10

Human Resource Management Research Methods

Key concepts and terms

- Central tendency
- Chi-squared test
- Correlation
- Critical evaluation
- Deduction
- Dispersion
- Evidence-based
- Experimental design
- Falsification
- Frequency
- Grounded theory
- Hypothesis
- Induction
- Likert scale
- Linear regression

- Multivariate analysis
- Null hypothesis
- Paradigm
- Phenomenology
- Primary source
- Positivism
- Proposition
- Qualitative research
- Quantitative research
- Reductionism
- Regression
- The research question
- Secondary source
- Significance
- Theory

Learning outcomes

On completing this chapter you should be able to define these key concepts. You should also know about:

- The nature of research
- Planning and conducting research programmes
- Approaches to research
- The basics of statistical analysis
- Research philosophy
- Literature reviews
- Methods of collecting data

Introduction

HRM specialists and those studying for HR professional qualifications may be involved in conducting or taking part in research projects. Postgraduate students will almost certainly do so. Qualified HR specialists should keep up to date as part of their continuous professional development by studying publications such as those produced by the CIPD, which present research findings, or by reading articles in HR journals such as *People Management* or academic journals based on research. Students must extend their understanding of HRM through reading about research findings.

The purpose of this chapter is to explain what is involved in planning and conducting research projects. This will be done against the background of a review of the nature and philosophy of research. Descriptions will be given of the main approaches used by researchers, including literature reviews, quantitative and qualitative methods and collecting and analysing data.

The nature of research

Research is concerned with establishing what is and from this predicting what will be. It does not decide what ought to be; that is for human beings interpreting the lessons from research in their own context. Research is about the conception and testing of ideas. This is an inductive, creative and imaginative process, although new information is normally obtained within the framework of existing theory and knowledge. Logic and rational argument are methods of testing ideas after they have been created.

What emerges from research is a theory – a well-established explanatory principle that has been tested and can be used to make predictions of future developments. A theory is produced by clear, logical and linear development of argument with a close relationship between

information, hypothesis and conclusion. Quality of information is a criterion for good research as is the use of critical evaluation techniques, which are described later in this chapter.

The production of narratives that depict events (case studies) or the collection of data through surveys, are elements in research programmes but they can stand alone as useful pieces of information that illustrate practice.

Research methodology is based on research philosophy and uses a number of approaches, as described later. There is usually a choice about which philosophy or approach or which combination of them should be used.

The characteristics of good research

The characteristics of good research, as identified by Phillips and Pugh (1987) are first, it is based on an open system of thought that requires continually testing, review and criticism of other ideas and a willingness to hazard new ideas. Second, the researcher must always be prepared to examine data critically, and to request the evidence behind conclusions drawn by others. Third, the researcher should always try to generalize the research but within stated limits. This means attempting to extract understanding from one situation and to apply it to as many other situations as possible.

Research philosophy

Research can be based on a philosophy of positivism or phenomenology.

Positivism

Positivism is the belief that researchers should focus on facts (observable reality), look for causality and fundamental laws, reduce phenomena to their simplest elements (reductionism), formulate hypotheses and then test them. Researchers are objective analysts. The emphasis in positivism is on quantifiable observations that lend themselves to statistical analysis. It tends to be deductive (see page 187).

Phenomenology

Phenomenology focuses more on the meaning of phenomena than on the facts associated with them. Researchers adopting this philosophy try to understand what is happening. Their approach is holistic, covering the complete picture, rather than reductionist. Researchers collect and analyse evidence, but their purpose is to use this data to develop ideas that explain the meaning of things. They believe that reality is socially constructed rather than objectively determined. Using a phenomenological approach means that the research unfolds as it pro-

ceeds – early evidence is used to indicate how to move on to the next stage of evidence collection and analysis, and so on. It tends to be inductive (see page 187).

Table 10.1   Alternative research philosophies

Advantages and disadvantages of alternative research philosophies (Easterby-Smith *et al*, 1991)			
Positivism		Phenomenology	
Advantages	**Disadvantages**	**Advantages**	**Disadvantages**
• Wide coverage of the range of situations • Can be fast and economical • May be relevant to policy decisions when statistics are aggregated in large samples	• Methods tend to be flexible and artificial • Not very effective in understanding processes or the significance people attach to actions • Not very helpful in generating theories • Because they focus on what is or what has been recently, they make it hard for policy makers to infer what actions should take place in the future	• Can look at change processes over time • Help to understand people's meanings • Help to adjust to new issues and ideas as they emerge • Contribute to the development of new theories • Gather data that is seen as natural rather than artificial	• Data gathering can take up a great deal of time and resources • The analysis and interpretation of data may be difficult • May be harder than a positivist approach to control pace, progress and endpoints • Policy makers may give low credibility to a phenomenological study

As Valentin (2006) has commented:

A positivist perspective has dominated mainstream management research and theory. This assumes a broad consensus concerning the goals and practices of management. Management is seen as a purely instrumental process, objective, neutral, simply concerned with methods to ensure control and efficiency in organizations.

Planning and conducting research programmes

Against this background, the steps required to plan and conduct a research programme are as follows:

1. Define research area. This should be one that interests the researcher and has a clear link to an accepted theory or an important issue that is worth exploring. The research should generate fresh insights into the topic. It is necessary to undertake background reading at this stage by means of a preliminary review of the literature (particularly academic journals but also books, especially those based on research) to identify what has already been achieved in this area and any gaps (academic articles often include proposals for further research). The context within which the research is to be carried out needs to be explained and justified.

2. Formulate initial research question. This provides a rationale for the research. It is in effect a statement that answers the questions: 'What is this research project intended to address and what is its potential contribution to increasing knowledge?' At this stage it is based on the outcome of the initial work carried out in Step 1 but it will be refined and reformulated at a later stage when more information about the research has been made available.

3. Review literature. A literature review will focus mainly on academic journals. The aim is to establish what is already known about the topic, identify existing theoretical frameworks and find out what other relevant research has been carried out. The conduct of literature reviews is considered in more detail on page 180 of this chapter.

4. Develop theoretical framework. It is necessary to conduct the research within a clear theoretical framework. This will set out the models, concepts and theories that can be drawn on and developed to provide an answer to the research question. If an appropriate framework does not exist, a grounded theory approach (see page 188) may be required in which the researcher uses empirical evidence directly to establish the concepts and relationships that will be contained in the theory adopted as the research framework. It is important to be clear about the assumptions, conditions and limitations within which the investigation is taking place.

5. Finalize the research question. The initial research question needs to be finalized in the light of the outcome of the earlier steps. The final research question will identify the issues to be explored and the problems to be investigated. It will include a statement of intent that will set out what the research is to achieve. This statement leads to the formulation of the hypotheses or propositions that will be tested by survey or experiment during the research programme.

6. Formulate hypotheses or propositions. An hypothesis provisionally states a relationship between two concepts in such a way that the consequences of the statement being true can be tested. Hypotheses (there may be more than one) indicate the form the research project

will take in the shape of obtaining and analysing the evidence required to test them. Hypotheses may be attached to the statement of the research question. A proposition is a proposal put forward as an explanation of an event, a possible situation or a form of behaviour that will be tested by the research.

7. Design the research. This means considering initially what research philosophy will be adopted. Is it to be positivist, phenomenological, or both? It is then necessary to establish the methodology. A decision will need to be made on the extent to which the research will be quantitative, qualitative or, again, a combination of the two (see page 181). Methods of collecting and analysing evidence and testing hypotheses or propositions will be described. The sources of evidence and how they will be accessed will be identified. This will include the analysis of primary and secondary source documents, further literature reviews, surveys and field work. The design must clearly indicate how it will address the research question and be consistent with the theoretical framework. If at a later stage this is shown not to be the case, then the design will have to be amended.

8. Draw up research programme. This will cover how the research will be conducted, the timetable and the resources (funding, people, software, etc) required. Careful project planning is essential.

9. Prepare and submit proposal. This will justify the research by setting out the research question and the proposed methodology. It will also describe the programme and the resources required.

10. Conduct the research project. This includes obtaining and analysing the evidence from the various sources needed to answer the research question and prove or disprove hypotheses. The significance of the findings in relation to the research question and the hypotheses will be discussed and reference will be made to relevant information provided in the literature. This involves an extended literature review (see page 180), data collection (see pages 182–87) the use of critical evaluation processes (see pages 189–91) and the use of statistical analysis where relevant (see pages 191–95).

11. Develop conclusions. These draw together all the evidence. They provide the answer to the research question and explain why hypotheses have been accepted or rejected. The significance of the findings will also be assessed in terms of how they contribute to the development of existing knowledge and understanding. Any limitations to the study should also be mentioned.

12. Make recommendations. These set out management guidelines emerging from the research. They may also indicate any follow-up actions required if the research has been conducted within an organization.

Further guidance on conducting HRM research programmes is provided by Anderson (2004).

The ethics of research

There are a number of ethical issues that affect research. They include the need for researchers generally to act with integrity, for example in their dealings with the organization in which they are researching and the people they deal with. They must also respect the rights of participants by not publishing any information that might harm their interests and to be honest about their role when participating in research, especially when they are participating observers.

Literature reviews

Literature reviews or searches are essential preliminary steps in any research project. They often focus on articles in academic journals although textbooks may also be consulted, especially if they are based on research. It is necessary to know what has already been covered and the theories that have been developed to provide leads and reference points or as the basis for a grounded theory approach.

Literature searches in academic journals are much easier now by means of the Business Source Corporate database made available through EBSCO. CIPD members can access this through the CIPD website, on which about 350 journals are available. In most cases articles can be downloaded free of charge although some journals restrict this service for the first 12 months after publication. Searches can be made by subject matter, but unless the research is refined a huge number of references may be turned up – searching 'performance management' produces more than 6,000 results! The search can be extended through the references included in articles. A checklist to use when evaluating an article or text is given below.

Literature evaluation checklist

- To what extent is the article/text relevant to my research?
- What was the aim of the article/text?
- To what extent was this aim achieved?
- Are the findings supported by rigorous and convincing research?
- Does the article/text present new and interesting ideas or perspectives?
- Is the article/text clear and persuasive?
- To what extent do I agree with the views expressed?

Quantitative and qualitative methods of research

One of the key decisions to be made in planning and conducting a research programme is the extent to which quantitative methods (which broadly follow the positivist philosophy) or qualitative methods (which broadly follow the phenomenological philosophy) are used.

Quantitative research

Quantitative research is empirical – based on the collection of factual data that is measured and quantified. It answers research questions from the viewpoint of the researcher. It may involve a considerable amount of statistical analysis using methods for collecting the data through questionnaires, surveys, observation and experiment. The collection of data is distinct from its analysis.

Qualitative research

Qualitative research aims to generate insights into situations and behaviour so that the meaning of what is happening can be understood. It emphasizes the interpretation of behaviour from the viewpoint of the participants. It is based on evidence that may not be easily reduced to numbers. It makes use of interviews, case studies and observation but it may also draw on the information obtained from surveys. It may produce narratives or 'stories' describing situations, events or processes.

Comparison and use of quantitative or qualitative research

Quantitative research measures and predicts, whereas qualitative research describes and understands; see Table 10.2.

Table 10.2   Contrasts between quantitative and qualitative research (Bryman and Bell, 2007)

Quantitative research	Qualitative research
numbers	words
researcher distant	researcher close
macro	micro
hard data	soft data
theory testing	theory building
static	process
structured	unstructured

As Valentin (2006) notes, mainstream management journals, especially US ones, focus on empirical research using quantitative methodologies. There is a growing trend in the UK to follow suit, but in Europe there is greater preference for qualitative over quantitative methods, with case studies being a popular approach, at least for HRD (human resource development) research.

However, the distinction between qualitative and quantitative research is sometimes blurred. Easterby-Smith *et al* (1991) mention that increasingly researchers argue that an attempt should be made to mix methods to some extent because this will provide more perspectives on the phenomena to be investigated.

Methods of collecting data

The main methods of collecting data are interviews, questionnaires, surveys, case studies, observation, diaries and experimental designs.

Interviews

Interviews are an important research method. They obtain factual data and insights into attitudes and feelings and can take three forms:

1. Structured, which means that they are entirely concerned with obtaining answers to a pre-prepared set of questions. This ensures that every topic is covered and minimizes variations between respondents. But they may be too rigid and inhibit spontaneous and revealing reactions.

2. Unstructured, which means that no questions have been prepared in advance and the person being interviewed is left free to talk about the subject without interruption or intervention. Such 'non-directive' interviews are supposed to provide greater insight into the interviewee's perspective, avoid fitting respondents into predetermined categories and enable interviewers to explore issues as they arise. But they can be inconsequential and lead to poor data that are difficult to analyse.

3. Semi-structured, which means that the areas of interest have been predetermined and the key questions to be asked or information to be obtained have been identified. The interview may have a checklist but does not follow this rigidly. This approach enables the interviewer to phrase questions and vary their order to suit the special characteristics of each interviewee. It may avoid the problems of the completely structured or unstructured interview but it does require a considerable degree of skill on the part of the interviewer.

Interviews are basically qualitative but they can become more quantitative by the use of content analysis. This records the number of times reference is made in an interview to the key issues or areas of interest it was intended to cover.

The advantages of interviews are that they obtain information directly from people involved in the area that is being researched and can provide insights into attitudes and perspectives that questionnaires and surveys will not reveal, thus promoting in-depth understanding. They enable the interviewer to probe answers and check that questions had been understood. But the disadvantages are that:

- the construction of the interview questions may result in leading questions or bland answers;

- interviewers may influence the interviewees' reactions by imposing their own reference frame;

- respondents may tell interviewers what they want to hear;

- they are time-consuming – to set up, to conduct and to analyse;

- they require considerable interviewing skills including the abilities to recognize what is important and relevant, to probe when necessary, and to listen and to control the interview so that it covers the ground it was intended to cover.

Questionnaires

Questionnaires collect data systematically by obtaining answers on the key issues and opinions that need to be explored in a research project. They are frequently used as a means of gathering information on matters of fact or opinion. They use a variety of methods, namely closed questions that require a yes or no answer, ranking in order of importance or value, or Likert scales. The latter, named after Rensis Likert the US sociologist who invented them, ask respondents to indicate the extent to which they agree or disagree with a statement. For example, in response to a statements such as 'I like my job' the choice may be 1 strongly agree, 2 agree, 3 disagree, 4 strongly disagree. Alternatively, an extended scale may be used and respondents asked to circle the number that reflects their view about the statement (the higher the number the greater the agreement), for example:

My contribution is fully recognized   1 2 3 4 5 6 7 8 9

Extended scales facilitate the quantitative analysis of responses to questionnaires.

To construct and use a questionnaire effectively it is necessary to:

- Identify the key issues and potential questions.

- Ensure questions are clear.

- Avoid asking two questions in one item.

- Avoid leading questions that supply their own answers.

- Decide on the structure of the questionnaire including its length (not too many items) and the choice of scale.

- Code questions for ease of analysis.

- Start with simple factual questions, moving on later to items of opinion or values.

- Add variety and the opportunity to check consistency by interspersing positive statements such as 'I like working for my boss' with occasional associated negative ones such as 'I do not get adequate support from my boss'.

- Pilot test the questionnaire.

- Code results and analyse. Where rating scales have been used the analysis can be quantified for comparison purposes. Content analysis can be used to analyse narrative answers to open-ended questions.

Questionnaires are effective in gathering factual evidence but are not so useful for researchers who are investigating how or why things are happening. It is also impossible to assess the degree of subjectivity that has crept in when expressing opinions. For example, HR managers may give an opinion on the extent to which a performance-related pay scheme has in fact improved performance but the evidence to support that opinion will be lacking. This is where interviews can be much more informative.

Surveys

Surveys obtain information from a defined population of people. Typically, they are based on questionnaires but they can provide more powerful data than other methods by using a combination of questionnaires and interviews and, possibly, focus groups (groups of people gathered together to answer and discuss specific questions). When developing and administering surveys the issues are:

- The definition of the purpose of the survey and the outcomes hoped for – these must be as precise as possible.

- The population to be covered – this may involve a census of the whole population. If the population is large, sampling will be necessary (see below).

- The choice of methods – relying entirely on questionnaires may limit the validity of the findings. It is better, if time and the availability of finance permit, to complement them with interviews and, possibly, focus groups. Consideration has to be given to the extent to which triangulation (comparing the information obtained from different sources) is desirable (it usually is) and possible.

- The questions to which answers are required, whichever method is used.

- The design of questionnaires and the ways in which interview or focus groups, if used, should be structured.

- How the outcome of the survey will be analysed and presented, including the use of case studies.

In using surveys, and possibly other methods, it may not be feasible to cover the whole population (the sampling frame) and sampling will therefore be necessary. Sampling means that a proportion of the total population is selected for study and the aim is to see that this proportion represents the characteristics of the whole population. The sample must not be biased and that is why in large-scale surveys use is made of random sampling, ie the individuals covered by a survey are not selected in accordance with any criteria except that they exist in the population and can be reached by the survey. It is the equivalent of drawing numbers out of a hat. However, if the sample frame is considered to be already arranged randomly, as in the electoral roll, then structured sampling, that is, sampling at regular intervals, can be employed.

Sampling can produce varying degrees of error depending on the size of the sample. Statistical techniques can be used to establish sample errors and confidence limits. For example, they might establish that a sampling error is 3 per cent and the confidence limit is 95 per cent. This could be reasonably satisfactory, depending on the nature of the research (medical research aims to achieve 100 per cent confidence).

Case study

A case study is a description or history of an event or sequence of events in a real life setting. In learning and development, case studies are analysed by trainees to learn something by diagnosing the causes of a problem and working out how to solve it.

Case studies are used extensively in HRM research as a means of collecting empirical evidence in a real life context. Information is collected about an event or a set of events that establishes what has happened, how it happened and why it happened. Case studies provide information that contributes to the creation of a theory as part of a grounded theory approach, or the validation of an established theory. In addition, they can take the form of stories or narratives that illuminate a decision or a set of decisions, why they were taken, how they were implemented and with what result. They can illustrate a total situation and describe the processes involved and how individuals and groups behave in a social setting.

Case study protocol sets out the objectives of the research, how the case study will support the achievement of those objectives, including the evidence required, and how the work of producing the case study will be conducted. The methodology covers:

- sources of evidence – interviews, observation, documents and records;
- the need to use multiple sources of evidence (triangulation) so far as possible;
- the questions to which answers need to be obtained;

- how the case study should be set up including informing those involved of what is taking place and enlisting their support;

- the schedule of interviews and other evidence collection activities;

- how the case study database recording the evidence will be set up and maintained;

- how the case study will be presented – including the chain of evidence so that the reader can follow the argument and trace the development of events, the headings and report guidelines (these may be finalized during the course of the exercise) and whether or not the name of the organization will be revealed on publication (named cases studies are more convincing than anonymous ones);

- how approval will be sought for the publication of the case study, especially if it reveals the name of the organization.

Case studies are useful ways of collecting information on the reality of organizational life and processes. But there is a danger of the studies being no more than a story or an anecdote that does not contribute to greater knowledge or understanding. Quite a lot of skill and persistence is required from the researcher in gaining support, ensuring that relevant and revealing information is obtained and presenting the case study as a convincing narrative from which valid and interesting conclusions can be derived. All this must be done without taking a biased view, which can be difficult.

Observation

Observation of individuals or groups at work is a method of getting a direct and realistic impression of what is happening. It can be done by a detached or an involved observer, or by participant observation.

Detached observers who simply study what is going on without getting involved with the people concerned may only get a superficial impression of what is happening and may be resented by the people under observation as 'eaves-dropping'. Involved observers work closely with employees and can move around, observe and participate as appropriate. This means that they can get closer to events and are more likely to be accepted, especially if the objectives and methods have been agreed in advance. Participant observation in the fullest sense means that the researcher becomes an employee and experiences the work and the social processes that take place at first hand. This can provide powerful insights but is time-consuming and requires considerable skill and persistence.

The issues with any form of observation are getting close enough to events to understand their significance and then analysing the mass of information that might be produced in order to produce findings that contribute to answering the research question.

Diaries

Getting people to complete diaries of what they do is a method of building a realistic picture of how people, especially managers, spend their time.

Experimental designs

Experimental designs involve setting up an experimental group and a control group and then placing subjects at random in one or other group. The conditions under which the experimental group functions are then manipulated and the outcomes compared with the control group, whose conditions remain unchanged. The classic case of an experimental design was the Hawthorne experiment, the results of which had a major impact on thinking about how groups function and on the human relations movement. But this was exceptional. It is much easier to use experiments in a laboratory setting, as has been done many times with students. But there is always the feeling that such experiments do not really reflect real life conditions.

Processes involved in research

This section describes the logical, analytical and critical thinking processes that are used in research, namely deduction, induction, hypothesis testing, grounded theory, paradigms and critical evaluation.

Deduction

Research involves deduction, which is the process of using logical reasoning to reach a conclusion that necessarily follows from general or universal premises. If the premises are correct, so is the deduction. The conclusion is therefore contained within the evidence. It is not a creative or imaginative argument which produces new ideas.

Induction

Research can also be based on induction, which is the process of reaching generalized conclusions from the observation of particular instances. In contrast to deduction, inductive conclusions may be tentative but they contain new ideas. A creative leap may be required to reach them. Karl Popper (1972) referred to the problem of induction, which is that while science is seen as rational, deductive, logical, certain and objective, scientific progress seems to depend on processes that are imaginative, not entirely logical and tentative. But in research both deductive and inductive reasoning can be used in hypothesis testing.

Hypothesis testing

Formulating a hypothesis is an important element in a research project in that it provides a basis for the development of theory and the collection and analysis of data. A hypothesis is a supposition – a tentative explanation of something. It is a provisional statement that is taken to be true for the purpose of argument or a study and usually relates to an existing wider body of knowledge or theory. A hypothesis has to be tested and should be distinguished from a theory which, by definition, has been tested. A good hypothesis contains two concepts and proposes a relationship between the two. A working hypothesis is a general hypothesis that has been operationalized so that it can be tested.

Hypothesis formulation and testing use the strengths of both deductive and inductive argument; the former entirely conclusive but unimaginative, the latter tentative but creative. Induction produces ideas, deduction tests them.

To test a hypothesis, data have to be obtained that will demonstrate that the predicted consequences are true or false. Simply leaping to the conclusion that a hypothesis is true because a single cause of the consequence has been observed falls into the trap of what logicians call the 'fallacy of affirming the consequent'. There may be alternative and more valid causes. The preferred method of testing is that of denying the consequent. This is 'falsification' as advocated by Karl Popper (1959). His view was that however much data may be assembled to support a hypothesis, it is not possible to reach a conclusive proof of the truth of that hypothesis. Popper therefore proposed that it was insufficient simply to assemble confirmatory evidence. What must also be obtained is evidence that refutes the hypothesis. Only one instance of refutation is needed to falsify a theory, whereas however many confirmations of the theory exist it will still not be proved conclusively. I had the good fortune to be taught by Popper at the LSE and he illustrated his concept of falsification with swans. The hypothesis is that all swans are white and someone who stayed in Great Britain and didn't visit a zoo might think that this was the case. But a visit to Australia would lead to the discovery that swans can also be black. It is best, according to Popper, to take a falsification view and search for swans that are not white. This would mean that the original hypothesis would have to be modified to state that swans can be either white or black.

Grounded theory

Grounded theory is an inductive method of developing the general features of a theory by grounding the account in empirical observations or evidence. The researcher uses empirical evidence directly to establish the concepts and relationships that will be contained in the theory. Evidence is collected from both primary sources (ie obtained directly by the researcher from the originator of the evidence) and secondary sources (ie information that is already available in the literature or the internet). Use is made of triangulation – the corroboration of evidence by comparing what has emerged from different sources.

Paradigm

The term 'paradigm' has become popularized as meaning a way of looking at things. It is often used loosely, but properly it means the philosophical and theoretical framework of a scientific school or discipline within which theories, laws and generalizations and the experiments performed in support of them, are formulated. In other words, it is a common perspective that underpins the work of theorists so that they use the same approach to conducting research.

Critical evaluation

Critical evaluation involves making informed judgements about the value of ideas and arguments. It uses critical thinking, which is the process of analysing and evaluating the quality of ideas, theories and concepts in order to establish the degree to which they are valid and supported by the evidence (evidence-based) and the extent to which they are biased. It means reflecting on and interpreting data, drawing warranted conclusions and identifying faulty reasoning, assumptions and biases. It is necessary to test propositions using the following checklist.

Testing propositions checklist

- Was the scope of the investigation sufficiently comprehensive?
- Are the instances representative or are they selected simply to support a point of view?
- Are there contradictory instances that have not been looked for?
- Does the proposition conflict with other propositions for which there are equally good grounds?
- If there are any conflicting beliefs or contradictory items of evidence, have they been put to the test against the original proposition?
- Could the evidence lead to other equally valid conclusions?
- Are there any other factors that have not been taken into account which may have influenced the evidence and, therefore, the conclusion?

Critical evaluation requires clear thinking and the application of logical reasoning to establish the validity of a proposition, concept or idea. It is necessary to spot fallacious and misleading arguments. A fallacy is an unsound form of argument leading to an error in reasoning or a misleading impression. The most common form of fallacies that need to be discerned in other people's arguments or avoided in one's own are summarized below.

Common logical fallacies

- Sweeping statements – over-simplifying the facts or selecting instances favourable to a contention while ignoring those that conflict with it.

- Potted thinking – using slogans and catch phrases to extend an assertion in an unwarrantable fashion.

- Special pleading – focusing too much on one's own case and failing to see that there may be other points of view.

- Reaching false conclusions – forming the view that because some are then all are. An assertion about several cases is twisted into an assertion about all cases. The conclusion does not follow the premise. This is what logicians call the 'undistributed middle', which occurs when a syllogism is expressed as: All A is B. All C is B. Therefore all A is C. The conclusion all A is C is false because although everything that applies to A and C also applies to B, there is nothing in their relationship to B which connects A and C together.

- Affirming the consequent – leaping to the conclusion that a hypothesis is true because a single cause of the consequence has been observed.

- Begging the question – taking for granted what has yet to be proved.

- Chop logic – 'Contrariwise', continued Tweedledee, 'if it was so, it might be, and if it were so, it would be; but as it isn't it ain't. That's logic.' Chop logic may not always be as bad as that, but it is about drawing false conclusions and using dubious methods of argument. Examples are selecting instances favourable to a contention while ignoring those that contend with it; twisting an argument used by an opponent to mean something quite different from what was intended; diverting opponents by throwing on them the burden of proof for something they have not maintained; ignoring the point in dispute, and reiterating what has been denied and ignoring what has been asserted. Politicians know all about chop logic.

The following checklist can be used when carrying out critical evaluation.

Critical evaluation checklist

- Is the research methodology sufficiently rigorous and appropriate?

- Are the results and conclusions consistent with the methodology used and its outcomes?

- Have hypotheses been stated clearly and tested thoroughly?

- Do there appear to be any misleading errors of omission or bias?

- Are any of the arguments tendentious?

- Are inferences, findings and conclusions derived from reliable and convincing evidence?

- Has a balanced approach been adopted?

- Is the perspective adopted by the researchers stated clearly?

- Have any underlying assumptions been identified and justified?

- Have the component parts been covered in terms of their interrelationships and their relationship with the whole?

- Have these component parts been disaggregated for close examination?

- Have they been reconstructed into a coherent whole based on underlying principles?

Statistical analysis

Whichever approach or combination of approaches is used, the results have to be analysed and presented in reports, journal articles, papers or books. Quantitative research clearly involves statistical analysis. Reports on qualitative research may be largely descriptive but qualitative research is often supported by quantitative research, and statistical analysis to illuminate and support findings may still be required.

In general, the statistical analysis of quantified information is used to:

- identify and convey salient facts about the population under consideration;

- test hypotheses;

- make predictions on what is likely to happen;

- build a model that describes how a situation probably works;

- answer questions about the strength of evidence and how much certainty can be attached to predictions and models.

Statistics are used to describe and summarize data relating to a 'population', ie a homogeneous set of items with variable individual values. This involves measuring frequencies, central tendencies and dispersion. They are also used to analyse the data and the sample from which the

data were obtained to measure the relationships between variables (correlation, regression and the chi-squared test), to establish the relation between cause and effect (causality) and to assess the degree of confidence that can be attached to conclusions (tests of significance). A wide variety of software is available to conduct the more sophisticated analyses.

Frequency

The number of times individual items in a population or set occur is represented in frequency distributions expressed in tabular form or graphically. Commonly used charts are illustrated in Figure 10.1.
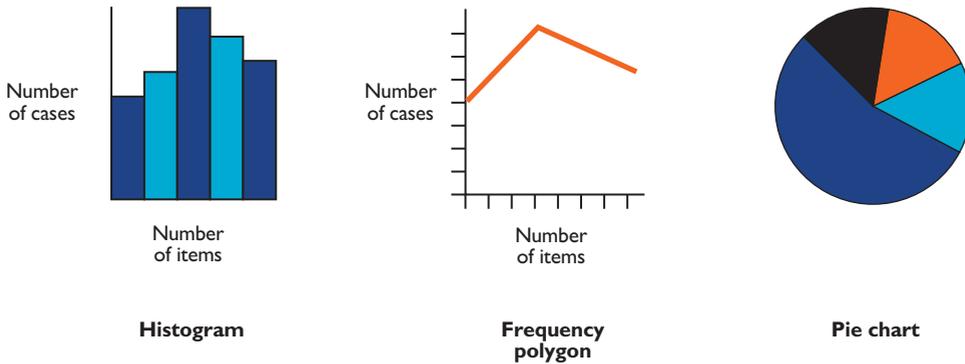

Figure 10.1   Examples of charts

Measures of central tendency

Measures of central tendency identify the middle or centre of a set of data. There are three types:

1. Arithmetic average or mean – the total of items or scores in a set divided by the number of individual items in the set. It may give a distorted picture because of large items at either end of the scale.

2. Median – the middle item in a range of items (often used in pay surveys when the arithmetic mean is likely to be distorted).

3. Mode – the most commonly occurring item.

Measures of dispersion

These are often useful to measure the extent to which the items in a set are dispersed or spread over a range of data. This can be done in four ways:

1. By identifying the upper quartile or lower quartile of a range of data. The strict definition of an upper quartile is that it is the value which 25 per cent of the values in the distribution

exceed, and the lower quartile is the value below which 25 per cent of the values in a distribution occur. More loosely, especially when looking at pay distributions, the upper and lower quartiles are treated as ranges rather than points in a scale and represent the top and the bottom 25 per cent of the distribution respectively.

2. By presenting the total range of values from top to bottom, which may be misleading if there are exceptional items at either end.

3. By calculating the inter-quartile range, which is the range between the value of the upper quartile and that of the lower quartile. This can present more revealing information of the distribution than the total range.

4. By calculating the standard deviation, which is used to indicate the extent to which the items or values in a distribution are grouped together or dispersed in a normal distribution, ie one which is reasonably symmetrical around its average. As a rule of thumb, two-thirds of the distribution will be less than one standard deviation from the mean, 95 per cent of the distribution will be less than two standard deviations from the mean, and less than 1 per cent of the distribution is more than three standard deviations from the mean. Another measure of dispersion is variance, which is the square of a standard deviation.

Correlation

Correlation represents the relationship between two variables. If they are highly correlated they are strongly connected to one another, and vice versa. In statistics, correlation is measured by the coefficient of correlation, which varies between -1 to +1 to indicate totally negative and totally positive correlations respectively. A correlation of zero means that there is no relationship between the variables. Establishing the extent to which variables are correlated is an important feature of HRM research, for example assessing the degree to which a performance management system improves organizational performance. But correlations do not indicate causal relationships. They can only show that X is associated with Y but this does not mean necessarily that X causes Y. Multiple correlation looks at the relationship between more than two variables.

Regression

Regression is another way of looking at the relationship between variables. Regression analysis examines how changes in levels of X relate to changes in levels of Y. A regression line (a trend line or line of best fit) can be traced on a scattergram expressing values of one variable on one axis and values of the other variable on another axis, as shown in Figure 10.2.
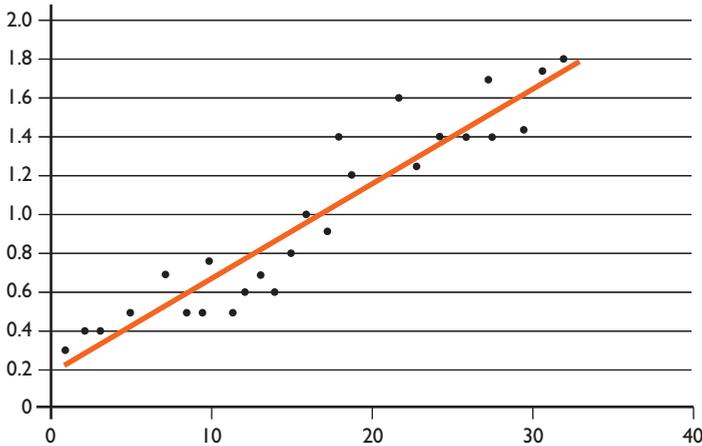
Figure 10.2   A scattergram with regression (trend) line

A trend line like this can be drawn by hand as a line of best fit but it can be calculated mathematically with greater accuracy. The distances of points from the trend line (the residuals) can be calculated as a check on the reliability of the line.

Multiple regression analysis can be conducted with the aid of a computer, which enables the values of additional variables to be predicted under various combinations of conditions.

The chi-squared test

The chi-squared test uses a statistical formula to assess the degree of agreement between the data actually obtained and that expected under a particular hypothesis.

The null hypothesis approach

A null hypothesis is a method of testing a hypothesis frequently used by researchers in which it is assumed that there is no relationship between two or more variables. It asks the question: 'Could the hypothetical relationship have been caused by chance?' If the answer is no, then the hypothesis is worth pursuing. However, it does not prove that the hypothesis is correct; it only indicates that something is worth pursuing. It can be associated with the chi-squared test.

Causality

Causality – determining the link between independent and dependent variables (cause and effect) – is a major issue in research, especially in the HRM field. As mentioned earlier, it may be relatively easy to establish correlations in the shape of a demonstration that X is associated with Y; it is much more difficult and sometimes impossible to prove that X causes Y. There are

a number of reasons for this, of which the three set out below are the most important.

First, the issue is complicated because of the need to distinguish between necessary and sufficient causes:

- Necessary cause: if X is a necessary cause of Y, then the presence of Y necessarily implies the presence of X. However, the presence of X does not imply that Y will occur.

- Sufficient cause: if X is a sufficient cause of Y, then the presence of Y necessarily implies the presence of X. However, another cause Z may alternatively cause Y. If so, the presence of Y does not imply the presence of X.

Second, complications arise because of the phenomenon of multiple causation. There may be a number of factors contributing to a result. Researchers pursuing the holy grail of trying to establish what HRM contributes to organization performance are usually confronted with a number of reasons why a firm has done well in addition to adopting 'best practice' HRM, whatever that is. Statistical methods can be used to 'control' some variables, ie eliminate them from the analysis, but it is difficult if not impossible to ensure that HRM practices have been completely isolated and that their direct impact on performance has been measured. Multivariate analysis is used where there is more than one dependent variable and where the dependent variables cannot be combined.

Third, there is the phenomenon of reverse causation when a cause is pre-dated by an effect – A might have caused B but alternatively, B may have come first and be responsible for A. For example, it is possible to demonstrate that firms with effective performance management schemes do better than those without. But it might equally be the case that it is high performing firms that introduce effective performance management. It can be hard to be certain.

Tests of significance

Significance as a statistical concept refers to the degree to which an event could have occurred by chance. At the heart of statistical science lies a simple idea which is that the chance or probability of various patterns of events can be predicted. When a particular pattern is observed it is possible to work out what the chances of its occurrence may be, given our existing state of knowledge or by making certain assumptions. If something has been observed that is unlikely to have occurred by chance, this occurrence can be accepted as significant. The problem is that any attempt to reach general conclusions may have to rely on fragmentary data. It is usually necessary to rely on samples of the population being studied and all sampling is subject to experimental error – the result can only be expressed in terms of probability and confidence limits will have to be placed on it. These can be calculated in terms of the standard error that might be expected from a sample. A standard error is the estimated standard deviation of a sample mean from a true mean. This implies that on approximately 95 per cent of occasions the estimate of the mean provided by the sample will be within two standard errors of the true mean.

HRM research methods – key learning points

The nature of research

Research is concerned with establishing what is and from this predicting what will be. It is about the conception and testing of ideas.

Research philosophy

Research design can be based on a philosophy of positivism or phenomenology. *Positivism* is the belief that researchers should focus on facts (observable reality), look for causality and fundamental laws. *Phenomenology* is concerned more with the meaning of phenomena than the facts associated with them.

Planning and conducting research programmes

1. Define research area.
2. Formulate initial research question.
3. Review literature.
4. Assess existing theoretical frameworks.
5. Formalize the research question.
6. Formulate hypotheses.
7. Establish the methodology.
8. Draw up research programme.
9. Prepare and submit proposal.
10. Collect and analyse evidence.
11. Develop conclusions.

Literature review

Literature reviews or searches are essential preliminary steps in any research project. They often focus on articles in academic journals although textbooks may also be consulted, especially if they are based on research.

Approaches to research

Research can be quantitative or qualitative. It can use inductive or deductive methods. It involves the testing of hypotheses and may adopt a grounded theory approach, ie an inductive method of developing the general features of a theory by grounding the account in empirical observations or evidence. Use may be made of paradigms – common perspectives that underpin the work of theorists so that they use the same approach to conducting research. Informed judgements about the value of ideas and arguments are made through critical evaluation. It makes use of critical thinking, which is the process of analysing and evaluating the quality of ideas, theories and concepts in order to establish the degree to which they are valid and supported by the evidence.

Methods of collecting data

- Interviews obtain factual data and insights into attitudes and feelings and can be structured, unstructured or semi-structured.

- Questionnaires collect data systematically by obtaining answers on the key issues and opinions that need to be explored in a research project.

- Surveys obtain information from a defined population of people.

HRM research methods – key learning points (continued)

- Case studies collect empirical evidence in a real life context.

The basics of statistical analysis

The statistical analysis of quantified information is used to:

- identify and convey salient facts about the population under consideration;

- test hypotheses;

- make predictions on what is likely to happen;

- build a model that describes how a situation probably works;

- answer questions about the strength of evidence and how much certainty can be attached to predictions and models.

Questions

1. You have been invited to contribute to a workshop in your local university on research management skills. This will involve making a short presentation on 'Using surveys in HR research.' Outline what you will say and why.

2. A friend who is studying for an MA in HRM has sent you the following e-mail: 'I understand that when you did your MA you carried out research making extensive use of case studies. Could you please explain to me how case studies are used and when it is appropriate to do so?' Provide a convincing reply.

3. What are the main advantages and disadvantages of interviews as a means of collecting data in HRM research?

4. A colleague is planning a research project and asks you in an e-mail to explain the differences between quantitative and qualitative research and the circumstances when they are best used. Produce a justified response.

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