are taken on both groups.
- Primary data** Data originated by the researcher specifically to address the research problem.
- Principal axis factoring** See Common factor analysis.
- Principal components analysis** An approach to factor analysis that considers the total variance in the data.
- Probability proportionate to size (PPS)** A selection method where the probability of selecting a sampling unit in a selected cluster varies inversely with the size of the cluster. Therefore, the size of all the resulting clusters is approximately equal.
- Probability sampling** A sampling procedure in which each element of the population has a fixed probabilistic chance of being selected for the sample.
- Probing** A motivational technique used when asking survey questions to induce the respondents to enlarge on, clarify or explain their answers and to help the respondents focus on the specific content of the interview.
- Problem audit** A comparative examination of a marketing problem to understand its origin and nature.
- Problem definition** A broad statement of the general problem and identification of the specific components of the marketing research problem.
- Problem identification research** Research undertaken to help identify problems that are not necessarily apparent on the surface, yet exist or are likely to arise in the future.
- Problem-solving research** Research undertaken to help solve marketing problems.
- Product moment correlation (r)** A statistic summarising the strength of association between two metric variables.
- Projective technique** An unstructured and indirect form of questioning that encourages respondents to project their underlying motivations, beliefs, attitudes or feelings regarding the issues of concern.
- Psycho-galvanometer** An instrument that measures a respondent's galvanic skin response.
- Psychographics** Quantified profiles of individuals based upon lifestyle characteristics.
- Pupilometer** An instrument that measures changes in the eye pupil diameter.
- Q-sort scaling** A comparative scaling technique that uses a rank order procedure to sort objects based on similarity with respect to some criterion.
- Qualitative research** An unstructured, primarily exploratory design based on small samples, intended to provide insight and understanding.
- Quantitative observation** The recording and counting of behavioural patterns of people, objects and events in a systematic manner to obtain information about the phenomenon of interest.
- Quantitative research** Research techniques that seek to quantify data and, typically, apply some form of statistical analysis.
- Quasi-experimental designs** Designs that apply part of the procedures of true experimentation yet lack full experimental control.
- Questionnaire** A structured technique for data collection consisting of a series of questions, written or verbal, that a respondent answers.
- Quota sampling** A non-probability sampling technique that is two-stage restricted judgemental sampling. The first stage consists of developing control categories or quotas of population elements. In the second stage, sample elements are selected based on convenience or judgement.
- Random error** An error that arises from random changes or differences in respondents or measurement situations.
- Random sampling error** The error 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.
- Randomisation** A method of controlling extraneous variables that involves randomly assigning test units to experimental groups by using random numbers. Treatment conditions are also randomly assigned to experimental groups.
- Randomised block design** A statistical design in which the test units are blocked on the basis of an external variable to ensure that the various experimental and control groups are matched closely on that variable.
- Range** The difference between the smallest and largest values of a distribution.
- Rank order scaling** A comparative scaling technique in which respondents are presented with several objects simultaneously and asked to order or rank them according to some criterion.
- Ratio scale** The highest scale. This scale allows the 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.
- Regression analysis** A statistical procedure for analysing associative relationships between a metric-dependent variable and one or more independent variables.

Reliability The extent to which a scale produces consistent results if repeated measurements are made on the characteristic.

Repeated measures analysis of variance An ANOVA technique used when respondents are exposed to more than one treatment condition and repeated measurements are obtained.

Research brief A document produced by the users of research findings or the buyers of a piece of marketing research. The brief is used to communicate the perceived requirements of a marketing research project.

Research design A framework or blueprint for conducting the marketing research project. It specifies the details of the procedures necessary for obtaining the information needed to structure or solve marketing research problems.

Research proposal The official layout of the planned marketing research activity.

Research questions Refined statements of the specific components of the problem.

Residual The difference between the observed value of Y_i and the value predicted by the regression equation \hat{Y}_i .

Response error A type of non-sampling error arising from respondents 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.

Response latency The amount of time it takes to respond to a question.

Response rate The percentage of the total attempted interviews that are completed.

Role playing Respondents are asked to assume the behaviour of someone else.

Runs test A test of randomness for a dichotomous variable.

Sample A subgroup of the elements of the population selected for participation in the study.

Sample control The ability of the survey mode to reach the units specified in the sample effectively and efficiently.

Sample size The number of elements to be included in a study.

Sampling control An aspect of supervising that ensures that the interviewers strictly follow the sampling plan rather than select sampling units based on convenience or accessibility.

Sampling distribution The distribution of the values of a sample statistic computed for each possible sample that could be drawn from the target population under a specified sampling plan.

Sampling frame A representation of the elements of the target population that consists of a list or set of directions for identifying the target population.

Sampling unit An element, or a unit containing the element, that is available for selection at some stage of the sampling process.

Sampling with replacement A sampling technique in which an element can be included in the sample more than once.

Sampling without replacement A sampling technique in which an element cannot be included in the sample more than once.

Scalar equivalence The demonstration that two individuals from different countries with the same value on some variable will score at the same level on the same test. Also called metric equivalence

Scale transformation A manipulation of scale values to ensure compatibility with other scales or otherwise to make the data suitable for analysis.

Scaling The generation of a continuum upon which measured objects are located.

Scanner data Data obtained by passing merchandise over a laser scanner that reads the UPC code from the packages.

Scanner diary panels Scanner data where panel members are identified by an ID card, allowing information about each panel member's purchases to be stored with respect to the the individual shopper.

Scanner diary panels with cable TV The combination of a scanner diary panel with manipulations of the advertising that is being broadcast by cable television companies.

Scanning device Technology that reads the UPC code from merchandise by passing it over a laser scanner.

Secondary data Data collected for some purpose other than the problem at hand.

Selection bias An extraneous variable attributable to the improper assignment of test units to treatment conditions.

Semantic differential A seven-point rating scale with end points associated with bipolar labels.

Sentence completion A projective technique in which respondents are presented with a number of incomplete sentences and are asked to complete them.

Sequential sampling A probability sampling technique in which the population elements are sampled sequentially, data collection and analysis are done at each stage, and a decision is made as to whether additional population elements should be sampled.

Sign test A non-parametric test for examining differences in the location of two populations, based on paired populations, that compares only the signs of the differences between pairs of variables without taking into account the magnitude of the differences.

Significance of the interaction effect A test of the significance of the interaction between two or more independent variables.

- Significance of the main effect of each factor** A test of the significance of the main effect for each individual factor.
- Significance of the overall effect** A test that some differences exist between some of the treatment groups.
- Simple random sampling (SRS)** A probability sampling technique in which each element has a known and equal probability of selection. Every element is selected independently of every other element, and the sample is drawn by a random procedure from a sampling frame.
- Simulated test market** A quasi-test market in which respondents are preselected; they are then interviewed and observed on their purchases and attitudes towards the product.
- Single cross-sectional design** A cross-sectional design in which one sample of respondents is drawn from the target population and information is obtained from this sample once.
- Single linkage** A linkage method based on minimum distance or the nearest neighbour rule.
- Skewness** A characteristic of a distribution that assesses its symmetry about the mean.
- Snowball sampling** A non-probability sampling technique in which an initial group of respondents is selected randomly. Subsequent respondents are selected based on the referrals or information provided by the initial respondents. By obtaining referrals from referrals, this process may be carried out in waves.
- Social desirability** The tendency of respondents to give answers that may not be accurate but may be desirable from a social standpoint.
- Solomon four-group design** An experimental design that explicitly controls for interactive testing effects, in addition to controlling for all the other extraneous variables.
- Special-purpose databases** Databases that contain information of a specific nature, e.g. data on a specialised industry.
- Specific components of the problem** The second part of the marketing research problem definition that focuses on the key aspects of the problem and provides clear guidelines on how to proceed further.
- Split-half reliability** A form of internal consistency reliability in which the items constituting the scale are divided into two halves and the resulting half scores are correlated.
- Standard deviation** The square root of the variance.
- Standard error** The standard deviation of the sampling distribution of the mean or proportion.
- Standard test market** A test market in which the product is sold through regular distribution channels. For example, no special considerations are given to products simply because they are being test-marketed.
- Standardisation** The process of correcting data to reduce them to the same scale by subtracting the sample mean and dividing by the standard deviation.
- Standardised services** Companies that use standardised procedures to provide marketing research to various clients.
- Stapel scale** A scale for measuring attitudes that consists of a single adjective in the middle of an even-numbered range of values.
- Static group** A pre-experimental design in which there are two groups: the experimental group (EG), which is exposed to the treatment, and the control group (CG). Measurements on both groups are made only after the treatment, and test units are not assigned at random.
- Statistical control** A method of controlling extraneous variables by measuring the extraneous variables and adjusting for their effects through statistical methods.
- Statistical designs** Designs that allow for the statistical control and analysis of external variables.
- Statistical inference** The process of generalising the sample results to a target population.
- Statistical regression** An extraneous variable that occurs when test units with extreme scores move closer to the average score during the course of the experiment.
- Stepwise discriminant analysis** Discriminant analysis in which the predictors are entered sequentially based on their ability to discriminate between the groups.
- Stepwise regression** A regression procedure in which the predictor variables enter or leave the regression equation one at a time.
- Story completion** A projective technique in which respondents are provided with part of a story and are required to give the conclusion in their own words.
- Stratified sampling** A probability sampling technique that uses a two-step process to partition the population into subsequent sub-populations, or strata. Elements are selected from each stratum by a random procedure.
- Structured data collection** Use of a formal questionnaire that presents questions in a prearranged order.
- Structured observation** Observation where the researcher clearly defines the behaviours to be observed and the techniques by which they will be measured.
- Structured questions** Questions that pre-specify the set of response alternatives and the response format. A structured question could be multiple-choice, dichotomous or a scale.
- Substitution** A procedure that substitutes for non-respondents other elements from the sampling frame who are expected to respond.
- Sugging** The use of marketing research to deliberately disguise a sales effort.
- Surrogate variables** A subset of original variables selected for use in subsequent analysis.

- Survey techniques** Techniques based upon the use of structured questionnaires given to a sample of a population.
- Surveys** Interviews with a large number of people using a questionnaire.
- Symmetric lambda** The symmetric lambda does not make an assumption about which variable is dependent. It measures the overall improvement when prediction is done in both directions.
- Syndicated services** Companies that collect and sell common pools of data designed to serve information needs shared by a number of clients.
- Syndicated sources (services)** Information services offered by marketing research organisations that provide information from a common database to different firms that subscribe to their services
- Systematic error** An error that affects the measurement in a constant way and represents stable factors that affect the observed score in the same way each time the measurement is made.
- Systematic sampling** A probability sampling technique in which the sample is chosen by selecting a random starting point and then picking every i th element in succession from the sampling frame.
- t distribution** A symmetrical bell-shaped distribution that is useful for sample testing ($n < 30$). It is similar to the normal distribution in appearance.
- t statistic** A statistic that assumes that the variable has a symmetric bell-shaped distribution, that the mean is known (or assumed to be known), and that the population variance is estimated from the sample.
- t test** A univariate hypothesis test using the t distribution, which is used when the standard deviation is unknown and the sample size is small.
- Target population** The collection of elements or objects that possess the information sought by the researcher and about which inferences are to be made.
- tau b** A test statistic that measures the association between two ordinal-level variables. It makes an adjustment for ties and is the most appropriate when the table of variables is square.
- tau c** A test statistic that measures the association between two ordinal-level variables. It makes an adjustment for ties and is most appropriate when the table of variables is not square but a rectangle.
- Telescoping** A psychological phenomenon that takes place when an individual telescopes or compresses time by remembering an event as occurring more recently than it actually occurred.
- Territorial map** A tool for assessing discriminant analysis results by plotting the group membership of each case on a graph.
- Test market** A carefully selected part of the marketplace particularly suitable for test marketing.
- Test marketing** An application of a controlled experiment done in limited, but carefully selected, test markets. It involves a replication of the planned national marketing programme for a product in test markets.
- Test statistic** A measure of how close the sample has come to the null hypothesis. It often follows a well-known distribution, such as the normal, t , or chi-square distribution.
- Test units** Individuals, organisations or other entities whose response to independent variables or treatments is being studied.
- Testing effects** Effects caused by the process of experimentation.
- Test-re-test reliability** An approach for assessing reliability, in which respondents are administered identical sets of scale items at two different times, under as nearly equivalent conditions as possible.
- Thematic maps** Maps that solve marketing problems. They combine geography with demographic information and a company's sales data or other proprietary information and are generated by a computer.
- Theoretical sampling** Data gathering driven by concepts derived from evolving theory and based on the concept of 'making comparisons'.
- Theory** A conceptual scheme based on foundational statements, or axioms, that are assumed to be true.
- Third-person technique** A projective technique in which respondents are presented with a verbal or visual situation and are asked to relate the beliefs and attitudes of a third person in that situation.
- Time series design** A quasi-experimental design that involves periodic measurements of the dependent variable for a group of test units. Then the treatment is administered by the researcher or occurs naturally. After the treatment, periodic measurements are continued to determine the treatment effect.
- Topic guide** A list of topics, questions and probes that are used by a moderator to help them manage a focus group discussion.
- 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 marketing research project
- Trace analysis** An approach in which data collection is based on physical traces, or evidence, of past behaviour.
- Transcripts** 'Hard copies' of the questions and probes and the corresponding answers and responses in focus group or depth interviews.
- Transitivity of preference** An assumption made to convert paired comparison data with rank order data. It implies that if brand A is preferred to brand B, and brand B is preferred to brand C, then brand A is preferred to brand C.

- Treatment** In ANOVA, a particular combination of factor levels or categories.
- Trend analysis** A method of adjusting for non-response in which the researcher tries to discern a trend between early and late respondents. This trend is projected to non-respondents to estimate their characteristic of interest.
- True experimental designs** Experimental designs distinguished by the fact that the researcher can randomly assign test units to experimental groups and also randomly assign treatments to experimental groups.
- True score model** A mathematical model that provides a framework for understanding the accuracy of measurement.
- Two-group discriminant analysis** Discriminant analysis technique where the criterion variable has two categories.
- Two-sample median test** Non-parametric test statistic that determines whether two groups are drawn from populations with the same median. This test is not as powerful as the Mann-Whitney U .
- Two-tailed test** A test of the null hypothesis where the alternative hypothesis is not expressed directionally.
- Type I error** An error that occurs when the sample results lead to the rejection of a null hypothesis that is in fact true. Also known as alpha error (α).
- Type II error** An error that occurs when the sample results lead to acceptance of a null hypothesis that is in fact false. Also known as beta error (β).
- Univariate techniques** Statistical techniques appropriate for analysing data when there is a single measurement of each element in the sample, or, if there are several measurements on each element, when each variable is analysed in isolation.
- Unstructured observation** Observation that involves a researcher monitoring all relevant phenomena, without specifying the details in advance.
- Unstructured questions** Open-ended questions that respondents answer in their own words.
- Validation sample** That part of the total sample used to check the results of the estimation sample.
- Validity** The extent to which a measurement represents characteristics that exist in the phenomenon under investigation.
- Variable re-specification** The transformation of data to create new variables or the modification of existing variables so that they are more consistent with the objectives of the study.
- Variance** The mean squared deviation of all the values of the mean.
- Variance method** An agglomerative method of hierarchical clustering in which clusters are generated to minimise the within-cluster variance.
- Varimax procedure** An orthogonal method of factor rotation that minimises the number of variables with high loadings on a factor, thereby enhancing the interpretability of the factors.
- Verbal models** Analytical models that provide a written representation of the relationships between variables.
- Verbal protocol** A technique used to understand respondents' cognitive responses or thought processes by having them think aloud while completing a task or making a decision.
- Viewing laboratory** A room where a focus group may be conducted and simultaneously observed, usually by using a two-way mirror.
- Voice pitch analysis** Measurement of emotional reactions through changes in the respondent's voice.
- Volume tracking data** Scanner data that provide information on purchases by brand, size, price, and flavour or formulation.
- Ward's procedure** A variance method in which the squared euclidean distance to the cluster means is minimised.
- Weighting** A statistical procedure that attempts to account for non-response by assigning differential weights to the data depending on the response rates.
- Wilcoxon matched-pairs signed-ranks test** A non-parametric test that analyses the differences between the paired observations, taking into account the magnitude of the differences.
- Word association** A projective technique in which respondents are presented with a list of words, one at a time. After each word, they are asked to give the first word that comes to mind.
- z test** A univariate hypothesis test using the standard normal distribution.
- z value** The number of standard errors a point is away from the mean.