Introduction to Business Research I

The Research Proposal

Dr William Wallace

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Introduction to Business Research 1

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First Published in Great Britain in 2003.

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The EBS DBA at a Glance

Programme Rationale

The Edinburgh Business School (EBS) Doctorate in Business Administration (DBA) programme is designed to develop applied business skills that can be used in real-world applications to address and solve real-world issues. The programme is aimed primarily at experienced managers and business professionals who are looking to develop doctoral-level research skills that can be put to practical use.

Traditional doctoral-level research is performed as part of a programme leading to the award of a Doctor of Philosophy (PhD) degree. Many PhD holders move into academia and develop academic careers as professional researchers. The DBA is an equivalent standard alternative. Most EBS DBA graduates will probably remain in commerce and industry and will develop careers as research professionals.

Irrespective of how doctoral skills are used or applied, and whether the programme leads to the award of a PhD or a DBA, the overall level of attainment is the same. In both cases the researcher must contribute to the existing knowledge base in some way. This contribution could be made, for example, through the discovery of new facts. It could, alternatively, be made through the demonstration of high-level critical reasoning. Either way the research process is based on finding out something new, using something in a new way or using an existing tool to fix a new problem.

Many people who enter doctoral programmes have little or no research experience. A significant proportion of people who enter the EBS DBA programme hold existing MBA degrees. MBAs often comprise wholly taught course elements, with little or no direct research. Even people with an existing MSc, which may involve a research element, may have no research experience beyond that required to produce an MSc-level dissertation.

The EBS DBA programme attempts to address this issue by requiring all new entrants to complete a suite of three research courses that prepare the student to work with a mentor and then a supervisor in developing doctoral research. The three research courses are entitled *Introduction to Business Research* because that is what they do: they provide an introduction to how to do business research. They are aimed primarily at people who have no previous experience of doctoral research.

Programme Structure

In the EBS DBA candidates are required to design and implement a programme of doctoral research. The research is written up in the form of a thesis that is presented for examination. The examination is a viva voce or formal defence of the thesis before internal (Heriot-Watt University) and external (other university) examiners.

The EBS DBA comprises two stages: the courses stage and the research stage. The courses stage prepares candidates for each phase of the research stage.
The Courses Stage

The courses stage comprises three courses. These courses are called the *Introduction to Business Research* (IBR) courses. They are referred to as IBR1, IBR2 and IBR3.

- IBR1 explains how to prepare a research proposal.
- IBR2 explains how to prepare a literature review submission.
- IBR3 explains how to design and conduct the main study, generate results and write up the thesis.

The Research Stage

The research stage largely mirrors the courses stage, where the various elements of the thesis are put together. In the research stage three separate pieces of work have to be produced for assessment.

A research proposal: a comprehensive statement of what the candidate proposes to do and how he or she proposes to do it. This covers areas such as the aims and objective of the proposed research, background literature review, outline research methodology, programme of works, ethical issues, etc. IBR1 explains how to prepare a research proposal.

A literature review submission: a title page, summary, introduction and a series of final draft thesis chapters including a comprehensive and exhaustive critical review of the existing literature base in the proposed area of research, together with a synthesis, statement of research aims and objectives, hypotheses and an outline research methodology chapter. IBR2 explains how to prepare a literature review submission.

A final thesis: a 45,000–50,000-word final thesis that incorporates the chapters submitted in the literature review submission (see above) together with a full research methodology chapter, results chapter, conclusions chapter and all other components of the final thesis, bound and submitted according to university regulations. The thesis is then examined by qualified examiners at a viva voce examination. The candidate is questioned, and all parts of the thesis are examined and a face-to-face oral defence is required. IBR3 explains how to design and conduct the main study, generate results and write up the thesis.

Assessment

The courses stage: each of the IBR courses is examined in a three-hour written examination. Candidates must achieve a minimum mark of 50 per cent to pass each examination, and all three examinations must be passed. A maximum of one resit per subject is allowed. If the candidate fails an examination twice, he or she is required to withdraw.

The research stage: the research proposal, literature review submission and final thesis are all submitted for formal review by the DBA Research Committee. The Committee is a panel of EBS and external academics chaired by the EBS DBA Programme Director. Submissions must be accepted by the Committee before the student can progress to the next element. If an element is rejected, the Committee will issue a schedule of further work required and the element is returned to the
candidate. Candidates can normally make up to two resubmissions of each element. If both resubmissions are rejected, the candidate is required to withdraw.

The examination: the thesis is examined at a viva voce examination. Most candidates attend EBS for the examination, although examinations can be arranged via video link if required. A typical viva voce lasts for some two to three hours. The outcome can be anything from 'Recommend award of degree' to 'Fail'. The most likely outcome is 'Recommend award of degree with minor alterations'. In this case the candidate is required to make minor corrections to the thesis prior to being put forward for the award of the degree.

Summary
Candidates have to:
1. Complete IBR1, IBR2 and IBR3 and successfully pass the examination in each case.
2. Prepare a research proposal and have it accepted by the DBA Research Committee.
3. Prepare a literature review submission and have it accepted by the DBA Research Committee.
4. Prepare a final thesis and have it accepted by the DBA Research Committee.
5. Present and successfully defend the thesis at viva voce examination.

The Detailed Content of the IBR Courses
The three courses build on each other. The basic sequence of development is shown below.

Introduction to Business Research 1 (IBR1): The Research Proposal
IBR1 acts as an introduction to business research and provides an explanation of how to develop a research proposal. A research proposal is essentially a structured statement of what the intended research is about and what it will try to achieve. It contains details of exactly what the researcher intends to do and exactly how he or she intends to do it. The research proposal has to address a number of individual areas. For example, it has to demonstrate a reasonable knowledge and understanding of what has already been published in the chosen research area. It has to contain a statement of methodology that explains exactly how the research is to be performed. The final research proposal is assessed by the DBA Research Committee. It has to be accepted by the Committee before the researcher can progress to the supervised stage of the research.

IBR1 explains how to develop and write the research proposal.

Introduction to Business Research 2 (IBR2): The Literature Review
IBR2 develops and builds on the material covered in the first research course. It provides the understanding required by the candidate to develop a full critical literature review and outline methodology. A literature review, as the name suggests, is a full and systematic critical review of all the relevant literature published in the chosen research area. In order to develop doctoral research, the researcher must contribute to the knowledge base. In order to demonstrate a contribution to the knowledge base, it is
first necessary to define what the existing knowledge base is. This is done by critically reviewing all the relevant literature in the chosen area and building up a detailed understanding of that literature and the knowledge contained within it.

IBR2 explains how to develop and write the literature review submission.

**Introduction to Business Research 3 (IBR3): The Research Method, Data Collection, Analysis and Results**

IBR3 provides an understanding of how the candidate can develop and design a suitable research method, collect and analyse data, and generate results and conclusions. It also describes the process involved in writing up a doctoral thesis and presenting the work to a board of examiners. The course covers a range of basic research methodologies at an introductory level, illustrating the basic characteristics of the various approaches. It also explains the process of generating results and conclusions and the mechanics of writing up the thesis and preparing for the examination.

IBR3 explains how to collect data, analyse it and generate results and conclusions. The course also explains how to write up the thesis and then defend it in the examination.

Collectively the three courses provide an introduction to business research. The examinations are designed to measure the student’s knowledge and understanding of the texts and also how well he or she can apply the course content to examination-based case studies. By the time a student has completed all three courses, he or she will have developed a knowledge and understanding of applied business research that will enable him or her to start work with a doctoral supervisor.
Module 1

Introduction

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Learning Objectives
By the time the candidate has completed this module, he or she should understand:

- the structure of the EBS DBA Introduction to Business Research courses;
- the relationship between the courses;
- the aims and objectives of the research stage of the EBS DBA programme;
- the structure of the research stage of the EBS DBA programme;
- the basic concept of a doctoral thesis and what this entails;
- the stages in the development of a doctoral thesis;
- the roles of the people involved in mentoring, supervision and examination;
- some important underlying concepts.

1.1 Introduction

This module introduces the Introduction to Business Research course texts, with particular emphasis on Introduction to Business Research 1. In doing so, it also introduces the research stage of the Edinburgh Business School (EBS) Doctorate in Business Administration (DBA) as a whole. It describes how the three Introduction to Business Research courses form the foundation of the research stage, and explains the philosophy and structure of the research stage and the mechanics of the mentored and supervised phases within the research stage. It describes the structure of the main documents that have to be prepared and submitted for review during the research stage, including the research proposal, the literature review submission and the thesis.
The EBS DBA programme comprises a courses stage and a research stage. Candidates are required to complete the courses stage before progressing to the research stage, and both stages have to be successfully completed for the candidate to be eligible for the award of the degree of DBA.

The courses stage comprises courses that prepare the candidate for the research stage. The courses stage usually comprises the three *Introduction to Business Research* courses. In some cases, however, the courses stage may involve additional courses. For example, where there is a mismatch between a candidate’s existing qualifications and his or her chosen area of specialisation, one or more additional courses may be prescribed. In such cases, the precise composition of the courses stage depends on the candidate’s qualifications and experience. All candidates, except those with existing doctoral degrees, study the three *Introduction to Business Research* courses. Most EBS DBA candidates have little or no research experience when they enter the programme because most hold MBA and/or MSc degrees that contain no applied research. It is necessary, therefore, to develop basic research skills before the candidate progresses to the research stage. The *Introduction to Business Research* courses develop generic knowledge and understanding of how to design and implement applied business research.

*Introduction to Business Research 1* establishes the research foundation. It introduces the concept of applied business research and develops an understanding of how research ideas can be identified, developed and worked up into a formal research proposal that can be critically evaluated to determine the viability of what is proposed.

On completion of *Introduction to Business Research 1*, the candidate will be equipped to design and write a fully structured and coherent research proposal that describes what the research is about, what it is designed to achieve and how it is to be executed to a standard that convinces the DBA Research Committee that the proposed research is viable. The DBA Research Committee is a panel of applied research experts who critically review the research proposal in great detail and identify any areas of ambiguity or weakness so these can be corrected before the candidate proceeds to the next stage. It is, of course, imperative that any weaknesses in the research proposal are identified and corrected before the candidate moves on to implement the research.

### 1.2 Ten Questions on the Research Stage of the DBA Programme

#### 1.2.1 Introduction

A good way to achieve an overview of the DBA research stage is to consider 10 frequently asked questions. The various terms and processes discussed in the questions and answers are all developed in more detail later in this module.
1.2.2 Ten Questions

What is the point of having a research stage?
The EBS DBA is a doctoral degree that is equivalent to a Heriot-Watt University PhD and, therefore, is examined in the same way and to the same standard. Under Heriot-Watt University regulations PhD and DBA degrees must contribute to the knowledge base in the relevant subject area. The research stage allows the candidate to either discover new facts or demonstrate sufficient high-level critical reasoning to make a contribution to the knowledge base.

What is the output of the research stage?
The output is a doctoral thesis that is put forward for examination. The thesis is developed through a series of stages and conforms to a specified structure. The candidate writes up his or her research as a thesis and then presents it to examiners and defends it against critical review. If accepted, and after any corrections are made, the thesis is stored in the university library and in national libraries. As a doctoral thesis, it contributes to the knowledge base in the relevant subject area.

What do I have to do to complete the research stage?
1. Complete the courses phase. The candidate completes the courses required to provide the knowledge base and the Introduction to Business Research courses. Once all courses and examinations have been completed, the candidate is assigned a mentor and progresses to the mentored stage.
2. Complete the mentored phase. The candidate works with the mentor to produce a research proposal that is then submitted for formal review by the DBA Research Committee. The research proposal may be accepted or rejected. Once it has been accepted, the candidate progresses to the supervised stage.
3. Complete the supervised phase. The candidate works with the supervisor to design and implement the research and write up the thesis. The thesis usually comprises two elements:
   Element 1: the literature review submission, which comprises the introduction, literature review, literature synthesis, pilot study report and outline methodology chapters.
   Element 2: the final thesis, which includes the literature review submission (see above) plus the data collection and analysis, and results and conclusions.
4. Present the thesis and defend it before examiners. This usually comprises a verbal (or viva voce) presentation before examiners appointed by the university.

What is a research proposal and why do I need to do one?
A research proposal is a formal document that sets out exactly what is intended to be achieved in the research and how it is to be done. The research proposal is considered by the DBA Research Committee, and the candidate can proceed only when the Committee is convinced of the viability of the research proposal.
What is a mentor and why do I need one?
The mentor is a member of EBS faculty. He or she will guide the candidate as the candidate develops the research proposal. The mentor is necessary because most EBS DBA candidates have little or no research experience and, consequently, need some expert help in writing the research proposal and developing the necessary research skills to be ready to work with a supervisor. The mentor provides generic advice on the proposal and prepares the candidate to work with a supervisor.

When do I get a supervisor?
Candidates are appointed a supervisor as soon as possible after they produce a viable research proposal that is accepted by the DBA Research Committee.

What is a literature review submission and why do I need to do one?
The literature review submission is a formal document that comprises a series of draft chapters that will go on to form part of the final thesis. A typical literature review submission comprises an introduction chapter, a series of literature review chapters, a literature review synthesis, a statement of research aims and objectives and a section on methodology. The candidate can only proceed to the final stage of the research when the Research Committee is convinced of its continued viability.

How big is the final thesis?
The final DBA thesis is normally around 45,000 to 50,000 words including references and appendices. This compares to a typical PhD thesis that is usually not less than 45,000 words and not more than 80,000 words.

Under University regulations doctoral theses (DBA and PhD) shall not normally exceed 80,000 words and shall not normally exceed 400 pages in length including appendices. If a DBA thesis is likely to exceed 80,000 words or 400 pages including references and appendices, a case has to be made to the University prior to submission.

How long will it take me to finish the research stage?
The time required to complete the research stage depends on numerous variables, including the nature of the research, access to data and the time available to the candidate. As a rough guide an ‘average’ candidate with a demanding job and family commitments might expect to complete the research stage in three to four years. A candidate with no work or family commitments might be able to complete the research stage in two to three years.

How is the research stage examined, and when do I get my DBA?
The research stage is examined via thesis and oral examination by internal and external examiners. Once any required corrections have been made to the satisfaction of the examiners, the candidate is recommended for the award of the degree of DBA and the degree is conferred at the next congregation.
1.3 The EBS DBA Introduction to Business Research Courses

Process Model

1.3.1 Introduction

The underlying rationale and fit between the three *Introduction to Business Research* courses is shown in the process model. A process model is a diagrammatic representation of a sequential process split up into its individual components and sub-components.

The sequence is as shown below.

- *Introduction to Business Research 1* explains the principles of research and how to prepare a viable research proposal.
- *Introduction to Business Research 2* explains how to design and conduct a review of the existing knowledge base and literature so that the proposed research can be located within the context of what is already known.
- *Introduction to Business Research 3* explains how to develop a research method that is both reliable and replicable, and how to collect and analyse data and present findings.

This sequence of progression matches that encountered in most academic and industrial research programmes. For example, a product developer working for a mobile phone manufacturer might be interested in developing a new type of handset that uses some kind of innovative touchscreen technology. The company has to be careful how it invests in the research and development of new products as the time and cost implications are considerable and the economic viability of the proposed new product can quickly change in a dynamic market.

The first step is to develop a presentation for review and (hopefully) approval by senior management. The presentation has to contain sufficient information for senior management to make an informed analysis and decision on the technological and financial viability of the proposed new product. It must, however, contain only relevant information. There is no point in including irrelevant content as this will slow the evaluation process down without adding value. In developing the proposal the product developer would identify the gap in the market, substantiate the case using market research results and support this with an indicative business case. The business case would detail likely development and production costs, research and development time estimates, time to market, etc.

This presentation is effectively a research proposal (*Introduction to Business Research 1*). Its purpose is to make a sufficiently strong case to convince senior management to commit to taking the development proposal to the next stage. If the research proposal is accepted, it does not mean the product will go on to be developed for full production or that the eventual produce will be a commercial success. Acceptance of the research proposal simply means that senior management think it has potential and are willing to allow more time and money to be committed to it so it can be developed in more detail at the next stage.

The next stage might be to develop the research proposal further by conducting a detailed analysis of the existing knowledge base on the proposed new product. The
product developer might review a wide range of company and external information on touchscreen technology. This is effectively a literature review (Introduction to Business Research 2) as it is a wide-ranging and critical review of all that is known about what is likely to be involved in developing the proposed new product.

If approved, the next stage will be to put together a detailed research method for developing the new product. The researcher will be required to develop a clear and reliable research method that can be evaluated before the company commits to it. The research method will have to say exactly how the research is to be carried out, what the phases of new product development will be, what evaluation milestones or stages there will be, when the prototypes will be ready, how they will be evaluated, and so on. This process approximates to the research methodology (Introduction to Business Research 3).

This example of the early stages of new product development is illustrative of the general progression outlined in Introduction to Business Research 1, 2 and 3. The Introduction to Business Research texts work both individually and as part of a suite. Individually they describe and develop parts of the overall process. Collectively they describe and develop the process of research from first principles to detailed implementation.
Figure 1.1  The full *Introduction to Business Research* process model
1.3.2 The EBS DBA IBR 1–3 Process Model

The full process model for the Introduction to Business Research courses is shown in Figure 1.1. The sub-process model relevant to Introduction to Business Research 1 is shown in Figure 1.2.

In Introduction to Business Research 1 the candidate is provided with the information required to generate the research proposal.

**Inception and Framing**

The candidate develops an initial concept, which may be suitable for further development, and then carries out a preliminary analysis in order to evaluate the concept. In some cases it may be necessary to perform a formal feasibility study, in which the time required, resources available, deliverables and other practicalities are considered.

**Context**

A research philosophy or paradigm is selected for the proposed research. The candidate may choose to base the research on a quantitative approach or on a qualitative approach or a combination of both. The candidate considers time, cost or other constraints and factors that could limit the outcomes of the research. The final stage is to develop a clear applied business application for the research so that it is anchored in a real business context.

**Research Proposal**

The research proposal is the outcome of the framing and context sub-processes. It is a formal statement of the candidate’s research intent in a standardised form that is evaluated by the EBS DBA Research Committee. It is either accepted or rejected depending on its viability and potential.

The EBS DBA Research Committee is a panel of EBS and external faculty members who review and critically evaluate each individual research proposal and recommend acceptance or rejection. The DBA Research Committee must be
convincing the research proposal is sufficiently robust and viable before allowing the
candidate to progress to the next stage, when a supervisor is appointed.

The format and presentation of the research proposal is discussed in detail in
Module 6. The research proposal has three main components that must be borne in
mind at all times:
1. Identify the research question, i.e. what is to be found out;
2. Describe how the data will be collected;
3. Show how the data will be analysed.

1.4 The EBS DBA Research Process

1.4.1 Introduction

The aim of the EBS DBA programme is to produce applied business research professionals who can use their doctoral-level skills to real effect at senior executive level in a business environment. This differs from the typical aim of a Doctor of Philosophy (PhD) degree, which is to produce professional researchers who use their research skills with less direct application and more emphasis on theoretical and academic application.

The structure of the DBA differs from most PhD programmes in that it is composed of a courses stage and a research stage. A traditional PhD programme comprises little or no courses element, and the candidate focuses entirely on the research element. This is because candidates typically enrol on a PhD programme after completing a first degree and MSc. Some universities run overlapping PhD and MSc programmes, where PhD students are required to pursue a relevant MSc as part of the first year or first two years of the research programme.

The structure of the courses stage varies depending on the existing qualifications of the candidate. All candidates are required to complete Introduction to Business Research 1, 2 and 3 in sequence. Many candidates are required to complete additional subject-specific courses in addition to the Introduction to Business Research courses. By the time the candidate has completed the course stage, he or she has demonstrated a command of both the subject-specific and research-oriented skills necessary to prepare him or her for doctoral research, i.e. a basic working knowledge of how to prepare a viable research proposal, literature review and research methodology, and of how to write up the research in the form of a structured examinable thesis. This does not, of course, guarantee that the subsequent research will be successful.

1.4.2 The Concept of the Knowledge Base

Doctoral level research means research that contributes to the knowledge base in the chosen research area. Knowledge base means all published information in the research area. Published information includes everything from website articles to peer-reviewed research journal articles.

For example, if a candidate performs a literature search in the field of strategic risk interdependency, he or she might identify 10,000 published pieces of work
ranging from PhD theses to newspaper articles. This is the literature base. The literature base is not the same as the knowledge base. For example, the literature base may contain two publications that say different things, and there may be two corresponding schools of thought within the knowledge base. In addition some published texts are more significant than others. For example, a published research paper in a top-ranking refereed research journal carries more knowledge-base and research significance than an unsubstantiated newspaper article. Both, however, represent part of the literature base.

The knowledge base is all the knowledge generated by and contained within the literature base, including all current theories, schools of thought, original ideas under development, etc. In doctoral-level research, the candidate is required to add to this knowledge base. There are two widely recognised ways in which this can be done. The first is by the discovery of new facts. For example, a researcher might prove a causal relationship between two variables where no such relationship had been shown to exist before. The second is by independent critical reasoning. For example, a researcher might demonstrate a new application for a known tool or model by applying it to a specific case.

It should be noted that the size of the knowledge or literature base in the chosen research area is very important. There are advantages and disadvantages associated with large and small literature bases. If the literature base is small, the candidate has plenty of scope for selecting a specific area that has not been researched before and it is easier to address the issue of originality. On the other hand, there is less literature on which to base the candidate’s proposed research. There are fewer references that can be cited in substantiation of the proposed research design. In addition, the fact that there are few publications in an area may be a clear warning that the candidate should be wary of that area. In the case of a subject with a large literature base, the candidate may have more of a problem in defining an area where an original contribution can be made, but a large literature base means there is plenty of existing research upon which the proposed research can be based and is also indicative of the area itself being viable for research.

In other words, it is best to choose an area with a large literature base. An area with little or no literature base is likely to be non-viable. One of the first things the mentor will ask the candidate to demonstrate is that there is a viable literature base in the chosen research area.

The DBA Research Committee is likely to accept a research proposal for research in an area with a non-viable literature base only if the candidate is able to make a sufficiently strong and convincing case in support.

1.4.3 The Concept of the Doctoral Thesis

In order to complete the research phase and graduate with the degree of DBA, the candidate must design and implement the research programme and then write up an account of the research and the contribution to the knowledge base in a doctoral thesis. He or she must then defend the thesis before examiners.
There are numerous definitions of the word ‘thesis’ (pronounced "thee-siss"). Some examples are listed below.

- A lengthy academic paper: a research dissertation based on original research, especially as part of the work towards a higher academic degree.
- A proposition: especially one used as an argument or as the basis for an argument.
- A statement: especially an unproved statement that serves as a premise in an argument.

Physically, the doctoral thesis is a bound volume written by the candidate and submitted to the university. Successful theses are retained by the University and are stored in the University library. A copy is also retained by the UK National Library. The thesis is a permanent piece of work that is released into the public domain and is testament to the work of the candidate.

Some EBS DBA candidates, depending on their existing qualifications, may be familiar with the idea of a thesis and may have produced one as part of their earlier studies. In most MBA courses there is no requirement for a separate research thesis and there is often little or no direct research in the syllabus. Some Master’s degrees such as Master of Science (MSc) or Master of Philosophy (MPhil) require the preparation of a formal dissertation as a standard component of the course of study. Most MSc courses comprise a taught element and a research element. In most cases, therefore, the dissertation is completed in partial fulfilment of the requirements for the award of the degree. In most full-time MSc courses the student effort hours required for the dissertation are about equal to the total student effort hours required for the completion of the taught courses.

In most MPhil courses, the dissertation or thesis is normally completed in fulfilment of the requirements for the award of the degree, and there is no taught element. Some universities offer MPhil courses as being effectively an MSc by pure research. In other cases doctoral candidates may be initially required to register for an MPhil and then transfer to full PhD registration upon successful completion of the first year. In some cases, the research that has been developed in this time may not be of an acceptable standard, and the doctoral candidate remains registered for an MPhil and eventually is awarded the degree of MPhil for research.

A doctoral thesis, whether PhD or DBA, is different from both the MSc dissertation and the MPhil thesis. The basic structure may be the same, but the level of rigour and standard of outcome is highest in the case of the doctoral thesis. It is possible to complete an MSc dissertation or MPhil thesis successfully without demonstrating the discovery of new facts or making a contribution to the knowledge base. For example, it may be possible for a candidate to receive an MPhil degree without conducting any original research. The research could, for example, be restricted to a critical analysis of an extensive literature review in order to show patterns or trends in what the literature is suggesting. A doctoral thesis must both contribute to the knowledge base and be original work.

Most theses are structured using a number of common elements. These elements may sometimes be referred to by different names, but they generally contain the
same basic components and contribute to the development of the thesis in more or less the same way.

The starting point in the development of a thesis is the production of a research proposal. Once approved, the research proposal acts as the foundation of the research that follows, and each section of the research proposal is developed in more detail as the final draft thesis is produced. The next stage is development of a critical literature review that demonstrates the candidate has developed a detailed knowledge and understanding of the relevant literature and knowledge base. Having developed this knowledge and understanding, the candidate develops a research problem or question. This is a simple expression of what the research is trying to achieve. The question is then used as the basis for developing a research aim and a series of research objectives. The aim expresses what the research is trying to determine, while the objectives express the measurable components of the aim. In many cases the candidate develops a testable theory or hypothesis that is developed directly from the literature review. The development of the theory or hypothesis often takes place after a pilot study in which the ideas suggested by the literature are investigated in a preliminary manner. In order to test the theory or hypothesis, the candidate has to develop a research method, which is the process used to collect and analyse data. The results are then processed and collated to produce conclusions.

The stages in the development of any thesis (discussed in more detail in later modules and also in Introduction to Business Research 2 and 3) can be summarised as follows.

- **The development of a research proposal**: where the candidate defines in detail what the research is intended to achieve and how it is going to be achieved.
- **The development of a literature review**: where the candidate demonstrates that he or she is familiar with the relevant published literature.
- **The development of a research question, theory or hypothesis**: where the candidate develops his or her own testable research question, theory or hypothesis based on the literature review.
- **The development of a research method**: where the candidate produces a reliable method for the collection and analysis of research data.
- **Data collection and analysis**: where the candidate uses the research method to collect and analyse research data.
- **The generation of results and conclusions**: where the candidate uses the research method and data collected to generate results and conclusions.

The completed thesis is written by the candidate and presented for examination. As with virtually all US and EU doctoral theses, the DBA is assessed at a viva voce or oral examination. The candidate presents the thesis before an internal (Heriot-Watt University) and an external (non-Heriot-Watt University) examiner. The examiners have to satisfy themselves on a number of key issues including the following:

- that the thesis is the candidate’s own work;
• whether or not the thesis outcomes form a contribution to knowledge of the subject;
• whether or not the thesis affords evidence of originality;
• whether or not the originality element is supported by the discovery of new facts;
• whether or not the originality element is supported by the exercise of independent critical power;
• the extent to which the candidate understands the complexities involved.

These issues are discussed in more detail in subsequent modules.

The examination concludes with a recommendation from the examiners, who may award the degree of DBA or recommend the award of the degree subject to minor or major alterations. In extreme cases a thesis may be failed and no resubmission allowed. The most frequent outcome is that minor alterations are required.

It should now be clear that a doctoral thesis is a considerable undertaking and represents a major challenge. The challenge presented by the thesis in the research stage is different from that presented by the examinations in the courses stage. The candidate will be required to develop entirely different and new points of view and approaches if the research stage is to be successfully completed.

1.5 The EBS DBA Thesis

1.5.1 Introduction

The EBS DBA thesis is a doctoral thesis and contains the same level of rigour as a Heriot-Watt PhD. Both are examined using the same system of examiners, and both require candidates to develop the same level of research ability. Both are required to make a contribution to the knowledge base.

Candidates should refer to the University Regulations for confirmation of current thesis requirements. Some major considerations are considered below.

1.5.2 Thesis Size and Originality

Candidates normally aim to produce a final thesis of around 45,000 to 50,000 words including references and appendices. This target size is lower than the university requirement for a PhD thesis, which is 45,000 to 80,000 words. Although the EBS DBA thesis typically contains fewer words than a PhD thesis, the requirements for contribution to the knowledge base are no less demanding.

All parts of the thesis must be the candidate’s own work. Candidates must ensure that they comply in all respects with current University guidelines on the issue of plagiarism. The candidate is required to sign a declaration that he or she has read the University guidelines on plagiarism and that the thesis complies in all respects with these guidelines.

The DBA Research Committee carries out a plagiarism check and reviews the draft literature review and methodology sections of the thesis before allowing the
candidate to proceed to the main study (data collection, analysis, results and conclusions). The final thesis is approved by the Research Committee before submission for examination.

1.5.3 Thesis Contribution

University regulations require that the EBS DBA thesis or dissertation:

[...] shall form a contribution to the knowledge of the subject and afford evidence of originality, shown either by the discovery of new facts or by the exercise of independent critical power.

This requirement is very important and is broken down into its components below. The thesis shall:

- form a contribution to the knowledge of the subject; and
- afford evidence of originality by
  - the discovery of new facts; or
  - the exercise of independent critical power.

Consider each of these components separately.

- **Forming a contribution to the knowledge of the subject.** The DBA thesis must contribute to the relevant knowledge base as defined by the relevant publications. This requirement is one of the main reasons why a detailed literature review is central to the thesis: in order to demonstrate that he or she has made a contribution to the knowledge base, the candidate must first define the knowledge base itself through the literature review. This requirement could be interpreted as the production of a piece of knowledge that has not been published before.

The contribution itself could be large or small. An example of large-scale contribution is the 1996 discovery of the link between Bovine Spongiform Encephalopathy (BSE) in cattle and Creutzfeldt-Jakob disease (CJD) in humans in the UK. This finding proved for the first time that prions (a form of protein) could cross the species divide between cattle and human beings. Most research produces a more modest contribution. As a result the knowledge base widens slowly as each individual researcher extends it at the margin.

In a business context a typical contribution could be to show that there is a link between the competency profile of two merging organisations and the short-term success of the merger. The competency profile could be defined as the range and levels of individual competencies at senior management level. It is important to keep the research focused, and it is advisable to define a relatively limited data set where possible: for example, the research might be restricted to the senior management levels within the sample organisations. The candidate might then establish a method for defining the competency profile of the two merging organisations. This could involve the development of a competency matrix where senior management competencies are portrayed in terms of range and level. When the profiles of the two organisations are transposed, the analysis may reveal overlaps in some areas and deficiencies in others. The candidate
might then show in a detailed case study that, the better the fit between the profiles, the higher the short-term success of the merger. The ‘success’ could be defined by several measures, including increased shareholder value, integration speed, merger cost and so on. The candidate might then develop results and attempt to validate them by conducting smaller cross-sectional studies across a range of similar organisational types. The outcome may be a statistical analysis showing that, the better the competency profile fit, the more successful the merger, in a manner that is statistically significant.

The research should be designed in such a way that it produces a contribution to the knowledge base regardless of the actual results. For example, a researcher might analyse a large sample and conclude that there is strong evidence for a causal link between variables A and B. Another researcher might conduct similar research and find there is no evidence of a causal link between B and C. Both researchers can use the results to contribute to the knowledge base. It is just as valid a contribution to demonstrate no association as it is to demonstrate association.

Another example could relate to cultural differences. For example, a prediction model might be developed in the US and applied and tested over a long period with the result that it is regarded as reliable for use in the US. A researcher might then try to apply the same model in Western Europe. The US-applicable tool may or may not work in the same way in Western Europe. The researcher could make a contribution by showing that the tool (a) works the same in Western Europe, (b) works differently in Western Europe or (c) does not work at all in Western Europe. Any of these three outcomes would make a contribution to the knowledge base.

- **Affording evidence of originality.** This overlaps with the preceding component. The contribution made to the knowledge of the subject thesis has to be original. Replicating existing research results (known as corroboration) can strengthen results but does not involve original thinking. It is not always possible to be truly original, and the examiners make a trade-off between the quality of the other aspects of the thesis and originality.

- **Evidenced by the discovery of new facts.** This is similar to the requirement for originality and for the results to make a contribution to the knowledge of a particular subject. The discovery of new facts is, by definition, originality. As in the case of originality, the examiners make a trade-off between reinforcement of existing facts and the other aspects of the thesis.

- **Evidenced by the exercise of independent critical power.** This is likely to be the most important to many DBA candidates. Consider some possible definitions of the words *independent*, *critical* and *power*.
  - Independent: not influenced or controlled in any way by other events, people or things.
  - Critical: giving opinions or judgements.
  - Power: a natural skill or ability to do something.

‘Independent’ in a research context means *not influenced or not controlled*. This comes back to the requirement for *originality* and *original work*. In the same con-
text ‘critical’ means being able to offer opinions or judgements on both the literature and the research findings. ‘Power’ refers to the ability to offer these independent and uncontrolled judgements. This sentence of the regulation is very important because it is likely to be the approach that a significant proportion of DBA theses adopt. A candidate can evidence originality by developing independent opinions or judgements about, for example, a real business case; this forms a contribution to the knowledge base.

1.5.4 Thesis Development Stages

The EBS DBA thesis development stages are discussed in more detail in this course and in Introduction to Business Research 2 and 3. The purpose of this introductory section is to provide a basic overview as a foundation for the development of a more detailed understanding as the candidate progresses through the research courses.

The EBS DBA is structured to contain a number of distinct progression milestones. These are summarised below:

- Milestone 1: entry to the programme.
- Milestone 2: completion of the courses stage.
- Milestone 3: working with the mentor to complete the research proposal.
- Milestone 4: working with the supervisor to complete the literature review submission (comprising literature review, literature synthesis, research methodology, etc.).
- Milestone 5: working with the supervisor to complete the thesis and successful viva voce.

Milestones 3 to 5 are relevant to the research stage. They effectively define three distinct elements in the development of the research. These stages are listed below.

- Stage 1: the research proposal.
- Stage 2: the literature review, synthesis, research hypothesis and design of the research method.
- Stage 3: implementing the research method, data collection, analysis, results and write-up.

These stages are reflected in the content of the DBA core courses Introduction to Business Research 1, 2 and 3 respectively. The contents of the three Introduction to Business Research courses are discussed in more detail later in this module. Introduction to Business Research 1 defines the research knowledge and understanding necessary to progress through stage 1 (the research proposal) and past milestone 3. Introduction to Business Research 2 defines the corresponding skills required to progress through stage 2 (the literature review submission) and past milestone 4. Introduction to Business Research 3 defines the corresponding skills necessary to progress through stage 3 (the research method) and past milestone 5.
Stage 1: The Research Proposal (the Mentored Stage)

*Note:* Candidates should refer to subsequent sections of the *Introduction to Business Research* course texts for further details on the roles and responsibilities of the mentor. This section is intended to give a broad overview only.

In stage 1 candidates complete the *Introduction to Business Research 1* course and work with an EBS mentor to develop a research proposal. The research proposal is then submitted to the EBS Research Committee for consideration. If the research proposal is rejected, it will be returned to the candidate with a review or further works required. The candidate must continue to develop the research proposal until a standard is achieved where it is accepted by the EBS Research Committee.

In developing the research proposal, the candidate is offered guidance by a mentor. The mentor is not empowered to give direction. He or she is empowered only to read the research proposal as it develops and offer guidance and advice. The fact that the mentor has read a completed research proposal does not imply that the research proposal may not be subsequently rejected by the EBS Research Committee.

The mentoring role is generic because the mentor might not be (and does not need to be) an expert in the specific research focus chosen by the candidate. The mentor provides advice on all aspects of the research proposal from finding and reviewing literature and developing a background literature review to developing research aims and objectives, methodology options, etc.

EBS also offers specialist pre-mentoring or supplementary mentors in a selection of popular research specialisms including finance, human resource management, strategic planning and marketing. Specialists are available to offer subject-specific advice either before or after a mentor is appointed. For example, the generic mentor may be mentoring a research proposal based on some aspect of applied financial management. The mentor may feel competent to offer help and advice on all aspects of the research proposal with the exception of one area that is highly specific to some aspect of applied financial management. In such cases the mentor can call in the services of the subject-specific supplementary mentor to offer subject-specific advice as a supplement to the mentor’s generic advice.

The mentor works with the candidate until there is agreement that the research proposal is ready to be submitted for formal review by the DBA Research Committee. But, even if the research proposal is accepted by the EBS Research Committee, this does not mean that it will necessarily be developed into a successful thesis. Acceptance simply means that the Research Committee feels that the research proposal shows sufficient potential and promise to be worth developing to the next stage.

Stage 2: The Literature Review and Research Method

*Note:* Candidates should refer to subsequent sections of the *Introduction to Business Research* course texts for further details on the roles and responsibilities of the supervisor. This section is intended to give a broad overview only.
Once the research proposal is accepted, and provided the taught stage has been successfully completed, the candidate is matched with a supervisor. Every effort will be made to match students with a supervisor who has related research interests and (if possible) is located in the same country or continent.

In stage 2 the candidate develops a literature review submission, comprising a literature review, literature synthesis, research question, theory or hypothesis, and a research method. As with the research proposal, the literature review submission must be developed to a standard that is accepted by the EBS Research Committee. If the literature review submission is not acceptable, it will be returned to the candidate with an indication of the review or further works required. With the assistance of the supervisor, the candidate must then continue to develop the literature synthesis until a standard is achieved where the document is accepted by the EBS Research Committee. The candidate can resubmit the literature review submission a maximum of two times. If the document is rejected for a third time, the candidate would normally be required to withdraw from the DBA programme.

Stage 3: Research Method Implementation, Data Collection, Analysis, Results and Write-Up

In stage 3 the candidate is required to implement the research method designed in stage 2. This usually involves carrying out some kind of data collection and analysis. For example, the candidate might conduct a series of interviews and use the responses to provide data that is then processed and used as the basis for testing one or more stated hypotheses. The method of analysis could be based on quantitative (numerical) analysis, qualitative (alphanumeric) analysis or, ideally, on a combination of the two approaches. The research method must be scientifically credible and ideally should be capable of replication. The analysis must be logical, investigate the data in the way intended and generate a clear set of research results. In most cases the results will consist of a comparison between the actual results and what was proposed by the hypothesis. The candidate must also offer a clear set of conclusions and suggestions for further research. The final thesis is then formally submitted for examination when the supervisor considers that the document is to an acceptable standard.

Assessment is by formal viva voce examination comprising the candidate, internal examiner, external examiner and supervisor.

There is no guarantee that the internal and external examiner will pass the final thesis. Success depends on the extent to which the examiners consider that the research aims and objectives are achieved and the way in which this is carried out.

1.5.5 The Structure of the Thesis

The recommended structure of the EBS DBA thesis is discussed in more detail in this course and in Introduction to Business Research 2 and 3. The purpose of this introductory section is to provide an overview that acts as a foundation for the development of a more detailed understanding as the candidate progresses through the research courses.
There is no single international standard generic framework for a doctoral thesis. The format and balance between sections varies depending on the research area under consideration. The candidate can elect to structure the thesis in more or less any way that he or she thinks fit. The supervisor will, however, almost certainly suggest a format that includes the following sequence.

- Preliminaries.
- Introduction.
- Literature review.
- Research question, theory or hypothesis.
- Research method development.
- Data collection and analysis.
- Conclusion.

In an ‘average’ doctoral thesis, the possible chapter headings might be as discussed below.

*Please note that the word count figures are indicative only. The word count for each section could be higher or lower than those suggested below, and the candidate should not feel constrained by the figures shown.*

- **Preliminaries.** This section includes the title page, acknowledgements, list of contents, list of figures and tables, and list of appendices. The preliminaries section includes an abstract that provides a summary of the research, including the primary findings. Abstracts are used by other researchers when they are conducting literature reviews. Abstracts should be no longer than a few hundred words, and should be worded so that another researcher can obtain a ‘flavour’ of what is included in the thesis by reading the content of the abstract and nothing else. There is a required format of the layout of the title page and the sequence of acknowledgement, table of contents, list of figures, etc. This format is defined in the separate summary provided in the handbook.

- **Introduction.** The introduction section should typically be 1000–2000 words long. It should contain a brief summary of the main aims and objectives of the research, together with a summary of any assumptions and limitations that apply. The introduction should also clearly establish the scope of the research, and should identify any areas that have been omitted, with justifications. A reader should be able to develop a reasonably clear picture of the research areas simply by reading the introduction.

  It is natural to assume that the introduction chapter should be written first. In fact doctoral research is highly fluid, and there may be several modifications to the development of the research that take the development away from what was originally planned. As a result the introduction chapter is often one of the last parts of the thesis to be written.

  Modifications and minor changes in direction are permissible, but the supervisor will almost always recommend against any major changes in aims and objectives as the research progresses. It is very important that the initial aims and objectives are carefully researched and thought through because the aims and objectives are central to the direction of the development of the research. If they are subse-
quently changed, the research already conducted may be aborted, and valuable
time could be lost. The EBS Research Committee also looks out for any diver-
gence in original aims and objectives as the progress reports are submitted. The
Committee will request a justification for a report that contains evidence of a
significant shift in aims and objectives.

- **Literature review.** A literature review can comprise one or more chapters, and
  the layout and content of the chapters reflect the content of the thesis title. For
  example, a thesis might have the following title:

  An investigation into the effectiveness of contemporary strategic planning
  implementation systems in the integration systems of large-scale merger
  and acquisition implementation processes in the UK financial sector.

This title includes the following important components:
- the effectiveness of contemporary strategic planning implementation systems;
- integration systems;
- large-scale merger and acquisition implementation processes;
- the UK financial sector.

The sample title suggests that the structure of the literature review should be
four chapters as listed above. Each chapter should survey the literature in each
of these areas, and, although each chapter addresses a different subject area with-
in the title, it is important that the chapters are linked. The objective of the
literature review is to demonstrate an understanding of the existing research
knowledge base. The existing research base is likely to cross title subject barriers,
and it is important that the literature review also does this. The literature review
also acts as the basis for the research question, theory or hypothesis. It is im-
portant to show that this question, theory or hypothesis has been developed by
the analysis of the literature, rather than having been ‘thought up’ by the candi-
date.

Linkage between literature review chapters can be achieved in a number of ways.
The most obvious way is to end each chapter with a brief summary and overview
of the subsequent chapter, explaining how it relates to the current chapter. In the
example above, the Chapter 1 summary could include a section on how integra-
tion is an essential component of strategic planning implementation systems in
mergers. Companies merge in order to fulfil strategic objectives. The success of
the merger, and therefore its contribution to the achievement of the strategic
objectives, is a function of how well the various stages of each company can
actually be integrated. The wording should be appropriate to the link between
these two areas.

Another way to achieve linkage is to cross-reference. This approach can be used
increasingly as the literature review develops. Themes and areas developed in
one literature review chapter can be raised again in a subsequent chapter and
developed further in the context of the subject matter. For example, a point on
strategic planning integration linking the first two review chapters could be
raised and developed further in the mergers and acquisition chapter. The use of
cross-referencing, especially if it is focused and related, can greatly assist in the
development of a strong central theme running throughout the literature review and linking the various chapters. Ideally, this should evolve naturally from the literature review, including a combination of published facts and the candidate’s own deductions and observations, building up in a logical progression towards the eventual research question, theory or hypothesis.

Sometimes studies arrive at different conclusions. The candidate must be able to evaluate the studies in terms of their validity and statistical significance in order to assess their contribution to the research issue.

While the literature review may run to several chapters, it must not be so large that it cannot be contained within the standard word limits that apply for a DBA thesis. As outlined above, the normal size of the EBS DBA thesis is around 45 000–50 000 words (about 200 pages). This word count range includes the introduction, literature review, methodology, analysis, results and conclusions, etc. In many cases the literature review and synthesis make up about half the final DBA thesis, depending on the size of the existing literature base, so an average literature review and synthesis might be 10 000–15 000 words. In cases where the existing relevant literature base is small, it could be considerably less.

- **Literature synthesis and generation of hypotheses.** It is not sufficient simply to review and accept what other researchers have published. It is necessary to include critical analysis. The candidate must demonstrate understanding of the literature, using his or her own reasoning and deductive skills to evaluate critically both individual and collective publications. At this point it is worth recalling University regulation 8.11, which calls for original work evidenced by the exercise of independent critical power. In the literature review the candidate should demonstrate an ability to compare sometimes contradictory theories or concepts and justify any decision as to their validity. This concept is discussed in more detail in *Introduction to Business Research 2*.

This chapter synthesises the literature. ‘Synthesis’ means identifying the main themes in the literature, combining them into cohesive logical progression and identifying the current state of the art. Synthesis is essential because the chapters suggested by the thesis title typically cover different disciplines. The key to a successful literature review is to become familiar with each of the literature areas, summarise each one and then draw out the connections between them in the synthesis chapter. The synthesis is used as the basis for the generation of a research theory, question and hypothesis.

The outcome of the literature review and synthesis is a theory, research question and hypothesis suitable for testing and analysis. The linkage between the literature synthesis, the critical evaluation of the primary emergent points from the literature and the development of the theory, research question and hypothesis should be clear and logical.

- **Pilot study and theory/hypothesis and refinement.** The pilot study is not always necessary, but it is advisable to carry it out where appropriate. It is often advisable to test the research theory or hypothesis with a pilot study before embarking on the full research analysis. A pilot study, as the name suggests, is a short testing study used to act as a pilot for the main study that is to follow. The pilot study could include a relatively small sample size and focus on one or more
of the numerous central areas of the primary research hypotheses. If the main
study is designed to be based on questionnaires and interviews carried out with
50 companies, the pilot study might include three or four such companies in a
preliminary evaluation. The main purpose of the pilot study is to test the reliabil-
ity of the chosen research method.
The pilot study fits into the stages of developing a formal theory, research ques-
tion and the hypothesis, as below. These stages are discussed in more detail in
Module 3.
1. Literature review.
2. Literature synthesis.
3. Basic theory.
4. Pilot study.
5. Pilot study outcomes.
7. Formal theory.
8. Research question.
9. Research aims and objectives.
10. Research hypotheses.
11. Operational hypotheses.
Having completed the literature review and synthesis, the candidate develops the
basic theory. The candidate then designs and implements a pilot study in order
to evaluate this basic theory and the methodology to be used in the main study.
The pilot study generates results that are synthesised with the results of the liter-
ature synthesis in order to evaluate the compatibility between what the pilot
study indicates and what the literature synthesis indicates. Depending on the
compatibility between these new elements, the basic theory is adopted or devel-
oped to become the formal theory. The formal theory is then expressed in terms
of a research question. The research programme is then developed around this
question and is expressed in terms of formal aims and objectives. These are then
expressed in terms of research and operational hypotheses. This approach is
considered in more detail and with examples in Module 3.
In many cases the pilot study (if properly designed and implemented) can suggest
new areas of interest extending beyond what is supported in the literature.

- **Research method.** After refining the research hypothesis or theory through the
results of the pilot study, the next stage is to design a suitable research method.
The research method is essentially the same as a recipe for baking a cake. The
various ingredients and actions are written down so that anybody reading the
recipe can bake the desired cake provided they follow the instructions. In theory,
if every cook uses the same recipe, and follows it exactly, all the cakes produced
will be the same. The same philosophy applies to research method design. The
research method chapter must contain sufficient detail so that any other re-
searcher can use the same design and method to obtain the same results. This
concept gives rise to the research requirement of *replicability*. The research meth-
ood should be reported in sufficient detail so that another researcher can obtain
the same results by using the same data set. Most research is valueless without
the replicability factor.
Replicability is a fundamental requirement in the physical sciences and engineering but is less important in the economic and social sciences. In the DBA thesis the examiners may or may not look for a degree of replicability, depending on the research topic. For example, in the case of a large sample analysed using a highly quantitative approach, it may be possible to achieve a high degree of replicability. In other cases, such as indicative applied research conducted on a single organisation, it may not be possible to achieve a significant degree of replicability because of the unique characteristics of the organisation.

Thus, while a degree of replicability is desirable in economics and social sciences research, it is not always essential. A candidate could produce an adequate DBA thesis with a low degree of replicability.

- **Data collection and analysis.** In applied business research, data are usually collected through a structured observation, questionnaire or interview, often associated with the abstraction of data from company files and records. The analysis of the data can range from relatively simple to quite advanced statistical techniques. In the applied business field the most useful research often includes a combination of quantitative (number crunching) and qualitative (descriptive) data. In business research the basic patterns and trends are usually revealed by statistical analysis and are then explored and developed using a combination of further quantitative and qualitative approaches.

- **Results.** The results are the outcome of the analysis. Results provide the basis on which the main research theory or hypothesis is either accepted or rejected. Straightforward hypothesis acceptance or rejection may not be the only approach to results and conclusions in business research. In some cases it might be appropriate to modify a theory and/or hypothesis.

- **Literature reappraisal and theory development.** The results of the research can be used to reappraise the literature and develop the main research theory or hypothesis. Given the research timescales involved, the initial literature review may have been conducted months or years before the final research results emerge. As a consequence, the initial review may become out of date as new publications emerge. In addition, the literature may actually support the results in ways that were not envisaged at the time that the original literature review was conducted. Doctoral research often throws up new and unforeseen results. Some of these results may be suggested in the literature but have been overlooked when the literature review was conducted. It is necessary to go back through the literature, update the review, and look for evidence supporting any new or unexpected findings.

A validation study can be carried out at this stage, although it is not typically necessary for the DBA. A validation study strengthens the research by recourse to a different set of data sources. Qualitative validation can be particularly useful in validation studies. The results of the research will be significantly reinforced if a validation study is carried out that shows that a high proportion of (for example) senior managers in the same field agree with them.

- **Conclusions and suggestions for further research.** The final stage of the thesis is to derive final conclusions and identify suggestions for further research. The final conclusions are developed from the analysis of the results and are re-
fined by the literature re-evaluation and any validation studies. The suggestions for further research are intended to identify potential research areas that are outside the scope and range of the current research but that are useful and promising areas for other researchers to develop. The candidate should be entirely honest about the limitations of the research. This will pre-empt potential criticisms from the examiners. For example, no methodology is ever perfect and there will always be aspects of the research design that could have been improved and areas of the data collection and analysis processes that could have been modified to improve effectiveness and efficiency.

1.6 The People Involved in Supervision and Assessment

1.6.1 Introduction

The design and implementation of a doctoral research programme is a major undertaking, and, unlike the courses stage, candidates do not work through the research stage alone. DBA candidates who have little or no experience of research could not successfully complete a doctoral-level research programme without the assistance of an experienced and qualified academic advisor. A doctoral research programme requires a high level of analysis, and the thesis is subjected to the most rigorous levels of scrutiny to ensure that it is of a sufficient standard for the degree to be awarded. Heriot-Watt University regulations, in common with those of most US and European universities, require a doctoral thesis to be examined by a combination of internal (members of the University faculty) and external (members of other university faculty) examiners.

This section gives a brief overview of the people involved in supervising and examining a doctoral thesis. Candidates should refer to the handbook for a more detailed description of the role of the individuals concerned.

1.6.2 The People Involved

The EBS DBA is an international programme with students all over the world. The programme is based around a nucleus of EBS faculty, based in Edinburgh, who manage an international network of DBA candidates and research specialists acting as mentors, supervisors and examiners.

1.6.2.1 The EBS DBA Research Committee

The EBS DBA Research Committee oversees the management and development of the research stage of the DBA programme. The Committee has a wide range of responsibilities, including the review of draft research proposals and literature reviews and developing policy and procedures. The Committee meets as and when required by the demands of the programme. Meetings are held every six weeks or so and more frequently during periods of heavy demand.

From the candidate’s point of view the main duties of the Research Committee revolve around the review and evaluation of the research proposal and literature
review submissions. The research proposal (milestone 3: see Section 1.5.4) and literature review (milestone 4: see Section 1.5.4) are submitted by the candidate for formal review by the DBA Research Committee as and when they are completed. These submissions are evaluated in detail and discussed at a formal Committee meeting. Having discussed the reviews, the Committee issues one of two rulings:

- The research proposal or literature review submission is accepted.
- The research proposal or literature review submission is rejected.

In the case of a rejection, the DBA Research Committee provides a summary of those areas that still need to be addressed, and the research proposal or literature review is returned to the candidate for further development.

The DBA Research Committee comprises members of the EBS faculty and some external members. The members of the Committee are all qualified to doctoral level and have all supervised at least one doctoral research programme to successful completion, and most hold professorial status.

The DBA Research Committee acts as the primary quality control regulator in the DBA programme. While the Committee is responsible for appraising the standard of all DBA research proposals and literature reviews, the Committee does not have any authority over the award of the degree of DBA. The DBA Research Committee is responsible for considering DBA research proposals and literature reviews and expressing a non-legally binding opinion on whether or not sufficient progress has been made and on whether or not the research proposal contains sufficient potential for successful development.

The final decision on whether or not the research element has been successfully completed lies with the examinations board (see below). The fact that a research proposal or literature review has been accepted by the EBS Research Committee does not imply that the candidate will necessarily go on to successfully complete the research element and be awarded the degree of DBA.

1.6.2.2 The Mentor

Most DBA programme candidates have little or no previous applied research experience. Therefore, the majority of candidates would find it very difficult to produce a viable research proposal without expert guidance. The candidate cannot be matched to a supervisor until the research proposal has been completed and accepted, so it is necessary to have generic rather than subject-specific guidance at this stage.

The mentor is an experienced researcher whose role is generic: the mentor provides advice on the structure and content of the research proposal and on a range of issues such as sources of literature, developing a critical review, basic research design, etc. The mentor effectively prepares both the student and the research for the supervised stage. The student is not allocated to a supervisor until he or she has developed (a) sufficient knowledge and understanding of applied research design and (b) a viable research proposal. This system minimises student ‘warm-up time’ in the supervised phase and facilitates the early development of the student–supervisor relationship.
The mentor establishes contact with the candidate and then provides him or her with general guidance for the duration of the development of the research proposal. Most of the communication between the candidate and the mentor takes place using web-board messages. In some cases mentors and candidates prefer to discuss the research by telephone. This is acceptable provided a summary of each conversation is recorded on the web board.

The role of the mentor is advisory, and the candidate may disregard any advice that is offered if he or she so chooses – at his or her own risk. The mentor is a highly experienced researcher with considerable supervision experience, so when the mentor offers advice it is for a good reason and the candidate would be most unwise to disregard it. In cases where the candidate does refuse to accept the advice of the mentor, the DBA Programme Director may intervene. In extreme cases where the candidate refuses to take the mentor’s advice and the advice of the DBA Programme Director, the DBA Research Committee will intervene and may recommend termination of the research.

Some candidates prefer to work with minimal interaction with the mentor, whereas other candidates make extensive use of the mentor. The degree of interaction is largely the choice of the candidate.

While the mentor will make every effort to assist the student in the development of the research proposal, the involvement of the mentor does not guarantee that a research proposal will achieve a standard where it is accepted by the DBA Research Committee. Some candidates may not be capable of producing a suitable research proposal, irrespective of the degree of support and advice offered by the mentor.

1.6.2.3 The Supervisor

The supervisor takes over from the mentor after the DBA Research Committee approves the research proposal. Unlike the mentor, the supervisor is a subject expert in the chosen research field.

Supervisors are drawn from EBS faculty, Heriot-Watt University faculty and faculty from business schools worldwide. Supervisors are qualified to PhD or DBA level, have published work to their credit and have supervised at PhD or DBA level to successful completion. The supervisor directs and advises the candidate through the literature review and the data collection, analysis, results and write-up phase.

Where possible, supervisors are allocated on a geographical basis so that the supervisor and candidate are within a reasonable distance of each other. Close proximity is, however, not essential, and in most cases it is not even necessary. Most candidates and supervisors work together effectively using web-board and email exchanges backed up by occasional telephone discussions.

1.6.2.4 The Senior Supervisor

The Senior Supervisor oversees the individual supervisors and acts as a moderator. The Senior Supervisor usually has no direct contact with candidates. The Senior Supervisor monitors the web-based exchanges between the student and the supervisor, making sure that an adequate number and frequency of exchanges are taking place. The Senior Supervisor also provides a second informed opinion on the
formal progress reports (see Introduction to Business Research 2) that are completed by the candidate at regular intervals through the supervised phases of the research. All formal progress reports have to be ‘signed off’ by both the supervisor and the Senior Supervisor. The EBS Research Committee relies on the Senior Supervisor for quality assurance.

The Senior Supervisor is responsible for the identification and selection of potential new supervisors. When the candidate has progressed through mentoring, the Senior Supervisor matches the candidate with a potential supervisor. The Senior Supervisor evaluates potential new supervisors and inducts them into the EBS DBA system.

The Senior Supervisor is also responsible for the selection and appointment of both internal and external examiners.

1.6.2.5 The Internal Examiner

Doctoral-level theses are examined by an examinations board that includes internal and external examiners. The internal examiner is a member of the EBS faculty or of another faculty within Heriot-Watt University.

The internal examiner is responsible for examining the doctoral thesis in order to ensure that it complies with university regulations relevant for the award of the degree. The internal examiner accompanies the external examiner (see below) at the viva voce examination of the thesis. The internal examiner reads the thesis in detail prior to the examination and then, along with the external examiner, asks relevant questions about the thesis. When the oral defence is complete, the internal examiner discusses the thesis and the defence with the external examiner. The supervisor may be present but is not usually required to contribute. The supervisor is not permitted to argue in support of the thesis or the presentation but may be called upon by the examiners to clarify points.

If the thesis is not of the required standard, the examiners may require amendments. In the case of minor amendments the internal examiner may assume responsibility for ensuring that any such corrections are made without further recourse to the external examiner.

1.6.2.6 External Examiner

The external examiner is a member of the faculty of another university. The external examiner could be selected from another UK university or from a suitable university anywhere in the world, or may be a practitioner working in a company or other organisation provided he or she fulfils the requirements for appointment as an external examiner. All external examiners are subject to approval by the Senate of Heriot-Watt University.

The external examiner receives a copy of the thesis and reads it in detail before the examination. He or she normally assembles a list of questions or notes and uses these as a basis for the questions and discussion that take place in the examination.
At the end of the examination, the external examiner discusses the thesis and presentation with the internal examiner. They agree on a decision and complete a report.

The concept of defence is central to Western doctoral thesis examinations. The viva voce examination is a demanding test, and the candidate must be properly prepared and ready to defend the thesis in front of an examiner he or she has never seen before. Defences where the candidate is not absolutely certain of the details of the methodology and existing literature can be disastrous.

1.7 The Introduction to Business Research Courses

1.7.1 Introduction

This section gives a brief overview of the three EBS DBA *Introduction to Business Research* courses. It is important that candidates understand how the three courses work together to provide a generic foundation for business research and research methods. The courses are designed to take the candidate from a level of no knowledge or understanding of applied business research to a level of understanding at which he or she can work with a designated supervisor and develop a doctoral-level research programme.

The supervisor is responsible for assisting the candidate in developing the research method and provides direction on more advanced and specific aspects of research methodology applicable in each case. The DBA *Introduction to Business Research* courses do not attempt to develop an understanding of advanced and specific methodologies because the choice of appropriate method will depend on the research problem being addressed. The DBA business research courses develop a generic understanding of how to design and conduct a research programme and how to write a thesis for presentation to an examination board.

1.7.2 Aims and Objectives of the Courses

There are three DBA *Introduction to Business Research* courses:

- *Introduction to Business Research 1*: the research proposal.
- *Introduction to Business Research 2*: the literature review, synthesis and research hypothesis.
- *Introduction to Business Research 3*: the research method, data collection, analysis, results and write-up.

The courses are self-contained, but they link together in developing the phased skills required in the development of the thesis. On completion of the EBS DBA course *Introduction to Business Research 1*, candidates should be able to produce a fully detailed research proposal to the standard required by the DBA Research Committee.

On completion of the EBS DBA course *Introduction to Business Research 2*, candidates should be able to produce a fully detailed and comprehensive literature review that is of a sufficient standard to be accepted by the DBA Research Committee.
On completion of the EBS DBA course *Introduction to Business Research 3*, candidates should be able to complete the research and develop the thesis to a standard acceptable for presentation and viva voce.

1.7.3 **Introduction to Business Research 1**

*Introduction to Business Research 1* takes the candidate from an assumed zero knowledge to understanding how to prepare a formal research proposal.

Most entrants to the DBA programme will not have done any in-depth postgraduate research. Some entrants, such as those with MSc degrees, may have some experience of conducting postgraduate research for a dissertation that acts in partial fulfilment of the requirements for the award of that degree. Other entrants, such as those with MBA degrees, may have little or no experience of research at any level. It is, therefore, necessary to establish a basic understanding of what research is and how it is carried out. The course introduces the concept of research, the quantitative and qualitative research philosophies and advice on developing a research focus from business issues. The course also develops the mechanics involved in preparing a formal research proposal from first principles, which includes development of the logistics of a research programme and timetable.

The course includes some elements of literature review and research method design, as these are important elements in the development of the research proposal. The research proposal must contain references to the literature to outline what is already known, because the research objectives and method must be based on the existing literature, and the research hypothesis or theory must be an extension of this literature base. In order to avoid rejection by the EBS Research Committee, the research proposal must show evidence of a potential to contribute to the knowledge of the selected subject and offer the potential to allow the discovery of new facts, or the potential for the candidate to exercise independent critical power.

1.7.4 **Introduction to Business Research 2**

*Introduction to Business Research 2* shows how to develop a literature review from the research proposal. The literature review enables a suitable research hypothesis or theory to be developed and an appropriate research method to be identified.

Candidates must develop an understanding of the role of the literature review. Developing and submitting a doctoral thesis is essentially the same as presenting a case in court. Assertions (apart from those directly provable by experimentation) are inadmissible. All statements must be supported by appropriate references to the literature. For example, a candidate might make the statement ‘Business productivity is a function of employee motivation.’ To some extent the statement is obviously true. However, the extent to which it is true is unclear because there are a number of other issues and functions involved. It is, therefore, necessary to substantiate any such comments with references to the literature. In a typical reference the information contained would comprise:

- the name of the author;
the year of publication;
the title of the journal or other type of publication involved;
specific identification material such as the volume of publication and the page numbers concerned.

For example, the statement ‘Business productivity is a function of employee motivation’ may have been made by Dr Joe Bloggs in an article published on pages 22–44 in Volume 27 of the *Journal of Applied Nomenclatures* in 2004. In the course this reference might appear as:

Business productivity is a function of employee motivation (Bloggs, 2004).

The full reference in the references section of the thesis might appear as:


The use of a referencing system allows readers to see quickly that the course is reinforced by the literature. In addition, the reference identifies the exact location of the materials cited in support of the statement. If there is any doubt, readers can access the full reference and check it for themselves. Informed readers (such as supervisors and external examiners) will be familiar with the literature and will expect references to prominent researchers.

1.7.5 **Introduction to Business Research 3**

Introduction to Business Research 3 takes candidates from the literature review and methodology to data analysis, the generation of results and the write-up of the final thesis.

This course details the statistical techniques necessary for data collection and analysis of business data. The course considers inference and interpretation, the concept of the pilot study and validation study, literature reappraisal, and theory development prior to the generation of final conclusions. The course offers advice on the writing-up process. Writing up may sound relatively straightforward, but it can be the most difficult part of the research. The thesis must contain a logical and methodical argument whereby each section builds on the previous and a central theme whose relevance is reinforced by each successive section and chapter.

The course provides advice on presentation and techniques that may be useful in the viva voce examination and in the implementation of any amendments required by the examinations board.

1.7.6 **Using the Introduction to Business Research Courses**

The difficulties associated with applied business research cannot be overemphasised. It is common for candidates to fail to appreciate the effort involved and the degree of detail required. Candidates have to pass examinations in the three courses, and the examiners will not award a pass if the candidate does not demonstrate the required skill for each one. The Introduction to Business Research courses provide a basic
generic introduction to the field of applied business research. The specific application will vary depending on the organisation chosen as the basis for the research. More advanced and specific research methods and associated approaches are developed in conjunction with the supervisor.

The *Introduction to Business Research* courses act as a bridge between the assumed zero research awareness of the candidate and the knowledge that can be provided by the experienced supervisor.

### 1.8 Some Important Issues to Remember

#### 1.8.1 Introduction

These issues have emerged during the operation of the EBS DBA programme and are listed here so that new candidates are aware of them and can allow for them as they develop their own research ideas. They are not the only issues the candidate needs to be aware of, but they are particularly important as they have the potential, if not managed properly, to affect the research stage of the programme.

#### 1.8.2 Managing Expectations

Candidates should always remember that the EBS DBA research stage involves high-level doctoral research. The *Introduction to Business Research* courses attempt to prepare the candidate for the research stage, and each candidate is offered the services of a mentor and, subject to completion of a viable research proposal, a supervisor. None of these sources of guidance and support, however, offer a guarantee that an individual candidate will be equal to the demands of doctoral research.

Doctoral research requires a candidate to think for him- or herself at the highest level. In many cases questions are posed to which there is no one single answer that can be looked up in a reference book. In doctoral research answers have to be forged for the first time. This is an entirely different concept and learning experience for most DBA candidates. Some candidates who are good at studying and passing examinations also have an aptitude for research, but some do not have the levels of creativity and innovation that are necessary to design and implement doctoral research. In some cases it is very unlikely the candidate will ever be able to successfully complete the DBA.

While the *Introduction to Business Research* courses are designed to develop basic research skills, they can only go so far in preparing the candidate for the rigours of the mentored and supervised phases. If a candidate successfully studies the *Introduction to Business Research* courses and passes the examinations, this is an indication that he or she has developed the basic research skills required to progress to the mentored phase, but it does not guarantee that the candidate will necessarily be successful in research.
1.8.3 Thesis Size and Work Required

The EBS DBA thesis should normally have a final word count of around 45,000 to 50,000 words and not normally exceed 400 pages in length including references and appendices. This target size is less than the standard university requirement for a PhD thesis, which is 45,000 to 80,000 words.

While the EBS DBA thesis is shorter in terms of word count than a standard Heriot-Watt University PhD, it is examined in the same way and to the same standard. The thesis must make a contribution to the knowledge base, and it has to be prepared and presented to a standard equal to that of a PhD.

It is, therefore, important to accept that there is a considerable amount of work involved in conducting DBA research and writing up the DBA thesis. There are no standard timescales for completion, although current University regulations contain upper time limits. Candidates must be prepared to spend a great deal of time in designing and implementing the research and in drafting the thesis. As an outline guide a candidate with plenty of time to progress the research might expect to complete IBR1–3, the research proposal, the literature review submission and the final thesis within three years. A candidate with limited time due to work and family commitments might expect to take four years to complete. The EBS DBA is not a ‘quick PhD’.

1.8.4 Plagiarism

Plagiarism is the act of taking the work of a third party and presenting it as one’s own. For example a school student who is writing an essay to be handed in for assessment might copy a similar essay from the Internet and simply change the name on the essay before handing it in for assessment. In a less extreme case a student might cut and paste sections from several different existing essays to form a new essay that he or she then submits as his or her own work. Plagiarism can take all kinds of different forms, from the direct copying of entire documents to the paraphrasing of individual paragraphs and sentences. It can include the use of diagrams as well as the use of text.

Plagiarism is a major problem in schools and universities all around the world, and the incidence of plagiarism has increased with the global growth of the Internet.

It is important that candidates appreciate, right from the very start of the research stage, that the research must be their own work. Where the work of others is included or cited, it must be attributed and referenced. This applies to all work submitted during the research stage, including the research proposal, the literature review submission and the final draft thesis.

1.8.5 Change Control

As discussed in Section 1.5.2 the research proposal, literature review submission and final draft thesis are all subject to formal review by the DBA Research Committee. The idea of this reviewing system is to ensure, as far as possible, that the research is progressing satisfactorily at each review stage.
It is important to realise that individual mentors and supervisors have their own views on research design and implementation and that, if not controlled, these ideas and preferences can sometimes influence the subsequent conduct of the research. For example a student may have a preference for designing research around a quantitative (using numbers) approach as this reflects his or her qualifications and experience. The candidate may subsequently discover that interesting observations that were not expected from the outset emerge from interviews. They may therefore decide to adopt a more qualitative approach during the course of the research.

The DBA Research Committee takes a balanced view. If the Committee accepts a research proposal based on quantitative research methods, then it is very likely the research will be viable using that particular methodological approach. For this reason, and to avoid the risk of the focus of the research subsequently being modified by the candidate’s immediate experience, the focus of the research cannot be subsequently changed without the approval of the Committee. When the supervisor and candidate agree a change would be desirable, the change must be referred to the Committee, and Committee approval must be forthcoming before the change can be implemented.

It is, therefore, very important to ensure that the research proposal is an accurate representation of the intended research, because once approved it can be difficult to change.

1.8.6 Written Access Guarantees

EBS DBA research is applied research. Candidates are normally required to obtain research data from real organisations. In order to obtain this data, candidates may have to conduct semi-structured interviews, issue postal or email questionnaires or examine organisation files and records, etc. Research data obtained by the researcher directly from individuals or organisations is often referred to as primary data in that it is obtained directly and for the first time by the researcher. Data obtained from published results, such as financial performance characteristics taken from published profit and loss accounts that are already in the public domain is often referred to as secondary data.

In most cases, to obtain primary data a DBA candidate has to work closely with a given organisation, and this obviously requires the consent and agreement of that organisation. If the viability of the proposed research depends on that primary data, it follows that the viability of the proposed research equally depends on the consent and agreement of the organisation or organisations who are to provide that data. It is vitally important, therefore, to understand that guaranteed access to the necessary data is a key aspect of DBA research design. Candidates must demonstrate they have guaranteed and unrestricted access to all necessary data from the earliest stages in the research design process. In most cases, when assessing a research proposal, the DBA Research Committee will require written access guarantees to be provided as part of the submission.

A written access guarantee is usually a signed letter on company headed paper that clearly states the company or organisation will allow the candidate access to all necessary data, whether this is people to interview or company documents
records. The written access guarantee has to be submitted along with the research proposal. Research proposals that do not contain adequate access guarantees will be rejected. It is worth noting that the DBA Research Committee has previously rejected a number of otherwise promising research proposals, simply because they were not supported by adequate written access guarantees.

1.8.7 Establishing a Viable Literature Base

It is important to remember that the candidate must be able to demonstrate a viable research base in the chosen research area. Research areas that have little or no published research should be considered as high risk and avoided. The mentor will ask the candidate to demonstrate that there is a viable literature base in the chosen research area. If the candidate is unable to demonstrate a viable literature base, the mentor will probably recommend the student choses an alternative research area. The DBA Research Committee is unlikely to accept a research proposal in an area where the candidate has been unable to demonstrate a viable literature base. It is important to remember that the DBA Research Committee is only likely to accept a research proposal for research in an area with a non-viable literature base if the candidate is able to make a sufficiently strong and convincing case in support.

Learning Summary

This module has attempted to introduce the EBS DBA and specifically the EBS DBA research element. The candidate should now have a basic understanding of:

- the arrangement of the EBS DBA Introduction to Business Research courses;
- the relationship between the courses;
- the aims and objectives of the research stage of the EBS DBA programme;
- the basic structure of research stage of the EBS DBA programme;
- the concept of a doctoral thesis and what this entails;
- the stages in the development of a doctoral thesis;
- the roles of the people involved in mentoring, supervision and examination.

The following section briefly summarises the primary learning outcomes included in this module.

The EBS DBA Introduction to Business Research Courses Process Model

- This course, Introduction to Business Research 1, is one course within a larger suite of three research courses. Collectively the three courses act to prepare the candidate for the research stage of the EBS DBA programme.
- The basic sequence of courses is as follows:
  - Introduction to Business Research 1 develops the framework and explains how to prepare a viable research proposal.
  - Introduction to Business Research 2 extends on Introduction to Business Research 1 and explains how to design and conduct a review of the existing
knowledge base and literature so that the proposed research can be firmly established within the context of what is already known.

- *Introduction to Business Research 3* extends on *Introduction to Business Research 1* and *Introduction to Business Research 2* and explains how to develop a viable research method and how to execute the data collection and analysis stages before going on to write up the final thesis.

- Inception is where the candidate considers numerous issues including his or her own academic qualifications, experience, interests and employment. He or she then develops an initial concept, which may be suitable for further development.

- Framing is where the candidate then carries out a preliminary analysis in order to provisionally evaluate the concept.

- The contextual sub-process is where the candidate sets the research in context by the selection of an appropriate research philosophy or paradigm.

- The research proposal is effectively an extension of the framing and contextual sub-processes. It is a statement of the candidate’s research intent in a standardised form that can be evaluated by others.

- In the EBS DBA programme the research proposal is a formal document that communicates the proposed research to the EBS DBA Research Committee. It is read and considered in detail by the Committee and is either accepted or rejected depending on its overall viability and potential.

### The EBS DBA Research Process

- The aim of the EBS DBA programme is to produce applied business research professionals who can use their doctoral-level skills to real effect at senior executive level in a business environment.

- The aim of the EBS DBA programme differs from the typical aim of a Doctor of Philosophy (PhD) degree, which is to produce professional researchers who use their research skills with perhaps less direct application and more of an emphasis on theoretical and academic application.

- The objectives of the EBS DBA programme revolve around the development of the applied business research skills necessary to achieve this aim.

- The EBS DBA comprises the courses stage and the research stage. Candidates have to successfully complete the courses stage before progressing to the research stage, and both stages have to be successfully completed to meet the requirements of the programme.

- The courses and research stages work together. The courses stage effectively prepares the candidate for the research stage.

- A traditional PhD programme comprises little or no courses element with the candidate focusing more or less entirely on the research element, although in the UK and in some other countries this traditional structure is changing slowly with more programmes adopting a courses element.

- The precise structure of the courses stage varies depending on the existing qualifications of the candidate.
• With the exception of those with existing doctoral or equivalent qualifications, virtually all candidates are required to successfully complete the Introduction to Business Research courses in sequence.

• The research stage involves the candidate in designing and implementing doctoral-level research, from preparing a viable research proposal right through to passing the final examination.

• In general terms ‘doctoral-level research’ means research that contributes to the knowledge base in the chosen research area. In this context ‘knowledge base’ means the sum total of the published information in the research area.

• The research stage is obviously very different from the courses stage. In the research stage there are no self-contained study packs of subject-specific examinations, as was the case in the courses stage.

• In the research stage the candidate works at his or her own pace, developing research in the chosen specific subject area and working towards the development of the final thesis.

• The EBS DBA research stage comprises two phases. In the mentored phase the candidate works with an approved mentor to develop a viable research proposal that is subsequently accepted by the DBA Research Committee. The mentor adopts an essentially generic approach, advising the candidate on all aspects and stages of the development of the research proposal.

• When the research proposal is accepted by the DBA Research Committee, the candidate progresses to the supervised phase.

• In the supervised phase the candidate works with an approved supervisor who is a specialist in the chosen research area.

• The working relationship between candidate and supervisor in this stage is exactly the same as for standard PhD research.

• In order to complete the research phase and graduate with the degree of DBA, the candidate must design and implement the research programme and then write everything up in the form of a doctoral thesis.

• The candidate is required to defend the thesis before examiners.

• The doctoral thesis itself is a bound volume that is written by the candidate and submitted to the University before being issued to the examiners.

• The starting point in the development of a thesis is usually the production of the research proposal.

• Once approved, the research proposal acts as the basic foundation of the research that follows, and each section of the research proposal is developed in more detail as the final draft thesis is produced.

• The next stage is usually the development of a detailed critical literature review that demonstrates the candidate has developed a detailed knowledge and understanding of the relevant literature and knowledge base.

• Having developed this knowledge and understanding, the candidate develops a research problem or question. This is a simple stated expression of what the research is trying to achieve.
- The question is then used as the basis for developing a research aim and a series of research objectives. The aim expresses what the research is trying to determine, while the objectives express the measurable components of the aim.
- The research method uses data collection as the source of information, allowing the data to be analysed and results generated.
- The results are then processed and collated to produce conclusions.
- The primary stages in the development of a thesis can be summarised as follows.
  - The development of a research proposal.
  - The development of a literature review.
  - The development of a research question, theory or hypothesis.
  - The development of a research method.
  - Data collection and analysis.
  - The generation of results and conclusions.
- The DBA thesis is assessed by a viva voce or oral examination.
- The examiners have to satisfy themselves on a number of key issues regarding the thesis. Some key areas are:
  - that the thesis is the candidate’s own work;
  - whether or not the thesis is of an adequate standard generally;
  - whether or not the thesis outcomes form a contribution to knowledge of the subject;
  - whether or not the thesis affords evidence of originality;
  - whether or not the originality element is supported by the discovery of new facts;
  - whether or not the originality element is supported by the exercise of independent critical power;
  - the extent to which the candidate understands the complexities involved.
- Candidates must demonstrate that there is a viable literature base in the chosen research area.
- The mentor will ask the candidate to demonstrate that there is a viable literature base in the chosen research area. If the candidate is unable to demonstrate a viable literature base, the mentor will probably recommend the student chooses an alternative research area.
- The DBA Research Committee is unlikely to accept a research proposal in an area where the candidate has been unable to demonstrate a viable literature base.
- The DBA Research Committee is likely to accept a research proposal for research in an area with a non-viable literature base only if the candidate is able to make a sufficiently strong and convincing case in support.

The EBS DBA Thesis
- The thesis should normally contain around 45 000 to 50 000 words including references and appendices.
• This target size is in contrast to the standard university requirement for a PhD thesis, which is generally to be no less than 45,000 words and no more than 80,000 words.

• Candidates should be aware of current university regulations on plagiarism and must ensure that they comply in all respects with current university guidelines on the issue of plagiarism.

• The current guidelines can be accessed at the University URL www.hw.ac.uk/registry/resources/PlagiarismGuide.pdf

• The DBA Research Committee normally reviews the draft introduction, literature review and methodology sections of the thesis before allowing the candidate to proceed to the main study (data collection, analysis, results and conclusions).

• The Committee normally carries out a plagiarism check at this point and considers the results as part of the formal Committee review of the draft work. The final draft thesis is also usually checked.

• The candidate is required to sign a declaration to the effect that he or she has read the university guidelines on plagiarism and the thesis complies in all respects with these guidelines.

• The research must form a contribution to the knowledge of the subject and afford evidence of originality.

• Originality shall be shown either by the discovery of new facts or the exercise of independent critical power.

• In terms of forming a contribution to the knowledge of the subject, the contribution could take a number of different forms.

• The knowledge of the subject is defined by the full range of published literature on that subject.

• The contribution made to the knowledge of the subject thesis has to be original.

• The contribution can be evidenced by the discovery of new facts, such as proving a new link between two existing variables.

• The contribution can also be evidenced by the exercise of independent critical power, such as analysis of a single company on a case-study basis to address a strategic business issue.

• The EBS DBA is structured to contain a number of distinct progression milestones. These are summarised below:
  – Milestone 1: entry to the programme.
  – Milestone 2: completion of the courses stage.
  – Milestone 3: working with the mentor to complete the research proposal.
  – Milestone 4: working with the supervisor to complete the literature review submission.
  – Milestone 5: working with the supervisor to complete the thesis and successful viva voce.

• There are effectively three distinct elements in the development of the research. These stages are listed below:
Element 1: the research proposal.
Element 2: the literature review, synthesis, research hypothesis and research method design.
Element 3: implementing the research method, data collection, analysis, results and write-up.

These elements are reflected in the content of the DBA core courses Introduction to Business Research 1, 2 and 3 respectively.

The thesis is likely to contain the following main sections:

- **Introduction.** The introduction section should typically be around 1000 to 2000 words long and should contain a brief summary of the main aims and objectives of the research together with a summary of any assumptions and limitations that apply.
- **Literature review.** A literature review could be a single chapter or could run to several chapters, and a ball-park figure for an average word count would be perhaps 10,000 words. It should be stressed that many literature reviews contain significantly fewer words.
- **Literature synthesis and generation of hypotheses.** This chapter synthesises the literature and uses the synthesis to generate some kind of research question, aims, objectives and, possibly, a series of testable hypotheses.
- **Pilot study and theory/hypothesis and refinement.** This section is not always necessary, but it is generally advisable to include a quick pilot study where possible.
- **Research method.** The research method describes the process for collecting and analysing research data. The research method chapter must contain sufficient detail so that any other researcher can come along later and, using the same design and method, obtain the same results.
- **Data collection and analysis.** The analysis involves the collection and processing of data.
- **Results.** The results are the outcome of the analysis. Results are most frequently presented as a combination of quantitative and qualitative approaches and are often considered directly in the context of the main research theory or hypothesis.
- **Literature reappraisal and theory development.** The results of the research can be used to reappraise the literature and develop the main research theory or hypothesis.
- **Conclusions and suggestions for further research.** The final stage of the thesis is the preparation of final conclusions and suggestions for further research.

**The People Involved in Supervision and Assessment**

- The EBS DBA Research Committee oversees the management and development of the research stage of the DBA programme.
• The Committee has a wide range of generic and specific responsibilities, ranging from the review of draft research proposals and literature reviews to developing new policy and procedures for the programme as a whole.
• The mentor establishes contact with the candidate and then provides him or her with general guidance for the duration of the development of the research proposal.
• The supervisor takes over from the mentor as soon as the DBA Research Committee considers the research proposal to be viable. Unlike the mentor, the supervisor is a subject expert in the chosen research field, and he or she works with the student right through to completion of the programme.
• Supervisors are either EBS faculty or wider University faculty or wholly external (non-Heriot-Watt) specialists who are selected on the basis of their expertise and (if possible) geographical location.
• The Senior Supervisor oversees the individual supervisors, acts as a moderator and usually has no direct contact with candidates.
• The internal examiner is responsible for examining the doctoral thesis in order to ensure that it complies with university regulations relevant for the award of the degree.
• The external examiner is a member of the faculty of another (not Heriot-Watt) university.

The Introduction to Business Research Courses

• On completion of the EBS DBA course Introduction to Business Research 1, candidates should be able to produce a fully detailed research proposal of a sufficient standard to be accepted by the DBA Research Committee.
• On completion of the EBS DBA course Introduction to Business Research 2, candidates should be able to produce a fully detailed and comprehensive literature review that is of a sufficient standard to be accepted by the DBA Research Committee.
• On completion of the EBS DBA course Introduction to Business Research 3, candidates should be able to complete the research and develop the thesis to a standard acceptable for presentation and viva voce.
• Candidates should read the three Introduction to Business Research courses very carefully. The difficulties associated with applied business research cannot be overemphasised. It is very common for candidates to fail to appreciate the effort involved and the degree of detail required.
• The Introduction to Business Research courses provide a basic generic introduction to the field of applied business research. The specific application will vary depending on the organisation chosen as the basis for the research. The more advanced and specific research methods and associated approaches are developed in conjunction with the supervisor.
• The Introduction to Business Research courses act as a bridge between the assumed zero research awareness of the candidate and the knowledge that can be provided by the experienced supervisor.
Some Important Issues to Remember

- In some cases, where a candidate has little or no aptitude for research, it may be that no amount of assistance and advice from mentors or supervisors or other research professionals can develop the necessary aptitude in the candidate. In such cases it is very unlikely the candidate will ever be able to successfully complete the DBA.

- The EBS DBA thesis should normally have a final word count in the region of 45,000 to 50,000 words including references appendices. While the EBS DBA thesis is typically somewhat smaller in terms of word count than a standard Heriot-Watt University PhD, it is examined in the same way and to the same standard.

- There is a considerable amount of work involved in conducting DBA research and writing up the DBA thesis.

- As an outline guide an outstanding candidate with plenty of time to progress his or her research might expect to complete the whole process of completing the Introduction to Business Research courses, the research proposal, the literature review submission and the final thesis within two to three years.

- A more ‘average’ candidate who may have limited time due to work and family commitments might expect to take three to four years to complete.

- Candidates must be aware of, and must comply with, all current University regulations regarding plagiarism. A copy of the latest guidelines can be found at the University URL www.hw.ac.uk/registry/resources/PlagiarismGuide.pdf

- The research proposal should be written with great care and after extensive consideration. Once the Committee has reviewed and approved the research proposal, the approach and focus detailed in the research proposal cannot be changed significantly without the approval of the Committee.

Review Questions

True/False Questions

These questions are designed to allow an evaluation of the general level of understanding of the subject areas. The questions should be read and answered as quickly as possible. Having read the preceding module, it should be possible to answer the majority of the questions correctly provided that reasonable level of understanding in each subject area has been developed.

The EBS DBA Introduction to Business Research Courses Process Model

1.1 Introduction to Business Research I is one course within a larger suite of four research courses. T or F?
1.2 *Introduction to Business Research 1* develops the framework and explains how to prepare a viable research proposal. T or F?

1.3 The research proposal is a formal document that communicates the proposed research to the EBS DBA Research Committee. T or F?

1.4 The research proposal is always accepted by the DBA Research Committee. T or F?

**The EBS DBA Research Process**

1.5 The primary aim of the DBA is to produce professional researchers who will go on to develop full-time careers in academia. T or F?

1.6 The research stage always includes the development of a research proposal. T or F?

1.7 The courses and research stages of the EBS DBA programme operate in isolation and do not relate to each other. T or F?

1.8 The research stage involves the candidate in designing and implementing doctoral-level research, from preparing a viable research proposal through to passing the final examination. T or F?

1.9 It is not generally necessary for ‘doctoral-level research’ to contribute to the knowledge base. T or F?

1.10 The EBS DBA research stage comprises two phases: the mentored phase and the examination phase. T or F?

1.11 In the supervised phase the candidate works with an approved supervisor who is a specialist in the chosen research area. T or F?

1.12 The research method uses data collection as the source of information, allowing the data to be analysed and results to be generated. T or F?

1.13 The DBA thesis is assessed via continual assessment only. T or F?

**The EBS DBA Thesis**

1.14 The thesis should generally contain 80,000 to 90,000 words including references but excluding appendices. T or F?

1.15 Candidates should be aware of and must ensure that they comply in all respects with current University regulations on plagiarism. T or F?

1.16 The research must form a contribution to the knowledge of the subject and afford evidence of originality. T or F?
1.17 The contribution can be evidenced by the discovery of new facts or by the exercise of independent critical power. T or F?

1.18 The thesis must include a pilot study. T or F?

**The People Involved in Supervision and Assessment**

1.19 The EBS DBA Research Committee comprises three members. T or F?

1.20 The only role of the Committee is to consider DBA programme applications. T or F?

1.21 The mentor is invariably a subject specialist in a relevant area. T or F?

1.22 The supervisor works with the student from successful completion of the research proposal through to completion of the programme. T or F?

1.23 The internal and external examiners have identical roles. T or F?

1.24 The internal examiner is invariably a subject specialist in a relevant area. T or F?

**The Introduction to Business Research Courses**

1.25 On completion of the EBS DBA course *Introduction to Business Research 1*, candidates should be able to produce a fully detailed research proposal. T or F?

1.26 On completion of the EBS DBA course *Introduction to Business Research 2*, candidates should be able to produce a final thesis. T or F?

1.27 The *Introduction to Business Research* courses provide a basic generic introduction to the field of applied business research. T or F?

1.28 The *Introduction to Business Research* courses assume candidates have a high level of research ability when they enter the programme. T or F?

**Some Important Issues to Remember**

1.29 All entrants to the EBS DBA research stage have the necessary aptitude for research. T or F?

1.30 All candidates have the ability to successfully conduct doctoral-level research and earn a DBA. T or F?

1.31 The EBS DBA is a quick and easy PhD. T or F?

1.32 Once approved by the DBA Research Committee, the research proposal can be changed. T or F?
Multiple-Choice Questions

These questions are designed to allow an evaluation of the general level of understanding of the subject areas. The questions should be read and answered as quickly as possible. Having read the preceding module it should be possible to answer the majority of the questions correctly provided that a reasonable level of understanding in each subject area has been developed.

The EBS DBA Introduction to Business Research Courses Process Model

1.33 This course, *Introduction to Business Research 1*, is one course within a larger suite of:
   A. two courses.
   B. three courses.
   C. four courses.
   D. five courses.

1.34 *Introduction to Business Research 1* is concerned primarily with explaining how to develop:
   A. a research proposal.
   B. a literature review.
   C. a pilot study.
   D. the complete thesis.

The EBS DBA Research Process

1.35 The main differences between the EBS DBA and a Heriot-Watt PhD are that:
   I. the DBA has a taught element.
   II. the research proposal is considered by a formal research committee.
   III. the DBA takes less time to complete.
   IV. the DBA is easier.
   Which of the above are true?
   A. I only.
   B. I and II only.
   C. I, II and III.
   D. I, III and IV.
1.36 Which of the following extracts is an accurate representation of the University requirement regarding contribution to the knowledge base?
   A. The thesis shall form a contribution to the knowledge of the subject and afford evidence of originality, shown either by the discovery of new facts or by the exercise of independent critical power.
   B. The thesis shall form a contribution to the knowledge of the subject, shown either by the discovery of new facts or by the exercise of independent critical power.
   C. The thesis shall form a contribution to the knowledge of the subject and afford evidence of originality, as demonstrated by the discovery and publication of new facts.
   D. The thesis shall feature the publication of new facts in the form of an original contribution to the knowledge base, shown either by the discovery of new facts or by the exercise of independent critical power.

The EBS DBA Thesis

1.37 In a doctoral thesis the literature review is generally completed:
   A. before the research proposal is completed.
   B. after the research proposal is completed.
   C. at the same time as the research proposal is completed.
   D. at any time in relation to the research proposal.

1.38 The thesis must provide clear evidence that it:
   I. is the candidate’s own work.
   II. is thoroughly understood by the candidate.
   III. affords evidence of originality.
   IV. contains a valid hypothesis.

Which of the above are true?
   A. I only.
   B. I and II only.
   C. I, II and III.
   D. I, II, III and IV.

1.39 A literature synthesis is primarily intended to:
   A. combine a series of literature reviews from separate areas of the research title into one common review summary that highlights the main emerging points.
   B. develop the review on one area of the research title in greater detail.
   C. use the main literature review as a support for the development of the research proposal.
   D. act as a validation study for the main research results.
1.40 An abstract is a:
A. point that is specifically referred to in the literature review.
B. primary research finding.
C. short summary of the research aims, objectives and results.
D. summary at the end of a section or chapter within the thesis.

1.41 Replicability is the concept of:
A. being able to reproduce the research in order to either corroborate or criticise the findings of the current research.
B. being able to use the research method to produce a similar research proposal.
C. using other research findings to substantiate the results of the current research.
D. using external sources to prove that the research findings are definitely correct.

The People Involved in Supervision and Assessment

1.42 The research supervisor could be:
I. a member of the EBS faculty.
II. a member of another Heriot-Watt faculty.
III. an academic from another university.
IV. an unqualified external consultant.
Which of the above are true?
A. I only.
B. I, II and III.
C. II only.
D. II and IV.

1.43 Generally speaking, EBS supervisors:
I. are qualified to PhD or DBA level.
II. are research active.
III. have supervised at least one PhD or DBA to successful completion.
IV. are experts in the exact research area undertaken by the candidate.
Which of the above are true?
A. I only.
B. I and II.
C. I, II and IV.
D. I, II, III and IV.

1.44 The EBS DBA thesis is examined by:
A. a series of written examinations.
B. continuous assessment of assignments.
C. requiring publication in research journals.
D. an oral presentation and defence (viva voce).
The Introduction to Business Research Courses

1.45 The EBS DBA course Introduction to Business Research 1 develops primarily:
I. the research proposal.
II. the literature review.
III. the development of the research method.
IV. the data collection process.
V. the write-up.
Which of the above are true?
A. I only.
B. I and II.
C. I, II and III.
D. IV only.

1.46 The EBS DBA course Introduction to Business Research 2 develops primarily:
I. the research proposal.
II. the literature review.
III. the development of the research method.
IV. the data collection process.
V. the write-up.
Which of the above are true?
A. I only.
B. II only.
C. II and III.
D. IV only.

Some Important Issues to Remember

1.47 The EBS DBA thesis, compared with a PhD thesis, is generally:
I. shorter.
II. less complex.
III. completed more quickly.
IV. subject to rigorous examination.
Which of the above are true?
A. I only.
B. I and II.
C. I and IV.
D. II, III and IV.
Module 2

Research Planning and Time Management

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Learning Objectives
By the time the candidate has completed this module, he or she should understand:

- the concept of a programme plan;
- how to break the research programme down into research work packages;
- how to estimate the time required for each work package;
- how to develop a research programme;
- how to establish milestones and checkpoints;
- the importance of personal progress reviews;
- how to handle delays and make trade-offs;
- what to do if the programme goes badly wrong.

2.1 Introduction

This module concentrates on the issues of planning the research programme and time management. Doctoral-level research is a complex project and, like any other complex project, it is very easy for the estimated times allowed for the overall research programme to be exceeded. If the time allowed is exceeded, the consequences can be negative for a number of reasons, the most obvious being fee cost increase. The research element costs a set amount for each year of supervision. The supervisor fees are fixed costs, and the total cost to the candidate is therefore a
direct function of the overall time taken to complete the supervised sections of the research element. Time overruns are also negative because they can distract the candidate from his or her normal business or employment activities. A significant proportion of EBS DBA candidates are senior managers and high-profile business people. Time spent on DBA research, although essential, has an opportunity cost.

To avoid cost overruns, the research programme should be carefully planned. This plan should subsequently be strictly adhered to. If delays do become evident, the candidate should make every effort to correct them as quickly and as thoroughly as possible. Most of the activities in the research programme have to occur at a set point in a sequence of associated activities. The overall process is, therefore, highly **sequentially interdependent**. This concept is discussed in more detail in subsequent sections.

This module attempts to develop an understanding of how the research programme can be broken down into individual research work packages that can then be planned using simple commercially available software. It goes on to consider how the plan can be monitored and how progress can regularly be reviewed. It also suggests some possible responses to discovered time delays.

# 2.2 Establishing Research Aims and Objectives

## 2.2.1 Introduction

The starting point in any structured research programme is to establish a set of aims and objectives. In most cases there may be some preliminary research and development before the aims and objectives are set, but the research, as a structured programme, cannot be defined until the required outcomes and the action necessary to achieve them are known. This approach applies to any problem-solving process. To address a problem, and find a solution, it is necessary to know what must be achieved. This section considers the importance of establishing reliable research aims and objectives, and addresses some of the dangers involved in changing these once the research programme is in progress.

## 2.2.2 Establishing Research Aims and Objectives

In research nomenclature, it is accepted usage to refer to the **aim** as being the desired end product of the research, and to the **objectives** as the actions necessary to achieve this aim. (This usage is adopted in the remainder of this text and in the subsequent EBS DBA *Introduction to Business Research* texts.)

As an example, consider the case of a DBA candidate who is concentrating his or her research on showing that the overall risk profile of an organisation is a function of a number of different types of risk.

The aim is to determine whether there is a functional relationship between overall risk profile and (say) the four different types of risk: strategic, operational, change and unforeseeable.

The objectives are to show that there is a functional relationship between:
strategic risk and the overall risk profile of the organisation;
• operational risk and the overall risk profile of the organisation;
• change risk and the overall risk profile of the organisation;
• unforeseeable risk and the overall risk profile of the organisation.

In other words, there is one aim and four different objectives. In achieving the objectives, the candidate also achieves the aim.

This differentiation is often reflected in the levels of research question or hypotheses developed.

A research hypothesis is concerned with the aim, whereas an operational hypothesis deals with the objectives.

In the above example the research hypothesis would be the following.

• \textbf{There is no functional relationship between the four different risk types and the overall risk profile of the organisation.}

\textit{Note: In line with conventional practice it is standard procedure to refer to the no-association hypothesis as the null hypothesis and to state it first. It is also conventional to state an alternative hypothesis that expresses the association.}

\textbf{Null (no association) research hypothesis: There is no functional relationship between the four different risk types and the overall risk profile of the organisation.}

\textbf{Alternative (association) research hypothesis: There is a functional relationship between the four different risk types and the overall risk profile of the organisation.}

The research hypothesis would then be accepted, or rejected, based on the acceptance or rejection of a series of operational null hypotheses:

1. There is no functional relationship between strategic risk and the overall risk profile of the organisation.
2. There is no functional relationship between operational risk and the overall risk profile of the organisation.
3. There is no functional relationship between change risk and the overall risk profile of the organisation.
4. There is no functional relationship between unforeseeable risk and the overall risk profile of the organisation.

In order to accept the research hypothesis, it is necessary (in this case) to accept each of the four operational hypotheses. If all four operational hypotheses are accepted, this is a strong argument for the research hypothesis being accepted as well.

Research aims and objectives are vitally important. They are similar to the strategic objectives of an organisation that are translated into operational or functional objectives for each functional or business unit. They are also directly analogous to the strategic orders issued to an army group and the individual tactical objectives set for individual field commanders. In all cases, the basic idea is the same. By achieving the objectives, the overall aim is achieved. If any of the objectives are not achieved, the aim may not be achieved. There is a difference between demonstrating a null effect and not being able to determine it at all due to data problems, etc.
In research terms, it should be stressed that the aim in the risk case given above is not to show that the research hypothesis is true. The aim is to show whether or not the research hypothesis is true. In research terms it may be equally valid to show that a research hypothesis should be rejected, as it is to show that the same research hypothesis should be accepted. An example is the analysis of a new drug during pre-clinical trials. The drug may be developed to provide a quicker way of combating headaches with no side-effects. In this case the research hypothesis could be:

- The drug does not cure headaches any more quickly than currently available drugs with no appreciable side-effects.

The operational hypotheses might be:
1. The drug does not cure headaches any more quickly than currently available drugs.
2. The drug does not cause any appreciable side-effects.

If operational hypothesis 1 is accepted, or if operational hypothesis 2 is rejected, then the main research hypothesis may also be rejected. In research terms, the fact that the drug does not cure headaches more quickly with no appreciable side-effects makes an equal contribution to the overall research programme. Further research may have to be carried out, and presumably the development cost of the drug will increase, together with the development time required, before the drug can be marketed. Rejecting the operational hypothesis is, therefore, equally valid even if it is not what the drug development company wanted to discover.

The fundamental difference between aims and objectives should now be clear. The aim is the end product required from the research; the objectives are the various actions necessary for that aim to be achieved.

If the aim is to build a warm, safe house, the objectives are to build the house safely and make sure that it has adequate heating and insulation. In meeting the aims, the builder also achieves the objective.

The research aims and objectives are normally stated in the introduction section of the thesis or right at the start of a research paper. Aims and objectives appear at the front of any research programme because everything follows on from them. This is why it is so important to establish the correct aims and objectives as early as possible in the research programme. If the research aims and objectives subsequently have to be changed, the whole design and scope of the research may have to be adjusted accordingly. The further the research programme has been developed when the aims and objectives are changed, the greater the degree of tactical adjustment there may need to be. This concept is illustrated in Figure 2.1 and Figure 2.2. Subsequent resource allocation is entirely dependent on the specification of the aims, the selection of the sample, the questions asked and the data collected.
In moving from the original statement of aims and objectives X to the required objective Y, the research programme has to develop through three separate activity sequences A, B and C. These sequences are shown as a single work package (group of activities) running in parallel for clarity. If, for example, the initial aims and objectives are changed halfway through the development of the research programme, both the original statement of aims and objectives X and the original aims and objective Y change, as shown in Figure 2.2. Note that these areas are most effectively addressed by the use of some simple project management tools and techniques.

It should, therefore, be absolutely clear that aims and objectives:

- are absolutely central to the research programme;
- should be very carefully thought through before being stated;
- should not be changed once set;
- should only be modified slightly if a change becomes inevitable.

The following section considers some guidelines to assist in adhering to the research aims and objectives.

New activity sequences D and E may now be required to achieve aims and objective Y1. These activities were not planned in the original programme, and they will therefore almost certainly have to start late. Starting these new activity sequences late will almost certainly increase the time required to achieve objective Y2. In addition, activity sequence A is no longer required because now it does not contrib-
ute to the achievement of revised aims and objective Y1. Activity sequence A1 therefore becomes obsolete, and all the work that was carried out in this sequence becomes abortive. The realisation that a whole section of work has become abortive can be extremely frustrating and can represent a very significant opportunity cost, in terms of both the research programme itself and the external (work and social) commitments of the candidate.

2.2.3 The Issue of Adhering to Research Aims and Objectives

At this stage, the idea of establishing and adhering to a set of aims and objectives may seem straightforward. In most research programmes, however, keeping to an initial set of aims and objectives can be extremely difficult. The two primary reasons for this are that:

- research is dynamic;
- research is concerned with the unknown.

One way to think about these issues is to consider the case of a ship sailing between two ports. If the position of the two ports is known it is possible to plot a course between them. The ship can then make use of its navigation equipment to monitor actual progress against the plotted course and to detect any divergences from course. As divergences are detected, the actual progress of the ship can be corrected through steering alterations to pull the ship back onto the plotted course. The actual progress of the ship, therefore, approximates to the planned course through a series of tactical adjustments. This concept is shown in Figure 2.3. The actual course approximates to the plotted course through a series of steering adjustments. Provided the current position of the ship at any given time is known accurately, the steering adjustments will bring the ship safely into port B. This assumes that there are no other external impacts and that the course corrections can be made without any further consideration.

![Figure 2.3 Actual course against plotted course](image)

The series of course adjustments and the overall changes in the actual position of the ship are examples of dynamic responses. They change continually because the ship is moving. In reality, the alterations of course required may be greater than or less than expected, because other dynamic effects impact on the position at any one time. Obvious examples include the wind and tides.
Research is dynamic, in that it constantly changes as the programme develops. The added complication is that research is also concerned with the unknown. To continue the navigational analogy, the position of the starting point is known but the position of the objective port is not known. The navigator knows where he or she thinks the objective port is, but does not know for certain. This is because the research programme is concerned with the discovery of new and original facts. The initial objective may change over time because, at the start of the programme, the candidate does not have sufficient information to define the end objective precisely. The candidate can describe the desired objective but cannot define what the final outcome will be. In the case of the ship’s navigator, this is like saying that he or she knows where the destination port is likely to be but this is no guarantee that the destination port will actually be located at that point.

At some point, the navigator will be able to collect enough information to be able to define the final objective. In some cases, this might only be when the desired port can actually be seen in the distance. At this point, a new course has to be plotted to bring the ship from its current position to the newly discovered destination port. The steering corrections required now are based around the revised plotted course.

If the navigator had known the actual position of the destination port when the ship left the home port, the plotted and actual courses would both have been different. This concept is shown in Figure 2.4.

Figure 2.4  Actual course against what the actual course should have been

The situation shown in Figure 2.4 is similar to that which often occurs in a research programme. The programme is both dynamic and concerned with the unknown. The extent of the unknown element varies, but if the research is based on the discovery of new facts and originality then, by definition, there must be an unknown element. The unknown element can be corrected only by the accumulation of information and facts. In research, this is addressed by designing a research method, collecting and analysing data, generating results and developing conclu-
sions. As the research progresses and more and more information is accumulated there comes a point where the candidate can see whether or not the original objective is as expected or whether a change is required. If a change is required, the issue of opening up new research activities and the possibility of aborting past work arise. The point at which sufficient information has been collected to allow this judgement to be made is sometimes known as the realization point or the event horizon.

Looking forward from the realization point the candidate can see where the end point is in relation to the current position. He or she can also see the difference between where the expected end point was and where the revised end point is. Looking back from the realization point he or she can see how the research has progressed in relation to how it should have progressed in the light of the new information.

Reverting to the impact of risk on the organisation, note that techniques have been developed to determine and measure the four primary classifications of risk (strategic, operational, change and unforeseeable). It is often observed that senior managers have a different definition for operational risk than middle managers. This often means that:

- completed work has to be redone;
- the connection between the new definition for operational risk and the three other risk types has to be investigated.

The candidate may therefore have to accept that the original aims and objectives of the research have changed. These aims and objectives may no longer be viable because new information has come to light that suggests this outcome. In most cases, provided the original aims and objectives have been carefully thought through, it is likely to be individual aspects of the research objective that have changed rather than the entire aim itself.

Typical reasons why this may occur include the following.

1. **Data may no longer be available.**
   An obvious reason for a change in objectives is that the research data necessary to achieve the objective are no longer available. This scenario could arise for a number of reasons. For example, a primary data source may withdraw cooperation. A candidate may have secured the support of a company in providing data. The company may provide some data and then refuse to provide any more, perhaps because it is concerned with the amount of time involved or the security implications of releasing more information than originally expected.

2. **The objective may fragment.**
   Sometimes an objective may initially appear to be easily definable and self-contained. As more information is collected, it may emerge that the objective becomes fragmented into a series of sub-issues. In other cases, it may transpire that the original aims were not sufficiently defined to allow the objective to be achieved. For example, a candidate might set out to show that there is a functional relationship between tyre wear and automobile accident rates. He or she might monitor accidents along a particular length of motorway over a period of time and collect data on the number of accidents and the degree of tyre wear in
each case. The sample may show that there is indeed a correlation between tyre wear and accident frequency. However, the candidate may subsequently discover that the length of road considered is subjected to abnormally bad weather conditions. The higher than average incidence of heavy rain or snow on that particular length of road may amplify the reduced grip effects of tyre wear. The candidate may then have to conduct a series of other studies, to allow for the effects of the abnormal weather conditions and to validate his or her findings by comparing them with results from a number of other samples.

One possible reason for this confusion is a lack of understanding of functional relationships.

\[(a) \quad \text{Accident rate} = f(\text{wear})\]

\[(b) \quad \text{Accident rate} = f(\text{grip}); \quad \text{grip} = f(\text{wear, weather})\]

Equation (a) is an example of specification bias. It can be avoided by the use of an initial specification as in equation (b).

3. **The research method may be flawed.**

Sometimes a candidate may discover errors or flaws in the design of the research method, particularly in the case of sample characteristics and data analysis techniques. In some cases, a candidate might use an established research method and only discover that it has limitations after a period of several months’ data collection. In other cases, the candidate might develop an entirely new research method, again only to discover that it has shortcomings after a considerable period of data collection and analysis. It will then be necessary to redefine the objective and either modify the research method or design an entirely new one. For example, the sample may turn out to be non-representative. Those interviewed may have a particular perspective on risk.

It should be stressed that there can be very considerable time implications where research aims and objectives have to be realigned or redefined after the research programme has started – especially after the research proposal has been accepted by the Research Committee. The entire programme can quickly lose momentum, and a great deal of additional or supplementary work can be generated. It is very important that, once set, any alterations to the research aims and objectives should be minor and very carefully controlled. In the case of the EBS DBA the supervisor, senior supervisor and the EBS Research Committee will look carefully for any shift in the stated aims and objectives after the research proposal has been accepted. Where any such changes are detected, the candidate will be asked for an explanation of why the change has occurred and what the likely consequences will be. In most cases, every effort will be made to correct the situation by the following courses of action.

1. Realign the progression of the research with the original aims and objectives.
2. Where this is not possible, every effort will be made to ensure that any alterations are minor and are as restricted as possible.
3. Where major changes are unavoidable, all necessary implications are considered and the entire research programme is realigned as necessary. This process can involve extensive redesign of major sections of the programme and, consequently, significant time delay.
In the latter case, the Research Committee will monitor carefully to ensure that all necessary corrections have been made before the candidate is allowed to progress.

2.2.4 Summary

The moral of the story is:

_The candidate should think about the aims and objectives very carefully indeed and should not set them until confident that they can be achieved and accurately represent what he or she is trying to do. Once set, only absolutely necessary changes should be made. Any changes are going to cause problems. The bigger the change the bigger the problems._

The next section considers how the research programme can be planned.

2.3 The Research Work Breakdown Structure

2.3.1 Introduction

This section considers the generation of a work breakdown structure (WBS) for the research programme.

2.3.2 The Work Breakdown Structure

A WBS is the first stage in any structured planning process. It is really a representation of the work that is involved, broken down into sections. The purpose of breaking the information down into sections is simply that it is easier to consider smaller pieces of information. This characteristic is a function of the human cognitive process. People naturally break a problem down into components and then consider each component individually. In arriving at solutions for each part of the problem, it is generally possible to arrive at a solution for the problem as a whole. The end product of the WBS is a set of work packages that can be individually planned, scheduled and assembled as a map or progression (precedence) diagram showing the sequence of work necessary to achieve the overall objective.

Time Out

_Think about it: the space shuttle Columbia._

The space shuttle Columbia broke up on re-entry to the earth’s atmosphere on 1 February 2003. All seven crew were killed. The vehicle itself appeared to break up while travelling at Mach 18 (about 13,000 miles per hour) at an altitude of about 200,000 feet. The cause of the catastrophic failure of the vehicle was not apparent. NASA immediately assembled a mishap investigation team, charged with conducting research into the cause of the disaster. The US Congress also announced that it would be carrying out a separate investigation and the US government announced that it would be setting up an independent commission into the causes of the accident.
It was known that there had been a series of malfunctions in the temperature sensors in the left wing, left wheel assembly and left wing hydraulic systems immediately prior to the accident. These sensor failures suggested an overheating problem in the general area of the left wing. In order for the sensors to fail, the overheating must have been very significant. This, in turn, suggested an excessive overheating problem.

In approaching the problem, all three bodies would have adopted a basic WBS approach. The initial problem was ‘what caused the failure?’ This top-level problem would then have been broken down into possible causes. At a superficial level the accident could have been caused by a number of key sub-failures. The five most likely sub-failures were:

- **Structural failure caused by overheating.** The shuttle had an aluminium hull. The friction caused by re-entry into the Earth’s atmosphere would have created temperatures of around 3000°C on the leading edge of the wings. If any of the heat-resisting tiles had been lost or damaged, the resulting heating effects would quickly have compromised the structural stability of the wing and hull. Aluminium (as is the case with most other metals) rapidly loses strength and rigidity as it is heated.

- **Structural failure caused by metal fatigue.** The shuttle was built in 1979. It had flown 28 missions when the accident occurred. Most metals such as steel and aluminium suffer from metal fatigue when subject to continuous variable stress.

- **Vertical stabiliser failure.** The vertical stabilisers were located towards the tail section of the shuttle. Their function was to maintain a vertical inclination unless countermanded by mission control. A failure would have allowed the shuttle to assume a skewed profile, possibly resulting in overheating of one or more sections of the wing and hull.

- **Fuel pump failure.** The descent profile of the shuttle was largely unpow-
ered. The ship was designed to glide to the landing point. There was, however, residual and emergency fuel on board, and a fuel pump failure, coupled with localised overheating, could have been responsible.

- **Hardware/software failure.** The shuttle flight telemetry on re-entry was controlled entirely from mission control. A problem either with the telemetry computers and/or the associated software could have resulted in the shuttle entering the Earth’s atmosphere too quickly, at the wrong angle or at the wrong inclination. Any of these scenarios could have resulted in catastrophic failure.

If structural failure caused by overheating was the main suspect, the various elements that could have caused this might have been damaged or missing heat absorption tiles, excessive ascent speed, incorrect flight profile and so on. If lost or missing tiles became the main suspect, the various causes of this condition would then have been considered. These could have included damage caused at take-off, damage while in space or damage on re-entry.

The overall problem would then have been broken down as shown below.
– Catastrophic failure
  – Structural failure
  – Overheating
    – Damaged or missing tiles
      – Damage caused on take-off
        – Damage caused by impact from main booster insulation panel
        – Inadequate fixing of insulation to main booster shell

Each component would have been broken down into sub-components. Each sub-component would then have been considered in terms of its own sub-components and so on until the analysis had continued to a sufficient level of detail where a single event could act as a primary cause. At the time of writing (February 2003), there was no firm evidence to suggest that the inadequate fixing of the insulation to the main booster shell caused the accident. This possible cause, however, formed the main focus of the enquiry as a section of this insulation had been seen to detach and strike the left wing of the shuttle during launch.

While there could have been other causes for the catastrophic failure of the shuttle, the initial evidence suggested the chain of reasoning shown above. One area of initial detailed analysis was, indeed, the effect of the inadequate insulation fixing causing insulation to detach and strike the left wing of the vehicle on launch.

The WBS approach allows the candidate to break down the research problem into greater and greater detail until the problem is sufficiently defined to allow individual planning and control. It will be recalled from Module 1 that an ‘average’ doctoral thesis might contain the following sections.

- Preliminaries.
- Introduction.
- Literature review.
- Literature synthesis and generation of hypotheses.
- Pilot study and theory/hypothesis and refinement.
- Research method.
- Analysis.
- Results.
- Literature reappraisal and theory development.
- Conclusions and suggestions for further research.

To plan the research programme effectively, these sections have first to be broken down into their separate components. The range and distribution of these components will vary from thesis to thesis, but generally it is possible to predict a number of standard components.
Consider, for example, the data collection and analysis section. In most cases, this section is likely to primarily involve some system or systems of data collection and some form of analysis. The data collection section could include a number of different types of data collection, and the analysis section could involve a number of different analytical tools.

Consider the case of a candidate who is concerned with the development of a risk management system for use in the negotiations leading up to the proposed merger of two large companies. The candidate might have secured the cooperation of the two companies concerned and intends to conduct the research primarily on the basis of analysing what the various senior managers say, both individually and during pre-negotiation team meetings.

The initial WBS distribution will be as shown in Figure 2.5.

![Figure 2.5: Basic second-level data collection and analysis distribution](image)

Research WBSs are often represented as simple breakdown structure diagrams as shown in Figure 2.5. The diagram in this case shows that the chapter in the eventual thesis and the work needed to be able to write that chapter can be subdivided into data collection and data analysis. This breakdown is sometimes known as a **second-level analysis** as it develops the WBS to the second level after the initial statement of objective.

The candidate might have developed a research method employing a number of data collection methods. Assume that these are:

- direct observation and recording at meetings;
- individual questionnaires;
- individual structured interviews.

Assume also that the candidate has decided, in the research method, to use two different analytical tools. The candidate has attempted to achieve a balanced approach by using a combination of qualitative and quantitative approaches.

The **third-level WBS** is therefore as shown in Figure 2.6.
Concentrating on the analysis side of the WBS, the candidate may have chosen to use a number of analytical tools and techniques to analyse the data. In this particular case, the candidate may have chosen to use content analysis and concordance analysis as the qualitative tools. **Content analysis** is often used in interpreting the underlying meaning in verbal discourse – for example, in analysing the word content of major speeches made by political leaders. The approach allows a researcher to count the frequency of occurrence of particular selected words. A researcher might analyse the speeches of the US president over a period of months when there is a threat of military action/intervention in the Middle East; the speeches might include an increasing frequency of the word ‘war’. The researcher might conclude that, as the frequency of the word increases, the likelihood of the corresponding event also increases and the probability of international conflict, therefore, also increases.

**Concordance analysis** is a type of content analysis. It concentrates on the use of specified words in the same sentence or paragraph. For example, the same analysis of speeches made by the US president might indicate a growing concordance between the words ‘war’ and ‘terrorism’. This might be taken to indicate a growing association between potential war and a concern about terrorism. The content analysis of a merger negotiation might find an increasing use of the phrase ‘risk management system’ up to the point where an appropriate risk management system is agreed upon, followed by a diminishing use of the phrase thereafter. The agreement itself may be preceded by an increased concordance of the phrase ‘risk management system’ and the word ‘risk’.

Both content analysis and concordance analysis have been widely used in the past to analyse the content of a range of sources including newspapers and political speeches. The tools have also been used in literary research to examine the works of Shakespeare. Even more recently, these approaches have been used in analysing the content of popular songs in the search for evidence of anti-feminist content.

Extending the research WBS to include content analysis and concordance analysis gives the layout shown in Figure 2.7.
The WBS represented in Figure 2.7 now extends to the fourth level. Note that the WBS shown only develops the data analysis side of the WBS beyond level 3. In practice, each level 3 work package would be developed to level 4.

In terms of planning the research, the next stage is to break down the level four activities into their component level 5 activities. In the case of the research tools used, there is likely to be a separate design and application requirement. In terms of programming the research, it is important to be able to attach a time requirement for the content analysis, data collection and analysis element. In terms of the programme, the components of the content analysis element are likely to be design and application. In using content analysis as an analytical tool, the main elements likely to be involved are those of designing the appropriate content analysis method and applying it. This gives the layout shown in Figure 2.8.
Figure 2.8: **Basic fifth-level data collection and analysis distribution**

Research methods are covered in detail in *Introduction to Business Research 3*. In most cases, there are three basic stages involved in developing a research method:

- system design;
- system trials;
- system application.

These three phases are self-explanatory. In the design phase, the candidate designs the research method to suit the research application. In some cases the candidate may make use of an existing method or adapt an existing method, whereas in other cases it may be necessary to design a completely new method. For example, content analysis has been in use for over 60 years so a large number of standard methods have been developed over the years. (The first applications were in fact used in the analysis of political speeches made by Hitler in the 1940s.)

Irrespective of whether the method used is based on an established approach or is completely new, there will usually be a requirement for a series of system trials. In research these often revolve around a pilot study where the proposed method is tested and calibrated against the sample used. When trials are complete, the system is then applied to collect and analyse research data.

The final research WBS, including the pilot study and calibration, is shown in Figure 2.9.

Most WBS analyses only break down as far as level 6. In practice, it is possible to define more or less any project in sufficient detail for individual control purposes using six levels or fewer.
Having broken the research project down to this level of detail, the candidate now has a clear picture of each individual work element required to complete the research programme. In the WBS example above it is necessary to complete the pilot study, evaluation and calibration and adjustment to complete system trials. It is necessary to complete system trials, system design and system application to be able to complete the content analysis research method and so on. The candidate can now establish each of the work packages in the WBS as individual targets. In terms of scheduling the whole process, an individual time estimate or target for completion of each work package has to be set so that the overall key or milestone dates can be established.

2.3.3 Summary

The moral of the story is:

*The candidate should look at the research programme as a whole and then break it down into sections. Each section should then be broken down to arrive at the smallest level of element required to give the candidate individual monitoring and control capability.*
The next section considers how individual time estimates can be placed against WBS elements.

2.4 Estimating the Time Required to Complete a Research Work Package

2.4.1 Introduction

Having broken the research programme down into its components, and having identified each individual work package necessary to complete the research programme, the next stage is to estimate approximately how long each work package is likely to take. This is a very important aspect as the research element of the DBA has a finite time limit, and it is in the candidate’s own interests, in terms of both fee costs and opportunity costs, to complete the research element as quickly as is practicable.

This section considers some alternative methods for estimating the time required to complete each work package. Probabilistic and deterministic time estimating and scheduling are covered in detail in the EBS MBA text *Project Management*. As this text is core to the EBS MBA, candidates will be familiar with these concepts.

2.4.2 Research Activity Time Estimating

*Note:* The following section is based on the assumption that the candidate is a typical distance-learning DBA candidate with a reasonably demanding job and average family commitments. Candidates with different degrees of available time may be able to complete the various sections of the programmes in more or less time than the values stated.

The following section does not include the time required for the development of the research proposal or for the physical writing up of the thesis.

As discussed in Section 2.3, research planning is difficult because it is dynamic and intrinsically concerned with the unknown. As a result, there will always be a requirement for tactical adjustment and response, and there will always an element of uncertainty. In research programme planning there will be a deterministic element, in that the time required for a particular activity can be determined with reasonable accuracy, and a probabilistic element, in that the time required for a particular activity can be estimated only within a range of possible values.

The first point to be made about research activity durations is that elements always seem to take longer than expected. The typical sections in an average thesis are as listed below.

- Preliminaries.
- Introduction.
- Literature review.
- Literature synthesis and generation of hypotheses.
- Pilot study and theory/hypothesis and refinement.
- Research method.
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- Analysis.
- Results.
- Literature reappraisal and theory development.
- Conclusions and suggestions for further research.

Consider the time implications for each section in turn.

1. **Preliminaries.** These are often written last and can be completed quickly. In most cases, the abstract, acknowledgements, tables of contents and list of figures can be completed within one or two days.

2. **Introduction.** The introduction, although relatively short, can take much longer to complete. It has to be carefully worded to convey information quickly and easily to the reader. The actual writing of the introduction may only take one day but the research and background thinking behind it may take considerably longer.

3. **Literature review.** The literature review is one of the most time-consuming aspects of the whole research programme. There is no set target time limit for the completion of the literature review. As a rule of thumb, most full-time candidates could expect to complete the literature review within six months. In some cases the process could take less time. The overall time required depends on the amount of published material there is in the research area. A candidate concentrating on the **mathematical tools used in the valuation of prospective merger partners** will find that there is extensive literature in the field. In this case, the candidate may have to search and read hundreds of articles because researchers have been active in the field for many years. Alternatively, a candidate concentrating on the **use of artificial intelligence techniques in computer modelling for the assessment of cultural integration in oil company acquisitions** will find that there is little or no relevant literature in the chosen field. In the former case the literature review could easily take six months. In the latter, a full review could be undertaken in one week because there might be only five articles published in the subject area.

Where there is a significant publication list in a chosen area it is important to classify the literature in some way. In the literature review phase it is very easy for a candidate to become involved in reading material that is not directly relevant. Other material may be relevant but have little scientific validity. It is fair to say that a significant proportion of the published material on business research has little or no ‘real’ research value. The term ‘real’ in this context means based on a proven and verifiable research method. Such publications may be interesting, but candidates often waste a lot of time reading business research publications of questionable quality.

It is useful to remember that there is a wide range of quality measures that can be used when considering the relative status of a given publication. The highest-quality publications are those that have been subject to peer review. Publications direct from a doctoral thesis and those appearing in refereed research journals are the most reliable. In a refereed research journal a paper put forward for publication is first assessed by a team of other academics or referees. The referees may require minor or major modifications to the paper before it is published. Conference proceedings are generally regarded as being the next most reliable,
especially if they have been refereed. The less reliable sources include textbooks and non-refereed ‘research’ publications. Textbooks are out of date as soon as they are written, and in some cases the content is not subject to peer review. Non-refereed journals may have no credentials other than that the paper has satisfied the editor.

The main considerations when estimating the time to complete the literature review are the following.

- How large is the relevant literature base?
- How much of it is relevant?
- How long will it take to read the relevant material?

In most cases, six months should be taken as a maximum.

4. **Literature synthesis and generation of hypotheses.** If the literature review is conducted carefully, this phase should not take more than two weeks or so. The purpose is to synthesis the literature, bringing everything together in support of the development of the main operational and research hypotheses. In practice, the synthesis process should occur mentally as the literature review progresses. The actual writing down and linking to the hypotheses may take a week or so.

5. **Pilot study and theory/hypothesis refinement.** The pilot study is a very variable element. Most candidates could expect to work on an initial pilot study for perhaps one to three months. Depending on the outcome it may be necessary to modify the hypotheses or theory and perhaps conduct a refined pilot study to appraise the modifications.

6. **Research method.** The research method could be developed very quickly, especially if an existing method is used in its entirety or is adapted for use in the research. Where a completely new method is used there may be a need for further pilot study work and appraisal. The most time-consuming element comes in making sure that the research method is correctly aligned with the research aims and objectives. Candidates often make the mistake of developing a research method that does not, in fact, collect relevant data and/or does not analyse the data in alignment with the research aims and objectives. As a general guide, a maximum of two to three months is normally allowed for the design, evaluation and calibration of the research method.

7. **Analysis.** The time required for the analysis phase depends on the range and quantity of data to be analysed. If the research method has been properly designed and calibrated, analysis can be a relatively straightforward process. Where the research method is not so well designed and calibrated, the analysis process can take considerably longer. In some cases, the level of analysis can be relatively superficial whereas in others several different levels may be required. The analysis may present results requiring further analysis to correct them for bias or reactance. These factors are discussed later in this text. In most cases, analysis can be completed within three to six months.

8. **Results.** The results should start to suggest themselves during the early stages of the analysis process. By the time the analysis is complete the results should also be more or less complete. Formalisation of the results can be expected to take perhaps one month.
9. **Literature reappraisal and theory development.** This is another extremely variable phase. As discussed above, research is dynamic and is concerned with the unknown. As research results generate new information, it is surprising how the candidate’s view of the original research can change. The original research hypotheses developed from the literature may no longer be entirely appropriate. In many ways, the more successful the research, the greater the need to reappraise the literature in the light of subsequent discoveries. It will be recollected that university regulations call for a contribution to the knowledge base and evidence of originality. If these requirements have indeed been achieved, then an addition to the literature becomes appropriate and there is a definite requirement to reappraise the existing (and now outdated) literature base in the light of the new facts discovered by the research.

The timescale required for this reappraisal varies as a function of the extent to which the new facts affect the literature base. Where the new contribution is small this process may take only a few days. Where the contribution is large, the process may take longer. As a general guide, a maximum of one month should be allowed for this process.

10. **Conclusions and suggestions for further research.** The end product of the research process is the generation of results and conclusions. These should align with the original research objectives. The conclusions summarise the contribution the research has made. In the case of replication, the conclusions may confirm the findings of another researcher, provided independent critical reasoning power has been used and applied. In other cases, the conclusions may be entirely new and will be presented to the ‘academic community’ for critical analysis. The conclusions should be generated quickly after the results have been generated, and there is no reason for this process to take longer than a few days. The candidate is now in a position where he or she is an expert in the research area, and it is valid that he or she should suggest potential areas of further research for other researchers. Most successful research programmes generate a number of interesting leads that cannot be followed up within the timescale available. These leads often prove to be useful for other researchers when developing their own research areas, building upon and extending the candidate’s research.

The overall recommended outline time allowances for the various phases, therefore, are as follows.

- Preliminaries: a few days.
- Introduction: a few days.
- Literature review: six months.
- Literature synthesis and generation of hypotheses: a few days.
- Pilot study and theory/hypothesis and refinement: three months.
- Research method: three months.
- Analysis: six months.
- Results: one month.
- Literature reappraisal and theory development: one month.
Conclusions and suggestions for further research: a few days.

In theory, the entire research programme (excluding the research proposal element) could be completed within two years in the case of candidates who have sufficient time available to progress at a fast rate.

In practice, it is generally advisable to build in some spare time to allow for unforeseeable delays. Unforeseeable time risks can originate from a wide range of sources. An obvious example is a candidate who sets up a series of interviews over several days with a collaborating company and finds that the night before the first interview he or she has developed influenza. The development of influenza is entirely unforeseeable and the probability of contracting it is a function of a wide range of drivers entirely outside the control of the victim. The consequences could, however, be disastrous. The series of interviews may have to be cancelled, and it could be weeks before the sequence of interviews can be re-scheduled. Every week lost in re-scheduling the interviews could result in an additional week on the overall duration of the research programme.

The concept of building in spare time or contingency planning is considered in more detail in Section 2.8.

2.4.3 Summary

The moral of the story is:

*The candidate should always allow at least the times shown and should assume that the actual times required will be greater. The time taken to prepare the research proposal and to write up the thesis depends very much on the abilities and time availability of the candidate.*

2.5 The Research Schedule

2.5.1 Introduction

This section examines the development of a simple research programme schedule using widely available software. It is strongly recommended that the candidate develop a schedule as early as possible in the research programme. The schedule acts like a map showing what has to be done, how the various activities link together, and how much time is available for each activity. There are several obvious advantages in preparing and maintaining the schedule using specialised project planning software rather than trying to develop and maintain a schedule on paper.

Candidates should note that the scheduling process is covered in detail in the EBS DBA text *Project Management*. As this text is core to the EBS MBA, most candidates will be familiar with scheduling techniques.
2.5.2 Developing a Research Schedule

A research schedule shows the following information.
1. The work packages required to complete the programme.
2. The sequence in which these work packages are to be carried out.
3. When each work package should start and finish.

This information allows the candidate to track his or her actual progress against planned progress and isolate where actual progress is ahead or behind programme. Where there is a delay, depending on the importance or criticality of the delay, some form of corrective action may need to be initiated. The candidate may be faced with the prospect of working even more hours each day to make up the delay.

The most common way of presenting a schedule is in the form of a Gantt chart. The Gantt chart is named after Henry Gantt, who pioneered the use of the Gantt chart in the US in the early twentieth century. Gantt charts have the advantage of being both easy to assemble and easy to read. They are particularly useful for showing a series of complex activities with their corresponding dates and times. They are reliable so long as the data used in preparing them are initially accurate and kept carefully up to date.

A Gantt chart comprises a series of boxes or bars representing the individual work packages identified in the WBS analysis (see Section 2.4). These bars are arranged in the sequence in which the research programme has to be developed. Gantt charts can be very complicated where they represent the work packages to be completed on a large project. They are generally much more basic when used to schedule a doctoral research programme.

The basic sequence of work and probable duration of each activity, as discussed in the previous sections, are likely to be:
- Preliminaries: a few days.
- Introduction: a few days.
- Literature review: six months.
- Literature synthesis and generation of hypotheses: a few days.
- Pilot study and theory/hypothesis and refinement: three months.
- Research method: three months.
- Analysis: six months.
- Results: one month.
- Literature reappraisal and theory development: one month.
- Conclusions and suggestions for further research: a few days.

Using a straightforward package such as Microsoft Project, these activities can be entered into the activities list and linked using simple predecessor relationships. In this case, it is assumed that the activities listed will follow in a straightforward sequential arrangement as shown in Figure 2.10.
In Figure 2.10 the shaded bars represent the activities. The durations shown are included for illustrative purposes only and will vary from research programme to research programme. The actual dates shown are similarly variable. The small arrows linking each activity represent predecessor dependencies. In the example, the literature reappraisal and theory development cannot start until the results analysis has been completed. Similarly, the conclusions cannot start until the literature reappraisal and theory development are complete. The overall completion date for the research programme, based on the activity durations and sequences entered, is shown by the small black diamond in the bottom right corner of the chart.

The candidate can estimate the likely completion date right at the start of the programme by simply entering the activities, activity durations and precedence dependencies as described. If the overall estimated completion date is too late – for example, beyond the maximum time allocated by the candidate for completion of the DBA – it may be necessary to reduce the overall time required for completion. This can be achieved either by reducing the estimated duration of one or more work packages or by converting a sequential relationship between two work packages to a parallel relationship.

The overall research programme is shown in Figure 2.11. The overall programme can be viewed simply by zooming out from the more detailed section shown in Figure 2.10. By considering the entire programme, it may be possible to identify work packages that could be carried out simultaneously. An obvious example is analysis and results. As the candidate analyses a large quantity of data, it is likely that some results will emerge more quickly than others. It is possible, for example, that 30 per cent of the final results will be generated by the time 75 per cent of the analysis is complete. In practice, therefore, it is perhaps unnecessary to show analysis as being completed before results can start. It may be feasible to conduct these activities in parallel with a lag time between them. The lag time represents the extent to which the analysis needs to be ahead of the results. There will always be some lag time between these two activities if they run in parallel because there has to be some analysis before there can be any results.

In the example shown in Figure 2.11 the overall duration of the research programme is around two years, with the largest single activity being the literature

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**Figure 2.10 The closing activities in the standard research programme**

In Figure 2.10 the shaded bars represent the activities. The durations shown are included for illustrative purposes only and will vary from research programme to research programme. The actual dates shown are similarly variable. The small arrows linking each activity represent predecessor dependencies. In the example, the literature reappraisal and theory development cannot start until the results analysis has been completed. Similarly, the conclusions cannot start until the literature reappraisal and theory development are complete. The overall completion date for the research programme, based on the activity durations and sequences entered, is shown by the small black diamond in the bottom right corner of the chart.

The candidate can estimate the likely completion date right at the start of the programme by simply entering the activities, activity durations and precedence dependencies as described. If the overall estimated completion date is too late – for example, beyond the maximum time allocated by the candidate for completion of the DBA – it may be necessary to reduce the overall time required for completion. This can be achieved either by reducing the estimated duration of one or more work packages or by converting a sequential relationship between two work packages to a parallel relationship.

The overall research programme is shown in Figure 2.11. The overall programme can be viewed simply by zooming out from the more detailed section shown in Figure 2.10. By considering the entire programme, it may be possible to identify work packages that could be carried out simultaneously. An obvious example is analysis and results. As the candidate analyses a large quantity of data, it is likely that some results will emerge more quickly than others. It is possible, for example, that 30 per cent of the final results will be generated by the time 75 per cent of the analysis is complete. In practice, therefore, it is perhaps unnecessary to show analysis as being completed before results can start. It may be feasible to conduct these activities in parallel with a lag time between them. The lag time represents the extent to which the analysis needs to be ahead of the results. There will always be some lag time between these two activities if they run in parallel because there has to be some analysis before there can be any results.

In the example shown in Figure 2.11 the overall duration of the research programme is around two years, with the largest single activity being the literature
review. This type of duration distribution would be more or less standard in DBA research programmes.

**Figure 2.11 The overall research programme**

The research programme Gantt shown in Figure 2.11 is, of course, only a plan. The work packages shown are based on estimated times and an anticipated sequence of execution. In practice, some packages may be completed quickly while other packages may suffer delays. For example, the literature review may be completed more quickly than expected because the number of reliable publications in the area was actually much smaller than anticipated. Alternatively, the analysis section may take considerably longer than expected because a particular group of results may be discovered to be questionable and may have to be reanalysed to ensure that they are reliable. It is therefore important that the Gantt chart is also used as a tracking tool where actual progress is entered and the difference between actual and planned progress, at any particular point, is highlighted. In Microsoft Project, this is achieved by showing actual progress as a smaller (black) bar within the overall activity (shaded) bar. The actual progress bar is simply dragged using a mouse to represent the estimated percentage completion achieved in the relevant activities. This process is shown for the literature review in Figure 2.12.

**Figure 2.12 Actual against programmed progress**
Using this **tracking Gantt** feature allows the candidate to monitor progress achieved to date compared with planned values and to make a corresponding estimate of the revised likely programme completion date based on current and past rates of progress. It is vital to carry out this form of analysis as early as possible in the research programme and frequently thereafter. The sooner any delay can be detected, the more time there is for the candidate to do something about it and try to make up the lost time. Delays not discovered until late in the programme are much more difficult to correct as there is less time available to issue any response, or carry out any corrective actions.

Microsoft Project also offers a range of other presentation formats. One very useful alternative is the calendar shown in Figure 2.13. The calendar displays exactly the same information as the Gantt chart, but this time on a day-by-day basis. This format is particularly useful where the research project contains a series of activities each of which has a series of subprojects. For example, the literature review may contain four separate chapters. Each chapter may contain six subsections and each subsection may address two or three distinct areas. The WBS distribution may be as shown below.

- The literature review
  - Chapter 2. The UK financial sector.
  - Chapter 3. Productivity and efficiency.
  - Chapter 4. Modelling the productivity and efficiency risk profile.
  - Chapter 5. Financial risk and risk management.
    - Section 3.1. Measuring productivity and efficiency.
    - Section 3.2.
    - Section 3.3.
    - Section 3.4.
    - Section 3.5.
      - Section 3.1.1. The resource-based view.
      - Section 3.1.2. The logic-based view.
      - Section 3.1.3. The financial view.

In this case the literature review could contain a hundred different subsections at level 4. The time allowed for each section may be a matter of days and it is useful to be able to plan the individual subsection start and finish time to this degree of tolerance. A programme calendar as shown in Figure 2.13 allows this.

The candidate can monitor daily progress on each individual subsection. The calendar also allows the candidate to ‘tick off’ work as it is completed, and it provides a day-by-day reminder of when the next subsection has to start in order for the overall research process to remain on programme.
A final format often used is that of the working time display. An example from Microsoft Project is shown in Figure 2.14.

**Figure 2.13  Typical calendar display**

A final format often used is that of the working time display. An example from Microsoft Project is shown in Figure 2.14.

**Figure 2.14  Working time display**
The working time display can be used as a log. The software automatically records the total number of hours spent on individual activities as progress-tracking information is entered. The total number of hours logged can then be compared with the overall duration allowed for an activity or sub-activity, and the time concentration of different parts of the programme can then be identified. For example, the analysis might reveal that some subsections of the literature took longer to complete than others although both involved the review of a similar amount of literature. This could indicate areas that may take longer than expected in subsequent activities such as literature reappraisal.

2.5.3 **Summary**

The moral of the story is:

*Develop a schedule that includes everything that has to be done and make sure required sequence of activities and other precedence logic are in place. Update the schedule with actual progress data and carefully monitor any delays.*

2.6 **Milestones and Checkpoints**

2.6.1 **Introduction**

Milestones in a research schedule act in a similar way to milestones at the roadside. They give an indication of how far the journey has progressed and how far there is still to go. In a long and demanding research programme it can be psychologically important for a candidate to complete the early milestones as quickly as possible. Checkpoints are more like toll barriers on a highway. A specific action has to be completed before they can be passed through.

This section briefly considers some of the major milestones and checkpoints to be negotiated in order to complete the research programme.

2.6.2 **Generating Milestones and Checkpoints**

Milestones can be inserted in the research schedule at more or less any point where a section or subsection is either started or finished. Checkpoints are more important as they act as barriers to progress rather than as markers of progress. In order to pass through a checkpoint the candidate has to complete an action or set of specific actions.

Checkpoints are an important consideration in a research schedule because the various activities and work packages are highly interdependent. In this context, interdependent simply means that the progress in any given work package depends, at least to some extent, on progress in other work packages. For example, the literature synthesis cannot be completed until literature review chapter 4 is completed and chapter 4 cannot be completed until section 4.1.2 is completed. There is, therefore, an interdependency between the literature synthesis and subsection 4.1.2 in the preceding chapter.
Interdependencies can take a number of different forms.

- **Sequential interdependency** occurs where a series of activities have to be carried out in a set sequence. The greater the degree of sequential interdependency, the lower the opportunity for carrying out any activities out of sequence. For example, the driver of an automobile has to depress the clutch before changing gear. Some aspects of the research programme are clearly sequentially interdependent. The research proposal has to be completed before the literature review, and the literature review has to be completed before the analysis.

- **Reciprocal interdependency** occurs where a series of different activities have to be completed before the overall programme can move forward. To continue the driver example, the driver has to turn the ignition key, put the car in gear and press the accelerator before the automobile will move forward (or backward). The transition of the vehicle from a static object to a mechanism cannot take place until these separate activities have taken place.

An obvious research programme example is writing up all the various chapters in the thesis itself. All (say) 10 chapters have to be completed before the thesis can be accepted by the supervisor for submission. There is no point in having chapters 1 to 9 fully complete if a small subsection of chapter 10 is incomplete. For the thesis to be submitted, every single component has to be present because it is the thesis as seen, and the oral presentation in support of it, that will determine the decision of the examiners.

Other sections of the research programme are also reciprocally interdependent. The candidate has to bring together all sections of the literature review, which may be developed either sequentially or in parallel. Irrespective of the sequence in which the components were developed, they have to be brought together before that section of the research programme can be concluded and before the candidate can move on to the literature review phase. The concept of reciprocal interdependency is shown in Figure 2.15.
In Figure 2.15 the activities required for the programme to move through the checkpoint are indicated by activities A, B and C. These activities must all be complete before the programme can progress, so it is useful to mark the end of these activities as individual milestones. In practice, in a business context, the individual milestones may be established as markers for the individual managers responsible for the planning and execution of activities A, B and C. In this respect these markers signify the end of the responsibility of these individuals. They have completed their remit, and the responsibility for taking the finished activity through the checkpoint may then become the responsibility of a senior manager or project manager. In this particular case, the end of the reciprocally interdependent activities are indicated by milestones. Once all these milestones are achieved the research programme can move through the checkpoint.

- **Pooled interdependency** occurs where a series of different activities have to be completed and the results combined or pooled before the next activity can begin. Pooled interdependency differs from reciprocal interdependency in that it refers to an activity that cannot be finished without the pooling of inputs. Reciprocal interdependency refers to the combination of a number of completed activities to allow the research programme to move on a significant amount, and usually through a checkpoint.

Typical checkpoints in the research schedule include:

- the completion of the research proposal;
- the completion of the literature review;
- the completion of the research element including the thesis.

These are the primary checkpoints. The candidate has to complete the research proposal before he or she can move on to the literature review. The candidate has to complete the literature review before he or she can move on to carry out the
design of the research method, data analysis and generation of results and conclusions.

Each of these checkpoints is separated by activity periods. The time required between checkpoints depends on the nature of the research and on the characteristics of the individual candidate, although there are maximum and minimum timescales as set in the course regulations. The activity periods themselves contain sub-checkpoints. These sub-checkpoints are defined by both formal progress reports (during the supervised phase) and informal progress reviews that the candidate is required to produce on a regular basis. These progress reports are essential as they allow the senior supervisor to see that each candidate is progressing.

2.7 Personal Progression Review

2.7.1 Introduction

Time planning and scheduling is only one aspect of satisfactory performance. There is little point in finishing the research programme on time if what is produced is not up to the required standard. In research, there is also the additional requirement that what is being done now may affect what can be done in the future. Progress today could have a direct impact on progress in the future. In some cases, there may be a significant time delay or lag between actions taken now and the emergence of the consequences in the future. This section looks at how a simple informal and optional personal progression review system can be established.

2.7.2 Developing the Personal Progression Review

A personal progression review (PPR) is a simple way of monitoring progress up to a particular time. It is strongly recommended that candidates take time out from their research programmes to reflect on and review what they have achieved, how well it has been achieved and, importantly, how it could have been achieved more effectively. The research programme is very much a learning experience. Most DBA candidates have no experience of doctoral-level research so it is important to build up a library of information, as things occur, to learn from past experiences.

It should be stressed that, although the preparation and use of PPRs is highly recommended, it remains optional, and any PPRs produced are not formally marked or graded and do not form part of the assessment for the programme.

PPRs can be held at any time throughout the research programme. It is good practice to set up two different levels of PPR. Major PPRs should be held at significant checkpoints. It is appropriate to review large numbers of completed activities as a checkpoint is negotiated. The fact that the checkpoint has been passed is obviously good, but the major PPR may indicate areas where performance could have been better. It may also indicate where issues considered in the current PPR could impact significantly on future activities in the research programme.
Minor PPRs should be held at the end of each milestone. Even in developing and writing one subsection of a literature review chapter, there are lessons to be learned and opportunities to be taken with the objective of improving future performance.

In the case of major and minor PPRs it is useful to develop a standard table to be used for all PPR applications. A typical example is shown in Table 2.1.

**Table 2.1 Personal progression review summary**

<table>
<thead>
<tr>
<th>General information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Milestone code</td>
<td>1.27</td>
</tr>
<tr>
<td>Milestone identity</td>
<td>Completion of pilot study design.</td>
</tr>
<tr>
<td>Programme start status</td>
<td>Started 6 days late.</td>
</tr>
<tr>
<td>Programme end status</td>
<td>Completed on time (16 June).</td>
</tr>
<tr>
<td>Performance status</td>
<td>Pilot study design appears to match the requirements of the research aims and objectives. Pilot study design stage completed in 85% of programmed time.</td>
</tr>
</tbody>
</table>

**Facilitating the next stages**

<table>
<thead>
<tr>
<th>Specific actions required</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Next programme stage</td>
<td>1.28 Pilot study trials.</td>
</tr>
<tr>
<td>Specific actions required</td>
<td>Contact collaborating company to agree on a date for first interviews. Check pilot trials sample size and arrange specific appointment dates and times with first six respondents. Set up interview responses database and arrange for transcriptions.</td>
</tr>
<tr>
<td>Problem areas</td>
<td>Difficulty in establishing likely validity due to lack of data. Interview based on standard design by Bloggs J. but with specific non-verified adaptations. Supervisor has not been involved at any stage of the design of the pilot study.</td>
</tr>
<tr>
<td>Future general actions</td>
<td>Ensure that sufficient data is collected to allow full pilot validation study. Seek to extend literature review if possible and develop reading on specific adaptations of the Bloggs typology. Brief supervisor on the design of the pilot study and incorporate any recommendations.</td>
</tr>
<tr>
<td>Supervisor</td>
<td>Discuss problems with lack of trials data and ask for advice. Discuss adaptation of existing typology issue.</td>
</tr>
</tbody>
</table>

In Table 2.1, under the heading of *general information*, the relevant milestone is identified. It is prudent to assign individual code numbers to identified milestones as two or more milestones may have similar-sounding names. The entry normally also
contains information on when the milestone was achieved and the time taken to complete the activity, whether or not the activity started on time, and any time that was saved during the course of the activity. There will usually be a brief summary of the performance status of the activity. This will include observations on whether or not the particular activity appears to be achieving its objectives and how rapidly the activity developed. In the example shown in Table 2.1 the milestone that forms the basis of the PPR is the completion of the pilot study design. It is obviously important to observe and record that the pilot study design has evolved in line with the overall aims and objectives of the research programme.

The next heading is facilitating the next stages. This identifies the next programme activity (with numeric code number) and shows the immediate actions required to initiate the next activity. In this case, the next activity is pilot study trials. In order for pilot study trials to start, the necessary data collection facilities have to be put in place and activated. The example assumes that the candidate has already secured the cooperation of a collaborating company. It is therefore necessary to:

- contact collaborating companies to agree on a date for first interviews;
- check pilot trials sample size and arrange specific appointment dates and times with the first six respondents;
- set up an interview responses database and arrange for transcriptions.

Individual dates for these actions could appear in the PPR. Alternatively the PPR could refer directly to the relevant dates for each activity as shown on the research programme Gantt chart.

The section headed problem areas is used to record any actual or perceived problems encountered in achieving the milestone. In this case, the candidate is concerned that he or she has developed a pilot study design that is (apparently) an adaptation of an existing typology, originally developed by another researcher called Bloggs. Making use of an existing research method reduces the risk involved in choosing a method, especially if the established method has had significant use and exposure. As soon as any adaptations are made, however, the degree of risk of the adaptations being non-compatible with the data set or the aims and objectives of the research starts to increase steeply.

The problem areas are normally directly addressed in the future general actions section. The final section is usually reserved for comments, questions or concerns that the candidate wishes to put directly to the supervisor. In this case, the concerns are based on the lack of data for the pilot study trials and the untried adaptation of an established research method. The candidate should remember that the supervisor is required only to make a limited time input to the supervision process. The supervisor is, additionally, required only to make suggestions and offer guidance and is not required to offer specific direction. It is therefore important that the candidate makes sure that his or her use of the supervisor is as efficient as possible.

As the candidate starts to develop and write up more and more of the thesis, it is possible that several milestones could be achieved within the space of (say) a one-week period. The recording of specific questions or areas of concern for presentation to the supervisor on a table like that shown in Table 2.1 is a useful way of
centralising these issues and ensuring that they are not forgotten prior to the next communication with the supervisor.

Occasionally the PPR may throw up a major problem. For example, the pilot study trials may reveal that the pilot study itself is not correctly aligned to the main study. A pilot study is intended to act as a preliminary evaluation tool, for the research hypotheses and the research method. It is a very important component of the research programme as it acts as a type of bridge between the existing literature and the candidate’s own work. Most of the work prior to the pilot study is non-experimental and is largely literature-based. Most of the work after the pilot study is experimentally based, concerned with either research method design or implementation. The pilot study may indicate that there is a problem with the basic data set being used or with the initial research method itself. The PPR may indicate that the data collected so far does not indicate any evidence in support of the main theory or hypothesis.

Reconsider the earlier example on the suspected association between tyre wear and accident rates. The main theory might be based on the supposition that accident rates increase as a function of tyre wear. The candidate might develop a pilot study that measures the tyre wear on 50 cars involved in accidents. The candidate may be very confident that there is an association, and he or she may fully expect to obtain supporting results from the pilot study. The pilot study results, however, may indicate no such association.

In developing the PPR, the candidate may feel that there are two reasons why the expected association is not present. The two obvious reasons are as listed below.

- The sample size is not sufficiently large to be representative.
- The research method is flawed.

In the former case, the sample size may be too small to be representative of the general population. The 50 vehicles chosen for use in the pilot may be a particular type of automobile that is (say) more prone to accidents anyway, irrespective of the degree of tyre wear present. It could be that the accident rate is higher in the chosen data set region than elsewhere, perhaps because there is an abnormally high degree of criminal activity such as ‘joy riders’. Where such concentrations occur, the incidence of accidents is again likely to be high, irrespective of the degree of tyre wear present.

The other possibility is that the research method is flawed. The candidate may have to investigate to see whether the method used for assessing tyre wear is reliable. The degree of wear might be assessed in the pilot by measuring the distance between the outer edge of the tread and the bottom of the grooves. This approach may subsequently turn out to be flawed because the thickness in the original wearing layer varies across the sample size.

Irrespective of whether or not the lack of expected results arises from the sample or the method, the PPR signposts the fact that there is a problem with the pilot study. The candidate may subsequently have to return to the sample and method and reassess both for reliability.
2.7.3 **Summary**

The moral of the story is:

*A plan is useful but it is only as effective as the extent to which it is adhered to. It is important to be able to ascertain how well the plan is being converted into research outcomes. All candidates encounter problems and difficulties at one time or another. It is important that these are identified and assessed as part of a PPR at frequent intervals. The candidate can only make so much use of the supervisor so it is important that the PPR is used as a means of recording and prioritising matters to be raised with the supervisor during the next communication.*

2.8 **Delays, Contingencies and Responses to Major Progress Problems**

2.8.1 **Introduction**

No matter how carefully a research programme is scheduled, and irrespective of how reliable the monitoring and control system is, most programmes will experience events that cause delays. In some cases the resulting delays could be insignificant, whereas in other cases the consequences of a delay could impact directly on the successful progression of the research programme. This section discusses some simple arrangements for building spare time into the research programme in order to cushion the impact of any external delay-causing events.

2.8.2 **Delays, Contingencies and Responses**

Having broken the research programme down into work packages, developed a plan and carried out suitable monitoring and review control, there is always the possibility that the research programme may be seriously delayed by some element over which the candidate has no control. In most cases these delays are caused by unforeseeable risks – risks that could not reasonably have been foreseen either when the plan was prepared or as the monitoring and control process developed. In some cases these delays can be significant and can seriously disrupt the development of the research programme.

The simplest way of allowing for unforeseen delays is to build in some spare time to some or all of the activities in the research programme schedule. When developing the schedule the candidate could simply add, say, 10 per cent to each estimated duration. The first three sets of activities might then progress smoothly, so that by the end of the third set of activities a significant slack or buffer time will have accumulated. If an unforeseen event, such as contracting influenza, then occurs, the candidate can absorb any delay without necessarily disrupting the main programme.

The amount of time that can be absorbed will of course depend on the amount of buffer time accumulated over the course of the first three sets of activities. If the delay is considerable, there will be a point where all available buffer time is eroded and the delay starts to impact directly on the completion of the main programme.
Accumulated buffer time has a number of disadvantages. The main problem occurs where the candidate has to fix critical activities well in advance. A typical example would be a series of research interviews with senior managers. The candidate might have to use considerable internal influence to secure consent to carry out these interviews. The times and dates may have to be precisely fixed several months in advance. If the research activities preceding these interviews run on time or early, the candidate may be left with a significant gap between the end of the preceding activity and the start of the interviews. In most cases this time can be put to good use, but there is always a possibility that the end result could be the ineffective use of this time.

A second way of allowing for time savings and delays is to develop a schedule containing a minimum of two parallel activities at any one time. If a delay occurs on one activity path, the buffer time built into both paths can be absorbed up to a point. Where one or more activities finish early before a fixed point, as in the case of the interviews, the candidate can then move on to the parallel path and work on this until the date for the start of the interviews is reached. It is usually possible to develop some degree of parallelisation in any research programme. For example, the development of the research method has to follow on from the literature review, but it is almost always possible to start some aspects of the method design before the literature review is completed.

This concept is illustrated in Figure 2.16 and Figure 2.17.

**Figure 2.16 Literature review, synthesis, theory and method (sequential)**

In Figure 2.16, the literature review chapters, the synthesis, pilot study and research method are all shown as sequential activities. In this case an early completion in one activity reduces the overall time required to complete the sequence, but a delay on any one activity increases the overall time required to complete the sequence. If the overall delay cannot be absorbed by any built-in time buffer, the research method will finish late. Both an early finish and a late finish of the research method stage could have serious implications if this stage is immediately followed (for example) by a fixed date set of interviews.

Greater flexibility can be included by starting the synthesis, theory development and research method earlier and running these in parallel with the development of the literature review. None of these activities can be completed before the literature review is completed but they can be started earlier and run in parallel with the development of the literature review.
In Figure 2.17 the candidate intends to start the synthesis, pilot study design, theory development and research method as soon as the literature review starts. Any delay in any of these activities can be absorbed more easily as the candidate can switch emphasis between activities as opportunities allow.

The parallel development approach is more complex than the sequential approach and it requires careful planning and control. With any parallelisation of related activities, there is always the risk of abortive work. The candidate may attempt to synthesise the literature as each chapter develops but he or she will not be able to develop a full synthesis until all relevant information is available. There is a high probability that important literature subject associations will be missed or not be appreciated until late in the literature review. As a result, this approach tends to generate an exponential information curve as shown in Figure 2.18. In the programmed example shown above, the candidate could expect to have to process a very large amount of information as he or she is formulating the research question or theory, because the information from all of the preceding parallels will come together within a relatively short period of time.
In Figure 2.18 the parallel activities generate information at a more or less linear rate, but because they are all now programmed to finish at the same time, the rate of information generation tends to develop as a curve with an increasing gradient. The primary danger here is that the information flowing into the system exceeds the maximum that can be handled by the candidate within the timescales allowed. Any excess will face a wait before it can be processed, and this is likely to result in a delay to the overall completion of the sequence.

The possibility of abortive work associated with parallelisation is likely to exacerbate this potentially dangerous situation.

Another possible approach is to build in a block time contingency towards the end of the research programme. In some cases it is possible to write up parts of chapters as the research proceeds. For example, the literature review can usually be written in draft form as the reviewing proceeds. The candidate may have to return to these draft chapters and make extensive alterations as the synthesis and literature re-evaluation stages develop, but it is generally possible to write up in first draft form a considerable part of the thesis text as the research is developing. The candidate will have to leave a period at the end of the research programme for ‘writing up’. This period is used to modify existing draft work and to write up any sections not drafted as the work proceeded. It is also needed for the writing of the results and conclusions, which cannot be developed until a late stage.

It is sometimes advisable to build in a contingency period between the start of writing up and the formal examination. If the candidate allows six months for writing up, one of these months could be clear and left to absorb any cumulative delays that have evolved through the programme. This is a relatively good position for a block buffer as the examination can usually be fixed at relatively short notice and the final date can be left open until a late stage in writing up. External examiners have to be approved by the university, and in some cases the university may ask for
additional information over and above that initially provided when the external examiner is first proposed.

2.8.3 Summary

The moral of the story is:

Candidates should assume that unforeseen delays are going to occur and should make adequate allowance. The potential impact of delay can be reduced by including spare time in the programmed activity durations and/or by increasing the proportion of activities that run in parallel.

Learning Summary

The candidate should now understand:

- the concept of a programme plan;
- how to break the research programme down into research work packages;
- how to estimate the time required for each work package;
- how to develop a research programme;
- how to establish milestones and checkpoints;
- the importance of personal progress reviews;
- how to handle delays and make trade-offs;
- what to do if the programme goes badly wrong.

The following section briefly summarises the primary learning outcomes from each section that is included in this module.

Establishing Research Aims and Objectives

- Research aims and objectives act as the foundation of the research programme.
- The aim refers to the desired end product.
- The objectives refer to the actions necessary to achieve the aim.
- Generally each aim comprises a series of objectives.
- A research hypothesis generally mirrors the aim.
- An operational hypothesis normally mirrors the objectives.
- A research hypothesis usually comprises a series of operational hypotheses.
- The research aims and objectives do not have to be represented as hypotheses. Some researchers develop a research theory whereas others develop a research question.
- In order to achieve an aim, objectives are met. The objectives are usually achieved through a series of activities or work packages.
- Work packages are sometimes arranged in sequence and sometimes in parallel.
- Once set, aims and objectives should not be changed unless this is absolutely unavoidable.
• If changes to aims and objectives must be made, the changes should be minor.
• If major changes are proposed, there could be objections from both the supervisor and the EBS Research Committee.
• Major changes are likely to involve both abortive work and major additional work.
• Research is both dynamic and concerned with the unknown.
• New objectives may be discovered some way into the research programme.
• There is often a requirement for a series of tactical responses in order to keep the development of the research correctly aligned with the objectives.

The Research Work Breakdown Structure
• The WBS is a representation of the research programme, broken down into work packages.
• This is necessary in order to derive individual work units that can be independently planned and controlled.
• The WBS is the starting point in the generation of a research schedule.
• Most WBS breakdowns progress to a maximum of about six levels.

Estimating the Time Required to Complete a Research Work Package
• It is difficult to estimate research activity duration accurately because the full extent of the work is difficult to assess.
• Research nearly always takes longer to complete than was expected.
• The dynamic nature of research coupled with the unknown element promotes estimating inaccuracy.
• The typical times allowed for each element of an average research thesis are as shown below.
  – Preliminaries: a few days.
  – Introduction: a few days.
    – Literature review: six months.
    – Literature synthesis and generation of hypotheses: a few days.
    – Pilot study and theory/hypothesis and refinement: three months.
    – Research method: three months.
    – Analysis: six months.
    – Results: one month.
    – Literature reappraisal and theory development: one month.
    – Conclusions and suggestions for further research: a few days.
• Spare time in one form or another should always be allowed to take unforeseen events into account.

The Research Schedule
• A research schedule simply shows the following information.
  – the work packages that are required in order to complete the programme;
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- the sequence in which these work packages are to be carried out;
- when each work package should start and finish.

- This information allows the candidate to track his or her actual progress against planned progress and isolate where actual progress is ahead or behind programme.
- Where there is a delay, depending on the importance or criticality of the delay, some form of corrective action may need to be initiated.
- The research schedule should ideally be prepared using commercial project planning software.
- Most software packages represent the schedule as a Gantt chart.
- Most software packages provide a tracking facility where actual progress can be compared with planned progress.
- The schedule should be checked and updated on a regular basis.

**Milestones and Checkpoints**

- Milestones are indicators. They are generally used to identify the end of a work package or series of work packages.
- Checkpoints are progression points. Normally there is a series of events or activities that have to be completed before the research can pass through a checkpoint.
- A schedule usually contains more milestones than checkpoints.
- Interdependency occurs where activities are dependent on each other.
- Sequential interdependency occurs where a series of activities have to be carried out in a set sequence.
- Reciprocal interdependency occurs where a series of different activities has to be completed before the overall programme can move forward.
- Pooled interdependency occurs where a series of different activities have to be completed and the results combined or pooled before the next activity can begin.
- Typical checkpoints in the research schedule include:
  - the completion of the research proposal;
  - the completion of the literature review;
  - the completion of the research element including the thesis.

**Personal Progression Review**

- A personal progression review (PPR) is a simple way of monitoring progress up to a particular point in time.
- PPRs can be held at more or less any time throughout the research programme.
- Major PPRs should be held at significant checkpoints.
- Minor PPRs should be held at the end of each milestone.
- PPRs provide an important tool in assessing how well the research programme is progressing.
PPRs are useful for highlighting areas to be brought to the attention of the supervisor.

**Delays, Contingencies and Responses to Major Progress Problems**

- No matter how carefully a research programme is scheduled, and irrespective of how reliable the monitoring and control system is, most programmes will experience events that cause delays.
- In some cases the resulting delays could be insignificant, whereas in other cases the consequences of a delay could impact directly on the successful progression of the research programme.
- One way of addressing the possibility of a delay is to build spare time into each work package.
- This approach may be a disadvantage where work progresses on schedule up to a fixed activity point and where there are no parallel activities.
- Spare time can be built into a programme with increased parallelisation. This arrangement gives the same net time reserve within a more flexible response option framework.
- Time reserves can also be built in using block buffers or whole activities with a zero work requirement. These should be placed towards the end of the schedule.
- Overlapping activities through parallelisation can lead to very high information processing demands at certain points in the schedule.
- If a peak information-processing demand exceeds processing capacity, a delay could result.

**Review Questions**

**True/False Questions**

**Establishing Research Aims and Objectives**

2.1 The objectives of the research are a summary of the individual aims. T or F?

2.2 The aim of the research is achieved by the achievement of the individual objectives. T or F?

2.3 It is possible to have research aims without having specific objectives. T or F?

2.4 Research aims and objectives are fluid and can be changed throughout the research programme. T or F?

2.5 Research aims are mirrored in research hypotheses. T or F?
2.6 Research objectives are mirrored in operational hypotheses. T or F?

2.7 It is acceptable to change research aims extensively so long as research objectives remain fixed. T or F?

2.8 Achieving a research aim usually involves completing a given sequence of research activities or work packages. T or F?

2.9 Work packages can be arranged in more or less any order. T or F?

2.10 When scheduling a research programme, the longest-duration work packages should always be carried out first. T or F?

2.11 Research is dynamic and concerned with the unknown. T or F?

2.12 Research requires a tactical response capability. T or F?

2.13 Any proposed changes in research aims and objectives can usually be accommodated. T or F?

2.14 Changes in research aims and objectives are likely to result in additional work and abortive (completed) work. T or F?

The Research Work Breakdown Structure

2.15 The WBS approach mirrors the process adopted by the human brain in analysing a problem. T or F?

2.16 The WBS approach is based on the concept of identifying individual work elements that can be effectively planned and controlled. T or F?

2.17 Most WBS breakdowns extend to 10 or more levels. T or F?

Estimating the Time Required to Complete a Research Work Package

2.18 It is normally possible to estimate research activity times accurately. T or F?

2.19 The main problem with identifying research activity durations relates to the unknown element. T or F?

2.20 Most research activity duration estimating can adopt a deterministic approach. T or F?

2.21 The literature review should act as the basis for the development of the research method. T or F?
2.22 The literature review should normally be completed within three months (full-time students). T or F?

2.23 Research programmes are usually completed more quickly than originally thought. T or F?

**The Research Schedule**

2.24 The research schedule basically shows the work packages, the sequence in which they are to be completed, and the time required for each. T or F?

2.25 A good research schedule more or less guarantees that the research will be completed on time. T or F?

2.26 Most schedules present the work involved as a Gantt chart. T or F?

2.27 The main problem with a Gantt chart is that it cannot be modified once the work has started. T or F?

2.28 It usually takes between one year and two years to actually write the thesis up. T or F?

2.29 Tracking is the process of adding actual progress to the planned progress in order to identify delays and other problems. T or F?

**Milestones and Checkpoints**

2.30 Schedules normally contain more milestones than checkpoints. T or F?

2.31 A checkpoint could also be a milestone. T or F?

2.32 The completion of one chapter of the literature review would generally be regarded as a milestone. T or F?

2.33 The non-rejection of the outline proposal by the EBS Research Committee would probably be regarded as a checkpoint. T or F?

**Personal Progression Review**

2.34 A PPR is a tool for testing the research hypothesis. T or F?

2.35 A minor PPR should be held at each milestone. T or F?

**Delays, Contingencies and Responses to Major Progress Problems**

2.36 It is not possible to allow for every event that could cause a delay. T or F?
2.37 Delays can be allowed for to some extent by building spare time into each activity. T or F?

2.38 All research work packages should be carried out in sequence. T or F?

Multiple-Choice Questions

Establishing Research Aims and Objectives

2.39 In common research usage, a research aim is:
   A. the desired outcome from the research.
   B. the actions necessary in order to achieve the desired outcome.
   C. the operational hypothesis.
   D. the research hypothesis.

2.40 In common research usage, a research objective is:
   A. the desired outcome from the research.
   B. one of the actions necessary in order to achieve the desired outcome.
   C. the operational hypothesis.
   D. the research hypothesis.

2.41 The research objective is usually mirrored in the:
   A. research hypotheses.
   B. operational hypotheses.
   C. literature synthesis.
   D. suggestions for further research.

2.42 An operational hypothesis is usually expressed in terms of a series of:
   A. assumptions.
   B. interviews.
   C. aims.
   D. delays.

2.43 The aims and objectives of the research can be achieved by developing a method to test a:
   I. hypothesis.
   II. research question.
   III. theory.
   IV. model.
   Which of the above are true?
   A. I only.
   B. I and II.
   C. I, II and III.
   D. I, II, III and IV.
2.44 Research should be considered as being:
I. dynamic.
II. unpredictable.
III. short timescale.
IV. concerned with the unknown.
Which of the above are true?
A. I and II.
B. I and III.
C. I and IV.
D. I, II, III and IV.

2.45 Once set, research aims and objectives:
A. never change.
B. should not be changed if this can be avoided.
C. always change.
D. should be ignored.

The Research Work Breakdown Structure

2.46 Most research programmes can be adequately broken down by a WBS extending to a maximum of:
A. three levels.
B. six levels.
C. nine levels.
D. twelve levels.

2.47 The literature review level 2 breakdown would typically identify:
A. chapters that constitute the literature review.
B. chapters that constitute the literature review and the statement of objectives.
C. statement of the research aims and objectives.
D. abstract.

Estimating the Time Required to Complete a Research Work Package

2.48 As a general guide, the average time required to complete the literature review is usually about:
A. one week.
B. one month.
C. six months to a year.
D. over two years.
2.49 As a general guide, the average time usually required to complete the data collection and analysis section is about:
A. one week.
B. one month.
C. six months to a year.
D. over two years.

2.50 The time taken to complete the literature review is a function of the:
I. size of the literature base.
II. speed at which the candidate can read the literature.
III. information-processing capacity of the candidate.
IV. rate at which research results can be generated.
Which of the above are true?
A. I and II.
B. I, II and III.
C. II, III and IV.
D. III and IV.

The Research Schedule

2.51 A typical research schedule shows the:
I. various activities and work packages that have to be done.
II. various aims and objectives that have to be achieved.
III. any assumptions that have been made.
IV. unforeseeable activities.
Which of the above are true?
A. I only.
B. I and II.
C. I, II and IV.
D. II and IV.

2.52 The research activity immediately preceding the research method would usually be the:
A. preliminaries.
B. introduction.
C. results.
D. pilot study and theory/hypothesis refinement.

Milestones and Checkpoints

2.53 Once established, the dates of milestones and checkpoints:
A. always change.
B. never change.
C. may change.
D. cannot change.
2.54 The activities involved in developing the literature review are:
   I. possibly sequentially interdependent.
   II. reciprocally interdependent.
   III. pooled interdependent.
   IV. exclusively interdependent.
   Which of the above are true?
   A. I only.
   B. I and II.
   C. II and III.
   D. II, III and IV.

Personal Progression Review

2.55 A PPR would normally be sited to coincide with:
   A. a checkpoint.
   B. the start of a particular activity.
   C. the end of a particular activity.
   D. the mid-point of a particular activity.

2.56 Ideally a system should be developed that includes:
   A. one level of PPR.
   B. two levels of PPR.
   C. three levels of PPR.
   D. more than three levels of PPR.

Delays, Contingencies and Responses to Major Progress Problems

2.57 A contingency is an allowance to cover:
   A. an unforeseeable event.
   B. an unforeseen event.
   C. an uncontrollable event.
   D. a non-quantifiable event.

2.58 One of the most significant blocks to delay or acceleration flexibility is:
   A. an inability to re-plan accurately.
   B. an extensive degree of parallelisation.
   C. unforeseeable delays.
   D. fixed start time or finish time activities.
Module 3

The Philosophical Basis of Research

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Learning Objectives
By the time the candidate has completed this module, he or she should understand:
- the key characteristics of the two major research paradigms, positivism and phenomenology;
- the differences between verification and falsification;
- the differences between the deductive and the inductive approaches to research;
- the nature of a hypothesis, and be able to formulate a null hypothesis;
- how the grounded theory approach is implemented.

3.1 Introduction

This module introduces the concept of the research paradigm and goes on to explore some of the classical approaches to research.

The module differentiates between the two standard research viewpoints and considers these alternatives in some detail. It is intended to provide an insight into the research approaches and their underlying philosophies, which must be considered at the start of the research process.

The philosophical basis of research is of fundamental importance. The concept can be explained in terms of the choices to be made in running an organisation. A not-for-profit local authority will have an entirely different philosophical approach from that of a mobile telephone handset manufacturing company, which operates in a high-risk competitive environment. The local authority may have no competition and may operate under conditions where the risk profile is of virtually no consequence.
Similar distinctions apply to the design of the research. The candidate may choose to base the research on a purely quantitative approach, where numerical data are processed using complex statistical analysis. This type of approach is acceptable where the research requires or justifies it. It would not be appropriate where the data generated by the research are not suitable for such analysis, for example where the sample size is a single person or company, or where the research does not lend itself to traditional quantitative analysis.

The approach adopted by the candidate must be appropriate to the research programme. An incorrect choice at an early stage can have potentially disastrous consequences later. This module attempts to provide the candidate with a sufficient understanding of basic research philosophies in order to make an informed choice and to develop a suitable research methodology as part of the overall programme.

3.2 The Concept of Research Paradigms

3.2.1 Introduction

Any research is subject to a range of underlying philosophical issues. Philosophy itself is a complex area, and it is important that candidates have a basic understanding of the philosophical aspects of their research. In approaching a research programme the candidate does so within a certain philosophical framework and with a set of ideas and belief systems that significantly affect his or her approach to the design and execution of the research. The candidate could approach the research from a highly structured, quantitative, rigid scientific point of view, or he or she could adopt a less rigid, more flexible, hands-on approach, where he or she becomes a part of the groups or teams that form the basis of the research.

This section considers the basics of philosophy and looks at the main alternative research belief systems or paradigms that are available to the candidate.

3.2.2 Basic Research Paradigms

The word ‘philosophy’ in English is based on the Middle English philosophie, which itself derives from the Latin philosophia and the earlier Greek philosophos. It is sometimes defined as the pursuit of wisdom, and as such is fundamentally linked to the concept of research. The pursuit of wisdom has been developed differently in different cultures around the world. In Western philosophy, four primary core elements or branches evolved.

- Aesthetics.
- Epistemology.
- Ethics.
- Metaphysics.

Consider each branch in turn.

- **Aesthetics** is essentially the study of beauty and ugliness. An object can be considered as beautiful either in universal terms or in individual terms. For exam-
ple, most people find a splendid sunrise beautiful. Few people would say that such a sunrise is ugly. Irrespective of the characteristics and personality of the viewer, virtually anybody who is asked would agree that a good sunrise is beautiful. This is an example of a universal beauty. Other things might be found beautiful by some but ugly by large numbers of others. The obvious example is a controversial building design such as the Battersea Power station in London. This is a Grade 1 listed building, and is permanently protected from demolition or any form of external change. Many people, however, would suggest that it is an ugly building. Such individual consideration of beauty depends on the taste of the individual. Aesthetic considerations form part of our everyday lives, and our aesthetic perceptions are important in our behaviour as consumers. Everything from buying a car to buying a house to choosing a partner is influenced and to some extent driven by aesthetic considerations.

- **Epistemology** is concerned with the boundaries or limits of knowledge. The word is derived from the Greek *episteme* (knowledge) and *epistami* (understanding) together with *logos* (theory). The knowledge and understanding of humanity is in all cases incomplete. We know a great deal about some things but we don’t know all there is to know about anything. Research is concerned with finding out new things and adding to the knowledge base. In terms of epistemology, research is concerned with expanding the limits of the knowledge base and with increasing the validity of the existing knowledge base.

- **Ethics** is concerned with the essential differences between good and bad, and with the moral duties and natural obligations of mankind. The word is derived from the Middle English *ethik*, which itself derives from the Latin *ethice* and the Greek *ethike* and *ethikos*. The ethical characteristics of a society determine many aspects of its behaviour. Different cultures tend to develop different codes of ethics. For example, in one culture it may be normal practice to eat the flesh of a certain animal while in other cultures this may be forbidden, usually on religious grounds.

- **Metaphysics** is concerned with the principles that underlie the study of a particular element. The word is derived from the Middle English *metaphesyk*, which itself derives from the Latin *metaphysica*. Metaphysics is usually considered in terms of two sub-branches, *metaphysics proper* and *ontology*. Metaphysics proper relates to the characteristics of reality, whereas ontology is concerned with the nature and characteristics of existence. Reality is an important issue in many aspects of research. It can actually be very difficult to show conclusively that something is real as opposed to appearing to be real.

The philosophical approach adopted by the candidate affects a wide range of different aspects of the research. Some obvious aspects where the design is to some extent driven by the philosophical approach adopted include the following:

- the basic methodological design;
- the choice of sample and type of data collected;
- the method of processing the data;
- how the outcomes of the analysis are interpreted;
- how results are converted into conclusions;
the extent to which the research contributes to the knowledge base.

It is important to understand that the research may also be affected to a significant extent by the philosophical disposition of the candidate. Irrespective of the effects of researcher philosophy on the design of the research (see above), there will always also be an impact on the view of the researcher. For example, two researchers may carry out the same experimental research and generate the same results, but their conclusions could be different depending on their philosophical ideologies. Research on apparent miracle cures, for example, could suggest a divine basis to a religious researcher and a purely scientific basis to a non-religious researcher. It is very difficult for researchers to separate their own moral philosophy from that of their research. The researcher’s own beliefs are also likely to affect the research area chosen as the basis for the research.

The collective range of beliefs, principles, limits and frameworks that define a particular approach to research is referred to as a paradigm. The word is derived from the Latin *paradigma* and the Greek *paradeigma*. A paradigm is generally defined as a philosophical and theoretical framework and set of beliefs that are central to the laws and theories generated within a particular discipline or school of thought. For example, in astrophysics the approach adopted in any research programme makes common assumptions based on accepted theories. Anybody conducting research on gravitation will assume that Newton’s laws apply, simply because nobody has ever produced evidence to contradict them. Newton’s first law essentially states that:

> An object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction unless acted upon by an unbalanced force.

In other words, once something is moving it stays moving unless something happens to stop it. This is a theory or a belief because we cannot prove it is true. There may be an exception tomorrow. Until the exception occurs, however, the law forms part of the set of beliefs that underlie gravitational research. If the exception does occur, the set of beliefs has to change and the underlying paradigm has to be modified.

Paradigms are dynamic. As the knowledge base in a particular discipline develops and grows, the set of beliefs that researchers hold also changes. The set of beliefs or paradigm evolves as the knowledge base expands. In other words a current set of beliefs can hold until new evidence emerges to contradict these beliefs. For example, a person who lives in an advanced civilisation knows that thunder and lightning are caused by static electricity in clouds. A person in a less civilised society may attribute the phenomenon to a divine agency. The person who lives in the advanced civilisation has one paradigm while the person who lives in the less advanced civilisation has another. In both cases the paradigm acts as the basis for evaluating the physical phenomenon. The current paradigm evolves over time. The person from the more advanced civilisation might indeed have attributed thunder and lightning to a divine agency if he or she had lived in that same civilisation a thousand years ago and before the advent of modern science.
A business-based example can be drawn from human motivational theory. There is a well-established belief system in the factors that influence human motivation. As the conditions under which humans work change, there may be the opportunity for a new set of beliefs to emerge and supplant the existing ones. In other words, as working conditions change, a new paradigm of human motivation may emerge.

In business and management research there are two dominant paradigms. These are generally known as **positivism** and **phenomenology**. The candidate should note that these are two separate belief systems about how to conduct research. They are alternatives and to some extent represent extreme positions on a continuum of philosophical ideology. A researcher can adopt either a positivist or a phenomenological approach. It has to be one or the other – not both.

### 3.3 The Concept of Positivism

#### 3.3.1 Introduction

The concept of positivism as a philosophical and research paradigm originated in Germany in the 1920s. It was given a number of different names over the years since it was first established, including logical positivism, logical empiricism and neopositivism. The underlying foundation of positivism is the logical and scientific analysis of events. Positivism assumes that research can be conducted using logical and rational analysis. Positivism developed as an approach concerned with the regularities and causal relationships existing in a sample. One of the primary variables used in positivism is causality. A causal relationship is one where two entities are linked by a relationship where the action of one causes an effect in the other. An obvious example is found in interest rates and house prices. As interest rates fall, people can borrow money at lower interest rates. In effect they can borrow more money for a given monthly repayment. This means that more people can buy in a given price range, so demand increases. As demand increases so do house prices. It can be said, therefore, that there is a causal relationship between interest rates and house prices. In this case the causal relationship may be expressed as a mathematical function or as a model where changes in interest rates can be input and the overall effect on house prices forecast.

A positivist researcher in management and business research assumes that the analytical approaches used in the pure sciences and engineering can equally be applied in the social sciences. There are some obvious problems with this assumption, and these will be considered in due course.

#### 3.3.2 Logical Reasoning and Empirical Observation

For the positivist researcher there are only two sources of knowledge. These are **logical reasoning** and **empirical observation**. All other sources of knowledge are meaningless.

- **Logical reasoning** is the consideration of facts using logical analysis such as mathematics. For example, Einstein’s special theory of relativity (see Section
3.5.2) was derived purely by mathematical calculation. It involves the variables of mass and energy together with the constant of the speed of light. Nobody has ever encountered any significant mass travelling at anywhere near the speed of light. Einstein’s theory is based on extremely complex mathematics. The calculations have been checked and verified over and over again, and it is more or less certain that they contain no errors. The mathematics told Einstein what the functional relationship between energy mass and speed is. The functionality has never been proven by empirical observation, but it is shown to be reliable by the mathematics. This is an example of an addition to the knowledge base by logical reasoning.

- **Empirical observation.** The main alternative to logical reasoning is empirical observation. This source of knowledge develops by researchers observing what happens and developing conclusions based on these observations. An example is the behaviour of a new comet. The appearance of new and previously unknown comets cannot be predicted by logical reasoning. A comet with an orbit that lasts longer than the recorded history of mankind could reappear at any time, and there is no way that its appearance could be predicted by logical reasoning. The Hale-Bopp comet of 1997 was a typical example. Logical reasoning after the event suggested that the comet’s orbit lasts some 2400 years. Logical reasoning could not predict the 1997 appearance because the last appearance was around 400BC and there was no known record of it. Once the comet could be analysed by empirical observation, logical reasoning could be used to predict the next appearance.

A positivist would argue that mathematics is based on logical reasoning whereas sciences such as biology are based on empirical observation. Early medical researchers discovered how the circulatory system functioned by dissecting cadavers. Early anatomists observed the structure of the body at first hand and developed theories to explain how the circulatory system worked, based on what they had observed.

One of the most important distinctions between positivism and phenomenology is that of **forecasting.** Positivist approaches tend to be good at producing models or theories that can predict future outcomes. For example, experimental direct observation of the population of Scotland over a 5-year period between 1997 and 2002 may reveal a number of important statistical facts. For example, (a) the birth rate may be falling by an average of 5 per cent per year, and (b) the average life expectancy may have increased by 1 per cent over the same 5-year period. These observed facts could be used to predict the likely population of Scotland in 10 years’ time. When developed properly, and where appropriate confidence limits are applied, such predictive tools can be very accurate. They do not, however, explain why the population is falling. This phenomenon could be produced by a very complex profile of drivers, ranging from economic factors to employment rates. In other words, using empirical data analysis it may be easier to predict that something will happen than to explain why it is possible to make the prediction. For example, a medical researcher might be able to predict accurately that a given percentage of children born in any single year will develop **autism.** The same researcher may have no idea what causes autism, or why it should occur at a given frequency within the population as a whole.
Positivism therefore assumes that there are independent causes leading to observed effects. Observed events such as the classic symptoms of global warming are driven by independent causes such as the emission of so-called greenhouse gasses, increased atmospheric pollution, increased population, and deforestation. Positivist research suggests that, as these drivers increase, the degree of global warming symptoms observed also increases. In other words, there is a direct relationship between the causes and the effects. Positivism identifies this relationship but does not explain it.

It should be noted that explanation, as opposed to prediction, requires the presence of some kind of deductive theory. A deductive theory is simply a theory that attempts to show why something happens. In most cases theories that explain something contain a deductive theory and one or more causal links. For example, water boils at 100 degrees Celsius because that is the temperature at sea level where water changes phase from liquid to vapour. It is also apparent that evaporation is directly linked to air pressure. It is possible to deduce that water boils at 100 degrees at sea level because that amount of energy is sufficient to drive phase change against the restraining effects of air pressure. A temperature of 100 degrees is sufficient to allow the water molecules to overcome air pressure and move from liquid to vapour.

3.3.3 The Concept of Operationalism

In the pure sciences and engineering it is often relatively easy see that which the research is trying to measure. For example, if a researcher is examining the causal relationship between temperature and relative humidity he or she can vary temperature while measuring it with a thermometer. At the same time he or she can measure relative humidity using a hygrometer. The researcher will find that, as the temperature of moist air increases, the amount of moisture it can hold also increases, so the degree of saturation (and therefore the relative humidity) of the air decreases. In its simplest form this causal relationship predicts that clouds will form as warm air meets cold air.

In business and management research it is often less easy to observe and measure the direct variables that define a causality, which can be defined as the relationship between cause and effect. For example, a team of operatives may be performing badly at a given task. Managers may respond by offering bonus payments to try and increase the overall output of the team. Having observed the effect of the bonus payment on output a researcher might conclude that a bonus payment of 10 per cent of average salary generated an increase in output of 15 per cent over a 4-week period. In arriving at this conclusion the researcher presumably simply measured the total bonus paid in the relevant currency and the total output produced. This approach may seem straightforward enough. The problem is the supposed causality between bonus payments and output. The researcher may assume that bonus payments are the only driver of output. In fact there are numerous other drivers that could also increase the rate of output of the team. Some obvious examples are listed below.

- Increased individual and group commitment.
Successful training courses.
- Improved team member relations.
- Improved production equipment.
- Improved maintenance and response to breakdowns.
- Improved working environment.
- Increased formal and informal communications.

Some of these potential output increase drivers could have been occurring during the course of the researcher’s observations. Unless he or she has taken them into account and built their measurement and evaluation into the research methodology, the overall viability and reliability of the research results are potentially compromised. In addition, even if the researcher does recognise the potential impact of these drivers, unless he or she derives a way of measuring them, the overall results could again be compromised.

Positivists therefore attempt to operationalise variables where it is difficult to measure exactly what is going on. The positivist researcher allows a variable that can be measured to represent a variable that cannot. For example, in interviews a positivist researcher might record the number of positive statements made and use this as a measure of individual respondent satisfaction. The greater the frequency of positive statements, the greater is the satisfaction of the individual. This is an example of simple operationalism, as the researcher has assumed that observations of non-analytical events must be definable in terms of an appropriate scientific equivalent.

In terms of framing hypotheses most researchers develop research and operational or operationalised hypotheses. These concepts are discussed more in Introduction to Business Research 2 and 3. Basically, a hypothesis is a statement of what is expected given the level of knowledge and understanding held by the researcher. The research hypothesis addresses the direct issue the researcher is trying to analyse. The operational or operationalised hypotheses are usually developed from the research hypotheses and express these in terms of causalities or functionalities that can be measured. For example, a researcher may be researching the relationship between the likelihood of long-term economic success and strategically aligned mergers and acquisitions. The research hypothesis may include non-measurable elements such as ‘long-term success’. The term ‘long-term success’ has to be defined, and could have different meanings for different people. For this reason the research hypothesis could be operationalised in terms of a series of operational hypotheses expressing the research hypotheses in terms of variables that can be measured. Long-term success could be operationalised in terms of:

- share value;
- stakeholder perceptions;
- market perceptions;
- internal and external attitudes;
- risk profile characteristics.

The term ‘long-term success’ has now been operationalised in terms of the main drivers of long-term success. Each operational element can now be expressed in...
terms of an operational hypothesis. For example, the research hypothesis could be as shown below.

There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of the long-term success of that merger or acquisition.

Operationalism can take on numerous different forms, and there are examples of information that has been operationalised in all aspects of everyday life. For example, a barcode on a product is nothing more than a series of lines and numbers. Each product, however, can be given a separate barcode so that, when that product is scanned, the scanner can easily determine the identity of that product. Supermarket check-outs record sales of each item by scanning its barcode and keeping a record of how many are sold in each period. These sales records usually form the basis for the reordering process. As reserves of a given product fall to a trigger level (as determined by total sales), an order is automatically submitted for new supplies of that product. The barcode is also used for pricing. The scanner at the checkout reads the barcode and consults its price database to see how much that product costs. It then uses this price to increase the running total for all the products presented by the customer. In this case the barcode operationalises the product. It turns the product description into a unique code expressed in numbers.

Operationalism is very important in management and business research because many of the variables involved in establishing causality and causal chains are likely to be immeasurable in direct terms. An example is motivation. Most researchers would agree that individual and team motivation are complex issues and cannot be derived in terms of single measurable variables. Any research on motivation is likely to require the derivation of a series of motivation drivers such as remuneration, interest, satisfaction, need and the development of measurement scales for each variable.

3.3.4 Some Weaknesses

Positivism is only one paradigm. It has strengths and weaknesses compared with phenomenology and the other main alternative paradigms. It is particularly important that the candidate is fully aware of the weaknesses and limitations of positivism.

Applicability

As a research paradigm positivism is very popular in the pure sciences and engineering. A researcher who is studying the efficiency of different types of propulsion systems for ships can rest assured that certain basic laws will always apply. For example, Newton’s third law states:

For every action there is an equal and opposite reaction.

So far this law has been observed with absolute reliability every time it has been tested. If a person wears a pair of roller skates and he or she stands in front of a wall
and pushes against the wall, the person will move backwards away from the wall. This is because the force exerted by the person in pushing the wall generates an equal and opposite force pushing the person away from the wall. This same basic law underpins numerous engineering disciplines. For example, a rocket engine propels an aircraft attached to it forward because the engine generates thrust that is directed backwards.

The engineering researcher can assume that this law will always apply. It is inconceivable at present knowledge and technological levels that this law could ever be broken because the laws of physics as we understand them cannot allow this to happen. A positivist approach based on measuring thrust and velocity using purely numerical measurement systems is, therefore, entirely appropriate.

The problem arises when positivism is applied in the social sciences and/or specifically in business and management. These subject areas tend to have a high human element. Human behaviour is a major driver in any research based on management, for example. As soon as people become involved, the scientific and quantitative strengths of positivism quickly become undermined. It is very difficult to apply natural laws to human behaviour. A person will always fall under gravity if he or she jumps from an aeroplane. That same person might react in two different ways when presented with the same stimuli in an office environment. Most phenomenologists would argue that a purely positivist approach does not allow the flexibility and detail required to understand human behaviour.

Reactivity

Another basic assumption central to positivism is the notion that the researcher is isolated from the sample, experiment or whatever generates the data for the research, and he or she can observe impartially without influencing the outcome in any way whatsoever. In other words, the researcher does not react with the sample in any way. Reactance is zero. This assumption is acceptable in the case of the rocket engineer who is working out the thrust generated by a new fuel. The presence of the researcher clearly has no reactance with the thrust energy released by the fuel on combustion.

The problem again arises where the research is based on people. As soon as a researcher observes individuals or groups of people there will be an immediate effect on the individuals or groups concerned. This is reactance, and is a major issue in the design of research in management and the social sciences. Researchers have adopted a range of different approaches to the issue of reactance. There are examples of research where the researcher has concealed himself or herself from the individuals or groups and has attempted to observe events either in the field or in a laboratory setting where there is no contact whatsoever with the sample. This idea has been extended into television entertainment in recent years with the evolution of television programmes where groups of celebrities are confined in settings ranging from houses to jungles and the viewer watches individual and group behaviour using a series of concealed cameras. In some cases such programmes are incredibly popular.
In other cases researchers have tried to overcome the reactance issue by forcing themselves to become a part of the sample they are analysing. This is similar in principle to the old idea of the police detective going undercover, infiltrating and subsequently becoming a part of the gang that is under investigation. The process is sometimes referred to as embedding. A significant proportion of researchers in the social sciences assert that this is the only reliable approach to carrying out research on group behaviour in terms of developing full understanding.

In practice, reactance is a serious issue in social science and business research, which positivism as a paradigm does not fully address. A more grounded approach, where the impact of the researcher can be measured and designed into the research programme, is preferable. In research with people the positivist view that the researcher acts in isolation is often simply not viable.

**Predictability and Rationality**

Positivism is best suited to scientific environments where events can be predicted with a degree of certainty. As most people are aware, it is not always possible to predict human behaviour with any degree of certainty. The answer a person gives to a question depends on a great many different variables, most of which vary from person to person. For example, consider the question below.

**Is the US right to use force to bring about regime change in the Middle East?**

The answer any individual gives depends on that person’s entire belief system. Some people will see US intervention as good whereas others will see it as bad. Even if all respondents try to be as objective as possible, what is seen as good and bad depends on a series of drivers that vary from person to person. Some obvious drivers in this case are listed below.

- Nationality.
- Racial group.
- Religious group (if any).
- Government type in home country.
- Gender.
- Political alignment.
- Intelligence.
- General and specific knowledge of current affairs.
- Ability to visualise.

As these drivers vary from person to person, it is very difficult for the positivist researcher to allow for them. For example, it may be possible to measure IQ on a numerical scale but it is much more difficult to measure knowledge of current affairs in a quantitative manner. Even if all these drivers could be operationalised there is still no guarantee that two equal driver states will produce the same response in two separate people, because there is always the issue of individuality and freedom of thought. People do not always act rationally. They sometimes make irrational choices for no apparent reason. These are values that make us unique as individuals.
and express who we are. This unpredictability in human sampling often makes a positivist approach unsuitable in research based on people.

**Realism and Reliability**

The positivist researcher assumes that there is an essential underlying realism that can be considered in isolation and measured quantitatively. For example, there is a clear causal relationship between driving conditions and vehicle accidents. Everybody knows that poor driving conditions lead to more accidents. Examples of poor road conditions include bad weather, bends, and poor road surface. From the positivist viewpoint there is a clear causal link between the two variables. All the researcher has to do is measure that causal link scientifically and quantitatively to prove the link. This approach is reasonable enough in this particular application, but only up to a point. For example, the human element can upset the apparently obvious positivist causal links. A person could deliberately decide to drive badly because he or she is upset about something else and does not concentrate properly on driving. Alternatively a person might drive in a criminally dangerous manner while under the influence of alcohol and/or narcotics.

Positivism therefore assumes there is an underlying reality, and encounters problems where there is no such underlying reality. For example, a researcher may be convinced there is a causal link between strategic alignment and the likelihood of medium-term company success. The positivist researcher assumes this reality exists and sets about finding it and proving it objectively. In fact, there may be no such underlying objective reality.

The positivist researcher would look purely at the link between driving conditions and accidents. The positivist’s research methodology would be unable to allow for non-quantifiable drivers such as the state of mind of the person who is driving the car.

Reliability is another major issue where a positivist approach is used in a social science or management application. Reliability is the extent to which a piece of research actually measures what it is intended to measure. For example, a researcher might assess road conditions and accidents and conclude that, as driving speed increases, the risk of an accident increases because the reaction time available to the driver is reduced. Based on observations it may seem reasonable to conclude that reaction time is the underlying driver of accidents. The more reaction time a driver has and, therefore, the slower the vehicle is travelling, the more time the driver has to take evasive or other actions when threatened with an accident. Empirical observations may apparently show this causality to be the case. In fact, accidents may increase with speed because of another variable such as road surface. The road surface may be excessively worn so it offers very little friction at high speed. The researcher establishes one causal link based on what he or she actually sees when, in fact, the causality lies elsewhere although it produces the same observations.

Both realism and reliability are affected by the perceptions of the researcher. In the case of realism the researcher may be convinced that there is an underlying reality when, in fact, there is not one. In terms of reliability the researcher may
sincerely believe he or she is measuring one thing when, in fact, he or she is measuring another.

**Neutrality**

The positivist researcher believes that he or she can conduct research, collecting and analysing data and generating results and conclusions in a manner where the researcher is detached and entirely neutral. In other words the researcher is separate from the research and is unable to influence the research in any way. This concept is sometimes referred to as **theory-neutral** or **value-neutral** in that the researcher observes what happens and draws neutralistic conclusions irrespective of (a) any theories or concepts on what the outcome should be and (b) any theories he or she is trying to generate, verify or falsify. In management research this may not be a viable concept. For example, a researcher who interviews a number of senior managers on industrial relations does so within a framework of his or her own perceptions. Even where any response data are highly operationalised, there is always a likelihood that the way in which the interview responses are interpreted is a function of the perceptions, knowledge, memories and ideals of the researcher. It is almost impossible to detach interviewer and interviewee because the interpretation of the communication content made by the interviewer is variable. The interviewer–interviewee relationship can never be as detached as the scientist–object relationship that exists, say, with a rocket engineer working on propellant fuel development.

**Misplaced Rigour**

A common problem with positivist research design is that of misplaced rigour. Researchers who adopt a positivist approach sometimes spend a great deal of time in choosing and developing appropriate statistical and mathematical data processing and analysis techniques for their research. In some pure science research the amount of time spent on designing the statistical analysis can be the largest single time element in the whole research programme. In management and business research, quantitative approaches are just as viable and important as qualitative approaches, but the time spent in designing the appropriate analysis techniques should be in proportion to what these actually contribute to the research. Candidates sometimes spend more time on the design and implementation of the mechanical process of statistical analysis than they do on the rest of the research. This problem is sometimes known as the **misplaced rigour issue**. It is characterised by theses where a positivist candidate has allowed the statistical analysis section to become the most important aspect of the work. Candidates should remember that the analysis process is basically a support function, and it should be no larger and carry no greater emphasis than is justified.
3.4 The Verification and Falsification Issue

3.4.1 Introduction

Most research revolves around either the discovery of new facts or high-level independent critical reasoning. Whichever approach is used, it is standard practice to contribute to the knowledge base either by showing that something is the case or by showing that something is not the case. These processes are often referred to as verification and falsification. In terms of evaluating a theory the researcher could adopt the basic strategy of setting out to show that the theory is true or alternatively may set out to show the theory is false. Although each approach is equally valid, which is chosen has obvious implications for the design and implementation of the research programme.

This section considers verification and falsification and examines the appropriateness or otherwise of each alternative for a range of research programme types.

3.4.2 Verification and Falsification

Positivism asserts that only those theories or propositions that can be observed and tested empirically can have any meaning. In other words only a theory that can be proven true or false has any meaning. As a result, branches of philosophy such as aesthetics and metaphysics are meaningless because it is not possible to say whether or not a statement such as ‘that tree is beautiful’ is true or false. This is clearly an oversimplification as, for example, we are all affected by beauty and ugliness. Most of us would prefer to live in a beautiful location rather than in an ugly one. We may not be able to measure the difference between the two locations empirically, but the difference is still perceptible and important.

The assertion that a statement has meaning only if it can be proved to be true or false is often referred to as the verifiability principle.

Positivism also generates a major problem in terms of verification. To have meaning, theories or propositions must be able to be tested empirically. The problem here is that there is great difficulty in actually proving empirically that something is true or correct. This issue was first raised by Karl Popper in his book *The Logic of Scientific Discovery* (1959). Popper argued that it is impossible to prove that any proposition is actually correct. Popper put forward a hypothetico-deductive approach to positivism, where the approach is based on deduction and falsification rather than the earlier approach to positivism based on inductive and verificationist principles.

Popper argued that this alternative approach was necessary because no matter how often a particular theory is empirically tested there is no guarantee that at some point in the future an observation will not occur that will act to disprove the theory. This limitation applies to numerous classical theories. Einstein’s special theory of relativity was published in 1905, and his general theory of relativity was published in 1915. These publications revolved around Einstein’s famous equation:

\[ E = mc^2 \]
where
\[
E = \text{energy};
\]
\[
m = \text{mass};
\]
\[
c = \text{the speed of light (a constant)}.
\]

As a theory this was startling in its day, and it still is today. The formula links energy with mass and the speed of light. There are numerous implications of the formula. For example, in Newtonian physics, if an object increases its velocity and its mass is constant, its kinetic energy increases. In Einstein’s theory, as the velocity of an object approaches the speed of light its mass increases towards infinity. This appears to be impossible, as an object travelling at the speed of light would have infinite mass and would occupy the whole universe. The theory, however, still holds good, and nobody has been able to disprove or falsify it. Einstein was effectively able to modify the laws of gravity that had existed since Newton’s time, by adding the concept of equivalence. The important point is that Einstein’s theories are just that: theories. They are accepted while they perform satisfactorily in relation to observations. As new information comes to light, a change to the theory may become necessary. The existing theory may therefore be right or wrong, but until it is disproved, it stands.

The falsification approach is based on the idea that it is easier to prove that something is false rather than trying to prove it is true. Logically this makes sense. No matter how many times empirical research is carried out and produces results compatible with Einstein’s theory, there is still no guarantee that one day a researcher will generate results that prove one or more aspects of the theory wrong. It needs, therefore, only one falsification event to falsify a theory, whereas an infinite number of verification events do not necessarily show that the theory is true. Popper argued that research can be framed in a scientific structure only if it can be falsified. Theories should be designed in such a way that they can be easily tested for falsification, in which case only one rejection is needed for the theory to be disregarded.

For example, early civilisations tended to expand and occupy the territory available to them. As their civilisations reached oceans and seas the leaders of the civilisations must have wondered what was beyond these oceans. In the case of the Roman Empire, the Romans were able to travel around some seas on land and confirm that there were lands ‘on the other side’. The Romans were able to map the modern-day Mediterranean and Black Seas accurately in this way. The empire did, however, reach the Atlantic in North Africa, Spain, Gaul and Britain. The Roman ships were based on simple, trireme designs, and they were unable to move far from land because (a) they were technologically unreliable and (b) the Romans did not understand how to navigate using the sun and stars. The Romans must therefore have wondered what lay beyond the Western horizon. They had no way of finding out, because the Atlantic acted as an impenetrable barrier to them. Many of them must have theorised that because the earth was flat (as they presumed), it must have an end, and that end was presumably over the Western horizon.

It was not until the fifteenth century that oceangoing ships were finally able to cross the Atlantic and discover the Americas. The theory that the edge of the world lay over the horizon had to be modified. Some people still believed in the theory,
but the edge was now placed over a new Western horizon \textit{beyond the Americas}. It was several more years before the limits of the Pacific Ocean were finally established and people realised once and for all that the planet is indeed a globe. In this case there were two levels of falsification occurring at once. The theory of the edge of the world off Britain was falsified when Vespucci and Columbus sailed across the Atlantic and reached the Americas. The theory of the world being flat was falsified when the first explorers finally reached China from the Americas.

There are, of course, a number of dangers with the falsification approach. The main issue lies in the potential for error. There are generally two main types of error that can lead to incorrect falsification. These are:

- **Type I error**: where a reliable theory is incorrectly falsified through unreliable observation and testing. This type of error tends to occur in the early stages of research into a new field. For example, when a new disease such as HIV-AIDS appears, researchers do not know much about the disease, and they may establish experiments that appear reliable but in fact are not. Because of incorrect assumptions the experimentation may be measuring the wrong variable. As a result, a theory linking HIV-AIDS to contaminated intravenous injections might be incorrectly falsified.

- **Type II error**: where an unreliable theory is not falsified because reliable observations are considered to be unreliable. In this case a false theory is in fact not falsified because reliable falsification results are disregarded. This error often occurs when somebody first develops an important linkage between two variables.

The falsification approach also generates a problem when it considers something that cannot be falsified or verified. The classic example, explored many times in the philosophy literature, revolves around the issue of the existence of God. Most people would agree that the statement ‘God exists’ cannot be verified or falsified. This is because ‘God’ is a concept. God is not an object or a being that can be empirically observed and tested. In this respect the statement ‘God exists’ is meaningless to the positivist. Traditional views on the existence or otherwise of God include theism (belief), atheism (disbelief) and agnosticism (may believe if evidence is provided). These are all disregarded as meaningless by the positivist as they cannot be subjected to testing by empirical research because of the very nature of God. A positivist is not a believer, an unbeliever or a maybe-believer. He or she dismisses the statement on the existence of God completely.

Another issue revolves around the meaning of the word ‘meaning’. In positivism something has meaning if it can be observed empirically. For example, the statement that ‘5 + 3 = 8’ has meaning in that every time 5 is added to 3 the result is 8. The outcome, however, does not have any meaning in itself. In order for the equation to work, we must have an appreciation and understanding of what 8 means. In other words, the statement ‘5 + 3 = 8’ means something beyond what is simply contained in the equation.

Popper’s hypothetico-deductive approach to positivism forms the basis for much of modern-day hypothesis-based research. It should be stressed that not all research is based on the use of hypotheses. It is fair to say, however, that a large proportion
of positivist research in engineering and the pure sciences makes use of hypothesis testing as the basis for accepting or rejecting a theory. The basic sequence of work involved in the hypothetico-deductive approach is summarised below.

- Develop an understanding of the current knowledge base.
- By synthesising the literature in the relevant subject areas, develop a basic theory.
- Develop the theory into a testable form, expressing it as a hypothesis or in terms of a series of hypotheses.
- Carry out appropriate empirical research, testing the hypotheses with data generated directly from the research.
- Accept or reject the hypotheses and reassess the theory.

In other words, the hypothetico-deductive approach compares the associations or consequences of the hypotheses with empirical or observed data, and uses this comparison to accept or reject the hypotheses. The process is based on deduction, which can be defined as a process of reasoning.

### 3.5 The Concept of Phenomenology

#### 3.5.1 Introduction

This section considers phenomenology. This is the main alternative research paradigm to positivism. Phenomenology addresses some of the weaknesses associated with positivism as discussed in the previous section. This section presents the concept of phenomenology, and examines its suitability for research in the social sciences.

#### 3.5.2 Transcendental Phenomenology

Phenomenology is required as an alternative to positivism because of the complexities and incompatibilities of the real world. A positivist approach is fine for research in engineering and the pure sciences, because these fields are relatively predictable. It is possible to predict with some accuracy what will happen when a piece of ice is immersed in hot water. The temperature of the ice will rise while the temperature of the water will fall. Eventually, depending on the external conditions and the relative volumes of each phase, the water will all arrive at one temperature, where it will remain in equilibrium.

It is much more difficult to predict outcomes with such accuracy where people are concerned, because there are numerous possible human reactions to any given event. Even the most staid and organised person has elements of unpredictability in his or her personality. Positivism has difficulty in assessing this uncertainty, and the approach rapidly becomes unsuitable when applied to research involving direct human issues such as motivation, individual and team development, or team evolution. When considering an entire workforce and how it behaves, it is very dangerous to try to confine the analysis to those aspects of behaviour that can be explained in terms of laws.
The phenomenologist adopts a very different research approach from that of the positivist. The phenomenologist seeks to involve himself or herself directly with the sample. Ideally the phenomenological researcher becomes a member of any teams that form the sample. The more the researcher can be accepted as part of the team and embedded within it, the greater his or her level of understanding and appreciation of what is going on within the team. This is logical. The best way of understanding how a football team works is by becoming a team member. An observer who becomes a player is certain to develop a greater insight into the mechanics of team operation than an alternative observer who is confined to the grandstand.

This close degree of involvement implies interaction. In positivism, interaction and consequent reactivity are kept to an absolute minimum as the researcher acts in isolation from what he or she is observing. In phenomenology, exactly the opposite applies. The researcher seeks to involve himself with the other team members as much as possible, and attempts to interact at every opportunity.

The phenomenologist seeks to work in both the objective and subjective aspects of research. In phenomenology these aspects are intrinsically linked, whereas in positivism they are not. In positivism, it is objective analysis that is important, while the subjective interpretations, opinions and ideas of the researcher are excluded. In phenomenology these subjective elements are absorbed directly into the objective aspects of the research and are used to refine and develop the research, sometimes in real time.

Phenomenology also rejects the idea of there being a central underlying reality that exists and has to be discovered. The positivist may look at Newton’s laws of motion and see them as a central reality that defines how objects behave when forces act upon them. The positivist would argue that these laws always existed because they describe physical constants. In order to explain what happens when forces act on objects all mankind had to do was discover these laws. In our case, the scientist who discovered them was Newton. The positivist would argue that if it hadn’t been Newton it would have been somebody else, because the laws exist anyway. This approach again is fine in the pure sciences, but it cannot be so readily applied to people. The phenomenologist would see each event or activity as unique and as being driven by a one-off sequence or combination of drivers. In most cases there is no reason why the same set of drivers should generate the same outcome each time. For example, if a fire alarm suddenly goes off in a busy shopping mall, the reaction of the people in the mall could be different each time depending on the average characteristics of the crowd. A crowd with a particularly high proportion of women and children might be more likely to generate screams of alarm than a crowd with a high proportion of men. If panic does break out, a crowd with a higher proportion of women might experience fewer crush injuries than might be the case if more men were present.

The phenomenologist looks at each individual person as an individual with personal characteristics. The personality and belief system of each person is unique, and this uniqueness affects the outcome of the research. Phenomenology can allow for these individual non-quantitative variables, but positivism cannot. Positive...
searchers would be concerned with operationalising the characteristics of the population as a whole while trying to include as many people as possible in the sample in an attempt to make results more reliable. The phenomenologist would be more concerned with the individual and with how the characteristics of the individual affect the research. Phenomenology is therefore often concerned with smaller sample sizes, and often centres on experimental or exploratory-based research as opposed to the more hypothesis-based or hypothetico-deductive approach favoured by positivists.

Many senior managers tend to associate with the phenomenological approach as a matter of course. This is logical, as most business or management problems are effectively projects. They are one-off events caused by a one-off sequence or combination of events. No two identical problems are ever likely to arise, if for no other reason than that people learn from past events. In analysing a management problem based on people, the senior manager adopts a phenomenological approach. Positivism would in most cases be of little direct application. The manager uses a combination of his or her own experience of management and people and applies this knowledge to the particular case in hand. He or she makes some kind of subjective analysis of the characteristics of this particular case and formulates a subjective solution based on a combination of experience and appreciation.

A major aspect of phenomenology is that it is holistic. It emphasises a much wider range of different variables than positivism, and it seeks to understand the complex linkages that exist between these variables. For example, in trying to understand what motivates an individual at work a whole range of different variables have to be considered. These can be initially divided into work aspects, home aspects and general aspects. Typical work aspects include pay and working conditions. Home aspects include domestic relationships and debt. General aspects include general health and age. These various drivers all act together within the personality of the individual involved, and the end result of this complex interrelationship is a subjective level of motivation observed by the phenomenological researcher. Phenomenology also develops and evolves as the research proceeds. For example, in the initial stages of the research the researcher might think that work aspects are more important than home aspects. As the research continues, the researcher might develop a deeper level of understanding of the individual concerned and begin to realise that work aspects are in fact most important in this particular case. The researcher becomes embedded in the study and, in acquiring greater knowledge of the individual concerned, is able to develop a more detailed and clearer understanding of that person’s perceptions and motivational characteristics.

3.5.3 Some Weaknesses

Phenomenology has strengths and weaknesses compared with positivism. It is particularly important that the candidate is fully aware of the weaknesses and limitations of phenomenology.
Passivity and Interpretation

A common criticism of phenomenology is that it is too passive and interpretative. Critics argue that the paradigm lacks the rigour and discipline of positivism, and it passively allows the researcher too much freedom of action. Positivists find it unacceptable that the researcher can actually join the sample and become embedded within it. They argue that there must be a degree of reactance after such involvement and interference on the part of the researcher.

Positivists also argue that phenomenological results are open to interpretation because of the high levels of subjective assessment used. The researcher interprets observations and results on the basis of his or her knowledge and experience. In some cases these interpretations form the basis of real-time modifications to the design of the research so that emerging points of particular potential and promise can be investigated. Positivists argue that this lack of structure leads to a semi-chaotic structure.

There is also the issue of people interpreting the same data or results in different ways. Positivist results tend to point to clear conclusions provided they are interpreted correctly. For the phenomenologist, the situation can be much more complex. The researcher has to interpret what he or she has experienced, and that interpretation is very much a function of the characteristics of the individual. This idea applies to all aspects of personal taste and individual interpretation. For example, ten people might eat a piece of chocolate from the same bar. There is no doubt that each person will each taste the same chocolate, but taste as an interpretation of the ingredients of the chocolate on the taste buds of the individual could vary. There is no guarantee that everybody will experience the taste of the chocolate in exactly the same way. Person A has no way of knowing whether the chocolate eaten by person B and person C tastes exactly the same to them as it does to him or her. Much the same applies to observations of humans. Two identical researchers could observe identical team interactions, but there is no guarantee that both researchers will appreciate what is happening in exactly the same way. Similarly, two identically qualified and experienced researchers may interpret the subjective communication in a structured interview response in different ways.

Replicability

The issue of replicability is very significant in phenomenology. Researchers often use replication as support for new findings or theories. The basic argument is that if ten researchers all conduct the same experiment under the same conditions they should all get the same results. If they do all get the same results, there is a strong argument that the results are reliable. In order for research to be replicable, it must be highly structured, with each stage carefully described and each action ordered and defined. The slightest variation in the size or nature of the sample could affect the results and produce variances. It is possible to design experiments like this using a positivist approach. For example, if 0.01kg of compound X is burned in a bomb calorimeter, it should always heat up 1 litre of surrounding coolant water by (say) four degrees. The rise in temperature of the water is broadly a function of:

- the starting temperature of the water;
- the mass of compound X used;
- the ambient temperature of the surrounding area;
- the speed of the reaction;
- the specific heat capacity of water (a constant).

Provided these variables and single constant are controlled and kept at exactly the same level, and provided any other experimental conditions such as the mass of the calorimeter are standardised, the same water temperature increase should be observed each and every time.

In phenomenological approaches this level of standardisation is often simply not possible. It is very difficult to apply constants to aspects of human behaviour.

**Dilution**

There is a reasonable argument that phenomenology suffers from the issue of dilution. Doctoral research has to be strongly focused. It must look in detail at one single aspect or functionality and examine it in detail. Positivism can do this easily. In its simplest form, a positivist experiment could comprise two variables in some form of controlled or measurable environment. Empirical observation can then be used to observe what happens when one variable is changed, and an overall functionality can be generated. In phenomenological research this approach is more complex. The phenomenological researcher is unlikely to be able to define any characteristics of human behaviour in terms of two variables that act in a controlled environment. In order to be able to determine research outcomes the phenomenologist has to take account of a much wider range of variables and also of the linkages between them. As a result the phenomenologist becomes less focused on one causal relationship and has to attend to a multiplicity of causal relationships. This has the effect of diluting the attention of the researcher, and can make the research itself more complex and time consuming.

**Scope and Time Requirement**

It can be argued that the individual capacity of appreciation and understanding is limited. A researcher can embed himself or herself within an organisation and in doing so can develop a unique insight into the individual and group mechanics within that organisation. The larger the organisation, however, and the greater the number of people involved, the more difficult it becomes for the researcher to develop a detailed knowledge and understanding of what is going on. In the case of a very large company, it may require the work of years for a researcher to develop an adequate knowledge and understanding of the relevant organisational mechanics. The implication is that there is a functional relationship between the size of the company or organisation used as a sample and the time required to develop a sufficient understanding of how that organisation works. Most doctoral researchers would simply not have enough research time to allow the development of a detailed understanding.

**Lack of Rigour**

Phenomenology is often criticised by positivists on the grounds that it lacks scientific structure and rigour. Some branches of phenomenology such as ethno-
methodology have specifically evolved as unstructured disciplines. The ethnomethodologist deliberately adopts a non-scientific and non-specialist approach to understanding how a given society is structured and ordered. Ethnomethodologists do this by direct subjective interpretation of what they see going on around them. Most positivists would shudder at this lack of structure, yet it mirrors the way that humans reason in everyday applications.

3.6 Comparisons between Positivism and Phenomenology

3.6.1 Introduction

This section presents a basic comparison between positivism and phenomenology. It is apparent that both paradigms have inherent strengths and weaknesses. One approach is clearly more applicable in some research cases than in others. It may also be apparent that the ideal research philosophy could be one that makes use of both paradigms, combining the separate advantages of each. This section makes a direct comparison between positivism and phenomenology in an attempt to provide the candidate with the necessary knowledge and understanding of the two paradigms to help in the selection of the appropriate balance in the final research design.

3.6.2 A Basic Comparison

There are clearly major differences between the two main research paradigms of positivism and phenomenology. The choice of paradigm is central to the design of the research, and it is essential that the correct approach, or balance of approaches, is adopted for the particular research programme in question.

Note: It should be stressed that the candidate will be required to select either a positivist or a phenomenological paradigm for his or her research. Research must be based on one or the other and not both.

The positivist is concerned primarily with objective and quantitative research. He or she looks at populations as a whole and tries to generate simple causal relationships between relatively small numbers of variables, often within a controlled environment. The positivist usually generates a series of hypotheses, subsequently tested using established statistical tools and techniques. The sample is chosen and data are collected in relation to these hypotheses so that they can be tested. In some cases a research hypothesis may be operationalised in the form of a series of operational hypotheses. The end result of the research could be the acceptance of an existing theory or the generation of a new theory for subsequent testing by other researchers. Positivist research often uses a reductionist approach, where complex variables are represented in a simplified form that is more appropriate for quantitative analysis where the basic questions are ‘how often’ or ‘how many’ or ‘how much’.

Positivism therefore tends to produce theories or law-like generalisations, where the researcher is isolated from the research itself. For this reason, positivism can provide only a mathematical or statistical equivalent of other and perhaps more
complex relationships. The characteristics of the researcher are not allowed to impact on the research at any level. Bias, reactance, prejudice and misinterpretation are all engineered out by the design of the research methodology. It could be argued that positivism alone provides only a partial view of what is happening in any given social science application. People are too complex and irrational to be studied by purely quantitative and rational methods.

Phenomenology adopts an entirely different approach. The phenomenologist seeks to immerse himself or herself as much as possible in the sample to the extent that he or she becomes part of the sample. The phenomenologist is concerned much more with subjective and qualitative research, based much more on standard human reasoning and thought processes than positivist research. Phenomenological research is based much more on asking ‘why’ or ‘how’ rather than ‘how often’ or ‘how much’. The phenomenologist looks just as much at individuals as at populations, and is not daunted by the prospect of allowing for individual variations in psychology and personality and the effects this could have on the research. Phenomenological research is often exploratory. It is not concerned with large samples or with accepting or rejecting hypotheses. It is often concerned with single samples and with the generation of exploratory theories. The end product of phenomenological research could be an entirely new and ground-breaking theory that is then put forward for subsequent positivist testing. Phenomenological research is often the ground of the visionary rather than of the standard scientific researcher.

In terms of management and business research the phenomenologist approach argues that the only way to understand how a team of people or indeed a company works is to become part of it. The interactions and forces applying within a large company are so complex that they simply cannot be understood by an impartial observer taking notes from an outside position. The only way to understand the complexities of the mechanics of the company is to experience them at first hand as an employee and/or team member. The researcher becomes part of what is researched, and the whole picture of the interaction is observed. Phenomenology therefore takes a holistic view and avoids the reductionist tendency of positivism.
Some of these differences are summarised in Table 3.1.

Table 3.1  Basic differences between positivism and phenomenology

<table>
<thead>
<tr>
<th>Consideration</th>
<th>The positivist view</th>
<th>The phenomenological view</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement philosophy</td>
<td>Primarily quantitative</td>
<td>Primarily qualitative</td>
</tr>
<tr>
<td>Viewpoint</td>
<td>Primarily objective</td>
<td>Primarily subjective</td>
</tr>
<tr>
<td>Typical questions</td>
<td>How much?</td>
<td>How?</td>
</tr>
<tr>
<td></td>
<td>How often?</td>
<td>Why?</td>
</tr>
<tr>
<td>The position of the researcher</td>
<td>Separated and remote</td>
<td>Embedded and an intrinsic part of the sample</td>
</tr>
<tr>
<td>Primary objective</td>
<td>To show causal relationships and to develop laws</td>
<td>To understand and explain experienced phenomena</td>
</tr>
<tr>
<td>Measurement basis</td>
<td>Hypothesis testing</td>
<td>Exploratory</td>
</tr>
<tr>
<td>Reality</td>
<td>Single reality isolated from researcher</td>
<td>Multiple/complex realities linked to researcher</td>
</tr>
<tr>
<td>Data characteristics</td>
<td>Highly structured</td>
<td>Rich</td>
</tr>
<tr>
<td></td>
<td>Quantitative</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Scope</td>
<td>Reductionist</td>
<td>Holistic</td>
</tr>
<tr>
<td>Sample size</td>
<td>Typically large</td>
<td>Typically small</td>
</tr>
<tr>
<td>Researcher reactance</td>
<td>Low interaction</td>
<td>High interaction</td>
</tr>
<tr>
<td></td>
<td>Low bias</td>
<td>High potential bias</td>
</tr>
<tr>
<td></td>
<td>Value free</td>
<td>Value laden</td>
</tr>
<tr>
<td></td>
<td>Low reactance</td>
<td>High reactance</td>
</tr>
<tr>
<td>Similarity to standard human reasoning processes</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Reliability</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Immediate validity</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Immediate applicability to business and management research</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Potential value when used in association with the alternative paradigm</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

It should be stressed that these differences are not necessarily good or bad. They simply describe the essential differences between positivism and phenomenology.

Positivism is basically a quantitative and objective approach, where the background to the research problem is known and large amounts of research data can be collected and processed relatively quickly. Results are generally replicable and reliable. The main drawback is that positivism produces results of limited application, and the approach may fail to address adequately the full complexities of research problems where people are involved. Phenomenology produces richer and deeper data, and the researcher develops a much better understanding of why
observed events are occurring as opposed to ‘how often’ or ‘how fast’ they are occurring. The problem with phenomenology is that, in order to obtain these richer data, the research methodology tends to be more complex and may be more time consuming. There is also a risk that the research programme will fail to produce any meaningful exploratory theory and/or the researcher will simply run out of time.

Both approaches are equally valid, and the choice of paradigm depends on the nature of the research and on what the researcher is looking to gain from that research.

The two approaches do have some clear advantages and disadvantages. In some cases, the advantages associated with one paradigm appear to outweigh, or at least balance, the disadvantages. In other cases they apparently fail to do so. The main advantages and disadvantages associated with each paradigm are summarised in Table 3.2.

It should be appreciated that positivism and phenomenology are, in effect, mutually exclusive in the context of any individual research design. A given piece of research should adopt either a positivist or a phenomenological paradigm. In this context, positivism and phenomenology should ideally be viewed as elements towards the ends of the same continuum, typically, but by no means exclusively, from research in the pure sciences and engineering at one end (positivism) to research in the social sciences at the other (phenomenology). It is, of course, possible to use a combination of different research methods within the same paradigm. For example, a phenomenological researcher could use both quantitative and qualitative approaches to data collection and analysis. The practice of using more than one research method within the same overall paradigm is known as triangulation. The concept of triangulation is discussed in more detail in Module 4 of this text. It is basically concerned with using a number of different approaches to arrive at the same conclusions. For example, a team of people could be observed from an objective/quantitative point of view, where their actions are observed and counted. This could produce standard quantitative results showing how often individual events occurred. This could then be further developed using a more subjective/qualitative approach. For example, the various team members could be interviewed, asking them why they did things at certain times. The end product is a set of results within the same paradigm that have been generated using both subjective/qualitative and objective/quantitative approaches.

The results are therefore triangulated, as they have been arrived at using the same paradigm but different methodological approaches.
## Table 3.2 Advantages and disadvantages of positivism and phenomenology

<table>
<thead>
<tr>
<th></th>
<th>Positivism</th>
<th>Phenomenology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td>• Applicable for establishing simple causal relationships</td>
<td>• Applicable for establishing more complex and interrelated causal relationships</td>
</tr>
<tr>
<td></td>
<td>• Good where straightforward objective research is required</td>
<td>• Preferable where subjective assessment is required</td>
</tr>
<tr>
<td></td>
<td>• Good where purely quantitative analysis is required</td>
<td>• Good where purely or largely qualitative analysis is required</td>
</tr>
<tr>
<td></td>
<td>• Good where the sample size has to be large and large amounts of data have to be processed</td>
<td>• Applicable for generating theories based on a few complex observations</td>
</tr>
<tr>
<td></td>
<td>• Good for making predictions based on the population as a whole</td>
<td>• Adopts a holistic approach considering the full picture</td>
</tr>
<tr>
<td></td>
<td>• Appropriate if the question is about ‘how often” or ‘how quickly’ something happens</td>
<td>• Preferred where the researcher wants to develop a detailed understanding</td>
</tr>
<tr>
<td></td>
<td>• Research methodology can be relatively simple</td>
<td>• Appropriate if the question is about ‘why’ or ‘how’ something happens</td>
</tr>
<tr>
<td></td>
<td>• Results can be replicated</td>
<td>• The researcher can modify the research to allow for what he or she has learned</td>
</tr>
<tr>
<td></td>
<td>• Results tend to be highly reliable</td>
<td>• Better at making explanations as to why things happen</td>
</tr>
<tr>
<td></td>
<td>• Less demanding on the experienced researcher</td>
<td></td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td>• Not applicable for research based on people</td>
<td>• Not applicable for research based on purely scientific or mathematical principles subject to immutable laws</td>
</tr>
<tr>
<td></td>
<td>• The reductionist approach may be too restrictive in some cases</td>
<td>• Highly complex</td>
</tr>
<tr>
<td></td>
<td>• The research design cannot be modified in any way to allow for what the researcher has learned</td>
<td>• May be difficult to replicate findings</td>
</tr>
<tr>
<td></td>
<td>• Produces only a snapshot of basic knowledge</td>
<td>• Results may be relatively unreliable</td>
</tr>
<tr>
<td></td>
<td>• Does not provide explanations</td>
<td>• May be problems where large sample sizes are required</td>
</tr>
<tr>
<td></td>
<td>• When using operationalisation may fail to measure numerous important variables</td>
<td>• There is a limit to how much understanding the researcher can develop within time limits</td>
</tr>
</tbody>
</table>
### 3.7 Deductive and Inductive Theory

#### 3.7.1 Introduction

This section considers deductive theory and inductive theory. Deduction is based on logical reasoning, where one logical element follows on from the last. In inductive theory some event or pattern of behaviour is observed, and a theory is then developed to explain what is observed. These different theoretical approaches are important considerations in research design, and the candidate must understand what the approaches are, how they differ from each other, and, depending on the characteristics of the research programme, which approach should be followed.

#### 3.7.2 The Deductive Approach

The deductive approach is based on the development of understanding how a logical chain of events comes together to produce a result. The most obvious example of deduction is the process adopted by a police detective in trying to solve a crime. The detective is presented with a lot of information relating to the crime. The detective does not know what happened in the moments leading up to the crime, so he or she looks at all the known information and then attempts to piece the relevant information together to produce a picture of what happened in the lead-up to the crime. Once the detective gets the basic chain of events right, any further evidence should act to substantiate this chain.

Note that the police detective also needs to adopt an inductive approach for some aspects of the investigation; in fact, a balance of deductive and inductive reasoning is usually required for the detective to arrive at a likely solution. This concept is considered in more detail in Section 3.7.4.

Deductive reasoning is based on a flow of logic where events or actions build up in a sequence to give an output or result. One such example is syllogism. The word ‘syllogism’ is derived from the Middle English *silogisme*, which itself was derived from the Latin *syllogismus* and the Greek *syllogismo*ς. Early philosophers used syllogisms to try to prove assertions through a process of deduction. Classic syllogisms include three elements. These are a **major premise**, a **minor premise** and a **conclusion**. Aristotle developed the famous syllogism shown below in order to argue, through deduction, that Socrates was mortal.

---

<table>
<thead>
<tr>
<th>Positivism</th>
<th>Phenomenology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disadvantages</td>
<td>• Results may be open to interpretation</td>
</tr>
<tr>
<td></td>
<td>• May lack scientific rigour and be affected by dilution</td>
</tr>
<tr>
<td></td>
<td>• Data classification and analysis can be very complex and time consuming</td>
</tr>
</tbody>
</table>
All humans are mortal.
Socrates is human.
Therefore Socrates is mortal.

None of the three elements can be disputed. Clearly, all humans are mortal (the primary premise), as there are no exceptions that we are aware of. Socrates is a man and he, therefore, is human (the secondary premise). Given that all humans are mortal and Socrates is human, it follows that Socrates is mortal (the conclusion). The deduction is reinforced by the fact that Socrates is dead.

A further example of a fully deductive syllogism is given below.

All elements can exist in three phases.
Mercury is an element.
Mercury, therefore, can exist in three phases.

This syllogism is again a correct deduction. All elements can exist in three phases: that is in a solid, a liquid and a gaseous state. If mercury is an element, it must be capable of existing in three phases, and indeed it is. This can be shown by empirical research. Mercury is in liquid phase at room temperature, and boils (turns from the liquid phase to the gaseous phase) at 356 degrees Celsius.

A deductive approach can also be used to develop a conclusion that may be true or is most likely to be true. Consider the syllogism given below.

Most lawyers drive sports cars.
John Smith is a lawyer.
John Smith probably drives a sports car.

In this case the deductive premises have generated the conclusion that John Smith probably drives a sports car. This conclusion is based largely on the premise that John Smith is a lawyer and, therefore, presumably makes a lot of money.

In deductive theory the conclusion is generally specific. In the example given above, the conclusion applies only to John Smith and not to anybody else. Conversely the primary premise is usually general. In this case, it applies to all lawyers. The secondary premise is usually specific. In this case, it applies specifically and only to John Smith. Deduction is generally about producing specific conclusions from premises that are both general and specific.

Premises can both strengthen and weaken conclusions, and incorrect premises provide incorrect conclusions. For example, consider the following.

Teams usually win when they play at home.
Glasgow Rangers are playing at home on Saturday.
Glasgow Rangers will probably win on Saturday.

Here the primary premise is general, the secondary premise is specific, and the conclusion is specific. The chain of deduction is correct. This is sometimes known as valid reasoning. Both premises are correct, so the conclusion is more likely to
be correct. If the conclusion is changed, as shown below, the logical reasoning is now broken.

**Teams usually win when they play at home.**
**Glasgow Rangers are playing at home on Saturday.**
**Glasgow Rangers will win on Saturday.**

It is not logical to infer this conclusion from the premises. This is invalid reasoning and the conclusion is unreliable. The Rangers may win on Saturday, but there is no guarantee. Similarly the conclusion may be correct based on the premises, but one or more of the premises may be unreliable, as shown below.

**Teams win when they play at home.**
**Glasgow Rangers are playing at home on Saturday.**
**Glasgow Rangers will win on Saturday.**

In this case it is clearly wrong to say that teams win when they play at home. All teams, even Glasgow Rangers, suffer occasional home defeats. Based on an incorrect primary premise, the specific conclusion is incorrect even though the reasoning is valid.

It should be clear that there are different possible areas for errors in deductive reasoning. The premises may be wrong, leading to a wrong conclusion through a process of valid reasoning, or the premises may be correct leading to a wrong conclusion through a process of invalid reasoning. The police detective mentioned at the start of this section needs to keep careful records so he or she can check both the validity of the pieces of evidence provided and the reliability of the reasoning sequence being made in linking that evidence together. He or she also needs an inductive ability (see Section 3.7.4).

Deductive research generally progresses through a number of distinct phases. The researcher develops a thorough understanding of the relevant knowledge base, and from this he or she develops a theory that can be evaluated by the testing of hypotheses.

### 3.7.3 Deductive Hypothesis Formulation

Candidates should remember the basis sequence of work involved in generating a set of hypotheses, as first raised in Module 1. The overall sequence of elements included in the development of a formal theory, research question and the development of a hypothesis are again listed below.

1. Literature review.
2. Literature synthesis.
3. Basic theory.
4. Pilot study.
5. Pilot study outcomes.
7. Formal theory.
8. Research question.
9. Research aims and objectives.
10. Research hypotheses.
11. Operational hypotheses.

The basic sequence of actions involved in preparing research and operational hypotheses is shown in Figure 3.1.

In simplistic terms, the literature review shows what other researchers have published in the relevant area. The literature synthesis summarises what other researchers have said in the context of the current research. The candidate then develops a basic theory from the literature synthesis. The candidate then designs and implements a pilot study in order to evaluate this basic theory and the methodology to be used in the main study. The pilot study generates results or outcomes. These are then synthesised with the results of the literature synthesis in order to evaluate the compatibility between what the pilot study indicates and what the literature synthesis indicates. Depending on the compatibility between these new elements, the basic theory is adopted or developed to become the formal theory. The formal theory is then expressed in terms of a research question. The research programme is then developed around this question and is expressed in terms of formal aims and objectives. These are then expressed in terms of research (collective) and operational (individual) hypotheses. This approach is considered in more detail and with examples in Module 4.

It is also important to ensure that the research theory or hypothesis that was developed from the literature is suitably defined and modified based on the results of the pilot study. In many cases the pilot study (if properly designed and implemented) can suggest new interest areas extending beyond what is supported in the literature.
A hypothesis usually contains two variables linked by some form of causality. A typical example is shown below.

There is no linear functional relationship between team pay and team motivation.

This seems a reasonable enough assumption up to a point. In this case the dependent variable is motivation and the independent variable is pay. This is because (according to the hypothesis) motivation is dependent on pay whereas pay is independent of motivation. The proposed causal relationship takes the form of a direct linear relationship. In other words if pay doubles, motivation also doubles, and if pay is halved, motivation is also halved.

It is standard practice to express hypotheses in terms of an initial hypothesis and a secondary hypothesis. The idea is that the initial and secondary hypotheses express both sides of the issue. For example, in taking measurements to determine whether or not a ball is round, there are two possible outcomes from the measurements.

(a) The ball is not round.
(b) The ball is round.
Clearly any ball either is round or is not round. One of these alternative states of nature describes the ball, irrespective of what shape it actually is. There is no need to introduce a third description, as these two cover all possible outcomes. The research can therefore be geared to say whether or not the ball is not round. If the results suggest the ball is round, the primary hypothesis (the ball is not round) is rejected and the secondary hypothesis (the ball is round) is accepted.

The primary hypothesis normally assumes no association and is usually referred to as the null hypothesis. The secondary hypothesis normally assumes association and is usually referred to as the alternative hypothesis. The null hypothesis is usually represented as H₀ and the alternative hypothesis is usually represented as H₁. The whole concept of hypotheses and hypothesis generation is addressed in much more detail in Introduction to Business Research 2 and Introduction to Business Research 3.

If the null (no association) hypothesis is rejected, the alternative (association) hypothesis, which generally offers an alternative and entirely opposite position, is accepted.

As mentioned previously, the standard convention is to use the null hypothesis to represent no association. In other words, if the researcher is concerned with whether or not there is a link between age and mental agility, the null hypothesis would be that there is no association and the alternative hypothesis would be that there is an association.

In the ball example above the hypotheses are:

H₀ (null hypothesis): The ball is not round.
H₁ (alternative hypothesis): The ball is round.

In a more strategy-based example we might consider the association (or otherwise) between the degree of strategic alignment and the likelihood of long-term success in a merger or acquisition.

The null and alternative hypotheses could therefore be represented as shown below.

H₀: There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of the long-term success of that merger or acquisition.
H₁: There is a positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of the long-term success of that merger or acquisition.

Note that the null hypothesis is assigned to the no-association outcome and the alternative hypothesis is assigned to the association outcome.

This research hypothesis could then be operationalised in terms of the main drivers of long-term success, as shown below. In each case the same process of showing a null and alternative hypothesis is followed, but this time the various hypotheses act to operationalise the main research hypothesis.

H₀: There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term share value increases.
H1: There is a positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term share value increases. 
H0: There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term stakeholder perceptions. 

H1: There is a positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term stakeholder perceptions. 
H0: There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term market perceptions. 

H1: There is a positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term market perceptions. 
H0: There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term positive internal and external attitudes. 

H1: There is a positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term positive internal and external attitudes. 
H0: There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term risk profile characteristics. 

H1: There is a positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term risk profile characteristics. 
H0: There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of long-term risk profile characteristics. 

The null hypothesis always assumes that there is no causal link and the alternative hypothesis assumes that there is a causal link. This convention may be reversed provided a consistent approach is adopted.

In this case the operational hypotheses contribute to the research hypothesis. They express the research hypothesis in terms of variables that can be physically measured from a positivist perspective. For example, long-term share prices can be measured in terms of the appropriate currency. The risk profile can be measured using standard risk management tools and techniques. In accepting or rejecting the operational hypotheses the researcher also accepts or rejects the research hypotheses. For example, if the researcher accepts all the operational hypotheses there are grounds for accepting the overall research hypothesis.

Time Out __________________________________________________

Think about it: falsifiable statements.
Hypotheses must be falsifiable. They cannot relate to statements that cannot be false because they are undeniably true. Similarly, hypotheses that allow interpretation in different ways are not acceptable. Consider the examples given below.

• Long-term success is a function of post-acquisition strategic alignment.
  This statement can be falsified. Long-term success can be operationalised and measured in terms of a range of different variables including share price, stakeholder opinions, company growth, and profitability. Strategic alignment can also be
operationalised and measurements taken for a specific company over a period of time.

- Long-term success may be a function of post-acquisition strategic alignment. This function cannot be falsified because of the use of the word ‘may’. A hypothesis has to take the form of a direct statement that can be either falsified or verified.

- Long-term success either is or is not a function of post-acquisition strategic alignment. This statement cannot be falsified. Long-term success is or is not a function of post-acquisition strategic alignment. The functionality either exists or it does not. Either way the statement is true and cannot be falsified.

- Post-acquisition strategic alignment has an impact on long-term success. This statement also cannot be falsified. Post-acquisition strategic success must have an impact on strategic success even if the impact generated is too small to be measured or quantified. Very few people would accept that this statement could ever be proved false.

### 3.7.4 The Inductive Approach

The **inductive** approach is different from the deductive approach. The inductive approach observes events and then attempts to explain them. The reasoning behind the inductive approach is that theories developed directly from empirical observations are more likely to be reliable than theories developed from chains of logic.

For example, a researcher might be interested in the effects of the general poor performance of stock markets around the world and pension fund performance over the first ten years of the twentieth century. Share prices generally performed consistently badly over this ten-year period. A deductive researcher would deduce that pension funds are likely to be affected by low share price performance because fund managers buy and sell shares as their main way of making money. They also invest in low-risk options such as bonds, but these are often used to hedge share losses. In other words, poor stock market performance implies poor pension fund performance. The deductive researcher might generate a hypothesis such as that shown below.

\[
\begin{align*}
H_0: & \text{ There is no functional relationship between the performance of the top 100 EU company share prices and EU pension fund performance.} \\
H_1: & \text{ There is a functional relationship between the performance of the top 100 EU company share prices and EU pension fund performance.}
\end{align*}
\]

The deductive researcher would then go out and design a methodology to test these hypotheses.

The inductive researcher would observe share price behaviour and compare this with pension fund performance over the same period. The inductive researcher would see an apparent correlation between share price performance and pension fund performance: the stronger the correlation, the stronger the justification for the
generation of a testable theory. The inductive researcher therefore observes first and then develops a theory to explain what he or she has observed.

The underlying logic of inductive reasoning is clear. If an observer sees the same apparent functional relationship between two variables over and over again, it seems logical to assume that there may indeed be a causality between the two variables. This is the basis for most exploratory-based research. This is often the approach adopted in medical research, where the incidence of illness or patterns of patient behaviour suggest some form of association that is not generally or currently accepted. The approach could also be used where a new disease appears and scientists try to discover more about it by looking at the disease’s patterns of behaviour. For example, a team of scientists might be tracking the number of people infected by a new disease over a five-year period. If the number of infections falls each year for five consecutive years, the projected weighted mean will be expected to show a continuing fall over the next five years. In other words, using the inductive approach a projection of future behaviour may be made based on theories developed from the observation of past behaviour.

There are certain prerequisites for the inductionist approach to be viable. These are briefly considered below.

1. **Any theories must be based on a large sample size.**
   Whether the researcher is observing the number of patients suffering from an illness or the performance of individual pension funds, the greater the sample size the more reliable the results. Theories based on small sample sizes are less likely to be reliable than theories based on large sample sizes.

2. **There must be overwhelming support for the theory.**
   The observations made should support the theory with few or no contradictions. As the number of contradictions increases, the likelihood of any resulting theory being reliable decreases. The greater the degree of support offered by the sample, the stronger the theory is likely to be.

3. **The observations must be robust.**
   Ideally the observations should be carried out across a range of different circumstances and under a number of different conditions. The greater the degree of generalisability, the more reliable the theory becomes.

**Time Out**

**Think about it: Gulf War Syndrome.**

The concept of Gulf War Syndrome (GWS) first appeared in 1991 just after the first Gulf War between the coalition forces of the UN and the Iraqi dictator Saddam Hussein. Soldiers from a number of different countries who served in the war began to complain of a range of symptoms including anxiety attacks, unpredictable mood swings, excessive sweating, nervous tension, problems with concentration and a range of other unpleasant problems. The incidence of the syndrome and the close correlation between it and Gulf War soldiers suggested a definite link. Action groups acting on behalf of ex-servicemen and women created the term 'Gulf War Syndrome' and started a long campaign to get the
illness recognised by the UK and other governments so that the people and families affected would be entitled to compensation.

The UK Ministry of Defence initially denied that there was any such illness as GWS. There was no immediate and obvious cause for the illness. In other words, a deductive researcher looking at possible causes of illness and death as a result of the Gulf War would not have arrived at a logical deduction that GWS should exist. No such illness had been apparent in similar mobile warfare battles set in a desert environment such as that in North Africa in 1941–42. An inductionist approach, however, showed a clear relationship between soldiers who had served in the war and the incidence of GWS.

Eventually it became more and more clear that there was a link. Three main contenders for being the cause of the illness were put forward. These were weapons, chemical warfare and inoculations. Consider each briefly in turn.

- **Weapons.** The coalition forces were using a number of new weapons that had not been used in widespread combat before. One example was the use of depleted uranium armour-piercing shells. These shells did, and still do, use depleted uranium because of its great density. The metal is formed into a type of bolt contained within a windshield. When the shell hits a tank the uranium bolt penetrates to the inside of the armour, and the resulting energy release kills or disables the crew. The bolt also scatters a fine uranium powder as a result of the impact with the steel armour. This powder is very fine and can be easily breathed in.

- **Chemical warfare.** The coalition leaders made it clear that they intended to attack the Iraqi army using conventional weapons. They pledged not to use chemical weapons, and threatened Saddam with nuclear attack if he allowed his artillery officers to use chemical shells. The Iraqi use of chemical weapons was never proved in the war, but there is still a suspicion that some use may have been made. There is also the risk that chemical agents escaping from damaged production plants could have had an effect. Finally there was the potential impact of the hundreds of oil well fires deliberately started by the retreating Iraqi troops. Many coalition troops were directly exposed to smoke and fallout from these fires over a considerable period of time.

- **Inoculations.** The coalition troops were vaccinated against a range of diseases prevalent in the Middle East including cholera, typhoid and polio. They were also inoculated against a range of biological warfare agents the allied commanders were concerned that Saddam might use. Vaccinations against anthrax and bubonic plague were common. This battery of inoculations no doubt gave the soldiers who received it some protection, but there was growing concern that it was overloading their systems and causing damage.

The campaigners for the soldiers and families kept up the pressure on the various EU governments and especially the UK government. The UK government ran a number of inquiries and eventually a full public inquiry. In November 2004 the Gulf War Illnesses Public Inquiry reported that the Ministry of Defence
should accept that many soldiers who served in the 1992 Gulf War did indeed suffer illness as a result of that service. The inquiry added that known drivers of military service related illnesses such as stress and fatigue could explain some of the apparent illnesses related to GWS but not all of them. The inquiry said that some unknown element appeared to have been responsible for the majority of cases and the primary effects of GWS. The inquiry also suggested that inoculations (see above) could have been the main cause, or possibly the pesticides used to spray the soldiers' tents. Other possible causes given include low-level exposure to nerve gas and the inhalation of depleted uranium weapons dust.

Further inductive research is now required so that researchers can look at the incidence and severity of GWS in patients and try to develop theories to explain any patterns.

Inductive research is clearly the most appropriate approach in cases such as the appearance of new diseases where the cause is unknown. Once inductive research provides some possible answer, deductive research can be used to great effect in testing these and developing them further where appropriate.

The inductive approach is most closely linked with a phenomenological approach. As with embedded team research, the inductive approach looks initially at what is going on around it and collects a large amount of data from a range of different perspectives. It then attempts to formalise a theory to bring all this complex and interrelated material together.

3.7.5 Deductive/Inductive Alternation

In practice a significant proportion of research programmes use an approach that alternates between deductive and inductive approaches. The police detective, when investigating a murder, uses a deductive approach when trying to formulate a possible chain of events based on the information that is available. He or she also uses an inductive approach in looking at the range of data presented and in trying to formulate a theory to explain how observed events fit together.

3.8 Grounded Theory

3.8.1 Introduction

This section introduces the important concept of grounded theory. Researchers in management and business often find that grounded theory offers a viable and useful approach for conducting research. Grounded theory was initially developed to assist innovative research in medicine, but it subsequently evolved and was adapted to provide a useful approach in the social sciences.

3.8.2 The Concept of Grounded Theory

Grounded theory as an approach was established by Glaser and Strauss (1967). The concept has evolved over the years to such an extent that there is now a Grounded
Theory Institute. The basic idea of grounded theory is that it acts as an inductive methodology for discovering and developing theories. As previously discussed, the pure sciences are founded around a large number of laws that have been discovered and developed over the years. Newton’s laws of motion were first developed in the seventeenth century, but used ideas and concepts going back to ancient Greece. Many of the central laws and theories that form the frameworks of physics, chemistry and biology are generations old. It could be argued that the most recent really significant set of laws to be introduced were Einstein’s theories of general relativity, and even these were introduced almost 70 years ago at the time of writing.

The development of such a large number of clearly defined laws and theories in the pure sciences has occurred because research has been ongoing in these disciplines, at least in some form, for thousands of years. Some basic principles of mathematics, mechanics and physics, such as Archimedes’ principle of buoyancy, show a complex understanding of the principles of mass and mass displacement as early as 250BC. It could be argued that early interest in pure sciences such as physics and astronomy took place because clever people looked at the world around them and wondered why things happened as they did. In 250BC the oceans and the stars were much the same as they are today, and these clever people wondered where these things came from and how they worked. All they had to do was look out of the window to be reminded of the existence of these entities.

Research in areas other than the pure sciences, engineering and mathematics has a much shorter pedigree. For example, there are some theories in subjects such as economics, but these theories and laws are generally smaller in number and less embracing than the pure science laws. Economics as a discipline has a much shorter history than physics. It could be argued that the laws of physics have always existed and are, therefore, as old as the universe. The laws of economics have been developed only over the relatively very short period of time since countries developed the concept of economy. Given the short history of the discipline itself, it is hardly surprising that the detailed theories and laws that support it are far fewer in both number and magnitude than those that support and underpin the pure sciences.

The history of research in management and business is even shorter than research in economics. The disciplines contain virtually no established laws. This is why grounded theory may be of particular relevance and application in these fields. In its simplest form grounded theory is an approach whereby the researcher develops a theory on something while at the same time grounding the theory in actual observation. The term ‘grounding’ in this context means cementing or anchoring. The idea is that a researcher develops a theory to explain something and then applies the theory to a sample and modifies the theory as necessary to maintain its viability in relation to what is being observed.

An example might be how a new disease affects the behaviour of insurance companies. Entirely new diseases occasionally arise in the population. Occasionally one such disease may prove to be particularly contagious and virulent. If that disease also proves to be incurable, then there are obvious implications for the population as a whole. HIV (human immunodeficiency virus) – AIDS (acquired immunodeficiency syndrome) first appeared in the 1940s, but it was not until the late 1970s that
it became apparent that the disease had global implications. Different treatments have been developed over the past 25 years, but even the best of these has only managed to halt the disease rather than being able to cure it. In the early 1980s the insurance companies realised that the disease had implications for their normal actuarial mathematics calculations when considering life assurance risk. The insurance companies had never faced a new unknown risk element on this scale before, and nobody knew exactly how they would react. A grounded researcher could have theorised that the insurance companies would respond by seeking further information from all applicants on lifestyle in order to try to establish some means of calculating an appropriate risk level. They might also increase premiums generally and restrict life assurance cover. The grounded researcher could then have watched what the insurance companies actually did in relation to these variables and modified the theory as appropriate.

Grounded theory is particularly useful in areas where there is very little prior research and therefore not much published information to go on. It is, therefore, based on inductive theory rather than deductive theory. As an approach, grounded theory is also very useful where the researcher is considering a small sample size, such as an individual company or other form of organisation. Each company is unique, and therefore it is inappropriate to try to base the research on centralised laws. The only effective way to develop a theory that explains aspects of the company’s behaviour is to use a grounded approach.

Grounded theory is also useful where direct practical application is required. For example, a person might be faced with a practical problem where he or she does not know the answer. The person formulates a theory to explain what he or she is seeing and then applies that theory directly to see whether it provides a solution. If the theory does not provide a solution, the person modifies the theory and applies it again and continues to refine the theory until it does provide a solution. This approach effectively mirrors the ‘natural’ human reasoning and problem-solving process. A person who owns an automobile might one day find that the engine will not start. The person then enters into a reasoning process in order to determine why the engine will not start. The person subconsciously develops a series of theories to explain the engine malfunction. Typical reasons for the problem are that:

- the fuel tank is empty;
- the battery is flat;
- the electrical system is not working.

This list is obviously not exhaustive, but the person probably reasons from experience that these elements account for a high proportion of engine malfunctions. The person may then check the fuel level indicator and find that there is sufficient petrol (gasoline) in the tank. The ‘no fuel’ theory is therefore rejected, and the person then concentrates on the remaining theories. He or she may then physically check the battery and electrical system in an effort to find the fault. The person is therefore attempting to solve the problem by establishing an initial theoretical framework and then modifying this as more information is discovered. The modification of the theory is driven by the hard facts generated by the empirical evidence provided by the examination of the electrical system and battery.
Assuming the person has a sufficient level of mechanical knowledge, he or she should be able to identify the cause of the fault by a process of successive focusing of the fault theory as more and more empirical evidence is generated from the examination of the battery and electrical system.

It is also important to note that, in trying different alternatives and eliminating them when they do not address the problem, the person is alternating between inductive and deductive reasoning. The analysis at each stage is inductive (try the electrical system) but the detailed investigation of each of these stages alternates between inductive and deductive.

Note also that in grounded theory the researcher does not approach the research with a central theory that he or she intends to test. Instead the researcher approaches the research with a theoretical framework defined by the existing knowledge base on the subject. In the ‘car won’t start’ example above the person does not approach the problem with a central theory such as ‘the car won’t start because it has run out of petrol’. Clearly this may or may not be the case. A person who is prepared to use only this consideration has a comparatively low likelihood of being able to solve the problem. The grounded researcher approaches the problem knowing the issues involved and being prepared to modify and adapt any theories as dictated by what he or she encounters ‘on the ground’.

3.8.3 The Comparative Method

The original Glaser and Strauss (1967) book outlined a general process for collecting grounded theory data and analysing it in relation to what they called emerging categories. They referred to this approach as the comparative method.

The comparative method comprises a number of definable phases or stages. These are briefly outlined below.

1. **Stage 1. Background.** As with any research project the first stage is to define a research area and then study the existing knowledge base in that area. In grounded theory the researcher must be aware of the existing knowledge base, such as it is, but he or she must not be constrained by it. The initial theory that forms the basis of the grounded theory is based on the literature and on the researcher’s own ideas and theoretical musings, but the researcher must accept that this theory may have to be modified.

2. **Stage 2. Categorisation.** Having studied the literature the candidate categorises it into a range of different subject areas. For example, in ‘the car won’t start’ example the obvious categories are those of fuel, electrical system and battery. In trying to work out why the car won’t start these are the three main categories the person will address.

3. **Stage 3. Interrelationships.** The researcher then has to examine the interrelationships between the categories. For example, does the electrical system depend on the fuel system and vice versa? It could be that there is plenty of fuel in the tank but this is not reaching the engine because to do so it has to be driven by a fuel pump, which is itself electrically powered. The failure of the electrical system leads to the failure of the pump, which in turn leads to the failure of the fuel
system. This is an oversimplification in terms of the engineering operation of most vehicle engines, but it hopefully illustrates the point.

4. **Stage 4. Application.** Having categorised the data to be collected, and having established the interrelationships between the data types, the theory is then applied. The person who is trying to start the car may take the view that it is unlikely to be a fuel problem because he or she has never run out of fuel before. The person therefore takes the view that the problem is most likely to be the electrical system, and he or she checks that first. After a detailed examination of the electrical system, the person may realise that the electrical system is working correctly, and therefore the problem must lie elsewhere.

5. **Stage 5. Evolution.** The person therefore modifies the theory and accepts that the problem must indeed lie in the fuel system. He or she checks the fuel level and finds the tank to be half full. The problem must therefore lie in the supply system. Notice how the person is constantly alternating between inductive and deductive reasoning.

6. **Stage 6. Subsequent application.** Having developed the theory the person then applies the evolved theory to the problem again. This time he or she may find the theory fits in that the fuel system is indeed the problem. It may be that the fuel pump has failed, even though it is receiving an adequate electrical current.

7. **Stage 7. Refinement and adoption.** The person may take out the fuel pump, test it externally and find that it is jammed. The end of the process involves buying a new fuel pump, fitting it, and then proving that the old pump was the problem by starting the vehicle first time.

This approach is known as the comparative method because there is a constant comparison between what is expected and what is observed, or between the data received and what was theorised to be received. This continuous comparison forms the basis for the continual evolution of the theory. This approach is again logical because it mirrors the natural thought processes undertaken by humans when addressing problems. It is also the process followed by people when learning and acquiring knowledge and understanding. It is also the basic process that underlies evolution.

The end product of a grounded research programme is likely to be a new theory or concept that explains a series of empirical observations made by the candidate. The theory could be quantitative or qualitative, or a combination of both, and it could be based on a range of different data types. As grounded theory is often used in exploratory-based research as opposed to hypothesis testing, and as it often makes use of small sample sizes, issues such as triangulation and validation become important.

**Time Out**

**Think about it: grounded theory.**

A DBA candidate who is also a senior manager in a large energy supply and distribution company called company X might decide to base his or her research on a grounded theory approach to issues that determine the likelihood of senior managers in acquired companies leaving within 1 year of an acquisition
by a larger acquirer. The candidate may have some experience of this area because company X has acquired a number of smaller electricity and gas supply and distribution companies in the EU and US over the past ten years. In some cases the existing senior management teams have stayed in place, unless specifically modified by company X. In other cases the senior management teams have moved on immediately after the acquisition, and this has had the effect of compromising the value of the acquired companies; in some cases the acquired companies have become involved in real difficulties as a direct consequence.

The candidate realises, as since company X intends to continue making both friendly and hostile acquisitions over the foreseeable future, there is real commercial and applicable potential in the research. If company X can get more senior managers in acquired companies to stay in place, the long-term value of those companies will be higher than if sudden senior management migrations occur.

The candidate, based on his or her own experience, might consider that the most likely drivers of senior managers leaving immediately post-acquisition are:

- a reduction in personal power;
- a reduction in personal security;
- a reduction in personal control.

The candidate might design a grounded research programme where he or she develops a theory of post-acquisition migration likelihood based on these three drivers being the most significant. If accepted, this theory could be used to focus company X’s attention in the period leading up to and immediately following an acquisition. The candidate might design a series of structured interviews and questionnaires to be executed both before and after acquisitions. The responses are to be assessed on a purely qualitative and subjective basis.

After conducting three pre-acquisition interviews and four post-acquisition interviews it becomes apparent that there may be differences in response depending on when the questionnaires and interviews occur. The findings may indicate that, in the period leading up to the acquisition, the primary concern of target senior managers is the survival of the target as an entity. This could be because the senior managers associate with the target company and feel an intrinsic part of it. They may feel that this relationship may be threatened after the acquisition. The research may also indicate that, post-acquisition, this anxiety becomes replaced with a feeling of resignation, and most target senior managers actually leave because they feel they have become misplaced.

In this case the original hypothesis citing personal power, personal security and personal control appears to be invalid. In fact there are two separate main issues, one before and one after the acquisition. The researcher therefore has to realign the research completely and probably develop new questionnaire and interview techniques. He or she now has to analyse the significance of the survival of the target as an entity (pre-acquisition) and displacement (post-
acquisition). The new interviews and questionnaire will have to be redesigned specifically to measure these variables. In addition, it will be apparent that this realignment has affected the scope of the existing literature review, which has probably not included acquisition target survival and displacement. The end result from the point of view of the researcher is summarised below.

- New questionnaires are needed.
- New interviews are needed.
- Additional literature searching and reviewing is required.
- Additional synthesis is required.
- Some elements of the existing literature review may now be obsolete.
- Some elements of the research programme executed to date may be obsolete.
- The sample companies may no longer be appropriate.
- Additional contributions may now be needed.
- Additional validation and triangulation studies may now be needed.

These are obviously major implications if the researcher is working to a time limit.

### 3.8.4 Some Issues

Grounded theory can provide a useful and viable approach for researchers in management and business. It does, however, also have some drawbacks. Some of these are considered briefly below.

- It should be appreciated that grounded theory is a challenging approach. Candidates who adopt this approach have to be prepared to ignore standard and established scientific approaches to research. Grounded theory researchers have to live ‘on their wits’ and exist in a state of constant change and adaptation as a consequence of changes in the forces in the environment. In practice this can be extremely demanding, and in terms of embedded teamwork it can also be mentally exhausting.

- Unlike the positivist hypothetic-deductive approach, the grounded-based researcher does not have a single defined objective such as the testing of a hypothesis. The research can constantly change, and the emphasis of the research and its entire focus can migrate over time. In a positivist approach the researcher may make a contribution to the knowledge base by rejecting a hypothesis. Even though this does not make a positive contribution in the sense that it adds new facts, it still makes a net contribution in that it suggests that a particular approach may be disregarded. For example, it would be a great contribution if somebody could develop a cure for HIV-AIDS, but as part of the research leading to that cure, somebody can still make a contribution in showing that treatment X does not provide a cure. At least other researchers can forget about treatment X and concentrate on other potential alternative treatments.

- There is no guarantee that a grounded theory approach will actually generate any meaningful results. A researcher could spend a year becoming more and more
involved in a particular team issue only to find that the complexity of that issue increases more and more as the research continues and it is simply not possible to draw any coherent conclusions from it.

- Triangulation and validation are very important because of the small sample sizes involved and because of the exploratory nature of the research. In order for the results to have any meaning, it may be necessary to increase the complexity of the study still further by designing additional data collection techniques and by introducing specifically designed validation studies.

- The replication issue is always a major problem with grounded research. In order to be replicable, research must follow a structured approach and there must be a defined and detailed methodology. Grounded research adapts and evolves as the research programme develops, and it is very difficult to structure a methodology that will allow anybody to attempt any meaningful replication.

- Grounded theory research can lead to the development of entirely new theories. This is potentially very exciting as it gives the researcher the opportunity of making a real contribution. Some new theories can lead to the development of entire new disciplines. The problem is that new grounded theories are inevitably a product of the researcher’s own personality, attitudes and leanings. As soon as such theories are released, they are likely to be criticised by other researchers. Most new theories are never accepted by the relevant research community and are disregarded before they are ever fully examined. This can be very frustrating for a researcher who has just spent three or four years developing such a theory.

- In terms of management and business research, grounded theory has to be considered as a high-opportunity, but high-risk, approach.

**Learning Summary**

This module has reviewed the two major paradigms within business and management research, positivism and phenomenology. The principal characteristics, advantages and disadvantages of both paradigms have been outlined. Both provide frameworks within which candidates can conduct their research. It is also possible to combine methodologies drawn from both paradigms in the same study and to triangulate the findings.

Karl Popper’s role in establishing the hypothetico-deductive method, whereby science progresses by formulating theories, deducing hypotheses, and using observations to test these hypotheses in an attempt to falsify them, is crucial. It is important to be aware of the fundamental differences between the deductive and inductive approaches and to understand how to formulate a new hypothesis.

The candidate should now:

- understand the key characteristics of the two major research paradigms, positivism and phenomenology;
- be able to explain the differences between verification and falsification;
- be able to explain the differences between the deductive and the inductive approaches to research;
understand the nature of a hypothesis and be able to formulate a null hypothesis;
be able to explain how the grounded theory approach is implemented.
The following section briefly summarises the primary learning outcomes from each section included in this module.

**The Concept of Research Paradigms**

- Any research is subject to a range of underlying philosophical issues. Philosophy itself is a complex area, and it is important that candidates have a basic understanding of the philosophical aspects of their research.
- In approaching a research programme the candidate does so within a certain philosophical framework and with a set of ideas and belief systems that significantly affect his or her approach to the design and execution of the research.
- Western philosophy contains four primary branches. These are:
  - aesthetics;
  - epistemology;
  - ethics;
  - metaphysics.
- Aesthetics is essentially the study of beauty and ugliness. An object can be considered as beautiful either in universal terms or in individual terms.
- Epistemology is concerned with the boundaries or limits of knowledge.
- Ethics is concerned with the essential differences between good and bad, and with the moral duties and natural obligations of mankind.
- Metaphysics is concerned with the principles that underlie the study of a particular element.
- The collective range of beliefs, principles, limits and frameworks that define a particular approach to research is referred to as a paradigm.
- A paradigm is generally defined as a philosophical and theoretical framework and set of beliefs central to the laws and theories generated within a particular discipline or school of thought.
- Paradigms are dynamic. As the knowledge base in a particular discipline develops and grows, the set of beliefs that researchers hold also changes.
- In business and management research there are two dominant paradigms. These are generally known as positivism and phenomenology.
- Positivism and phenomenology are two separate belief systems about how to conduct research. They are alternatives and to some extent represent extreme positions on a continuum of philosophical ideology. A researcher can adopt either a positivist or a phenomenological approach – not both.

**The Concept of Positivism**

- A positivist researcher in management and business research assumes that the same analytical approaches used in the pure sciences and engineering can equally be applied in the social sciences.
• For the positivist researcher there are only two sources of knowledge. These are:
  – logical reasoning; and
  – empirical observation.
• All other sources of knowledge are meaningless.
• Logical reasoning is the consideration of facts using logical analysis such as mathematics.
• Empirical observation develops by researchers observing what happens and reaching conclusions based on these observations.
• A positivist would argue that mathematics is based on logical reasoning whereas sciences such as biology are based on empirical observation.
• One of the most important distinctions between positivism and phenomenology is that of forecasting.
• Positivism shows what is happening but not necessarily why it is happening.
• It should be noted that explanation, as opposed to prediction, requires the presence of some kind of deductive theory.
• Causality is the relationship between cause and effect.
• Positivists attempt to operationalise variables where it is difficult to measure exactly what is going on. The positivist researcher allows a variable that can be measured to represent a variable that cannot be measured.
• In terms of framing hypotheses, most researchers develop research and operational or operationalised hypotheses.
• Operationalism can take on numerous different forms, and there are examples of information that has been operationalised in all aspects of everyday life, such as a barcode.
• Positivism has significant failings when applied to the social sciences.
• Positivism is best suited to scientific environments where events can be predicted with a degree of certainty.
• The positivist researcher assumes that there is an essential underlying realism that can be considered in isolation and measured quantitatively.
• Reliability is the extent to which a piece of research actually measures what it is intended to measure.
• The positivist researcher believes that he or she can conduct research, collecting and analysing data and generating results and conclusions in a manner where the researcher is detached and entirely neutral.

The Verification and Falsification Issue
• Positivism asserts that only those theories or propositions that can be observed and tested empirically can have any meaning. In other words only a theory that can be proved true or false has any meaning.
• As a result, branches of philosophy such as aesthetics and metaphysics are meaningless because it is not possible to say whether or not a statement such as ‘that tree is beautiful’ is true or false.
• Positivism also generates a major problem in terms of verification. To have meaning, theories or propositions must be able to be tested empirically.
• The falsification approach is based on the idea that it is easier to prove that something is false than try to prove it is true.
• A type I error occurs where a reliable theory is incorrectly falsified through unreliable observation and testing.
• A type II error occurs where an unreliable theory is not falsified because reliable observations are considered to be unreliable. In this case a false theory is in fact not falsified because reliable falsification results are disregarded.
• The falsification approach also generates a problem when it considers something that cannot be falsified or verified.
• Popper’s hypothetico-deductive approach to positivism forms the basis for much of modern-day hypothesis-based research.
• The hypothetico-deductive approach compares the associations or consequences of the hypotheses with empirical or observed data, and uses this comparison either to accept or to reject the hypotheses. The process is based on deduction, which can be defined as a process of reasoning.

The Concept of Phenomenology

• Phenomenology is required as an alternative to positivism because of the complexities and incompatibilities of the real world.
• A positivist approach is fine for research in engineering and the pure sciences because these fields are relatively predictable.
• It is much more difficult to predict outcomes with such accuracy where people are concerned because there are numerous possible human reactions to any given event.
• The phenomenologist adopts a very different research approach to the positivist. The phenomenologist seeks to involve himself or herself with the sample directly.
• The phenomenologist seeks to work in both the objective and subjective aspects of research.
• Phenomenology also rejects the idea of there being a central underlying reality that exists and has to be discovered.
• A major aspect of phenomenology is that it is holistic. It emphasises a much wider range of different variables than positivism and it seeks to understand the complex linkages that exist between these variables.
• A common criticism of phenomenology is that it is too passive and interpretative.
• Positivists also argue that phenomenological results are open to interpretation because of the high levels of subjective assessment used.
• The issue of replicability is very significant in phenomenology.
• There is a reasonable argument that phenomenology suffers from the issue of dilution.
Comparisons between Positivism and Phenomenology

- The positivist is concerned primarily with objective and quantitative research. He or she looks at populations as a whole and tries to generate simple causal relationships between relatively small numbers of variables, often within a controlled environment.
- The positivist usually generates a series of hypotheses that are subsequently tested using established statistical tools and techniques. The sample is chosen and data are collected in relation to these hypotheses so that they can be tested. In some cases a research hypothesis may be operationalised in the form of a series of operational hypotheses.
- The end product of the research could be the acceptance of an existing theory or the generation of a new theory for subsequent testing by other researchers.
- Positivist research often uses a reductionist approach where complex variables are represented in a simplified form that is more appropriate for quantitative analysis, where the basic questions are ‘how often’ or ‘how many’ or ‘how much’.
- Phenomenology adopts an entirely different approach, The phenomenologist seeks to immerse himself or herself as much as possible in the sample to the extent that he or she becomes part of the sample.
- The phenomenologist is much more concerned with subjective and qualitative research, based much more on standard human reasoning and thought processes than positivist research.
- Phenomenological research is based much more on asking ‘why’ or ‘how’ than ‘how often’ or ‘how much’.
- The phenomenologist looks just as much at individuals as at populations and is not daunted at the prospect of allowing for individual variations in psychology and personality and the effects this could have on the research.
- Phenomenological-based research is often exploratory. It is not concerned with large samples nor with accepting or rejecting hypotheses. It is often concerned with single samples and with the generation of exploratory theories.
- The end product of phenomenological research could be an entirely new and ground-breaking theory that is then put forward for subsequent positivist testing. Phenomenological research is often the ground of the visionary rather than of the standard scientific researcher.
- Both approaches are equally valid, and the choice of paradigm depends on the nature of the research and on what the researcher is aiming to get from that research.
- The candidate needs to choose to base his or her research on either a positivist or a phenomenological paradigm.
Deductive and Inductive Theory

- The deductive approach is based on the development of understanding how a logical chain of events comes or came together to produce a result.
- Deductive reasoning can be represented as a syllogism.
- A classic syllogism contains a primary premise, a secondary premise and a conclusion.
- In deductive theory the conclusion is generally specific. Conversely, the primary premise is usually general and the secondary premise is usually specific.
- Premises can both strengthen and weaken conclusions and incorrect premises provide incorrect conclusions.
- There are different possible areas for errors in deductive reasoning. The premises may be wrong, leading to a wrong conclusion through a process of valid reasoning or the premises may be correct, leading to a wrong conclusion through a process of invalid reasoning.
- Deductive research generally progresses through a number of distinct phases. The researcher develops a thorough understanding of the relevant knowledge base, and from this he or she develops some kind of theory that can be evaluated by the testing of hypotheses.
- Where hypotheses are used the primary hypothesis is usually referred to as the null hypothesis and the secondary hypothesis is usually referred to as the alternative hypothesis.
- The null hypothesis is usually represented as \( H_0 \) and the alternative hypothesis is usually represented as \( H_1 \).
- If the null hypothesis is rejected the alternative hypothesis, which generally offers an alternative and entirely opposite position, is accepted.
- Examples of null and alternative hypotheses are represented.
  - \( H_0 \): There is no positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of the long-term success of that merger or acquisition.
  - \( H_1 \): There is a positive functionality between the degree of strategic alignment in a merger or acquisition and the likelihood of the long-term success of that merger or acquisition.
- The inductive approach is different from the deductive approach. The inductive approach observes events and then attempts to explain them.
- The reasoning behind the inductive approach is that theories that are developed directly from empirical observations are more likely to be reliable than theories that have been developed from chains of logic.
- The underlying logic of inductive reasoning is clear. If an observer sees the same apparent functional relationship between two variables over and over again, it seems logical to assume that there may indeed be a causality between the two variables.
• This is the basis for most exploratory-based research. This is often the approach adopted in medical research, where the incidence of illness or patterns of patient behaviour suggest some form of association that is not generally or currently accepted.

• There are certain prerequisites for the inductionist approach to be viable. These are briefly listed below.
  – Any theories must be based on a large sample size.
  – There must be overwhelming support for the theory.
  – The observations must be robust.

• In practice a significant proportion of research programmes use an approach that alternates between the deductive and inductive approaches.

**Grounded Theory**

• In its simplest form grounded theory is an approach whereby the researcher develops a theory on something while at the same time grounding the theory in actual observation.

• The term ‘grounding’ in this context means cementing or anchoring. The idea is that a researcher develops a theory to explain something, applies the theory to a sample, and then modifies the theory as necessary to maintain its viability in relation to what is being observed.

• Grounded theory is particularly useful in areas where there is very little prior research and therefore not much published information to go on.

• Grounded theory is based on inductive theory rather than deductive theory. As an approach, grounded theory is also very useful where the researcher is considering a small sample size, such as an individual company or other form of organisation. Each company is unique, and therefore it is inappropriate to try to base the research on centralised laws. The only effective way to develop a theory that explains aspects of the company’s behaviour is to use a grounded approach.

• Grounded theory is also useful where direct practical application is required. For example, a person might be faced with a practical problem where he or she does not know the answer. The person then formulates a theory to explain what he or she is seeing, and then applies that theory directly to see whether it provides a solution. If the theory does not provide a solution, the person modifies the theory and applies it again and continues to refine the theory until it does provide a solution.

• This approach effectively mirrors the ‘natural’ human reasoning and problem-solving process.

• It is important to note that in grounded theory, in trying different alternatives and eliminating them when they do not address the problem, the person is alternating between inductive and deductive reasoning. The analysis at each stage is inductive but the detailed investigation of each of these stages alternates between inductive and deductive.
• In grounded theory the researcher does not approach the research with a central theory that he or she intends to test. Instead the researcher approaches the research with a theoretical framework defined by the existing knowledge base on the subject.

• The comparative method comprises a number of definable phases or stages. These are listed below.
  – Stage 1. Background.
  – Stage 2. Categorisation.
  – Stage 3. Interrelationships.
  – Stage 5. Evolution.
  – Stage 6. Subsequent application.
  – Stage 7. Refinement and adoption.

• The end product of a grounded research programme is likely to be a new theory or concept that explains a series of empirical observations made by the candidate. The theory could be quantitative or qualitative or a combination of both and it could be based on a range of different data types.

• As grounded theory is often used in exploratory-based research as opposed to hypothesis testing, and as it often makes use of small sample sizes, issues such as triangulation and validation become important.

• It should be appreciated that grounded theory is a challenging approach. Candidates who adopt this approach have to be prepared to ignore standard and established scientific approaches to research.

• Unlike the positivist hypothetic-deductive approach, the grounded-based researcher does not have a single defined objective such as the testing of a hypothesis. The research can constantly change, and the emphasis of the research and its entire focus can migrate over time.

• There is no guarantee that a grounded theory approach will actually generate any meaningful results.

• Triangulation and validation are very important because of the small sample sizes involved and because of the exploratory nature of the research.

• The replication issue is always a major problem with grounded research.

• Grounded theory research can lead to the development of entirely new theories. This is potentially very exciting, as it gives the researcher the opportunity of making a real contribution.

• In terms of management and business research, grounded theory has to be considered as a high-opportunity, but high-risk, approach.
Review Questions

True/False Questions

The Concept of Research Paradigms

3.1 A research paradigm is a type of research method. T or F?

3.2 Metaphysics is a branch of Western philosophy. T or F?

3.3 Epistemology is the study of morality and rational judgement. T or F?

3.4 The candidate’s own beliefs about the world will probably be reflected in the research topic chosen. T or F?

3.5 A paradigm is basically a set of accepted beliefs. T or F?

3.6 The beliefs contained within a paradigm are standard under current conditions. T or F?

The Concept of Positivism

3.7 Positivism searches for regularities and causal relationships between its constituent elements. T or F?

3.8 A causal relationship is one where two entities are linked by a relationship where the action of one causes an effect in the other. T or F?

3.9 The process of explanation is more or less the same as the process of prediction. T or F?

3.10 The underlying reasons behind why people are more or less motivated are best viewed from a positivist approach. T or F?

3.11 Operationalisation enables the testing of hypotheses with empirical data. T or F?

3.12 Misplaced rigour is a common problem in some badly designed positivist research. T or F?

3.13 Positivism assumes that there are no independent causes that lead to observed effects. T or F?

3.14 Explanation consists of establishing causal relationships between variables and linking them to a deductive theory. T or F?
3.15 A deductive theory is a theory that attempts to explain why something happens as observed. T or F?

**The Verification and Falsification Issue**

3.16 The hypothetico-deductive method is based on deduction and falsification. T or F?

3.17 It is definitely true to say that ‘all grass is green’. T or F?

**The Concept of Phenomenology**

3.18 Phenomenology is the main alternative paradigm to positivism. T or F?

3.19 Phenomenology is more concerned with explaining why things happen. T or F?

3.20 Ethnomethodology is a branch of phenomenology, and is concerned with learning about the ways in which people order and make sense of their everyday activities. T or F?

3.21 Phenomenology advocates the study of direct experience taken at face value. T or F?

3.22 Phenomenology does not take a holistic view. T or F?

3.23 An inductive approach often develops as phenomenological research proceeds. T or F?

**Comparisons between Positivism and Phenomenology**

3.24 It is advisable not to combine positivist and phenomenological paradigms in a single research strategy. T or F?

3.25 Reductionism is carried out in order to simplify data. T or F?

3.26 The mere fact of measuring something does not necessarily lead to greater understanding. T or F?

3.27 The phenomenological approach is holistic and not reductionist. T or F?

3.28 An advantage of positivism is that the approach attempts to examine the totality of the situation. T or F?

3.29 An advantage of phenomenology is that it makes use of relatively small amounts of simple data. T or F?

3.30 A disadvantage of positivism is that the data collection process is always relatively extensive and time consuming. T or F?
Deductive and Inductive Theory

3.31 All research is either wholly deductive or wholly inductive. T or F?

3.32 A syllogism is an example of deductive reasoning. T or F?

3.33 A police detective usually makes use of a combination of deductive and inductive reasoning. T or F?

Grounded Theory

3.34 Grounded theory makes use of empirical observations or evidence to ‘ground’ the theory as it is developed. T or F?

3.35 Grounded theory has no real research validity. T or F?

3.36 Grounded theory rejects the idea of theorising before conducting the research. T or F?

3.37 The comparative method involves taking information from data collection and comparing it with emerging categories. T or F?

3.38 In grounded theory, both primary and secondary sources of evidence should be consulted. T or F?

Multiple-Choice Questions

The Concept of Research Paradigms

3.39 Western philosophy comprises:
   I. Physics.
   II. Epistemology.
   III. Ethics.
   IV. Aesthetics.
   Which of the above are true?
   A. I and II.
   B. I, II, III and IV.
   C. II, III and IV.
   D. III and IV.
3.40 The philosophical position adopted by the candidate will influence a number of aspects of the research design including:
I. the research method adopted.
II. the type of evidence sought.
III. how data are collected, analysed and interpreted.
IV. how results are used for the development of conclusions.
Which of the above are true?
A. I, II and III.
B. I, II, III and IV.
C. II, III and IV.
D. III and IV.

3.41 A paradigm is a:
A. set of beliefs.
B. set of research methods.
C. collection of data.
D. list of research outcomes.

**The Concept of Positivism**

3.42 Positivism is concerned primarily with:
A. studying phenomena in order to understand why things happen.
B. the development of qualitative research methodologies.
C. searching for regularities and causal relationships.
D. observing psychological behaviour at first hand.

3.43 Positivism believes that there are independent causes that lead to:
I. observed effects.
II. phenomenological development.
III. direct theorisation.
IV. research weaknesses.
Which of the above are true?
A. I only.
B. I and II.
C. I and III.
D. II, III and IV.
3.44 Positivism has been criticised because of possible weaknesses when applied to research in:
I. the pure sciences.
II. engineering.
III. mathematics.
IV. the social sciences.
Which of the above are true?
A. I and II.
B. II and III.
C. III only.
D. IV only.

3.45 Positivism has been challenged on many grounds, including the fact that:
I. there is no single method that generates scientific knowledge in all cases.
II. a paradigm appropriate for research in the pure sciences may be inappropriate in social sciences.
III. it is too simplistic for many applications.
IV. it does not observe the facts of the external world neutrally and objectively.
Which of the above are true?
A. I, II and III.
B. I, II, and IV.
C. I, II, III and IV.
D. II, III and IV.

**Verification and Falsification**

3.46 Falsification is the process of:
A. criticising a given data set.
B. identifying operational errors in a research methodology.
C. disproving an operational hypothesis.
D. showing a theory to be false.

**Phenomenology**

3.47 A phenomenological paradigm would generally be more suitable than a positivist alternative in the study of:
I. what demographic trends have occurred over a given period.
II. why some employees are more motivated than others.
III. what the long-term pattern of employee absenteeism looks like for a given company.
IV. why some corporate cultures are more effective than others.
Which of the above are true?
A. I and II.
B. I, II, III and IV.
C. II and III.
D. II and IV.
Some typical characteristics of a phenomenologically based approach are that:
I. the researchers may interact closely with the subjects of the research at all levels.
II. the theory evolved may be developed largely through induction from empirical observation.
III. the aim may be to understand in detail a specific phenomenon.
IV. the totality of the problem may be investigated.
Which of the above are true?
A. I and II.
B. I, II and III.
C. I and III.
D. I, II, III and IV.

Comparisons between Positivism and Phenomenology

A reductionist approach is:
A. more likely to be applied to positivist research.
B. more likely to be applied to phenomenological research.
C. equally likely to be applied to both positivist and phenomenological research.
D. unlikely ever to be applied to either positivist or phenomenological research.

Phenomenological research is generally associated with:
I. high ambiguity.
II. relatively low levels of quantitative analysis.
III. relatively high levels of qualitative analysis.
IV. high levels of interaction between the researcher and subject.
Which of the above are true?
A. I and II.
B. I, II and III.
C. I, II, III and IV.
D. II, III and IV.

Some advantages of positivism are that it:
I. can often collect large amounts of data economically.
II. tends to use precise data that can be easily compared.
III. tends to generate results that are more easily replicated.
IV. examines the totality of the situation.
Which of the above are true?
A. I and II.
B. I, II and III.
C. II, III and IV.
D. III and IV.
3.52 Some disadvantages of phenomenology are that it:
   I. may require time-consuming data collection processes.
   II. may generate a requirement for complex data analysis processes.
   III. can generate data that are difficult to interpret.
   IV. ignores many causal variables.
Which of the above are true?
A. I and II
B. I, II and III.
C. III and IV.
D. IV only.

Deductive and Inductive Theory

3.53 Deductive argument is used to infer:
A. the particular from the general.
B. the elements of the specific.
C. the general from the particular.
D. the outline from the perspective.

3.54 Inductive research is used to infer:
A. particular elements of general truths.
B. anomalies within general truths.
C. general truths from the particular.
D. specific issues relating to general truths.

Grounded Theory

3.55 Grounded theory is concerned with:
A. developing new untested theories.
B. extending existing theories.
C. developing a theory while basing its development on empirical observations or evidence.
D. the use of purely positivist approaches.

References

Module 4

Developing Business Research Aims and Objectives

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Learning Objectives
By the time the candidate has completed this module, he or she should understand:

- what applied business research is;
- how applied business research differs from academic research;
- the concept of preferred and allowable research fields;
- the concept of aligning preferred and allowable fields;
- the consequences and implications of committing to a research field;
- how to establish scope and limitations;
- how to generate a research problem;
- some basic approaches to the identification of possible research topics;
- how to develop a research question;
- the significance of research questions, theories and hypotheses;
- the concept of operational and research hypotheses.

4.1 Introduction

Module 1 looked at the format and structure of the EBS DBA programme and how the research element fits in with the taught element. Module 2 considered the basic format of the thesis and how the various stages and important milestones can be planned and scheduled. Module 3 dealt with the philosophy of research. This module introduces the candidate to the concept of applied business research.

Applied business research is only one type of research. At any one time there are hundreds of thousands of formal research projects under way around the world. A significant proportion of this research is being conducted either within universities
or under the control of universities. Another significant proportion of this research is being carried out in companies and other types of organisation. Most companies have some kind of research and development section because they appreciate that innovation and development are ultimately essential attributes in maintaining and improving competitive advantage.

**Business research** is a specific type of research. **Applied business research** is even more specific, and the title narrows down the range of possible research subject areas that can fall within this category. This module examines the concept of applied business research.

### 4.2 The Concept of Applied Business Research

#### 4.2.1 Introduction

Most of the world’s research is carried out by universities, private companies, research institutes, and governments. Probably the largest single subject research area (as defined by expenditure) in the world is defence. The major defence contractors in the US and EU are very large companies, which handle some of the world’s largest research contracts.

The funding for the research and development of the new US Joint Strike Fighter (JSF) is a good example. In 2001 the US government awarded the contract for the development and manufacture of the JSF to Lockheed Martin. The deal was the largest military equipment contract in history, being worth a total of around $200 billion. A large proportion of this total was allocated to the research and development phases rather than for actually purchasing finished aircraft. Under the terms of the deal, Lockheed received $19 billion up front to fund the initial research and development of the design. The engine subcontractor Pratt and Whitney received $4 billion to fund the research and development of the engine. These are enormous sums of money for what are basically publicly funded applied research contracts. They are applied research contracts because the companies concerned are using the research for a specific application (researching and developing the design up to production status).

Most people are familiar with the ideas of medical research, defence research and engineering research. People appreciate that, in order to develop new drugs and medical treatment, extensive research is required. In the case of pharmaceutical research the developer of a new drug has to be absolutely certain that any drugs developed do what they are designed to do and do not create any unwanted side-effects. The consequences of the release of even one batch of defective drugs could be catastrophic. People could suffer side-effects or even permanent harm, and the manufacturer could be faced with large-scale compensation claims and possible criminal prosecution. It is therefore both a statutory obligation and in the company’s own interest to research and test new products thoroughly before they are released.

Although people are familiar with this type of research, and they also understand the importance of it, they are not aware of the concept of business research nor how important it is. Business research is concerned with conducting research in the
context of real commercial application. Two obvious applications are to find and diagnose business problems and to find ways of making the company work more effectively. Business research of this type tends to be relatively under-represented within the research communities.

4.2.2 The Case for Applied Business Research

In the UK most universities have a business school. These are largely self-financed as they are not generally supported by the main UK research or funding councils. Some of these business schools offer DBA programmes and some of them supervise doctoral research. In association with their business schools, most UK universities have management schools that support active doctoral-level research in the fields of accountancy, economics, finance and so on. In most universities these research areas do not generate a significant proportion of research fee or research funding income. In most cases the big research contracts are awarded to engineering and pure sciences projects. In the UK the Engineering and Physical Sciences Research Council (EPSRC) has a much larger annual research budget than that of the Social Sciences Research Council (SSRC). The SSRC in most cases would be responsible for funding management-related research.

In companies, the primary expenditure on research and development goes without exception, on the development of new products. Areas such as market research are usually funded because they are seen as being instrumental in getting the right product to the right customer base. Few companies make any serious research investments in specific business research. Companies may employ consultants, such as management consultants, who are charged with analysing the current organisational structure of the organisation or the format of the operational processes with a view to suggesting improvements. Although this is a form of business research it tends to be carried out at an operational level, and is often superficial. Few companies invest in any doctoral-standard research at the strategic level.

It might be argued that companies do not need to carry out high-level structured and applied business research. Particularly in the area of strategic planning and strategic alignment, there might be a feeling that companies check everything out and plan so carefully that there is nothing extra that doctoral-level research can add.

This would be a valid argument if all companies performed successfully in a strategic sense. The main problem is that some companies don’t. There are plenty of examples of companies that have carefully thought about a strategic move such as a merger or acquisition or a strategic alliance, but have failed to evaluate fully and cover the risk profile associated with the move.

4.2.3 The Process Involved in Developing Research Aims and Objectives

Research aims and objectives were discussed in Module 2. This module goes through the process involved in arriving at these aims and objectives from a range of initial ideas and concepts.

It will be recalled from Module 2 that in research nomenclature, it is accepted usage to refer to the aim as being the desired end product of the research and the
Objectives as the actions necessary to achieve this aim. The candidate states one or more aims and a series of objectives. In most cases there are more objectives than aims because objectives are actions that have to be taken, such as answering questions, before the aim can be achieved.

This section does not repeat Module 2. It attempts to develop an understanding of the processes and phases the candidate may have to go through in order to be able to generate a series of research aims and objectives. The basic sequence of activities generally involved is shown below.

<table>
<thead>
<tr>
<th>Research field</th>
<th>The area of interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope</td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td></td>
</tr>
<tr>
<td>Initial objectives</td>
<td></td>
</tr>
<tr>
<td>Research aims and objectives</td>
<td></td>
</tr>
</tbody>
</table>

The development of a set of research aims and objectives can be most readily considered in terms of a WBS breakdown, as shown above. The process involves breaking down an initial large object or target into smaller and smaller subsections until the desired level of detail and control is achieved. Each of the levels shown above is discussed in more detail in this module.

- **The research field** is the broad general area with which the research is concerned. It is often defined by the literature base.
- **The research scope** is effectively the defined boundaries of the research. There are usually numerous potential scope areas within a given research field. Two different researchers could develop two different research proposals within the same field but with different scopes.

The research field and research scope are generally referred to as the area of interest.

- **The research topic** concerns the specific areas of the candidate’s focus. The thesis title usually mirrors the research topic. Two different researchers could develop two different research proposals with the same scope but concerned with different topics.
- **The research question** is developed from the research topic and is necessary in order to allow a researcher to design the research programme. The question acts as a problem. The research programme is then designed to address this problem, in effect by answering the question. The question could take the form of a question (literally) or could appear as a hypothesis or even as a model or tool.
- **The initial objectives** are developed from the research question. The initial objectives indicate the expected outcomes from the research.
- **The final research aims and objectives** are developed from the initial objectives after a process of appraisal. The final research aim is the desired outcome.
of the research. The research objectives represent the specific actions necessary to achieve these outcomes (see Module 2).

The research topic, question and aims and objectives are generally referred to as the research problem.

In order to develop a research programme, the first step is to identify a research question or questions that require an answer. The identification and development of such a suitable question are one of the most important and demanding aspects of doctoral research.

The significance of the research question or problem is based on its role and function within the thesis. In developing the question or problem the candidate critically evaluates the existing literature and develops a detailed knowledge and understanding of the existing knowledge base in the relevant subject. He or she establishes a research field and sets scope and limitations on the extent of the research. The research question or problem acts like a bridge between the existing literature and the candidate’s own research. Everything that takes place before the problem or question ‘bridge’ is based on the literature and on the candidate’s perception and evaluation of what it contains. After the research problem or bridge, most activities are centred on the candidate’s own research, including data collection and analysis. The research question or problem therefore acts as a bridge or link between these two very different sections of the research.

The research field is the broad area of interest, and is often defined largely by the research literature. The scope establishes limits or boundaries to the field. The topic is the specific area of interest, and is usually directly related to the title of the eventual thesis. The research question is the bridge between the literature review/development of ideas and the candidate’s own research. The final stage in this section is the development of a series of outline objectives used as the basis for the main research aims and objectives generated subsequently.

This section considers each of the stages above in sequence. The text emphasises the care required in the development of each phase, as incorrect assumptions or inaccurate decisions can result in potentially abortive work and significantly more time being required for the completion of the research programme.

### 4.3 Identifying Possible Business Research Areas

#### 4.3.1 Introduction

When candidates first start thinking about business research, they often have difficulty in identifying a possible area of interest that can be used as a basis. Identifying an area of interest can be very difficult, and the consequences of choosing the wrong area could prove to be significant later in the research programme. This section considers the issues involved in looking at an overall picture of a company or organisation and considering it in terms of potential research areas. It considers the establishment of a suitable research field and of a suitable and workable research scope.
4.3.2  Developing a Potential Research Field

Identifying the field is very important. The field has to be chosen correctly because the whole development and evolution of the research programme depend on the characteristics of the field. The field itself is that area of one or more organisations that will act as the basis for the research. The characteristics of the field will define, to some extent, the scope of the research. The scope of the research defines the effective boundaries of what is covered by the research.

It should be remembered from Module 1 that the candidate should always select a research area where there is a viable literature base. If there is little or no published literature in the preferred area of research, then there is less literature on which to base the candidate’s proposed research and fewer references that can be cited in substantiation of the proposed research design. In addition, the fact that there are few publications in an area may be a clear warning that the candidate should be wary of that area. One of the first things the mentor will ask the candidate to demonstrate is that there is a viable literature base in the chosen research area. The DBA Research Committee is likely to accept a research proposal for research in an area with a non-viable literature base only if the candidate is able to make a sufficiently strong and convincing case in support.

The most appropriate field will vary, depending on the nature of the organisations being considered and on the scope of the research preferred by the candidate.

The identification of a potential field can best be approached using a work breakdown structure (WBS) approach, as discussed in Module 2. In most cases the process will involve a degree of alignment between what the candidate would like to do and what the organisation permits or allows. It is sometimes useful to consider the problem in terms of individual preferred and allowable fields and in terms of the alignment process necessary to develop the outcome field.

4.3.2.1  The Preferred Field

The preferred field is the field that the candidate would like to develop. The candidate might look at his or her own organisation and examine it closely for suitable research areas. The usual starting point in the WBS approach is for the candidate to decide on which broad areas he or she is most interested in. Remember that the EBS DBA is in Strategic Alignment, and the research must have at least an element of strategic advantage contained within it. Subject to this overriding constraint the candidate can choose any related area for development.

The candidate might have a particular interest in mergers and acquisitions. The candidate may find the area interesting, and he or she may be employed by an organisation that makes frequent acquisitions. Alternatively, the company may be about to embark on a series of acquisitions or may even be the subject of possible acquisition bids from other companies.

Having fixed on mergers and acquisitions as the broad field of interest, the candidate next has to carry out a scoping exercise. Scoping is the initial process of defining the boundaries of the field and modifying or altering these boundaries to achieve an acceptable end scope.
Scope is important because it establishes the limits of what the candidate is trying to achieve. A common problem in the early stages of doctoral research design is insufficient scope definition. If the scope is too wide, the candidate may not have sufficient time within the limits set to collect and analyse sufficient data. Additionally, doctoral research has to be concerned with the analysis of an issue in specific detail. It is usually necessary to restrict the range of issues so that the analysis can be conducted to a sufficiently detailed and focused level.

The end product is the research scope. Scoping is the process of reining in the research boundaries in order to achieve a satisfactory scope. The initial interest area – mergers and acquisitions – is obviously too broad to form the basis of a research programme, as mergers and acquisitions occur in all types of different companies, all around the world, for a wide variety of different reasons. In addition, some mergers and acquisitions are successful while others are failures. Mergers are different from acquisitions, both in terms of execution and in terms of outcome.

It is therefore necessary to narrow the scope down to some extent and to consider a selected area in more detail.

The obvious WBS level 2 division would be between mergers and acquisitions. The main difference between the two is the degree of consent and negotiation involved. Two companies generally merge by mutual consent. In the case of a hostile takeover, all that is required is for one company to acquire a majority holding in the shares of another company to achieve control. Some companies specialise in acquisitions, and there are numerous reasons why acquisitions occur. An obvious reason is to improve the strategic specialisation of the acquirer. In such cases the acquirer will probably aim for targets that are related in some way. Targets may share the same core business activities as the acquirer, or they may contribute to the development of an enhanced supply chain. Assuming the candidate chooses to concentrate on strategic specialisation as an objective for acquisitions, the WBS breakdown so far appears as follows:

– Mergers and acquisitions
  – Acquisitions
    – Acquisitions to enhance strategic specialisation

It should be apparent that the scope of the proposed research field is diminishing at each stage.

The next consideration is to identify a component of acquisitions to enhance strategic specialisation.

Thousands of acquisitions to enhance strategic specialisation have taken place over the past 25 years or so. It is therefore necessary to break this large number of events down into subcategories. The candidate might have a particular interest in one industry or sector. Ideally this interest should also reflect the current employment of the candidate. The candidate might work in and/or have a particular interest in the UK supermarket food retail area, and might decide to focus his or her research in this sector. The supermarket sector tends to be dominated by a few very large players, so the classification might be that of large UK food retailers.

The WBS now becomes:
– Mergers and acquisitions
  – Acquisitions
    – Acquisitions to enhance strategic specialisation
      – Acquisitions to enhance strategic specialisation in large UK food retailers

The WBS has now progressed to four levels, and the scope has narrowed to acquisitions to enhance strategic specialisation in large UK food retailers. If the starting point (WBS level 1) was mergers and acquisition, the current scope represents probably less than 1 per cent of all the acquisitions that have ever been made, and probably less than 0.1 per cent of all the mergers and acquisitions that have ever been made. The WBS acts to continually refine the broad interest area, focusing it in towards a specific interest area.

The next level down might concentrate on a specific aspect of acquisitions to enhance the strategic specialisation of large UK food retailers. Remember that the research has to make a contribution to the knowledge base, and has to be original work. The research also has to be specific and closely defined. A straightforward survey of all the acquisitions made to enhance strategic specialisation by large UK food retailers would therefore probably not be sufficient on its own. The survey would have to be applied in some way to form a contribution to the knowledge base.

The candidate therefore might attempt to develop a new model or predictive tool that can be used in forecasting the success or otherwise of such acquisitions. Any such model would obviously be of great interest to companies thinking of making an acquisition. Significant proportions of large-scale acquisitions fail to achieve their primary objectives, and anything that can improve the probability of success would be of great value.

The WBS now becomes:

– Mergers and acquisitions
  – Acquisitions
    – Acquisitions to enhance strategic specialisation
      – Acquisitions to enhance strategic specialisation in large UK food retailers
        – The development of a predictive model to forecast the likely performance of acquisitions to enhance strategic specialisation in large UK food retailers

The candidate has now developed a five-level WBS and has arrived at a sufficiently defined field that has a reasonable scope for the development of a doctoral research programme. At this stage the candidate does not become involved in the detailed rationale behind the choice of field. In addition he or she does not attempt to develop any detail of how the model is to be designed and operated. It is sufficient to identify a suitably scoped research field.
Having identified a preferred field it is then necessary to consider the likely allowable field. The allowable field is more detailed than the preferred field and contains a wider number of considerations.

4.3.2.2 The Allowable Field

The preferred field is the field that the candidate would like to develop. In reality it is rarely possible for a candidate to pursue all aspects of the preferred field. The allowable field is the preferred field modified by restrictions or limitations imposed by the practicalities that impact on the research programme. The preferred field may be found to be completely impracticable when the allowable field is considered. In other cases some sections of the preferred field may be impracticable while other sections are viable.

The allowable field is determined by a wide range of variables. The main considerations when considering the preferred field in terms of what is allowable are detailed below.

- **Availability.** It is common for a candidate to identify a very interesting and promising preferred field, only to find that one or more aspects of what is involved are not available. An obvious example is security concerns. In the mergers example the company concerned may relish the prospect of having a predictive tool developed for it, but it may not be prepared to allow sufficient financial and other information to be released to allow the model to be designed and calibrated. Companies, quite justifiably, can be very concerned about releasing any material that could be classified as ‘sensitive’. In many cases, companies will release some sensitive material to trusted employees where some kind of confidentiality agreement is signed. The agreement usually contains terms and conditions to the effect that the candidate undertakes not to release any research data or materials without the prior written permission of the company. In most cases there is also a requirement for EBS to sign a similar agreement. Availability could be affected by the consent or otherwise of key people to contribute to the research. The data collection process may call for the involvement of a number of senior people. These people may not agree, or may initially agree and later change their minds. Availability is discussed in more detail in Section 4.3.2.4.

- **Data reliability.** The preferred field might not be capable of generating data of a sufficient standard to underpin the development of doctoral research. This scenario sometimes evolves where the candidate intends to make use of, for example, historical company data. There may be an assumption that certain types of data or certain data sources will be available. As the candidate develops the research it may become apparent that such data and/or sources are not either available as anticipated or are stored in such a way that it becomes prohibitively difficult to extract and process them. Reliability is discussed in more detail in Section 4.3.2.4.

- **Literature.** It will be recalled that a literature review is an essential component of any doctoral research programme. The candidate has to develop an understanding of the existing literature in order to appreciate what is already known in
the subject area. This is important in order to ensure that the candidate is not duplicating previous research, and to develop an appreciation of whether or not the proposed research area is viable. It is also essential that the candidate carries out a critical review of the literature as a means of developing his or her own ideas from the published work. These issues can sometimes cause problems in applied business research because of the specific nature of the research. In the mergers and acquisitions example above there is plenty of published work on mergers and acquisitions, and on acquisitions specifically. As the candidate conducts literature searches through the lower levels of the WBS, however, the amount of relevant published work falls dramatically. There may be only a few references on acquisitions designed to enhance strategic specialisation in UK food retailers, and there may be only a handful or even no references on research models relevant to this sample. Where this occurs it is often possible to build up a literature review around the specific research area concerned, leaving only a small area that is not covered. This lack of integrated knowledge is sometimes referred to as a **knowledge gap**. This concept is shown in Figure 4.1.

**Figure 4.1 Literature overlap and knowledge gap**

In Figure 4.1 the literature bases in each of the component areas of the preferred field are shown. The primary literature bases are:

- acquisitions;
- strategic alignment;
- UK food retail;
- appropriate models.
The literature bases are represented as different sizes and shapes in a symbolic representation of the different sizes of each knowledge base and the range or diversification of areas addressed within each base. Where knowledge bases overlap, there are published works that combine aspects of both bases. In Figure 4.1 there are no published works that cover all four areas. There are, however, two areas of three-way overlap. These are designated as areas X and Y in Figure 4.1.

Area X represents published works that address acquisitions enhancing strategic specialisation in the UK food retail sector. Area Y represents published works that address models for acquisitions enhancing strategic alignment. These models could relate to other industries such as oil or automobile manufacture.

In the case shown in Figure 4.1 there is no four-way overlap. This indicates that there are no published works that address all four areas. The relative distance between areas X and Y indicates that there is a knowledge gap in the literature.

This discovery is good in some ways and bad in others.

It is bad because:

- the candidate has no previous work on which to base his or her research;
- there is no evidence to show that a four-way amalgamation is possible;
- it suggests (possibly) that other researchers may have shied away from the area.

It is good because:

- there is less chance of the candidate duplicating previous research;
- the candidate has discovered a potential research niche;
- the results could be in demand commercially.

In this case the candidate is faced with the problem of whether or not to proceed on the basis of the discovered conditions. The candidate may choose to proceed given that a niche has clearly been identified and the potential rewards are high. Alternatively the candidate may decide to redefine his or her research because there is no established literature base in the area. There may be good reasons for this, including the fact that the knowledge gap may indicate that research in this area is not viable.

Knowledge gaps are often identified in literature reviews. To proceed with research in a knowledge gap presents great opportunities but at a high risk level.

Availability, data reliability and literature are three examples of drivers that define the allowable field. The next issue is to consider how the preferred field and allowable fields can be aligned to develop an outcome field.

4.3.2.3 Alignment and the Outcome Field

Alignment in this context means lining up the preferred and allowable fields in the best possible fit. The candidate may want to focus on the development of a model to predict the success of an acquisition that is designed to enhance strategic advantage in the UK food retail sector. Preliminary exploration of the data sets available and the literature might indicate that:

- the data exist but might not be available;
- the data exist but might not be valid;
- the data exist, and are available and valid, but the company involved might not allow them to be used;
- there is an established literature base in most of the related areas;
- there are some literature overlaps;
- there is no comprehensive four-way literature overlap.

In reality the initial appraisals may produce a much longer list. The example given above is for illustrative purposes only.

The candidate now has to consider the risk profile involved in generating an outcome field from the preferred and allowable fields. *Strategic Risk Management* is an EBS DBA course text. This text covers risk analysis and classification techniques. The main areas for consideration in this case are the availability and reliability of the data set and the availability or otherwise of relevant and integrated literature.

There is no single outcome to the alignment process. Alignment can be highly complex and difficult to define in specific detail. It is important to consider the problem from several different aspects. Assuming that the relevant data appear to be available, the first approach to analysis is to consider the available literature. In the context of the literature, the largest single danger in the listing given above is that there are no four-way overlaps within the existing literature. This could indicate a number of different risk alternatives.

- High-risk option: proceed and develop the research.
- Medium-risk option: redefine the research field.
- Low-risk option: abandon the research field and seek a new one.

The high-risk option is to go ahead with the preferred research field and develop the research knowing that there is a knowledge gap. There could be operational reasons why the research may be unsuccessful, and the fact that no other researchers appear to have addressed the gap could indicate that there are genuine application problems. These in turn could indicate that there are problems with the data set or with the availability of the required data and supporting information.
The medium-risk option is to redefine the research field and to try to identify a four-way overlap by changing one of the concentration areas slightly. For example, the emphasis on *models* could be changed to a related area such as *tools*. It could be that further initial research will reveal that some researchers have developed tools for measuring strategic specialisation in UK food retail acquisitions but none has developed a prediction model for actually forecasting likely success or failure. This concept is shown in Figure 4.2. The *models* element has now been adjusted to *tools*. The literature on tools may indicate a degree of four-way overlap, represented as area Z. The candidate (medium-risk option) may now choose to realign the preferred research field (including models) to match the available research field (tools) to form a new outcome field including models.

This outcome field still represents medium risk because the overlap area is presumably small. There may also be problems in identifying a suitable research focus within the alignment area. This outcome field is, however, safer than the high-risk option where there is no overlapping research on which a new research programme can be based.

The low-risk option is to change the research field significantly. One possible avenue could be to redefine more than one of the literature areas. The candidate might choose to change the sample base entirely, for example from food retail to another area where there is significantly more published material on acquisitions. Examples might include the international oil (petroleum) industry, pharmaceuticals...
or automobile manufacture. These industries have all experienced very large-scale mergers and acquisitions over the past 20 years or so, and there is likely to be considerably more published work in these cases than on the UK food retail sector.

In most cases the outcome field is likely to be a compromise between what the candidate would like to research (the preferred field) and what is actually possible (the allowable field). It is essential that the outcome field is established as early as possible in the research programme because it forms the basis for the aims and objectives of the research.

4.3.2.4 Assessing the Outcome Field

Once a potential outcome field has been identified it is important to investigate it closely in order to make sure that it is practically viable. Figure 4.1 and Figure 4.2 above considered the issue largely from the point of view of the available literature. The existence of published work is often the most important consideration, but it is not the only consideration to be taken into account. In most cases, the next major consideration is that of the research sample.

The candidate now knows that there is at least a basic publication history in the chosen research area, and that some research data will be available. This does not mean that the candidate can necessarily develop successful research in the area. The candidate should consider a number of areas in detail when assessing the outcome field.

Data Availability and Reliability

These issues were discussed briefly above. The outcome field depends on the necessary data being both available and reliable. The candidate should think carefully about the type and range of data needed both to develop and to calibrate appropriate measure evaluation tools in acquisitions to enhance strategic specialisation in the UK retail sector. In order to do this it is necessary to think about how the data are likely to be collected and how they will probably be used. The candidate cannot go into any real detail yet because he or she is still a long way from designing an operational research method. It is possible at this stage, however, to think in overall terms about the general characteristics of the likely data set.

It is useful to think about the potential data set as a series of questions.

- What type of data will be required?

The candidate is concerned with developing tools to evaluate acquisitions. The first consideration is the type of data required for acquisitions to be evaluated. Logically most acquisitions can be broken down into three separate phases.

(a) **Strategic rationale**: where the underlying strategic logic and strategic fit of the proposed acquisition are considered. The acquisition could enhance strategic specialisation by strengthening the supply chain of the acquirer, for example strengthening the degree of vertical integration within the supply chain. One data set might therefore revolve around before-and-after comparisons of different aspects of the supply chain. In order to collect and evaluate this type of data the
candidate will need access to the senior strategic planners within the organisation and detailed background information on the supply chain itself.

(b) Valuation: where the overall financial considerations are examined. Most acquirers undertake some kind of detailed evaluation of the target before proceeding with the acquisition. In most cases the offer price (the price that the acquirer is prepared to pay for the target) is a function of the floor price (the current value of the target shares) and the value of the benefits expected to be generated by the acquisition. The candidate will require access to the valuation calculations and to any assumptions made in assessing future values.

(c) Implementation: where the process of integration is executed. An acquisition could perform more or less successfully as a direct function of the implementation process. An acquisition with good strategic fit and good financial prospects could fail because the acquisition is not carried out properly. The acquirer may fail to integrate the various operational units of the target fully. This could result in a failure to achieve the potential benefits of the acquisition, leaving a gap between the purchase price and the sum of the floor price and the valuation of the acquisition benefits.

The candidate also has to consider what type of data will be required within the classifications given above. For example, some data within the broad categories listed may be time dependent. The extent to which an acquisition is a success or otherwise may vary over a long period of time after the acquisition has taken place. An acquisition appearing to be a short-term success may turn out to be a long-term failure. The tool will have to be able to differentiate between short-term and long-term data: to do so may require a longitudinal study (see below).

- Will the data be available?

Having roughly identified the types of data that will be required, the candidate next has to consider whether or not the required data will be available. There are two primary issues to be considered here.

(a) Sensitivity. The data may exist but the collaborating data sources may be unwilling to release it. This is likely to be the case, especially in the financial category. Companies that have lost money on a major acquisition are unlikely to be willing to broadcast the fact. The candidate may have real problems in achieving access to sensitive information of this type.

(b) Existence. Another common problem is that the data required may have been lost or destroyed. Many companies are remarkably disorganised when it comes to ordering and storing historical information. The candidate may find that some data have been retained but significant elements have been discarded, particularly if the data relate to an acquisition that took place some time ago. Candidates often find that they spend hours looking through company records only to find that the required information has been destroyed or was never stored in the first place. Another common problem is that the data may still exist but may be stored in an inaccessible format. Some companies store records randomly on microfiche. The candidate may be able to identify the required data but may realise that it would take too long to extract.

- Are the data compatible with the proposed research method?
The candidate may have already decided that he or she wants to adopt a particular methodological approach. Some candidates may wish to adopt a primarily quantitative (numbers based) approach using advanced statistical techniques to analyse numerical data. Other candidates may wish to adopt a qualitative (descriptive) approach, or to combine the two approaches. A candidate who wishes to use a quantitative approach may find that the bulk of the data in the outcome field are actually qualitative. In some cases it may be possible to convert qualitative data into quantitative equivalents, but this may be awkward, time consuming and ultimately unreliable. In such cases the candidate may have to either realign the outcome field or adjust the proposed research method.

- Do the data provide sufficient detail?

Preliminary research may indicate an apparent mass of relevant data. On closer inspection the data may in fact be less detailed than originally thought, and may be insufficient to provide the basis for an adequate level of analysis. Another common problem is that the data set may provide sufficient detail in some areas but not in others. **Data gaps** or **holes** are unfortunately very common. In some cases it may be possible to interpolate across data gaps using the data that are available. In other cases it may be possible to design the research method so that these gaps can be avoided or allowed for. Large gaps or a significant number of small gaps may require a realignment of the outcome field.

**Potential Types of Study**

The candidate may prefer to conduct a particular type of study, basing the research method around one or more approaches. For example, the candidate may wish to use a case study approach. The concept of the case study is discussed in more detail in *Introduction to Business Research 3*.

A common system of using case studies is that of a single **longitudinal** case study backed up by a series of **cross-sectional** case studies.

A **longitudinal case study** involves the detailed analysis of data from one case study over a period of time. For example, the candidate might observe the process of an entire acquisition from start to finish over a period of several months. ‘Finish’ in this context could mean the point at which the acquisition becomes reality in that a majority shareholding is achieved by the acquirer. The term could also apply to a point several years later where the target is fully integrated with the acquirer. The longitudinal approach has the advantage that the candidate can analyse the complete process in detail, thereby building up a complete and accurate picture of the processes involved and generating data over a period of time. The obvious disadvantage is that any data are based on a sample size of one, and are therefore potentially unreliable. This problem can often be addressed by the use of a number of cross-sectional studies.

**Cross-sectional case studies** are short-term studies of other data sources. Rather than continuing over a period of time, cross-sectional studies provide an instantaneous or short-term view at different points in a longer-term process. If a longitudinal study is compared to a movie, a cross-sectional study can be compared to the movie **still**s often produced for publicity reasons. It may be possible to base
the research method on a single longitudinal case study, backed up by a large number of cross-sectional studies. The longitudinal study may indicate time-based patterns and trends. For example, after an acquisition there may be a short period of apparent financial success followed by a general deterioration over the next few months. This finding may be unique to the longitudinal case study concerned. The candidate might seek to show that this finding is generally applicable by looking for a similar pattern in a series of cross-sectional studies. If the candidate does indeed find the same pattern in another 30 companies on a cross-sectional basis, this would act as a good indication that the pattern is generally applicable rather than being a one-off.

If the candidate does intend to use a longitudinal case study backed up by a series of cross-sectional studies, he or she must be satisfied that the necessary data will be available and will be in a format compatible with the research method. The big danger with a longitudinal case study is that something goes wrong with the process halfway through or, worse, towards the end. A candidate might spend three to six months observing the pre-contract negotiations on a ‘friendly’ (non-hostile) acquisition only to find that negotiations break down and the whole strategic rationale changes. This could result in a significant amount of potentially abortive work and an additional six months being added to the overall research duration. In some cases it may be possible to modify the scope of the research or modify the aims and objectives slightly (see Module 2), but the candidate is still likely to be faced with significant problems.

It is therefore essential that the candidate researches any proposed longitudinal study very carefully before committing to it. In a significant proportion of EBS DBA cases the candidate would almost certainly base any such longitudinal case study within his or her own organisation. This is obviously a safer route than attempting to base the study in an external organisation.

- **Potential validation.** Assuming the candidate does decide to conduct a longitudinal case study backed up by a series of cross-sectional studies, there will always be a limit to the number of cross-sectional case studies that can be conducted. Cross-sectional case studies are involved only in generating a ‘snapshot’ of the situation at a particular moment of time, but it may take several weeks in each case to identify, extract and analyse the data required. It is often not possible to conduct sufficient cross-sectional studies to make the sample size reliable. Where this does occur, there may be a requirement for a validation study. A validation study is usually conducted over and above the main research in an attempt to show that the results generated are generally applicable. The main research might be based on one longitudinal and several cross-sectional studies. It may be advisable to conduct a validation study in order to increase the sample size by extending the range and number of data sources.

The validation study could be a simple questionnaire or a series of structured interviews where the results from the main study are summarised and presented to a range of different companies. If the candidate can show that, for example, 80 per cent of validation study respondents agree with a particular finding, this is a strong indication that the finding is valid.
Validation studies are not always essential, but where they are conducted they can act to strengthen the research significantly. If the candidate feels that a validation study may be necessary, it is important that he or she researches the availability of potential validation study respondents at an early stage. In the UK food retail acquisitions example there may be a problem with a validation study, because the number of large food retailers in the UK is relatively small. Five or six large companies tend to dominate the sector. There is also a degree of market saturation and high levels of competition between the various companies. It is perhaps doubtful that the candidate could either (a) identify sufficient different companies to make any validation study worthwhile or (b) secure the consent of these companies to contribute to the research.

- **Timescale.** It is important that the candidate checks the likely timescales involved at the earliest possible opportunity. In the acquisition example the candidate may have set aside a maximum of six months for data collection and analysis. This duration may be adequate if everything goes according to plan. The problem with business research is that many of the activities used as subjects are business driven. The time required to complete individual phases may vary as a function of business requirements and demands. Referring to the acquisition example again, the negotiations phase (if there is one) may be scheduled to last three months. In reality, however, a whole range of different factors may determine the actual time required. One factor could be variations in the stock market price of target shares. These may increase significantly in value as the negotiations start. This often happens with target shares as it becomes known that the acquiring company has an interest in buying target company shares. The interest acts to increase demand and, therefore, prices. As target share prices increase, the target company value increases, and this can result in the target becoming more powerful in negotiations in relation to the acquirer. This applies particularly where a high proportion of target shares are owned by a small number of primary shareholders. As the value position changes, there may be a requirement for more extended negotiations, and the overall negotiation timescale may increase significantly. If the candidate has committed to using this sample as the basis for a longitudinal case study, he or she has no alternative other than to extend the data collection period. In some cases this could significantly increase the overall time required to complete the research programme.

The candidate should therefore research any potential sample very carefully before committing to it as a basis for a longitudinal study. Once committed, the candidate runs the risk that the longitudinal study may extend or develop in ways that were not anticipated when the commitment was made.

It cannot be over-emphasised that the candidate should analyse the outcome field very carefully before committing to it. The range and extent of the field can be modified later, but any such modifications are likely to result in potential abortive work, additional work, and an extension to the overall time required for completion of the research schedule.
4.3.3 Committing to the Research Field

The candidate should commit to a particular research field only once he or she has thoroughly researched the background of the proposed field. The outcome field should be a function of the outcomes of careful consideration of the literature, data availability and all of the factors discussed above.

In committing to the research field, the candidate is committing to a specific area of research that forms the basis for the entire research programme to follow. This commitment is very important, and the candidate has to be sure that the area has adequate research viability. There are several other important considerations to be taken into account when committing to a research field.

The EBS DBA programme is concerned with applied business research. The EBS Research Committee will be looking specifically at the degree of application present in the research proposal. Two different DBA candidates may both identify similar viable research fields, but one field may be considerably more applied than the other. The degree of application is important.

Candidates should ideally discuss the proposed research field with the senior managers of their company or organisation. If the candidate is a senior manager then he or she should discuss the proposed field in detail with his or her peers and with anybody who is above them in the authority structure. Most companies have areas of concern or specific areas of performance that they are seeking to improve. Ideally the research field should coincide with or be aligned to one or more such areas. Remember that the objective of the DBA programme is to produce research professionals: people who can apply their doctoral-level research skills to address and solve real issues in real companies. Ideally the outcome of the research should have real commercial value within the organisation and, potentially, outside it as well.

Candidates should also think carefully about the future before committing to a particular field. Business is dynamic. It changes constantly as a result of internal innovation and change and in response to forces applied by the market. An issue that is relatively insignificant now may not be so insignificant in five years’ time. A full-time DBA candidate will probably take two years to complete the research programme, whereas a part-time or distance learning candidate may take several more years to complete. These timescales are sufficiently long for significant changes to take place in the business environment. Candidates should therefore consider carefully how the commercial importance of the research field is likely to vary over the next few years. Candidates should ideally commit to a field where the commercial importance of the research is likely to remain constant or preferably increase over the next few years.

**Time Out**

Think about it: choosing an applied research area that is likely to grow in importance.

In the food retail acquisitions example mentioned earlier in this module, it is likely that the importance of mergers and acquisitions (and, therefore, any relevant research) is likely to increase, at least in the foreseeable future.
Thinking it through, there are several obvious reasons for this, including that in this sector there:

- is market saturation;
- is market stagnation;
- are a relatively small number of major players;
- is a distinct geographical distribution of the major players.

Considering the issue logically, it becomes apparent that acquisitions are likely to prove the only opportunity for growth under these conditions. In the UK there are numerous large supermarkets in most towns and cities. This has resulted in market saturation and stagnation. Supermarkets have been built in virtually every location where there is sufficient demand. These supermarkets are owned by a relatively small number of large companies. In the UK these are:

- Tesco (2001 turnover £21.7 billion);
- Sainsbury’s (2001 turnover £14.9 billion);
- Safeway (2001 turnover £12.6 billion);
- ASDA (2001 turnover £10 billion).

Together these companies account for over 80 per cent of supermarket retail in the UK. The various companies tend to have individual geographical distributions. For example, Sainsbury’s has its greatest concentration in the south-east of England, whereas Safeway is strongest in the north of England and Scotland.

These conditions are all ideal for increased merger or acquisition activity over the next few years. It should be apparent that mergers and acquisitions provide the only guaranteed way of achieving growth under such circumstances.

It seems reasonable, therefore, to assume that the level of acquisition activity within the UK food retail sectors is likely to increase over the next few years. There are some obvious potential brakes on the process. One example is the action of the regulators. In the UK the Competition Commission is responsible for ensuring that, amongst other things, large-scale mergers and acquisitions do not result in one company acquiring a sufficiently large share of the market to allow it to determine prices. The 2002 market share limit was 25 per cent, and the merger of any two of the companies listed above would have led to the generation of a new company that would have exceeded this limit.

This raises a new issue. Supermarket chains looking to achieve growth may be forced to consider non-related acquisitions or mergers with non-related companies in order to achieve this. It was interesting to note in 2002 that, when Safeway announced its willingness for a takeover, bids were received from Tesco, Sainsbury’s and ASDA. Bids were also received from:

- Morrisons;
- Philip Green;
- Kohlberg Kravis Roberts;
- Walmart.

Morrisons is a smaller supermarket chain based in the north of England. The acquisition of Safeway would not have exceeded regulator market share limits.
Philip Green is the owner of numerous high street clothing and department stores. Kohlberg Kravis Roberts are venture capitalists and Walmart is a US-owned retailer. These four companies could all have acquired Safeway without breaching regulator limits, but with the exception of Morrisons, any such acquisitions would have been non-related. In other words the acquisition would not have been made with the intention of enhancing strategic alignment, which in turn would take the acquisition outside the outcome research field.

In terms of the long-term commercial value of the research the candidate has restricted potential for exploitation in that the research is likely to be commercially applicable only in cases where one supermarket chain merges with or acquires another supermarket chain. Such mergers and acquisitions are relatively unlikely in the UK because of regulatory restrictions. Future UK supermarket chain acquisitions may still be made, but, where they do occur, they are likely to be made as part of a diversified (non-related) acquisition strategy. Acquirers are likely to be non-supermarket bidders such as high street retail chains and venture capitalists.

The outcome field may still be viable from a research point of view, but may be of limited direct commercial applicability because of regulatory or market forces over the next few years.

The candidate therefore has to consider carefully the extent to which the research is likely to be commercially viable before committing to it. It is strongly advised that the candidate carefully considers and reconsiders the field using the kind of simple analysis detailed above, before making a final commitment.

4.3.4 Establishing Scope and Limitations

Once the candidate has committed to a particular research field, it is important that the scope is established as quickly as possible. The scope defines the effective boundaries of the research. These boundaries are necessary in order to define what will be included within the research and what will be excluded. Doctoral research should focus on a specific area and study it in detail. The research must be rigorous and carried out in sufficient detail to meet the requirements of the examiners. As the scope increases, the work necessary in order to achieve these standards increases. If the candidate thinks of the research scope as being defined by the edges of a circle, and the work required in order to address that scope as the area within the circle, it is apparent that the area increases as the square of the size (radius) of the circle.

Think about it: establishing scope.

One way to think about scope is to consider an astronomer who is concerned with carrying out research on the behaviour and characteristics of star systems. The astronomer has a telescope through which he or she can view any given star system in detail. The telescope can give the astronomer the ability to view the position of the stars relative to the star background. It also enables him or
her to view any interactions between the stars and any specific behaviour of individual stars.

The astronomer might decide to conduct his or her research on the star Rigel in the constellation Orion. The astronomer may be aware that the star’s name is derived from the Arabic rijl Al-jauza meaning literally the foot of Al-jauza (the central one). The astronomer may then view Rigel and note that it is a blue super-giant, shining with a luminosity of more than 40,000 of our suns. The astronomer may calculate that the surface temperature of Rigel is around 11,000 kelvins, which is about double that of our sun (hence the bluish colour of the emitted light). The astronomer may also find that, if Rigel’s ultraviolet emissions are considered, the luminosity rises to more than 60,000 of our suns. It may also become apparent that Rigel is accompanied by a stellar companion. The companion is about nine arcs away from Rigel and is of the seventh magnitude (faint to an earth-based observer). The astronomer may note that the two stars revolve around each other, and the light emitted from Rigel varies as a function of the position of the companion. The astronomer may conclude from his or her research that Rigel is actually in the process of ‘dying’, relying on the internal fusion of helium into carbon and oxygen.

These are all valid research findings, and are indeed based on known findings that have been published in the field of Rigel over the past 30 years or so.

In studying Rigel, the astronomer made the star the sole object of the research. The scope reflected the stellar boundaries of Rigel. The research on Rigel was not concerned with the constellation’s (Orion) alpha (formerly brightest) star Betelgeuse. The rest of the constellation was ignored, and the research was concerned solely with Rigel.

In this case:
- the scope of the research was limited to Rigel;
- the limitations of the research were that the study considered only Rigel and no other star or star system.

The scope was restricted to Rigel because it was necessary to concentrate on one star and study it in detail. If the astronomer had tried to study 50 stars, the research would have taken too long and the astronomer would almost certainly have had problems with time, financial and publication limits. In most cases it is feasible only to concentrate on one specific research area and study it in detail.

By defining a specific scope the astronomer accepted certain limitations. The research was limited to one star. This means that what was found in the case of Rigel may not necessarily be the case in other stars or star systems. For example the effects on the apparent luminosity of Rigel as a function of the location of the stellar companion may be a one-off observation, and it may not be generally applicable to other binary star systems.

The establishment of scope is essential in order that the research can be restricted within manageable proportions. If no scope is established the researcher will find himself or herself faced with an incomprehensible mass of data that crosses a range of specialism boundaries. In establishing scope, however,
the researcher accepts that there are limitations to the research as a direct result of the concentration in one particular area.

The same basic generalisations relate to applied business research. As a result of time and resource limitations, the candidate might restrict his or her research to a specific area. In the case of acquisitions in UK food retail, the research might be restricted to the top five UK supermarket chains. In some cases a further restriction on scope might be imposed where the research is limited to the acquisitions of supermarket chains by supermarket chains, rather than the acquisition of supermarket chains by non-related acquirers such as department store owners or property speculators. If the general area of tools used in the acquisitions to enhance strategic specialisation in the UK food retail sector is considered, some typical scope characteristics might be that the research is restricted to tools in acquisitions:

- by other supermarket chains;
- by larger (in terms of turnover) supermarket chains;
- by larger and strategically diverse supermarket chains;
- made between 1999 and 2002;
- conducted between non-regulator affected combinations.

The number and degree of qualifications made under the heading of scope are many and varied. The key element is to restrict the area of the research to that which can be analysed:

- within the time limits available;
- with the resources available;
- to full doctoral standard.

In establishing any such scope the candidate accepts that there are limitations to the research. In accepting the scope limits listed above the candidate is also accepting that the following sources of data are excluded:

- acquisitions made by non-supermarket chains;
- acquisitions by smaller supermarket chains;
- acquisitions by smaller and/or non-strategically driven supermarket chains;
- acquisitions made before 1999 or after 2002;
- acquisitions conducted between regulator-affected combinations.

In some cases the excluded elements (those outside the scope of the research) can be very important. For example, the majority of acquisitions relating to tools (as evidenced by the literature) might have been made by non-supermarket chains. In this case the candidate is effectively excluding the larger part of the literature in setting his or her scope. This could be significant, as the effective data set is restricted and may be non-representative, with significant implications in establishing the validity of the research data, and may result in a requirement for a larger than expected validation study. This in turn could have implications on the overall time required for the completion of the research programme.

The underlying implication is that a restricted scope is necessary in order (a) to make the research proposal practicable within the time and resource limitations that
apply and (b) to provide sufficient focus and definition to allow doctoral research to be carried out. In establishing this research scope, the candidate accepts that certain data sources are excluded and that there are limitations to the research. If the exclusions are significant, the validity of the research could be compromised, especially if the bulk of the published literature falls outside the scope of the current research.

4.4 Generating a Specific Research Problem

4.4.1 Introduction

The module so far has considered the establishment of a research field and the development of a specific research scope and limitations within this field. As discussed, this element of focusing is necessary in order that the research can be sufficiently defined. The definition is necessary because:

- doctoral research is concerned with researching a clearly defined area in detail;
- the researcher has time and resource limits that restrict the amount of research that can be carried out.

Having defined a research field and scope, the next stage is to develop a specific research topic. This topic forms the basis for the subsequent research question, theory or hypothesis, which in turn forms the basis for the aims and objectives of the research. The following section discusses the processes involved in establishing a research topic, a research question or problem, the establishment of initial objectives and the establishment of final research aims and objectives.

4.4.2 Factors to Consider in Generating a Specific Research Problem

Having established the research field and scope the candidate now has to generate a research topic. The topic itself is the subject matter of the research. It is the specific area of interest and is usually directly reflected in the title of the thesis. The topic is important because it affects the entire strategy of the candidate in designing and executing the research programme. For example, the topic is probably the most powerful single driver of methodology design and/or selection. Most research methodologies are selected and adapted as necessary to suit the research topic.

In general terms the topic must meet a number of important criteria. These are listed and discussed below. They are sometimes referred to as the must-haves. Research topics that form the basis of research proposals can be rejected by the EBS Research Committee if they do not match these must-haves.

The must-haves

- The research topic must be viable.
  The proposed area of interest must be capable of generating sufficient amounts and quality of data to allow the development of doctoral-level research.
- It must satisfy University regulations.
The University publishes its own regulations on degrees and awards. The candidate must ensure that the topic chosen meets all current University rules and regulations.

- **It must be feasible.**
  Inexperienced candidates sometimes choose topics that are too complex and ambitious. For example, the proposed topic may commit the candidate to a research programme that cannot be completed within the time available. There is no point in allowing a candidate to choose a topic that will obviously not be completed within a reasonable time.

- **It must be applied.**
  The EBS DBA is concerned with applied research. Ideally the topic should be extremely attractive to senior managers because it provides knowledge and/or solutions to problems that affect them directly.

- **It must be clearly defined.**
  The title chosen as the topic must be clear and unambiguous. It should be clear from the title exactly what the research is about.

- **It must be appropriate.**
  The proposed topic must be compatible with the existing knowledge base in the research field. For example, the topic may directly duplicate other research published only three months before. This may be acceptable, but it must be justified and built into the research programme.

- **It must be robust.**
  One of the most dangerous issues with research topics is whether or not they may require subsequent modification. Once set, candidates should make every effort to modify and change the research topic as little as possible.

In addition to these prerequisites the topic should ideally also satisfy a number of other requirements such as those listed below. These are sometimes referred to as the **should-haves**.

**The should-haves**

- **The research topic should be interesting.**
  It is surprising how many candidates choose uninteresting topics and then, unsurprisingly, struggle to maintain their interest as the research develops.

- **There should be a viable literature base.**
  If there is not a viable literature base, the mentor is likely to recommend the candidate modifies his or her focus towards an alternative area where there is a viable literature base. The DBA Research Committee is unlikely to accept a research proposal in an area that does not have a viable literature base unless the candidate can make a sufficiently strong case in support.

- **It should be appropriate.**
  The choice of topic should be appropriate to the preferences and needs of the candidate. There is no point in choosing a topic unrelated to the candidate’s own expertise area unless there is a good reason for doing so.

- **It should make a clear contribution.**
The topic should be in an area where more research is required and where the findings will make a direct contribution to what companies know and how they behave.

- **It should be balanced.**
  Ideally the topic should be such that it allows the candidate to use a balanced approach to including different research methods, combined positivist and phenomenological approaches.

- **It should be current.**
  Ideally the research topic should be up to date and should reflect current areas of interest. Examiners are likely to be impressed with research topics that match current advances in the appropriate field.

In identifying a suitable research topic candidates have to use their **creative imagination**. Candidates have to be able to look at a range of known information and use it to formulate an idea or theory or a concept they can then test using an appropriate research methodology. The creative imagination element is crucial in making the transition from an understanding and knowledge of the existing knowledge base to formulating a research theory and designing a suitable methodology to test it. The process is sometimes referred to as **process bridging** in that the candidate moves from a position characterised by what is known to a position characterised by what is not known.

Inexperienced candidates can sometimes have real difficulty in achieving this process bridging. It is common to find candidates who are very good at reading things and remembering facts and figures. These candidates often do well in MBA and other examinations because they have a good memory and are good at framing information in their minds. These same candidates can struggle to generate original ideas and thoughts based on what they have learned. The demand for creative imagination exists because candidates have to jump from what they have learned to a point where they use that learned knowledge to generate an original idea or concept. The process is rather like a form of **intellectual interpolation** where the candidate projects forward from what is known to predict a point beyond that condition. Some candidates, even some very clever ones, have real difficulty in doing this.

This process may sound challenging, and in some ways it is, but it should be appreciated that people use creative imagination all the time. In choosing wallpaper for a room, a person looks at the wallpaper and looks at the room and tries to work out mentally which wallpaper would look best in the room. The person uses his or her creative imagination to combine the two known elements (the room and the wallpaper) into an unknown element (what the room would look like, papered with that wallpaper). This process is usually carried out mentally, although interior designers are increasingly making use of computer models to produce accurate projections of how a room would look with different colour schemes.

Creative imagination is vital in establishing the research topic. There are various techniques that can be used to help in developing ideas and potential research topic and question areas; some of these are considered in the next section.
The final important factors to consider in relation to topic selection are timing and flexibility. These are important considerations. The candidate completes the EBS DBA research in three separate stages:

1. the research proposal;
2. the literature review;
3. the research method, data collection, analysis and generation of results and conclusions.

The candidate is expected to identify the research field, topic and aims and objectives in the research proposal. The topic must be clearly defined at this stage in order to be acceptable to the EBS Research Committee. The candidate at research proposal stage, however, has done only initial reading and is not yet expert in the appropriate topic area. The full literature review is not completed until the end of the second stage of the programme and it is only at this point that the candidate can feel fully informed of the knowledge base of the relevant topic. The literature review involves a great deal of detailed reading and study and may suggest interesting insights and possible modifications to the topic as the review progresses. The candidate may wish to make alterations to the research topic right up to the point at which the research question is set and the formal research aims and objectives are finalised as part of the literature review submission.

The candidate should always be wary of modifying the research topic once set. The EBS Research Committee will be watching for any evidence of candidates changing topic as this can easily lead to a loss of focus and abortive work, which can soon have disastrous consequences. Candidates can change their research topic in the light of the developing literature review, but any such modifications must be limited in scale.

Subsequent alterations to research aims and objectives can cause great difficulty, as discussed in Module 2.

4.4.3 Techniques for Generating Research Ideas

4.4.3.1 Interacting with the Mentor

The most obvious source of information and advice on potential research topic areas is the EBS DBA mentor. The mentor is an experienced researcher who is able to provide a wide range of advice and guidance on the selection and development of potential research topics. This is not to say that the mentor is required to provide candidates with suitable research topics. The ultimate responsibility for identifying and developing a suitable research topic remains with the candidate. The mentor, however, will provide guidance and advice at all levels of this process and will make every effort to facilitate the selection of an appropriate topic.

Candidates should avoid approaching the mentor ‘cold’. The mentor will find it much easier to offer advice and guidance if he or she has some idea of the background and interest areas of each candidate. The mentor might find it particularly interesting to know the general employment background of the candidate and also whether there are any general or specific research areas favoured by any employers or sponsors. Some candidates are sponsored on the DBA programme by employers
who want the candidates to address specific issues within the company concerned and to develop response methodologies or tools as appropriate. It is obviously imperative that the mentor is aware of any such agreements or arrangements at the earliest possible stage.

In discussion with the mentor, the candidate will find that the mentor is used to offering guidance and advice, and in terms of topic formulation has ‘seen it all before’. The mentor will generally spot topic incompatibilities and areas where future development problems are likely to arise.

While most mentor–candidate communication is by email, alternative communication media may be used with prior agreement.

4.4.3.2 Interacting with Colleagues

The second obvious source of topic ideas is interaction with colleagues. Most candidates are directly employed by a company or other form of organisation. The managers within these companies or organisations are generally aware of issues or problem areas faced by the organisation and for which general or specific solutions would be required. For example, a company might have different branches or subsidiaries in different countries around the EU. One subsidiary may be operating more profitably in Greece than a similar subsidiary in Germany. The German outfit, however, might have a higher turnover and higher production while employing fewer people. The company may realise that it does not have any kind of benchmark or standard whereby it can directly compare the profitability of operations in different geographical locations. This may have been an issue for some years at senior management levels, where investment decisions have been made using traditional and perhaps outdated evaluation techniques. Some kind of evaluative benchmarking model that gives a direct comparison of performance of each geographical operation against a set standard could assist considerably in making investment decisions.

Sometimes the identification of the most appropriate research topic can be a minor research exercise in itself. It may be worth conducting a short research programme to identify and list say the top five issues facing the employing company and then conduct a brief survey in an attempt to find out which of these issues is regarded as most significant by the senior managers in the company.

4.4.3.3 General Reading

Many experienced researchers and writers would argue that the best source of research topic inspiration is general reading. People who are research active in established research areas have to read a lot anyway, as this is the only way they can keep up to date on the knowledge base in their particular discipline. The more somebody reads about a particular subject, the greater the degree of knowledge and therefore insight into that subject is developed. As the level of insight increases, the reader reaches a point where he or she suddenly commands an overview of the subject. Complete mastery of the knowledge base reveals an intricate network or map of the knowledge in each particular branch and sub-branch of the discipline,
and it becomes clear which branches and sub-branches have been well researched and which have not.

Well-researched branches and sub-branches provide good research topic areas because there is already a developed knowledge base in the area. The candidate can read around what is already known and then develop a research topic that extends on concepts and findings already known, or even develop a new sub-branch that extends a developed area into a related undeveloped area. The candidate can clearly show that his or her chosen topic is related to the knowledge base and fits within it.

Branches and sub-branches that have not been well researched provide a wider range of potential research topic areas, simply because nobody has yet researched these areas. In effect, the researcher opting for these areas has a ‘clean sheet’ and can position his or her own research topic with relative freedom. The downside is that there is little or no established research and therefore very little in the way of a knowledge base on which to build a research proposal based on an existing knowledge base.

In general terms there is no substitute for doing plenty of reading when trying to fix on potential research topics. The process is time consuming and intellectually demanding, but the assistance provided to the bridging process, and the potential stimulation provided to the candidate’s creative imagination, can be considerable.

Possible sources of reading material include:

- research journals;
- textbooks;
- trade and sector literature;
- magazine and newspaper articles;
- conference papers;
- government publications;
- company archives;
- annual reports of companies;
- electronic databases;
- the Internet;
- MSc, MPhil, PhD and DBA theses.

Candidates may access a wide range of information sources, from research journals to newspapers. The quality of sources obviously varies considerably. A paper in a fully refereed research journal has been read and approved by peers. This does not mean the contents are true or correct, but there is a better chance that the contents are reliable as compared with say a newspaper article prepared by a journalist and approved by an editor.

As the candidate extends his or her reading and develops a more detailed knowledge of the literature, the knowledge itself will begin to polarise. This process is very difficult to describe. As the candidate learns more about what other researchers have published, certain areas of collective understanding will begin to emerge. It will become apparent that certain linking issues arise time and time again in the literature. It will also become apparent that there are definite knowledge gaps where
the knowledge base is incomplete. As the candidate starts to build up a mental map of these distributions, areas for promising research topics will begin to emerge.

It is also important to stress that much of the value of what is learned from reading comes in the development of integrated understanding. This occurs when a reader has read sufficient detail about a range of apparently unrelated subjects and he or she starts to see subtle interrelationships between these subjects. The research field is likely to cover several different areas and sub-areas, and the ways in which these link together in developing an overall understanding of the knowledge base are as important as the contents of the various publications themselves. It is difficult to explain the integrated understanding concept to somebody who has not experienced it. The concept is in some ways similar to learned behaviour in relation to complex tasks. For example, in learning to drive a new driver has to develop an appreciation of distance and speed, how to use the foot pedals, how to use the steering wheel, how to become aware of traffic in front, behind and on both sides. These are all separate skills requiring the use of different body parts and muscle /nerve groups, but the value in developing these individual skills lies in the combined effect or integrated understanding of how to drive a car. Individual skills command is required, but the end result depends on the combined use of these individual skills.

### 4.4.3.4 Brainstorming

**Brainstorming** may be helpful to generate and refine research ideas. This could be done with a group of fellow doctoral students or perhaps colleagues from the workplace who are experts in particular subjects such as marketing, finance, or production.

Brainstorming is a widely used approach for assessing the potential suitability or otherwise of proposed research areas. The idea of brainstorming is that as many people as possible look at a proposed piece of research with the objective of identifying a number of different possible outcomes. At one level the process might be concerned with the identification of research ideas or topics. At another level the process might be concerned with the advantages and disadvantages of choosing a particular topic.

In brainstorming methodology, a coordinator or facilitator is generally appointed. This person chairs the brainstorming session. He or she steers the discussion and tries to keep the group focused on the problem (for example to identify potential research topics). Brainstorming sessions are prone to becoming sidetracked and diverted away from the original objective. The coordinator needs to have a powerful and determined personality in order to be able to keep the discussions focused and relevant to the issues under consideration. The coordinator also needs to have a flexible approach and be prepared to change focus as required as the session develops. It is important that unusual or even apparently absurd ideas are at least considered.

The usual phases of a brainstorming process are:

- **Phase 1: Creative phase.** The idea of phase 1 is to invite as many ideas as possible from the brainstorming team. The team itself should include as many
people who are involved in a similar type of work and/or who work in the same department or section as the candidate. The team should also include other individuals who have an impact on the business or who act as stakeholders. The coordinator usually extracts one idea at a time from team members. The usual method is to use whiteboard or flipchart to record as many potential research topics or questions as possible as quickly as they are produced. It is important that any relevant risks or risk areas are identified. People should be encouraged to think outside their own specialisation. Apparently absurd ideas should be positively encouraged and recorded for future discussion and elaboration. The ideas are generally written down as they are extracted from the session. No criticism or discussion should be allowed at this stage. This is important, as criticism could easily inhibit original thought and innovation.

• **Phase 2: Evaluation phase.** Once the list of ideas is complete (at least for this particular session), each one is evaluated by all members of the team. Technical expertise and experience can now be applied by individual members in order to identify those potential research topics and research questions that have potential and those that do not. It is important that ideas and suggestions are not linked to individuals, so that free and open criticism and evaluation can take place. The brainstorming team members are now effectively working as a multidisciplinary analysis team, sharing expertise and experience in order to arrive at an optimum joint or mutual solution. Each idea is considered in detail and a final shortlist is formulated. These are the ideas on potential research topics, research questions and/or research aims and objectives risk that are regarded as having real potential and being worthy of further development. It is essential to be aware that the final list is the product of collective group effort, rather than a list of individual contributions. Multidisciplinary teams tend to produce much more original thought and a higher number of original ideas than single-discipline teams, and it is important that this effect is fully exploited.

4.4.3.5 **The Delphi Technique**

The Delphi technique is sometime appropriate in doctoral research. It is applicable where the candidate works in an organisation where there are other ‘experts’ or knowledgeable people in the subject area that forms the basis of the research. Ideally these experts should be available from both within and outside the organisation or company for which the candidate works. In the Delphi method, a panel of experts is selected from both inside and outside the organisation. The idea is to try to secure the contribution of people who are experts in the area under consideration. The experts are all given an identical statement of what the researcher is trying to achieve, with full associated data and support information. This could include information on the literature, previous research programmes, commercial application and so on. The experts are arranged so that they do not interact and do not know of each other’s existence. They therefore act purely as individuals. Each expert is asked to make an anonymous assessment of one or more potential research topics. Once the initial assessment is complete, each expert submits it to a steering group. The steering group assesses the evaluation made by each expert and produces a collective summary best matching the individual evaluations. The idea here is
that the individual evaluations are brought together to produce a distribution of predicted outcomes. There will be some possible positive outcomes and some possible negative outcomes that most (or even all) of the experts have identified. There will be other positive and negative outcomes that only a smaller number of experts have identified. In some cases the less frequently identified outcomes may be the significant ones, simply because they are, presumably, less obvious.

The steering group produces a collective evaluation and provides comprehensive feedback to each expert on the collective answer. Each expert therefore knows what the collective answer is in relation to his or her individual response. Each expert is then asked to make a new identification and prediction of potential outcome based on that collective answer. The process is then repeated as necessary. The idea is that, by seeing a collective evaluation, each expert can then consider the average and extreme responses from the other experts and use this information to focus on areas of genuine concern. As the process is repeated, the degree of focusing and refinement should increase.

The Delphi method therefore uses individual and group decision-making theory. It is based on the principle that groups approximate to the most accurate answer provided that group interaction is limited.

4.4.3.6 SWOT Analysis

A strengths, weaknesses, opportunities and threats (SWOT) analysis is a useful way of identifying the risks and opportunities a given research topic may present. Most research projects will contain a range of different strengths, weaknesses, opportunities and threats. In some cases strengths are related to opportunities and weaknesses are related to threats. In most cases, the best strategy to adopt in making a SWOT assessment is to:

- build on and exploit strengths;
- address and mitigate weaknesses;
- take advantage of and develop opportunities;
- avoid or mitigate threats.

A typical SWOT analysis is shown in Table 4.1. In this case areas related to the research topic have clearly been well researched in the past, and there is plenty of published information available for the candidate to use in formulating his or her research proposal. In addition the research results are likely to be applied and of direct commercial value. The weaknesses, opportunities and threats associated with the proposed research project are similarly shown in Table 4.1. The SWOT analysis can then be used to demonstrate the balance between strengths, weaknesses, opportunities and threats for a range of different research topic alternatives. It is also possible to assign relative weightings to different aspects of the analysis. For example, a high-risk option might be to give a double weighting to strengths and opportunities while leaving weaknesses and threats with a standard weighting. This would provide a balance towards accepting a research topic on the basis of positive attributes rather than rejecting the research topic on the basis of negative attributes. This gives a higher probability of acceptance irrespective of the risks presented by
the weaknesses and threats. The low-risk alternative would involve the opposite allocation of weightings.

**Table 4.1  SWOT analysis for a proposed research topic**

<table>
<thead>
<tr>
<th>Strengths</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• The research topic has been thoroughly researched in the past.</td>
<td></td>
</tr>
<tr>
<td>• There is a wide range of existing published materials available.</td>
<td></td>
</tr>
<tr>
<td>• The research topic is highly applied and is commercially attractive.</td>
<td></td>
</tr>
<tr>
<td>• The candidate is interested in the research area.</td>
<td></td>
</tr>
<tr>
<td>• The research area is clearly achievable within the time limits.</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weaknesses</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• The sample includes all companies in the sector: therefore there is no opportunity for any validation studies.</td>
<td></td>
</tr>
<tr>
<td>• There is no data source to support a central longitudinal study.</td>
<td></td>
</tr>
<tr>
<td>• There are insufficient sources of cross-sectional case study material.</td>
<td></td>
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<tr>
<td>• The research area is unfamiliar to the candidate.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• The research results could be exploited on a commercial basis.</td>
<td></td>
</tr>
<tr>
<td>• The results will be of direct use within the company.</td>
<td></td>
</tr>
<tr>
<td>• The research could be used to address real issues within the company.</td>
<td></td>
</tr>
<tr>
<td>• The research is niche. It uses a well-founded literature base but it makes use of new overlaps that could be commercially exploited.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Threats</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>• The collaboration of six of the eight companies that act as data sources is not guaranteed.</td>
<td></td>
</tr>
<tr>
<td>• The research could develop into politically and financially sensitive areas.</td>
<td></td>
</tr>
<tr>
<td>• The data sources suggest that there will be a lack of qualitative support data.</td>
<td></td>
</tr>
</tbody>
</table>

4.4.3.7 Records and Review

As the candidate progresses with the research he or she will read an enormous amount of material, ranging from newspaper articles to research journals. The literature review itself is discussed in more detail in subsequent sections and in *Introduction to Business Research 2*. It is perhaps sufficient at this point to stress the importance of maintaining accurate and reliable records of what has been read so that the material can be accessed again in the future and incorporated as referenced material in the literature review submission.

It is important that the candidate keeps a copy of any relevant material because all such material may be required for the main literature review. It is also important that the candidate classifies this material in some way. The candidate should avoid
the temptation simply to form a larger and larger pile of material that he or she has read, although many candidates (and some professors) are undeniably guilty of this.

To link literature sources together, the candidate has to develop some kind of **classification referencing system**. This is simply a classification system so that the relevance, value, subject matter and other characteristics of each article can be assigned and recorded. This subsequently allows the candidate to collect together different papers or articles that cover the same basic areas and also those sources that link individual areas together.

A good referencing system is necessary in order to allow this information to be controlled and put to best advantage.

The system should typically record the:

- source itself;
- subject matter of the source;
- degree of interlinkage;
- (subjective) quality of the article;
- degree of direct reference to specific sub-topics.

The reference in this case could be a simple code as shown below.

**JaP/advantage/3/A/mergers (a), retail (b).**

The code shown above could be written directly on the front of the appropriate article. In this case, the article is taken from the *Journal of Applied Psychology* (JaP) and is primarily on the subject of strategic advantage (advantage). The article has low interlinkage (3 out of 10), but is very high quality (grade A) and refers directly to strategic specialisation in the context of mergers (grade A linkage) and retail (grade B linkage).

The candidate could either use this code in relation to paper copies of the articles, or the papers could be scanned into a PC and the code used as an electronic tag to allow electronic database searches for particular reference types. Papers having similar characteristics can now be easily identified. The candidate can easily find them and abstract them from the growing library of relevant literature material. By reading and re-reading related articles with common links, the candidate can generate a lot of useful concepts and ideas to help in the development of a suitable research topic.

### 4.4.4 Developing Research Questions

Having identified an appropriate research topic and having agreed this with the mentor, the next stage is to develop a suitable research question or problem. This may sound easy but in fact can be extremely difficult. The precise wording of the research question impacts on the design of the research methodology and ultimately on the type of data collected and analysed and on the development of the final conclusions. The research questions should therefore be developed with great care.

Research questions should ideally be designed so they are in an analytical form expressing the causality between two variables. A typical example is shown below.
What is the functional relationship between interest rates and general levels of economic performance?

This question is concerned with the causality or cause-and-effect relationship between interest rates and general levels of economic performance.

The research paradigm itself will to some extent determine the wording of the research question. For example, a positivist researcher might be interested in explaining quantitative variations in demographic data, such as the population change characteristics of a given country over a 20-year period.

The positivist research topic might be as shown below.

The increasing average age of the population in the UK 1995–2015.

The research question designed to address this topic might be as shown below.

Did the proportion of people aged 70 or more increase during that period?

The research topic is concerned with the increasing average age of the population over a 20-year period. The research question addresses this topic by asking a particular and specific question.

Positivist questions generally should express a clear relationship between two or more variables and should be expressed in clear and precise terms. They should also be expressed in a form generally suitable for quantitative analysis.

A phenomenologist researcher might have an identical research topic but an entirely different research question. An example is shown below.

The phenomenologist research topic might be as shown below.

The increasing average age of the population in the UK 1995–2015.

The research question designed to address this topic might be as shown below.

Why did the proportion of people aged 70 or more increase during that period?

In this case the phenomenologist researcher is asking why the proportion of people aged over 70 increased over the period as opposed to simply showing that the population of people over 70 increased. The positivist research question is obviously much less complex than the phenomenological research question. The phenomenological researcher is likely to have to consider a great many demographic drivers, including:

- improved health care;
- better diet;
- better living conditions;
- climate change (strange but true);
- earlier retirement;
Improved working conditions.

The observed increase in the proportion of people aged over 70 is driven by these and other drivers acting in a complex interrelated network. For example, ‘better diet’ may be a complex issue. Again, the impact of the ‘better working conditions’ driver may be offset in part by the effects of the ‘early retirement’ driver.

Having accepted that the research question has to be framed in the context of the research paradigm, the researcher has to be able to develop a range of potential questions based on the original research topic. It is unlikely that the final research question will be the one that is first derived. It is much more likely that the candidate will develop a number of alternative potential questions and then arrive at the best one by a process of elimination.

Consider again the research topic given below.

The increasing average age of the population in the UK 1995–2015.

The candidate here is clearly interested in studying the increasing average age of the population over the stated time period. The candidate has to consider what research questions could address this research topic. Assuming the candidate is a positivist researcher, one possible set of alternative research questions could be as shown below.

1. Did the proportion of people aged over 70 increase during that period?
2. Did the proportion of people aged over 80 increase during that period?
3. Did the proportion of people aged over 90 increase during that period?
4. Did the death rate in the over 70s population decrease during that period?
5. Did the death rate in the over 80s population decrease during that period?
6. Did the death rate in the over 90s population decrease during that period?

The candidate should consider these alternative questions carefully. For example, consider questions 1–3 as opposed to questions 4–6. The first three questions are asking about the proportion of people in the overall population over a certain age. The second three questions are asking about death rates. Given the research topic, it seems initially reasonable to base the research question either on the proportion of ‘old’ people or on the death rate among ‘old’ people.

Further consideration casts some doubt on questions 4–6. Presumably, if the overall average age of the population is increasing, the number of people reaching ‘old age’ is increasing. The extent to which this is increasing is not stipulated. The relationship between death rate and population average age increase is not stipulated as part of the research topic. The death rate in the over 70s could decrease, but this might not result in an overall increase in average population age if the number of people reaching 70 is also falling. A decreasing death rate in the over 70s is likely to result in an increasing average population age only if the number of people reaching 70 is increasing. It therefore seems reasonable to assume that potential research questions 4–6 can be disregarded.

This leaves questions 1–3. The candidate now has to decide which measure best defines increasing average age. In most populations there will logically be fewer people reaching older ages. In the UK the average number of people reaching 70
years is about 50 per cent for females. This decreases to about 20 per cent reaching 80 years and fewer than 5 per cent reaching 90 years. Considering the statistics from 50 years ago the corresponding figures were something like 40 per cent, 16 per cent and 6 per cent respectively. In other words as the overall population ages, the greatest increases occur at the lower end of the ‘retirement age’ group. The increases in the extreme age groups of 80 years and 90 years are modest.

It therefore seems appropriate to choose potential question 1 as the research question, as this gives the best indication of a genuine increase in the average age of the population over the stated period.

The candidate should take great care in choosing the research question, and he or she should make sure that the choice of research question is compatible with the overall chain of reasoning used in the development of the overall research programme. The candidate should ensure that the proposed research question is put to the mentor for comment. It is also important that the proposed research question is acceptable to the candidate’s employers or sponsors.

In considering potential research questions the candidate should ask a series of related questions such as those listed below.

- Is the question based on a phenomenological or positivist approach?
- Can the question be answered with the resources available?
- Can an answer be generated within the timescale available?
- Has this question already been answered?
- If the question is answered, will the answer constitute a definite contribution?
- Can the answer be replicated?
- Will the answer be adequately triangulated?
- Can an appropriate methodology be designed?

Some sample research questions from positivist and phenomenological viewpoints are listed below.

1. **Research topic**: the relationship between strategic specialisation in mergers and acquisitions and the likelihood of medium-term success.
   - **Research questions**. Positivist and phenomenological examples are given below.
   - **Positivist**. Is there a functional relationship between the degree of strategic specialisation in mergers and acquisitions and the likely medium-term success of these mergers and acquisitions?
   - **Phenomenologist**. Why are strategically focused mergers and acquisitions more likely to exhibit medium-term success?

2. **Research topic**: the relationship between formal and informal communication channels and pre-merger cultural resistance.
   - **Research questions**. Positivist and phenomenological examples are given below.
   - **Positivist**. Is there a functional relationship between the degree of pre-merger formal and informal communication and the likelihood of cultural resistance?
3. **Phenomenologist.** Why does increased pre-merger formal and informal communication decrease the likelihood of cultural resistance?

3. **Research topic:** the relationship between the use of effective project management tools and techniques and the likelihood of making strategies work.

3. **Research questions.** Positivist and phenomenological examples are given below.

- **Positivist.** Is there a functional relationship between the use of effective project management tools and techniques and the likelihood of making strategies work?

- **Phenomenologist.** Why does the use of effective project management tools and techniques increase the likelihood of making strategies work?

One of the main issues to watch for in the development of research questions is that of value judgements. A value judgement is a judgement made by a researcher that depends on the value set of the researcher. Value judgements are often subjective in nature and are difficult to measure quantitatively. For example, a researcher might be conducting research on the long-term viability of fox hunting in the UK. This is an emotive subject in the UK, and has been the subject of a series of long and bitter campaigns by proponents of each side of the argument. Whether or not fox hunting has long-term viability depends on the opinions of those asked. In talking about exactly the same subject a hunt saboteur would say that fox hunting has no long-term viability at all, whereas a master of hunt would say that the activity has tremendous long-term viability. The viewpoint expressed depends very much on the position of the person expressing the view.

Some other typical research questions requiring value judgements are shown below.

- Should Western countries invade Middle Eastern countries to secure oil supplies?
- Should private education projects receive National Lottery funding?
- Should publicly donated blood be supplied free to private hospitals?
- Should countries generate more of their electricity using nuclear power?
- Should the government invest heavily in renewable energy sources?
- Should the concept of UN permanent membership be ended?
- Should vaccines be compulsory for all children?
- Should abortion be criminalised throughout Western Europe?
- Should fox hunting have been banned in the UK?

These are all questions requiring a value judgement. The extent to which a person tends to think either ‘yes’ or ‘no’ depends on his or her set of values. Some people object very strongly to the concept of the widespread use of nuclear reactors for electricity generation, on the grounds of the extreme danger of the fuel and its by-products. Other people argue that there is no viable alternative, and stress that we should already be embarking on a massive programme of nuclear power plant construction.
4.4.5 Developing Initial Aims and Objectives

The next stage in the process is to convert the research question into some form of initial aim. From Section 2.2.2 it will be recalled that in research nomenclature it is general practice to refer to the aim as being the desired end product of the research and the objectives as the actions necessary to achieve this aim. In most cases it is standard practice to generate an initial aim from the research question or problem and then develop this into a final aim and set of objectives. This initial aim is a first attempt at expressing the research question or problem in the form of a specific, definable single outcome or aim. The initial aim is often extensively modified and changed before a final aim and set of objectives is established.

The initial aim itself should reflect the research question. The wording should be such that in addressing the initial aim the researcher also addresses the research question.

Some examples of initial aims are considered in Table 4.2. These are all based on the acquisition strategic specialisation and long-term success example that has been cited throughout the text. Candidates should note that in each case the initial aim is only one possible aim arising from the wording of the research questions. In all cases the initial aim examples could have been worded differently and could have carried a different emphasis.
<table>
<thead>
<tr>
<th>Research question</th>
<th>Possible initial aim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why do companies prefer to make strategically focused acquisitions?</td>
<td>To identify the role of company strategic planning in acquisition tactics.</td>
</tr>
<tr>
<td>How can the degree of strategic advantage generated by an acquisition be measured?</td>
<td>To develop appropriate measurement scales for the effective evaluation of the degree of strategic specialisation generated in an acquisition.</td>
</tr>
<tr>
<td>Is there a functional relationship between the degree of strategic specialisation generated by an acquisition and the likelihood of long-term acquisition success?</td>
<td>To establish the extent to which there is a functional relationship between the degree of strategic specialisation generated by an acquisition and the likelihood of long-term acquisition success.</td>
</tr>
<tr>
<td>Why do apparently strategically focused acquisitions sometimes fail?</td>
<td>To develop a theory to explain why strategically focused acquisitions sometimes fail.</td>
</tr>
<tr>
<td>What is the impact of the general economy on the likely success of strategically focused acquisitions?</td>
<td>To establish the extent to which the general economy impacts on the likely success of strategically focused acquisitions.</td>
</tr>
<tr>
<td>Is the degree of strategic specialisation more important for long-term success in acquisitions than in mergers?</td>
<td>To determine the extent to which strategic specialisation is more important in acquisitions than in mergers.</td>
</tr>
<tr>
<td>Does the sector or industry affect the functional relationship between the degree of strategic specialisation generated by an acquisition and the likelihood of long-term acquisition success?</td>
<td>To establish the extent to which sector or industry affects the relationship between the degree of strategic specialisation generated by an acquisition and the likelihood of long-term acquisition success.</td>
</tr>
<tr>
<td>To what extent do managers learn from past acquisitions in setting the required level of strategic specialisation in current acquisitions?</td>
<td>To establish the extent to which managers learn from past acquisitions in setting the required level of strategic specialisation in current acquisitions.</td>
</tr>
<tr>
<td>Is there an optimal level of strategic specialisation in an acquisition over which the overall likelihood of long-term acquisition success starts to decrease?</td>
<td>To establish whether there is an optimum level of strategic specialisation in an acquisition beyond which the long-term success of an acquisition decreases.</td>
</tr>
</tbody>
</table>

In each case the initial aim converts the research question into a form where a single definable outcome is stated.

Candidates should consider the initial aim in detail before moving on to develop the final aims and objectives. For example, if the candidate intends to adopt a
positivist approach, the aim should be clearly worded so that it can be addressed using quantitative and objective approaches. Where combined quantitative and qualitative approaches are required, the initial aim should again be carefully designed so that both approaches can be used within the wording adopted.

### 4.4.6 Developing Research Aims and Objectives

The final stage is to develop the research aims and objectives. This process was covered in Section 2.2.2.

In developing final research aims and objectives, the candidate should break down the initial aim into its component elements using a work breakdown structure (WBS) approach and then address each component individually as an objective. In addressing the individual objectives the researcher addresses the overall aim.

For example, in Table 4.2 the final initial aim given is as shown below.

- To establish whether there is an optimum level of strategic specialisation in an acquisition beyond which the long-term success of an acquisition decreases.

This initial aim considers two primary variables. These are the **optimum level of strategic specialisation** and **long-term success**. These variables both have to be evaluated or measured in some way before the causal link between them can be shown. There will therefore be two obvious initial objectives:

- to develop a measurement system for strategic alignment;
- to develop a measurement system for long-term success.

These are initial objectives that have to be completed before the main analysis can take place. Strategic specialisation could be measured using either established techniques or new techniques developed specifically for this research. Having developed appropriate measurement systems for the two primary variables, the candidate then has to develop a measurement system and design a methodology for measuring the causality between the two variables. As an objective this could be stated as shown below.

- To develop a measurement system for measuring the causality between the strategic specialisation and long-term success measurement scales.

This measurement scale would then have to be applied across a range of strategically aligned acquisitions in order to establish the nature of the functional relationship. This objective could be stated as shown below.

- To apply the causality measurement system across ten acquisitions ranging from high strategic specialisation to low strategic specialisation.

These are the most basic research objectives associated with the stated aim. In some cases there could be more objectives and in other cases there could be fewer objectives. The basic idea is to express the initial aim as a final aim with as many objectives as are necessary to define what is required to achieve the aim.
## 4.5 Operational and Research Hypotheses

### 4.5.1 Introduction

This final section considers the generation and use of hypotheses. As discussed earlier, the research objectives can be structured around a research question, a theory, a model and/or a set of hypotheses. The candidate does not have to use a hypothesis-based approach. The use of hypotheses is, however, a well-established and easily developed approach.

### 4.5.2 Operational and Research Hypotheses

The idea of a hypothesis is discussed in more detail in *Introduction to Business Research 3.* At this stage it is necessary only to understand that a hypothesis is an alternative way of presenting a research problem. EBS DBA candidates can present the problem in the form of a research question, a theory, a model or evaluation proposal or as a hypothesis.

As discussed in Module 3, the formulation and testing of hypotheses is central to the hypothetico-deductive approach. The primary hypothesis is usually referred to at the null hypothesis and the secondary hypothesis as the alternative hypothesis. The null hypothesis (no association) is usually represented as $H_0$ and the alternative hypothesis (association) is $H_1$. If the null hypothesis is rejected the alternative hypothesis, which generally offers an alternative and entirely opposite position, is accepted. The whole concept of hypotheses and hypothesis generation is addressed in much more detail in *Introduction to Business Research 2* and *Introduction to Business Research 3.*

The null and alternative hypotheses usually refer to the objective of the research. For example, in Section 4.4.6 the objective of the research was as stated below.

*To establish whether there is an optimum level of strategic specialisation in an acquisition beyond which the long-term success of an acquisition decreases.*

This objective contains two variables and a causal linkage. Hypotheses tend to work best when they address only one aspect of a causal linkage. The candidate, therefore, would probably generate null and alternative hypotheses as shown below.

$H_0$: *There is no optimum level of strategic specialisation in an acquisition beyond which the long-term success of an acquisition decreases.*

$H_1$: *There is an optimum level of strategic specialisation in an acquisition beyond which the long-term success of an acquisition decreases.*

The candidate then designs a research methodology and tests this hypothesis, and either accepts the null hypothesis or rejects the null and accepts the alternative hypothesis.
It will be recalled from earlier sections that research aims are often expressed in terms of research hypotheses whereas research objectives are often expressed as operational hypotheses. Research hypotheses are often wide ranging and refer to the research aim outcomes. Operational hypotheses are more focused and usually relate to specific variables.

The candidate might be concerned with the relationship between the success of a proposed merger and the degree of relatedness present. The term ‘relatedness’ refers to the extent to which the main business activities of the two companies are related (matched or aligned) to each other. For example, the degree of relatedness in the merger of two automobile manufacturers would (presumably) be high, whereas the corresponding relatedness in the merger of an automobile manufacturer and a supermarket chain would almost certainly be low.

The objective of the research may be to show that there is a direct functional relationship between merger relatedness and long-term merger success. In this case the null hypothesis might be as follows.

\[ H_0: \text{There is no direct functional relationship between merger relatedness and long-term merger success.} \]

The alternative hypothesis might be as follows.

\[ H_1: \text{There is a direct functional relationship between merger relatedness and long-term merger success.} \]

The research hypothesis therefore relates to the research aim, which is to determine whether or not such a functional relationship exists. The alternative hypothesis also serves the research aim because the research hypothesis is concerned with whether a functional relationship exists. In this case the research aim is met whether or not there is a direct functional relationship.

The operational hypothesis as it stands is rather broad. It is standard practice to break the main operational hypothesis down into research hypotheses that individually address different aspects of the research hypothesis. In order to break the research hypothesis down into more manageable elements, a WBS-based approach is used.

In order to do this it is necessary to consider the primary components that make up the research hypothesis. The hypothesis itself refers to the relationship between merger relatedness and long-term merger success. The specific application to mergers is present in both cases so the primary variables linked by the hypothesis are relatedness and long-term success.

A number of different measures could be used in the evaluation of relatedness. These could include the degree to which the two companies have similar:

- core business activities;
- customer bases.

Similarly there are a number of different measures that could be used in the evaluation of long-term success. These could include long-term:
• efficiency improvements;
• increased shareholder value.

The operational hypotheses can be used to link these elements of the research hypothesis together. An example is shown below.

- **Operational hypothesis 1.** In mergers, companies with closely related core business activities do not generate increased efficiency improvements.
- **Operational hypothesis 2.** In mergers, companies with closely related core business activities do not generate increased shareholder value.
- **Operational hypothesis 3.** In mergers, companies with closely related customer bases do not generate increased efficiency improvements.
- **Operational hypothesis 4.** In mergers, companies with closely related customer bases do not generate increased shareholder value.

The candidate is now in a position where he or she has identified two primary elements in the operational hypothesis, and has been able to break these main elements down into sub-elements. The sub-elements effectively define the main elements. The sub-elements can be individually measured and analysed.

Core business activities and customer bases can be classified using relatively simple classification systems. For example, the customer base can be classified according to:

- size;
- geographical location/distribution;
- demand;
- financial potential;
- choice of alternatives.

The customer base of the two companies can be relatively easily profiled and the degree of fit or otherwise described with reasonable accuracy. By comparing good fits with bad fits it is relatively straightforward to describe the degree of fit in any particular case.

Efficiency and shareholder value can also be evaluated with relative ease. Efficiency could be defined in a number of different ways. An obvious example is return on capital employed or profit as a function of turnover. Shareholder value can also be relatively easily calculated by looking at share prices before and after the merger.

The candidate can now conduct these evaluations and examine the relationships between the four sub-elements. The research results might indicate that:

- as core business activity relatedness increases, efficiency increases;
- as core business activity relatedness increases, shareholder value increases;
- as customer base relatedness increases, efficiency increases;
- as customer base relatedness increases, shareholder value increases.

In this case, the results indicate that there is a positive functional relationship between:

- core business activity relatedness and efficiency;
• core business activity relatedness and shareholder value;
• customer base relatedness and efficiency;
• customer base relatedness and shareholder value.

The candidate may therefore decide to reject:

• Operational hypothesis 1 (companies that have closely related core business activities do not generate increased efficiency improvements).
• Operational hypothesis 2 (companies that have closely related core business activities do not generate increased shareholder value).
• Operational hypothesis 3 (companies that have closely related customer bases do not generate increased efficiency improvements).
• Operational hypothesis 4 (companies that have closely related customer bases do not generate increased shareholder value).

The four operational hypotheses are all directly related to the research hypothesis, which was:

**There is no direct functional relationship between merger relatedness and long-term merger success.**

The rejection of each operational hypothesis suggests a rejection of the main research hypothesis.

This approach is fine so long as the various operational hypotheses all point in the same direction. If some are accepted and others are rejected, then the acceptance of the operational hypothesis may be called into doubt.

The question arises: ‘What does the candidate do when results are conflicting?’ This problem is often encountered. In some cases trade-offs may be necessary in interpreting the findings.

### 4.5.3 Hypothesis Acceptance/Rejection Error

The concept of hypothesis acceptance/rejection error was briefly considered in Section 3.4.2 in the context of falsification.

When a researcher accepts or rejects a hypothesis this decision may or may not be correct. The hypothesis accepted may not actually be correct. There is therefore a chance that the researcher will accept the hypothesis even though it is wrong, or alternatively reject the hypothesis even though it is right. An obvious example of this is the current controversy in the UK over the use of MMR vaccine. This subject matter was used as the basis for an earlier illustration.

MMR is a multiple vaccine injection (MVI) designed to protect against measles, mumps and rubella (MMR). The debate has been raging for several years up to the time of writing (2003). There is unproven evidence that suggests that there may be a link between MMR vaccination and autism in children. As a result of media broadcasting many people perceive that there is a risk that the MMR vaccination may cause autism in their children, and increasing numbers of concerned parents have been refusing to allow their children to receive MMR vaccinations. This has
removed the (perceived) risk of autism from these children but it has exposed them to the new risk of infection by measles, mumps and rubella. The parents have therefore traded a perceived risk for a real and proven one. By playing safe on autism they have incurred risk on measles, mumps and rubella.

This type of consideration is known as type I and type II error bias. This is represented in Table 4.3.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepted</td>
<td>Correct decision</td>
<td>Type II error</td>
</tr>
<tr>
<td>Rejected</td>
<td>Type I error</td>
<td>Correct decision</td>
</tr>
</tbody>
</table>

If the hypothesis is true and it is accepted, then this is a correct decision. Similarly, if the hypothesis is false and it is rejected, then this is also a correct decision. If the hypothesis is true and it is rejected then this is an incorrect decision. This type of incorrect decision is known as a **type I error**. If the hypothesis is false and it is accepted, this is also an incorrect decision and is known as a **type II error**. If the hypothesis is *MMR vaccination is not harmful* then the government continuing to recommend its use when it does cause autism is a type II error. If there is no connection, then the parent refusing to allow vaccination is committing a type I error.

People have a natural tendency to avoid type II errors. Unless they are sure that the hypothesis is correct they will tend to reject it. They would rather reject a true hypothesis than accept a false one. Although there may be a link between MMR and autism, many people will continue to commit type I errors, assuming it will eventually be proved that there is no link. In the meantime, the type I error could be leading to widespread risk of infection by measles, mumps and rubella. One reason for this reluctance to accept a false hypothesis is that the results will be exposed. If the government allows MMR vaccinations that they thought were safe but which turn out to be dangerous, the injuries and compensation will be clear to see. It is much more difficult to see how many children died or were injured by *not* taking the MMR vaccination. In addition, it is often impossible to quantify type I errors, whereas the consequences of type II errors are generally more quantifiable. This tendency also drives people towards type I rather than type II errors.

**Learning Summary**

This module has attempted to develop an understanding of how business research aims and objectives can be developed from a set of initial ideas. The module has addressed the main concepts underlying business research and has stressed those areas where business research and specifically doctoral business research differs from research in the pure sciences and engineering. The module has addressed the concept of research fields and how these can be defined in terms of what the
candidate wants to achieve and the limits within which the candidate is likely to be constrained.

The module has also looked at the idea of developing a research question from a potential research field and has considered the process involved in the generation of suitable research and operational hypotheses, issues, postulations or equivalent that can be used as the basis for designing the formal analysis stages of the research.

The candidates should now have an understanding of:

- what applied business research is;
- how applied business research differs from academic research;
- the concept of preferred and allowable research fields;
- the concept of aligning preferred and allowable fields;
- the consequences and implications of committing to a research field;
- how to establish scope and limitations;
- how to generate a research problem;
- some basic approaches to the identification of possible research topics;
- how to develop a research question;
- the significance of research questions, theories and hypotheses;
- the concept of operational and research hypotheses.

The following section briefly summarises the primary learning outcomes from each section included in this module.

**The Concept of Applied Business Research**

- Most of the world’s research is carried out by universities, private companies and governments.
- Business research tends to be less structured than engineering or scientific research.
- Applied business research can make a real difference to the way in which companies perform.
- The aims and objectives form the basis for the design of the subsequent research programme.
- The research field is the broad general area with which the research is concerned.
- The research scope is effectively the defined boundaries of the research.
- The research topic is the specific area the candidate focuses on.
- The research question is developed from the research topic and is necessary in order to allow a researcher to design the research programme.
- The question could take the form of a question (literally) or could appear as a hypothesis or even as a model or tool.
- The initial objectives are developed from the research question.
- The final research aims and objectives are developed from the initial objectives after a process of appraisal.
Identifying Possible Areas of Interest

- The preferred field is the field that the candidate would ideally like to develop.
- The allowable field is the preferred field modified by restrictions or limitations that are imposed by the practicalities that impact on the research programme.
- Availability could be affected by the consent or otherwise of key people to contribute.
- There is an element of risk involved in accepting a research field.
- The candidate usually has a range of potential fields to choose from, each of which has a different risk profile.
- In some cases, where the risk profile is sufficiently high, it may be necessary to choose an alternative field.
- The outcome field is the final field that emerges and the one that subsequently acts as a basis for the research.
- A longitudinal case study is designed to run over a relatively long period of time.
- A cross-sectional case study is designed to develop a ‘snapshot’ of characteristics at one particular point in time.
- Cross-sectional case studies are often used to support longitudinal case studies.
- The research should be applied and have as much commercial potential as possible.

Generating a Specific Research Problem

- Having established the research field and scope the candidate has to generate a research topic.
- The topic itself is the subject matter of the research. It is the specific area of interest and is usually directly reflected in the title of the thesis.
- The research topic must:
  - relate to strategic alignment;
  - satisfy university regulations;
  - be feasible;
  - be applied;
  - be clearly defined;
  - be appropriate;
  - be robust.
- The research topic should:
  - be interesting;
  - be appropriate;
  - make a clear contribution;
  - be balanced;
  - be current.
• In identifying a suitable research topic candidates have to use their creative imagination.
• Candidates have to be able to look at a range of known information and use it to formulate an idea or theory or a concept they can then test using an appropriate research methodology.
• Creative imagination is vital in establishing the research topic.
• The candidate should always be wary of modifying the research topic once set. The EBS Research Committee will be watching for any evidence of candidates changing topic, as this can easily lead to a loss of focus and abortive work, which can soon have disastrous consequences.
• The most obvious source of information and advice on potential research topic areas is the EBS DBA mentor.
• Candidates should avoid approaching the mentor ‘cold’. The mentor will find it much easier to offer advice and guidance if he or she has some idea of the background and interest areas of each candidate.
• Most mentor–candidate communication is by email, although alternative communication media may be used with prior agreement.
• Another obvious source of topic ideas is interaction with colleagues. Working colleagues can give some valuable insights into issues that face organisations where a researched response could be of great value.
• Many experienced researchers and writers would argue that the best source of research topic inspiration is general reading.
• In general terms there is no substitute for doing plenty of reading when trying to fix on potential research topics. The process is time consuming and intellectually demanding, but the assistance provided to the bridging process, and the potential stimulation provided to the candidate’s creative imagination, can be considerable.
• Possible sources of reading material include:
  – research journals;
  – textbooks;
  – trade and sector literature;
  – magazine and newspaper articles;
  – conference papers;
  – government publications;
  – company archives;
  – annual reports of companies;
  – electronic databases;
  – the Internet;
  – MSc, MPhil, PhD and DBA theses.
• Brainstorming is a widely used approach for assessing the potential suitability or otherwise of proposed research areas.
• The idea of brainstorming is that as many people as possible look at a proposed piece of research with the objective of identifying a number of
different possible outcomes. At one level, the process might be concerned with the identification of research ideas or topics. At another level, the process might be concerned with the advantages and disadvantages of choosing a particular topic.

- The usual phases of a brainstorming process are listed below.
  - Phase 1: Creative phase.
  - Phase 2: Evaluation phase.
- The Delphi technique is sometimes appropriate in doctoral research. It is applicable where the candidate works in an organisation where there are other ‘experts’ or knowledgeable people in the subject area that forms the basis of the research.
- Research questions should ideally be designed so they are in an analytical form expressing the causality between two variables.
- The research paradigm itself will to some extent determine the wording of the research question.
- Positivist questions generally should express a clear relationship between two or more variables and should be expressed in clear and precise terms. They should also be expressed in a form generally suitable for quantitative analysis.
- In research nomenclature, it is general practice to refer to the aim as being the desired end product of the research and the objectives as the actions necessary to achieve this objective.
- In most cases it is standard practice to generate an initial aim from the research question or problem and then develop this into a final set of research aims and objectives.
- This first aim is often referred to as the initial aim or set of aims because it is a first attempt at expressing the research question or problem in the form of a specific aim. The initial aim is often extensively modified and changed before a final set of research aims and objectives is established.
- The initial aim itself should reflect the research question. The wording should be such that in addressing the initial aim the researcher also addresses the research question.
- In developing final research aims and objectives, the candidate should break down the initial aim into its component elements using a work breakdown structure (WBS) approach and then address each component individually as an aim. In addressing the individual aims the researcher addresses the overall objective.

**Operational and Research Hypotheses**

- Hypotheses are usually derived directly from the initial research objectives.
- Hypotheses are usually based around a null hypothesis and an alternative hypothesis.
- Research hypotheses are often wide ranging and refer to the research aim outcomes.
• Operational hypotheses are more focused and usually relate to specific variables.
• Operational hypotheses are often used in support of research hypotheses.

Review Questions

True/False Questions

The Concept of Applied Business Research

4.1 Most of the world’s research is carried out in universities. T or F?
4.2 The world’s largest research area is defence and armaments. T or F?
4.3 Applied research is always highly theoretical. T or F?
4.4 Businesses do not really need their own research. T or F?
4.5 The research field is the general area in which the research is conducted. T or F?
4.6 The research scope is usually wider than the research field. T or F?

Identifying Possible Business Research Areas

4.7 The research question addresses the research scope rather than the research field. T or F?
4.8 The preferred field is the research dictated by circumstances. T or F?
4.9 The candidate can usually always pursue the preferred field. T or F?
4.10 The allowable field is sometimes dictated by data availability. T or F?
4.11 Data reliability is not an issue in most research programmes. T or F?
4.12 A specific research field in areas where there is little or no published literature is always to be avoided. T or F?
4.13 High-risk fields should always be avoided. T or F?

Generating a Specific Research Problem

4.14 When generating a research question, immediate resource limitations should be disregarded. T or F?
4.15 The selection of a suitable research question requires a very high degree of artistic and creative imagination. T or F?

4.16 The EBS mentor will provide advice and feedback on the selection of the research question. T or F?

4.17 Brainstorming is sometimes used as a tool to assist in the development of the research question. T or F?

4.18 Brainstorming cannot be used in association with any other tool. T or F?

4.19 The Delphi technique is a type of brainstorming. T or F?

4.20 It is generally advisable to retain and classify all relevant literature as it is read. T or F?

4.21 Value judgements are usually based on hard facts. T or F?

4.22 Value judgements have no place in research. T or F?

4.23 The research question can be formed as a theory. T or F?

4.24 Empirical research is largely theory-based. T or F?

**Operational and Research Hypotheses**

4.25 Hypotheses are usually developed directly from research objectives. T or F?

4.26 A type I error occurs where the hypothesis is correct but it is rejected. T or F?

4.27 A type II error occurs where the hypothesis is wrong and it is rejected. T or F?

4.28 An operational hypothesis may comprise a series of research hypotheses. T or F?

**Multiple-Choice Questions**

**The Concept of Applied Business Research**

4.29 Applied business research is aimed primarily at:
   A. research professionals.
   B. theorists.
   C. professional researchers.
   D. academics.
4.30 The research scope is largely determined by:
   I. the chosen research field.
   II. the research question.
   III. the resources that are available.
   IV. the availability of relevant literature.
Which of the above are true?
A. I only.
B. I and II.
C. III only.
D. II and IV.

Identifying Possible Areas of Interest

4.31 In identifying a potential research area, the underlying approach should use a:
   I. WBS-based approach.
   II. project schedule.
   III. task responsibility matrix.
   IV. time recording system.
Which of the above are true?
A. I only.
B. I and II.
C. I, III and IV.
D. III and IV.

4.32 The preferred field is the field that the candidate:
   A. finally undertakes after considering the allowable field.
   B. has imposed upon him or her by his or her company.
   C. has imposed upon himself or herself by EBS.
   D. initially wishes to undertake.

4.33 The preferred field and the outcome field are:
   A. always the same.
   B. sometimes the same.
   C. rarely the same.
   D. always different.

4.34 Scoping is the process of:
   I. expanding the research field.
   II. strictly defining the limits of the research.
   III. validating main study findings.
   IV. developing grounded theory.
Which of the above are true?
A. I only.
B. II only.
C. II and III.
D. II, III and IV.
4.35 The allowable field is often determined by:
   I. research availability.
   II. literature availability.
   III. data reliability.
   IV. candidate preferences.
Which of the above are true?
A. I only.
B. I and II.
C. I, II and III.
D. I, II, III and IV.

4.36 Developing a research scope in which there is no relevant literature should be considered as the:
A. high-risk option.
B. low-risk option.
C. medium- to low-risk option.
D. low-risk option.

4.37 In terms of application and commercial value, research conducted under the high risk is likely to give potentially:
A. high-value results.
B. medium-value results.
C. medium- to low-value results.
D. low-value results.

4.38 In most cases the outcome field may:
A. be identical to the preferred field.
B. loosely resemble the preferred field.
C. generally resemble the preferred field.
D. bear no resemblance to the preferred field.

4.39 Before committing to a research field the candidate should consider:
I. the past.
II. the present.
III. the immediate future.
IV. the long-term future.
Which of the above are true?
A. I only.
B. I and II.
C. I and III.
D. I, II, III and IV.
Generating a Specific Research Problem

4.40 In developing a specific question the sequence of activities involved is:

4.41 The research topic must be:
I. compatible with University criteria.
II. feasible, meaningful and clearly defined.
III. as applied as possible.
IV. achievable.
Which of the above are true?
A. I and II.
B. I, II, III and IV.
C. II, III and IV.
D. II and IV.

4.42 The EBS mentor can be expected to help by:
I. selecting the topic.
II. suggesting important reading.
III. preventing candidates from addressing too broad a topic.
IV. commenting on the feasibility of the proposed research.
Which of the above are true?
A. I only.
B. I and II.
C. I, II and III.
D. II, III and IV.

4.43 The research topic should ideally be:
I. boring.
II. significant.
III. applied.
IV. focused.
Which of the above are true?
A. I and II.
B. II and III.
C. II and IV.
D. II, III and IV.
4.44 Brainstorming comprises a:
   A. creative phase and an evaluation phase.
   B. creative phase and a feedback phase.
   C. creative phase and a reconciliation phase.
   D. formative phase and a normative phase.

4.45 SWOT is an abbreviation for:
   A. singularities, weaknesses, opportunities and tenets.
   B. strengths, weaknesses, opportunities and threats.
   C. strengths, weaknesses, openings and timings.
   D. strengths, weaknesses, opportunities and triads.

**Operational and Research Hypotheses**

4.46 Hypotheses are often stated as the:
   A. null hypothesis and the arrangement hypothesis.
   B. null hypothesis and the alternative hypothesis.
   C. nil hypothesis and the one hypothesis.
   D. nil hypothesis and the alternative hypothesis.

4.47 A hypothesis suggesting the wrong answer that is accepted anyway is an example of a:
   A. type I error.
   B. type II error.
   C. type III error.
   D. type IV error.

4.48 A research hypothesis is often broken down into a number of:
   A. sub-objective hypotheses.
   B. circumstantial hypotheses.
   C. sub-research hypotheses.
   D. operational hypotheses.
Module 5

Research Strategy and Methodology

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Learning Objectives
By the time the candidate has completed this module, he or she should understand:

• the importance of developing a research strategy;
• the differences between cross-sectional and longitudinal research;
• the various different research methodological approaches;
• the advantages and disadvantages of the different research methodologies;
• the concepts of reliability, validity and generalisability;
• the basic types of triangulation;
• the concept of a pilot study;
• how to be able to design a suitable research method for the current research.

5.1 Introduction

This section is concerned with the concept of research strategies and research methodology. The candidate has to be able to develop a research strategy in order to be able to establish the strategic objectives of the research. The strategy defines the overall strategic objectives of the research and indicates how these various objectives interrelate.

Research methodology includes the various research methods available to the candidate. The choice of research method is crucial as it dictates the design of the data collection and analysis processes and establishes the approach to data analysis and the generation of results and conclusions.
For the purposes of the research proposal the candidate is expected to demonstrate an understanding of the research method to be used. The candidate is not expected to have developed a detailed research method or to have established a detailed data source. The most important single element is a demonstration that an appropriate research method has been chosen from the range of alternatives available. In many cases this may involve an element of critical review of existing and established methodologies in order to determine the approach that is most suitable for the current research.

5.2 Research Strategy

5.2.1 Introduction

This section considers the importance of developing and observing a good research strategy. Most long-term ventures can significantly improve their likelihood of achieving a successful outcome if they are planned and executed using a good strategy. A doctoral research programme is no exception. A typical research programme is highly complex and can last several years. The candidate is strongly advised to develop a good research strategy at the outset of the programme and then stick to it as closely as possible.

5.2.2 The Concept of Strategy

The word ‘strategy’ comes from the Greek strategia. The nearest direct translation into English is generalship. Good strategy or generalship depends on the formation of a careful plan or stratagem. The word ‘stratagem’ comes from the Greek strategos, which means literally 'to general'. Strategy relates to the approach adopted by a general officer, which in modern terms approximates to the command of a division. Such an officer is concerned with the operation and performance of the division as a whole rather than with the performance of individual battalions and platoons. The general leaves control of these smaller units to the lower-ranking commanders.

In controlling the division the general has to make complex and relatively long-term plans. The division is large and complex, and it takes time for it to do anything. Also, given its size, the division is slow to respond, and the various associated logistics such as food and ammunition supply all have to be planned in advance so that the necessary stores and supply dumps can be established. Some form of forward planning is essential as, without it, the various elements and components that make up and supply the division cannot work effectively together. This effective working together is central to the functioning of the division.

Strategic planning basically works by looking at where something is now, looking at where that same something needs to be in X years' time, and then developing a plan to bring that required transition about. The ‘something’ referred to could be a company, an individual, or even a whole country. The strategic planning process defines clear start and finish points, and examines all the processes that take place in achieving the conditions of the end point. The conditions considered also vary from
application to application. A company might define the conditions of the required position in terms of a range of different variables, including:

- turnover;
- number of employees;
- profitability;
- market share;
- customer base;
- development of new products;
- flexibility.

Having planned a strategy for achieving its strategic objectives, a company or an individual still needs to retain an ability for short-term or tactical response. The strategic plan may attempt to define the starting and end positions and all the transitional events expected, but it cannot allow for all possible eventualities. There may be entirely unforeseeable events impacting on the development of the strategy and requiring a tactical response. For example, a competitor may suddenly and without warning release a new product with considerable impact on the customer base. This could change what the customer base wants, and the original assumptions on customer base characteristics that were assumed as part of the strategic planning process may now be obsolete. The strategic plan now requires realignment, and a tactical response is required. The response in this case is tactical because the event that caused it was unforeseeable, and the response therefore could not have been planned.

Research programmes need exactly this level of strategic planning. In most cases the time and money involved represent very significant investments by the candidate. It is very much in the candidate’s best interests to ensure that the research programme is planned as carefully as possible, and that any divergences or variances from what is planned are identified immediately so that appropriate corrective actions can be carried out.

The design of the research strategy depends on the characteristics of the research programme itself. The primary initial choices are considered in the following section.

5.2.3 Empirical Versus Theoretical Research

The two main alternative forms of research are empirical research and theoretical research. Empirical research is based on observation of actual events. Theoretical research is based on theoretical projections. The first point to be aware of in terms of empirical and theoretical research is that they are not mutually exclusive in any given application. An empiricist may design a laboratory experiment to test a theory, and the outcome of the research could be support for the theory or criticism of it. An empiricist might also design a laboratory experiment to test a theory, and the outcome might be another theory: either an entirely new theory or an adapted form of the original theory. Similarly, a theoretician may observe the results of the empiricist’s laboratory experiment and use these observations to generate a new theory that actually explains something else.
Virtually all theory is based on what has been observed.

Good empirical research requires a thorough knowledge and understanding of the relevant theory, and good theories require detailed observation and knowledge of what is observed in the appropriate area. The empiricist designs his or her empirical research to be compatible with all known theories. For example, it would be pointless to perform experiments on aircraft design using any design elements that oppose current theories on gravitation.

Empirical research tends to be dominant in management and business research simply because of the nature of the subject areas concerned, and also, as discussed in Module 3, because these are relatively new disciplines and there has not been sufficient research and development time to allow a detailed theoretical framework to evolve.

Candidates should feel at liberty to choose either an empirical approach or a theoretical approach. The vast majority of EBS DBA candidates use some kind of empirical approach based on observation as their primary method of collecting data, while basing their hypotheses on some form of theory. As the candidate studies the literature on the relevant field he or she will see a lot of different approaches to research strategy design. The decision between empirical and theoretical approach is very important as it affects that design process. Possibly the strongest single configuration is a methodology and structure that makes strong use of both approaches. For example, the candidate might decide on one of several different desired outputs from the research. Depending on the literature review and the stated aims and objectives of the current research, the candidate might decide to go for one of the following options.

- Test an existing theory.
- Test a new branch to an existing theory.
- Test an entirely new theory.
- Develop a new theory for testing.
- Develop a new branch to an existing theory for testing.
- Develop an entirely new theory for testing.

The most rewarding although least likely option is the last one. Occasionally a candidate has the opportunity to develop an entirely new theory based on his or own empirical research, which itself is based on an existing theoretical framework. The logical process for developing a theory as an outcome would be as shown below.

1. Literature review.
2. Literature synthesis.
3. Basic theory.
4. Pilot study.
5. Final theory.
6. Design of research methodology, data collection and analysis.
7. Results.
8. Literature reappraisal and theory development.
9. Conclusions and statement of final theory.
In this process the basic theory developed relies on the critical appraisal and synthesis of the literature. This basic theory is evaluated using a pilot study and is refined and modified as necessary. The theory is then tested using the main study data collection and analysis. The results examine the extent to which the final theory is valid. The literature is then reappraised in the light of what has been learned in the main empirical research, and the theory is developed. The conclusions of the research are a statement of the final theory that is then put forward for empirical testing by others.

Think about it: Einstein’s theory of relativity.

Note: This example offers a simplified version of factual events in order to illustrate a principle. The example is not intended to be entirely historically accurate.

In testing an existing theory, or in adapting an existing theory for testing, the candidate may design a new research method that includes empirical observations using a positivist approach. The result might be a set of quantitative data that generates results that act as the basis of an extension to the existing theory or the development of a whole new theory. This approach is often used in engineering and the pure sciences, where existing theories may stand for generations before they are seriously challenged. The theory may evolve as different researchers demonstrate that parts of it should be modified or extended. For example, Isaac Newton in his *Principia* of 1687 first established the classical laws of physics, including the founding theory of gravity. Various adaptations to the laws of gravity were made as successive researchers tested Newton’s theories and/or developed aspects of the theories in order to initiate new branches. Researchers such as Cauchy, Stokes, Poincaré and Planck developed the new scientific disciplines of the study of light, heat, electricity and magnetism. In each case the discipline evolved directly from the original theory as new researchers exploited the theory to develop what were effectively new sciences in related areas. Researchers such as Maxwell and Lorentz developed the early research in relativity. Most of their research used a combination of empirical and theoretical approaches. They developed numerous new mathematical theories to explain observed events in the universe and then used these same theories (suitably modified to be compatible with observed data) to develop wholly new theories, which they then tested using empirical observation.

Einstein’s special theory of relativity was published in 1905. It was based on previous research but it included an exceptional degree of theoretical development and postulation. Einstein’s special theory was also remarkable because it did not attempt primarily to explain any mathematical results. The theory is based on two simple postulates.

- The laws of physics take the same form in all inertial frames.
- In any inertial frame the velocity of light is the same whether the light is emitted by a body at rest or by a body in uniform motion.
These postulates were theoretical and inductive in that it was not possible to prove or disprove them at the time. They were in effect theories developed from a combination of earlier theories (including gravitational theory) and direct empirical evidence from earlier related studies. In order to assess Einstein’s special theory of relativity, a large number of researchers have used a combination of empirical and theoretical approaches.

It is interesting to note that one of the other primary researchers in the area, Poincaré, reacted strangely to Einstein’s theory. Poincaré clearly understood Einstein’s theories, but he steadfastly refused to acknowledge them. Einstein’s special theory was published in 1905; Poincaré gave a series of lectures in France and Germany between 1905 and 1909 and he failed to mention Einstein’s work in any of them. In all the research papers Poincaré wrote, he never mentioned Einstein’s work in any capacity. Einstein similarly ignored Poincaré’s work, mentioning it only once in print. The other primary researcher, Lorentz, was frequently cited and praised by both Einstein and Poincaré. This is an example of how personality and cultural issues can interfere with scientific rationality!

### 5.2.4 Designing the Research Strategy

The design of the research strategy is driven largely by the nature of the research. The strategy itself is basically a plan or sequence of actions to be followed in ensuring that the aims and objectives of the research are satisfied. The strategy is concerned with research design at a number of different levels. These are listed below.

- **The philosophical level.** This level includes aspects such as the assumed research paradigm, the overall approach to the research, and the choice of quantitative/objective or qualitative/subjective approaches.
- **The analysis level.** This level allows for the nature of the analysis to be carried out. Some research questions may be highly structured whereas others may be less well defined.
- **The operational level.** This level includes all aspects of the mechanics of conducting the research, such as how much time is available to complete the entire process, what resources are available, what support tools and systems, if any, are available, and for how long.
- **The candidate level.** This level is really a reflection of the abilities and aptitudes of the candidate. It is common for candidates to design a research strategy that is inappropriate to their own abilities. Candidates should avoid obvious incompatibilities such as a highly quantitative approach where the candidate is non-numerate.

There is no point in trying to design an empirically based strategy where the sample does not support this approach. Conversely, it is acceptable to adopt a theoretical approach where empirical research may be supported.
The research strategy itself could be based on a simple research programme using a Gantt chart (see Module 2). The various stages of the proposed research should be shown in relation to each other and relative to the overall completion date required. Each section should then be considered in terms of how long it will probably take and in terms of how much it will cost. In some cases, cost can be a significant factor. The candidate might want to carry out a series of interviews with senior managers in different countries. This may appear desirable in relation to strengthening the research methodology, but there may be a considerable cost implication in terms of travel. There is no point in developing a research strategy that involves such costs if the necessary finance is not available to the candidate.

It is also common for the candidate to underestimate the time required to complete different stages of the research. The strategy may allow, say, nine months for the development of the literature review, but this may have to be significantly extended – for example if the candidate modifies his or her research aims and objectives part way into the literature review. Such modifications are unavoidable in some cases. Where they do occur, an unprogrammed tactical response may be necessary. It is advisable to design a strategy where some form of contingency allowance is included to cover some of the effects of such tactical responses.

Candidates unfortunately often underestimate the intellectual challenge offered by doctoral research. It is very important that the candidate makes a truthful and frank assessment of his or her own skills, experience and aptitude before committing to a final research strategy. Candidates sometimes commit to data analysis techniques that involve advanced and complex statistical analyses, without necessarily being familiar with the intricacies involved. Candidates sometimes do this on the basis that they will learn the necessary analysis skills before the actual data analysis phase is reached. This is a dangerous strategy, as there is no guarantee that:

- the proposed analysis techniques will be appropriate for the data collected;
- the candidate will be able to develop the necessary command of the techniques in time;
- the candidate will be able to successfully defend the analysis techniques chosen.

In all cases it is advisable for the candidate to design a research strategy that includes only approaches and techniques with which he or she is familiar. If the candidate wishes to include a technique with which he or she is not familiar, it is strongly advisable to develop a detailed command of that technique before committing to it in the research strategy.

The candidate should also ensure that the research strategy is properly aligned with the chosen research question or hypotheses. This may seem obvious, but it is surprisingly common to encounter detailed proposed research strategies that do not fully address the research question. The candidate should make every effort to carefully check all aspects of the proposed strategy, section by section, in order to ensure that the end outcomes do in fact address the proposed research question.
**Time Out**

**Think about it: research strategy.**

A researcher wishes to conduct research into the risk-profiling procedures used by banks. In the UK the Financial Services Authority (FSA) requires companies that provide financial services such as insurance, life assurance and pensions to maintain financial reserves sufficient to cover a proportion of their total liabilities. This requirement is an attempt to make sure that companies have sufficient reserves to meet demand. The requirement has placed a burden on companies because they have had to set large reserves aside that could otherwise have been invested with the intention of generating revenue. Increasingly, as world stock markets have stagnated or declined, companies have been put under growing financial pressure.

Most life assurance companies use premiums paid by members to buy a combination of bonds and company shares. In the past, fund managers have used the stock markets to buy and sell shares, playing the market to make a profit. This approach worked successfully through the ups and downs of the market for many years. As markets rose, share prices rose and fund managers were able to buy and sell, making a return. Some of the profits were paid out in maturing endowments and pensions, some were reinvested, and some were put into reserve as a precaution against any downturn in the markets. When the markets went into decline, a proportion of this reserve was used to maintain bonuses and pensions as share prices fell. This system worked well during periods of sustained market growth and during periods of cyclic variation. The system began to falter, however, towards the late 1990s as markets went into a period of continual decline. In 2003 in the UK, the Financial Times Ordinary Shares Index had fallen back to a level that had not been encountered since 1995.

As income from the markets fell, the life assurance companies struggled to meet demand from policyholders. Payout demand tends to increase steadily over time. The only way to balance income with outgoings in such a situation is for the life assurance company to attract more new policyholders. Such policies, however, become more difficult to sell as potential policyholders see bonus rates falling year on year. The net result was falling income and increasing outgoings over a number of years. This lead to the erosion of reserves and a growing need for the life assurance companies to reduce the minimum reserves required by the FSA. The FSA made several responses on this in an attempt to ease the position of the life assurance companies. One example was the relaxation in minimum liability reserve provided the life assurers could demonstrate that they had an operational, highly developed and reliable risk management system in place.

The researcher might be concerned with how to develop and design such a risk management system so that it meets FSA requirements in the most efficient and effective ways possible. One aspect of this research might involve the development of a section of the risk management system to provide tools for handling unforeseeable risk. Most risk management systems include, amongst other
elements, an identification process. The researcher might decide to develop a
theory on the likely occurrence of unforeseeable high-impact risk over a given
period.

The researcher might then decide to develop a research strategy based on the
extension of existing modelling theory extended and developed using empirical
data generated from a series of studies on the occurrence of unforeseeable risks
over a period of time. The strategy may involve the following stages.

- Initial literature review.
- Development of aims and objectives.
- Literature review.
- Literature synthesis and development of theory.
- Pilot study.
- Theory development.
- Research method.
- Data collection and analysis.
- Results and conclusions.

The first phases rely on the review of the literature in order to develop an
understanding of the existing theories. A research theory is then developed and
and a pilot study is executed in order to assess the viability of the research theory.

The research theory itself could be:

- an extension to an existing theory;
- a new theory.

If the pilot study indicates that the research theory is justifiable, the researcher
may then go on to develop an empirical element based on the statistical analysis.

This process could include the collection of data covering a wide range of
unforeseeable risk events over a period of time. The research theory might be
tested by the development of research and operational hypotheses aligned to
the aims and objectives of the research. Depending on the outcome of the
empirical element the research theory may be justified, and will be used as the
basis for the results and conclusions of the research. Ideally the theory should
then be published so that it can be discussed and critiqued by other researchers.
The research theory may go on to become a part of the validated and accepted
knowledge base.

5.3 Cross-Sectional Research

5.3.1 Introduction

This section considers the concept of cross-sectional research as part of a research
method. Cross-sectional studies are useful in that they provide a relatively quick
approach to the study of a subject by providing a snapshot of the situation at any
particular moment in time. Researchers can usually carry out a relatively large
number of cross-sectional studies, but it is usually only possible to carry out a much smaller number of more detailed longitudinal studies.

5.3.2 Cross-Sectional Research

Cross-sectional research is one of the most popular approaches used in business and management research. The idea of cross-sectional research is that it bases itself on the characteristics of the sample at one given time. In some ways cross-sectional research is like a still photograph of somebody, whereas a video clip provides a longitudinal ‘photograph’, comprising a series of still photographs linked together to represent movement. ‘Cross-sectional’ photographs serve one demand, such as for use in magazines and newspapers, where movie clips are currently inappropriate.

In a cross-sectional study the researcher accesses the sample organisation and simply takes a set of appropriate data in as short a time as possible. The shorter the data collection time the lesser the time-related variability that could impact on the validity of the data. Typically data are collected only once for each data provider. A typical example of the use of cross-sectional research would be research into the development of teams over a period of time after formation. A cross-sectional view taken in the early stages of team development will reveal one characteristic phase of development. A similar cross-sectional study made later in the team development process should reveal another characteristic phase of development. For example, in most cases direct leadership and direction will be higher in the early cross-sectional study than in the later cross-sectional study.

Cross-sectional studies have the advantage that they can be executed fairly quickly, and in most cases are cheap and easy to perform. Cross-sectional studies are reductionist and are generally included in positivist approaches as they may be adequate to explain how something is occurring as opposed to why it is occurring.

An obvious example of a cross-sectional study is a census. In most Western countries, governments carry out a periodic census of the population. Questionnaires are distributed to everybody in the country. People are usually required by law to complete and return the questionnaire. When the results are collated, they provide a classical snapshot or cross-section of the population in a particular year. The census can reveal some very interesting statistics. Some example results to emerge from the 2001 UK census included the examples shown below.

- The UK population was ageing. People over 60 years of age outnumbered those under 16 years of age for the first time. There were over one million people over the age of 85.
- The overall population was just under 59 million. This figure was one million less than was expected in 2000.
- The UK population had risen by 17 per cent since 1951, compared with an EU average of 23 per cent and a US figure of 80 per cent.
- There were more females than males in all age groups from the age of 22 years onwards.
- Three hundred and ninety thousand people classified their religious faith as ‘Jedi Knight’.
• Only 20 per cent of Welsh people actually spoke Welsh.

These are typical cross-sectional study results. They show a number of clear numerical outcomes. They represent results to classical ‘what’ questions. The results of the study do not allow any detailed consideration of the corresponding ‘why’ questions. An obvious area for a longitudinal study to assess this census cross-sectional study would be to examine the reasons why population growth in the UK has been lower since 1951 than in any other EU country. The obvious way to analyse this would be to examine all of the factors that could affect population growth year by year from 1951 to 2001. This process could involve the long-term analysis of statistics on birth rates, death rates, immigration, emigration and so on. For example, over the period considered birth rates and death rates could both have fallen at the same rate, and the increase could be accounted for by immigration. Alternatively death rates could have fallen more quickly than birth rates, but emigration could have exceeded immigration. There are numerous different possible ‘why’ explanations that are simply not generated or supported by a cross-sectional study.

As a result of the limited value of cross-sectional study outcomes it is often advisable to use cross-sectional studies in connection with more detailed longitudinal studies. This can be a particularly powerful combination when designed effectively. A candidate might use a phenomenological approach in designing a long-term cross-sectional study where he or she embeds with the sample. This process may take a year or more, during which time the researcher may amass a very rich and detailed set of data. The candidate may have the resources to conduct only one such longitudinal study, so he or she might design the research so that the results of the main longitudinal study are supplemented by data from supporting cross-sectional studies and are compared with the findings of a whole series of cross-sectional studies as a means of initial validation. Alternatively, the cross-sectional studies could be used as a means of identifying suitable research areas for further study.

Cross-sectional studies can therefore be used in three primary roles, as shown below.

• **Support.** Cross-sectional studies may be used to provide data to act in support of data obtained through a longitudinal study. The candidate would have to calibrate the timing of the cross-sectional studies with that of the longitudinal study to ensure that any time-based development is accurately reflected in both data sets.

• **Validation.** An alternative approach is to conduct the longitudinal study and then carry out a series of cross-sectional studies in order to validate the longitudinal study results. In the population growth example the longitudinal study may indicate that the main driver of population growth appears to be the falling birth rate. A series of cross-sectional studies could then be carried out in order to assess the impact of falling birth rate on population growth in different parts of the UK. In this case the cross-sectional study is acting as a validator of the longitudinal study results.

• **Initiation.** In the census example given above, the cross-sectional study could be used in order to identify and initiate promising research areas that could sub-
sequently be developed in the form of one or more longitudinal studies. In the census example the cross-sectional study has identified that the population has grown less quickly than expected. The longitudinal study could be established to look at the various determinants of population growth over a period of time in order to determine which are the main drivers of population growth.

In many ways cross-sectional studies are just as useful as longitudinal studies. They provide indicative or supportive results to longitudinal studies where time or other resources prohibit the use of more than one or two longitudinal studies. The data they provide are less rich but can be just as useful in supporting a research programme. Cross-sectional studies can, with careful planning, produce data that approximates to that produced by a longitudinal study. For example, a candidate could live and work with a particular project team over a one-year period and could collect detailed data on team evolution and development over that time. The candidate could generate similar results by conducting a series of cross-sectional studies of the same team over the same timescale. The idea is similar to that of watching an entire film at correct speed compared with watching the same film on fast forward, where only say 75 per cent of the actual frames are shown. In the latter case, the viewer gets an appreciation of what happens in the film, albeit not in as much detail as if the film were to be viewed at normal speed.

**Some Advantages of Cross-Sectional Research**

Consider some advantages of cross-sectional research.

- If carefully designed, cross-sectional studies can provide data that approximate to those provided by a much larger and more time consuming longitudinal study.
- Cross-sectional studies are often relatively simple and quick to design and implement.
- Cross-sectional studies allow the researcher to consider a wider range of different samples than would be possible with longitudinal studies alone. Using a wider range of samples as validation can significantly strengthen longitudinal main study findings.

**Some Disadvantages of Cross-Sectional Research**

Cross-sectional research also has a number of obvious disadvantages. Some of these are:

- Cross-sectional studies may produce results or outcomes with restricted value because the timescale for their implementation is short and therefore the amount of data they can provide is limited. In most cases there has be a number of different cross-sectional case studies taken at different times if the cross-sectional studies are to act in support of a full longitudinal study.
- Very careful calibration is required where the research is time-based and where the cross-sectional studies are intended to demonstrate time-based variations.
- Cross-sectional research is generally inappropriate where detailed understanding and explanation are required. Cross-sectional studies tend to be more appropriate for supportive and comparative uses.
• Cross-sectional studies are often used to increase the overall sample size included in the research. Where this is the case a reliable sample classification system is required to ensure that any cross-sectional data are compatible across the sample data it provides.

5.4 Longitudinal Research

5.4.1 Introduction

This section considers longitudinal research. In most cases a longitudinal element is needed if the researcher is attempting to answer ‘why’ something happens rather than ‘what’ happens. Longitudinal research is much more compatible with a phenomenological research paradigm, although longitudinal studies are still most often associated with the positivist view.

5.4.2 Longitudinal Research

A longitudinal study extends over a considerable period of time. In some cases the longitudinal study may encompass one or more entire lifecycle phases of the study. A longitudinal study is the obvious approach where the researcher is looking at long-term developments where the main aspects of the research are time-based.

Longitudinal research is associated with both positivist and phenomenological paradigms, and is equally suitable for a quantitative or qualitative approach. Some typical quantitative longitudinal study topics are listed below.

• Measuring wind speeds in a hurricane from the point at which it is first identified to the point at which it is downgraded to a tropical storm.
• Measuring the number of vehicle accidents occurring in connection with a motorway upgrading programme 1999–2001.
• The effect of high-level wind speed on the fuel consumption of a passenger aircraft travelling across the North Atlantic.

These are all quantitative longitudinal approaches as they are basically concerned with measuring quantitative elements over a period of time. The hurricane data collection process may last days whereas the aircraft example may only last a few hours. The motorway repair works example could last months or even years. The common element is that the data collection process goes on over a period of time in which the characteristics of the sample are likely to vary.

Some possible qualitative longitudinal study topics are listed below. This type of approach is widely adopted in the social sciences.

• A long-term study of the development of crime in inner city areas that are in decline and suffering increasing social deprivation.
• Patterns of group interaction in a multidisciplinary project team from formation to termination.
• A comparison of time-related conflict propagation over the lifecycle of single-discipline and multidisciplinary teams.
In these examples researchers would adopt a qualitative longitudinal approach as they are concerned with observing and explaining social actions and developments over a period of time. As with the quantitative examples, the qualitative examples are time based. They are concerned with measuring variations in research variables over a period of time. In some cases this timescale appears to be significant.

In its simplest form a longitudinal study could look at something as ordinary as the development of team conflict over the course of a project team lifecycle. The researcher might secure permission to attend all the meetings held by a project team, right from the inception of the project through to completion and termination of the project team. The researcher might observe the team interaction and record all occurrences of conflict together with any related discussion. The researcher might classify this conflict information in a number of different ways. For example, who said it, what did it relate to, was it new or based on previous conflict communication? Over a period of weeks and months, after attending perhaps 10 or 15 such project team meetings the researcher will have built up a picture of patterns of team conflict and will be able to show, for example, what caused the conflict, who initiated it and who else became involved, what happened about the issues raised, how the conflict continued across a series of meetings and so on. This type of study, especially when backed up by detailed structured interviews to obtain more data on important patterns of events, can generate a particularly rich and useful data set.

Some Advantages of Longitudinal Research
Consider some of the advantages of longitudinal research.

- Longitudinal studies have the advantage that they provide rich data and assist in developing a deeper knowledge and understanding of what is actually happening within a set of observations. In the case of social research they allow the researcher the access and time required to fully embed and make full use of the phenomenological approach.
- In some cases, especially in social contexts, the longitudinal approach may be the only viable way of understanding complex and ever-changing social groupings.
- Longitudinal studies work well with associated cross-sectional studies provided the overall research design is carefully controlled.

Some Disadvantages of Longitudinal Research
Longitudinal research has some obvious disadvantages:

- Longitudinal research is expensive in terms of time and money. A researcher might spend a year or more in a project team longitudinal study.
- If the results generated by the longitudinal study are in any way compromised or inconclusive the considerable time and money spent on a longitudinal case study may have to be entirely written off.
- Longitudinal studies tend to rely heavily on a single sample. This sample must, therefore, be very carefully selected. Any failings in the selection of the sample could have potentially disastrous results.
• A single sample is much more susceptible to the effects of both foreseeable events such as staff migration and unforeseeable events such as the actions of a competitor. As a consequence either the research design has to become more complex or the overall level of risk increases.

• A single sample may mean that the research study can only effectively be used as indicative and exploratory rather than definitive.

**Time Out**

**Think about it: longitudinal and cross-sectional methodologies.**

Consider the case of a large company that has decided to embark on an extensive staff training re-evaluation programme. The company is doing this because it has noticed that, despite record spending on both in-house and external training courses, the number of errors made by staff and the general number of complaints received from customers are actually increasing. The company therefore needs to look at its training courses in detail and find which ones are adding to the value of the staff and which ones are not.

The re-evaluation is to run over a two-year period. The company wants to look at staff in all parts of the company and monitor their development as a function of training courses attended over that two-year period. A final report is to be produced and issued to senior management so that appropriate decisions on future training programme design can be taken.

• How could a longitudinal research structure be established?
• How could cross-sectional studies be introduced?
• What are the main validity issues and how could these be addressed?

A main study longitudinal study would appear to be appropriate as the study itself is scheduled to last two years. From the information provided it appears that the company wants some kind of evaluation at the start of the two-year period and another evaluation at the end of it with a resultant report on how well the staff have developed over that period as a consequence of the training courses.

The research could presumably be based on structured interviews and questionnaires. These could ask questions in relation to those areas that are specifically required by the company. For example, good verbal communication skills may be needed by call centre staff. This is likely to be important for other members of staff as well, but may be less important for technical staff, for whom the primary skills requirement is in technical ability. As a longitudinal study, the research could monitor the development of individual staff members, teams and even whole departments as the various training courses are attended. Some departments might show a greater ongoing improvement than others. The various subjects would have to be classified in some way to allow for their individual characteristics.

The sample would also have to be structured in some way so that employees who have been present from the start of the observation period are considered separately from those who have been included more recently.
Cross-sectional studies could be introduced as a way of assessing individual training courses. For example, within the context of the overall longitudinal study a series of cross-sectional studies could be set up, with one or more studies concerned with an individual training course. Employees could be assessed in terms of an agreed evaluation factor before, during and after the course, so the course itself is assessed within the overall longitudinal study.

There are several important validation issues to be considered and, where necessary, allowed for in the research design. Some examples are given below.

- **Validation sample size.** The cross-sectional studies could be used for internal validation. It may be possible to provide external validation by conducting limited cross-sectional studies on similar or compatible companies and looking out for corresponding time-based improvements in individual, group and section performance.

- **Unforeseeable events.** The research strategy needs to allow for the occurrence of major unforeseeable events during the course of the research programme. Human issues are varied and complex in any large organisation. Training course effectiveness is a function of a large number of variables, including motivation and commitment. For example, life assurance companies have been having a hard time recently, as discussed earlier in this module. In many cases there have been reorganisations involving large-scale redundancies. There have also been examples of large-scale mergers and acquisitions as part of the long-term drive towards improving efficiency. One of the companies providing the data sources in the research may find itself embroiled in speculation about job cuts and/or possible takeovers or mergers. Such speculation could impact directly on staff motivation and commitment and on the effectiveness of the training courses.

- **Staff migration.** Given the two-year duration of the research programme there is likely to be a significant degree of staff migration within the timescale when data are collected. No real information is provided in this case, but in jobs such as call centre operations the turnover in staff can be anything up to 20 per cent per year. If this is the case in this sample the researcher could be faced with a 50 per cent change in staff over the period from when the research starts to when the report is submitted and any corrective actions put in place. If staff turnover is particularly high the effectiveness of training courses may be lost as a direct consequence, because large proportions of people are leaving and taking whatever they have learned on the training courses with them.

- **Data collection practices.** The researcher would have to standardise methodological issues such as the day and time at which interviews are carried out. Most experienced social science researchers are aware that the date and time can have a significant effect, particularly in unstructured interviews. People tend to be happier and have a more positive attitude towards the end of the working week. People also tend to provide more positive answers when they are less tired. The researcher would have to standardise
data collection in some way to make sure that responses are normalised for each training course.

- **Company ideology.** All companies are different. There are wide variations between companies in terms of organisational design, power and authority structures, leadership style, company age and experience etc. These variables could have an impact on the effectiveness of training courses. For example, employees who have been employed for a reasonable amount of time and have developed a significant level of experience are probably more likely to benefit from training courses than entirely new and inexperienced employees who are less able to see how to apply what they are learning. Some researchers make use of classification systems to describe the balance of characteristics that define the longitudinal sample company.

### 5.5 Research Methodologies

#### 5.5.1 Introduction

Having examined the basic alternatives of longitudinal and cross-sectional approaches, the next step is to consider the available alternative basic methodologies. Research methodology is considered in much more detail in *Introduction to Business Research* 3. The objective in this section is to provide a sufficient level of understanding of the alternatives available to allow the candidate to make a choice of the most appropriate research method for the write-up in the research proposal.

*Note:* It should be stressed that in the research proposal the candidate is required only to provide an indication of the methodology proposed for the main study. The detailed design of the research methodology does not take place until after the literature review submission.

#### 5.5.2 The Concept of Research Methodologies

The word ‘methodology’ is derived from the new Latin *methodologia* from the old Latin *methodus* and *logica*. It means *a body of methods or rules employed by a given discipline: a particular procedure or group of procedures*.

The word ‘method’ is derived from the middle French *méthode* from the Latin *methodus*. It means *a procedure or process for achieving a given object* (not strictly speaking objective, see Module 2) or *a mode of enquiry used by a given discipline*.

A research methodology, therefore, is a body of methods. A method is a procedure or process for achieving an object. In designing a methodology the candidate may have to design a series of research methods. For example, a longitudinal case study is a research methodology. A structured interview programme designed to extract data is a research method.

There are a variety of different research methodologies. Some are more appropriate for a particular research programme, while others are more appropriate for an entirely different type of research programme. The choice of methodology depends on the characteristics of the research concerned. There are several broad classifica-
tion systems in the research methodology literature. In terms of business and management research one possible classification system is as shown below.

- **Empirical research methodology.** As previously discussed, empirical research is based on explaining what is seen to happen. An example of an empirical approach is an experiment to show how an acidic solution results in litmus paper turning red. The molecules in the acid react with the molecules in the litmus to produce the observed change in colour.

- **Survey-based methodology.** This approach uses one or more forms of survey to obtain data from survey respondents. The response is usually based on some kind of survey questionnaire. Surveys are widely used by market researchers. The National Census, as discussed earlier, is an example of a survey.

- **Observation-based methodology.** Observation is sometimes used in a laboratory setting and sometimes not. It is not used so much in a social setting as it once was. The 1970s approach to work study and work study engineering was an example of observation in a naturalistic environment.

- **Inferential statistics-based methodology.** This approach is based on the use of statistics to infer meanings within numerical data.

- **Other methodological approaches.** This is something of a catch-all, and embraces methodologies that cannot easily be classified according to the headings listed above.

Each of these alternative methodology headings will now be considered in more detail.

### 5.5.3 Empirical Research Methodologies

There are numerous types of empirical research, ranging from highly structured laboratory experiments to the analysis of individual behaviour under naturalistic conditions. This section considers the case study, one possible subject type of empirical research.

Empirical research, as discussed above, is concerned with developing and testing theories and hypotheses in order to identify and explain causalities. It tries to explain causes and effects using objective observations and analysis, with the ultimate objective of allowing the researcher to exercise some degree of control or management of the causes and effects observed.

Empiricism is sometimes referred to as the ‘scientific approach’. Its real strength lies in the degree of control that the researcher can exercise over the data. In any causal relationship there is always a chance that the cause and effect events occurring have done so as a result of chance or have been influenced by some unknown variable. Empirical research allows the researcher to address these issues specifically. By using the scientific approach the empirical researcher can reduce the impact of any external or unforeseen influences to the lowest possible level, and can express the confidence limits that apply to the observed causality and attribute a direct level of reliability to the causality as a consequence.
Case Studies

Case studies are very popular in management and business research. A case study is basically a subject that is selected from a larger sample size for detailed investigation, usually on the basis that the sample is representative of the population as a whole.

For example, in trying out a new type of heart surgery a theoretician may suggest that an innovative procedure using a new material might be more efficient and less debilitating to the patient than existing techniques. The new procedure will, of course, have to go through a whole series of laboratory and clinical trials before there is any possibility of it being tried out on a real patient. At some point, however, a surgeon will have to try out the new procedure on a living patient for the first time. That patient is likely to be treated as a case study by the relevant medical researchers. They will watch for signs of infection and other complications, effects on blood pressure, recovery rates etc. They will do so because the impact of the new procedure on the single patient will be indicative of what can be expected of the population as a whole. The researchers will then go on to consider a series of other patients, and will continue until a sufficiently large sample size has been considered. After 100 procedures, the researcher will have a reasonable idea of success and failure rates, together with additional information on complications and causes.

A case study can therefore be considered as the intensive analysis of an individual subject. The individual subject in question could be a person, a team or an organisation.

There are, logically, several distinct types of case study. These are considered below.

• **The one-off.** In this case the researcher is interested in the single case study in question. He or she is not looking to apply the findings anywhere else, and the sample is not necessarily considered as representative. This type of case study applies where the sample is rare or unique. For example, a geomorphology researcher may study a particular volcano in an attempt to understand when it is next likely to erupt. This information may make little direct contribution to the discipline of volcanicity, because all the data collected relate purely to that single volcano, but it is likely to be of great interest to the people who live near the volcano.

• **The indicator.** In this case the researcher is interested in the case study because it may provide valuable insights into the population as a whole. To continue with the volcano example, a geomorphologist might conduct research on a particular volcano with the intention of contributing to the knowledge base on a particular aspect of general volcano behaviour. For example, he or she may be particularly interested in modelling pyroclastic flow and may study such flows on a particular volcano simply because that volcano is erupting at that particular time and may be one of the few areas on earth where active data on pyroclastic flows can be gathered at that time. The researcher will move on to consider pyroclastic flows on other volcanoes, each as individual case studies, as and when eruptions permit. The end product may be a direct contribution to the knowledge base on pyroclastic flow propagation and development.
• **The replicator–validator.** Case studies may also be used to validate other case studies. The most common configuration in business and management research is a single longitudinal case study backed up by a series of cross-sectional case studies acting to validate the main study. Researchers normally attempt to validate using cross-sectional case studies by using a process of replication. The basic idea is that the longitudinal case study is used to provide the main rich and detailed data that drive the main findings of the research. The cross-sectional case studies are then used to partially replicate the findings from the main study. The main reasoning is that the data from the longitudinal study may be unreliable as they are based on a sample size of unity. If the same results are observed in an additional 20 cross-sectional case studies, the case for accepting the reliability of the main study results is strengthened.

• **The multiple.** Case studies are also often used as part of a larger study where a significant number of similar case studies are used. This type of approach may be used where, for example, a new drug is being prepared for release, and the final stage of testing before release is a series of clinical trials on volunteers. Members of the general public are paid to take the new drug, and their responses over a prescribed period are then monitored. The manufacturer may have to carry out 10,000 such trials and show that the side-effect rate is no more than 1 per cent before the drug can be approved. Each volunteer who takes the drug is an individual case study in that his or her individual physiological and drug-response characteristics are measured over a period of time. The overall findings from the 10,000 individual case studies form a single large multiple case study revolving around the clinical trials of the new drug.

In business and management research the most common subjects for case study research are individuals and teams. For example, the characteristics and behaviour of a team may be observed and recorded over a period of time to see how the behaviour of the team changes as the team evolves over time. The main types of data-gathering approaches are as follows.

• **Direct observation.** The researcher directly observes and records team interaction. The standard approach is to use a video camera to record what happens and then go back over the recording and codify and/or classify events. The researcher could physically sit in the same room as the team under observation; alternatively the team could be filmed by a video camera with a feed to the researcher at a remote location.

• **Participant observation.** In some cases, particularly in phenomenological approaches, the researcher may choose to observe as a participant. The researcher becomes part of the team that he or she is observing. This approach can produce very detailed data, although reactance may be an issue.

• **Structured interviews and questionnaires.** These are widely used data collection tools in business and management research. Both tools have been abused in the past, and people are often sceptical when first faced with a structured research interview or questionnaire. A lot of companies restrict their acceptance of ‘cold’ questionnaires from external researchers because they consume too much staff time.
• **Unstructured interviews.** It can sometimes be very useful to have a general conversation with some of the key people involved in the case study. The data produced are obviously very much subjective but can provide valuable insights into the outcomes emerging from the more structured approaches.

• **Historical data.** Companies often store information on past events and decisions that may relate directly to the current research. For example, a researcher who is looking at current merger and acquisition strategy may find valuable information in historical records dating back to when the original strategy was discussed and agreed upon. Minutes of meetings held months or years before could be a valuable source of secondary data.

Observation-based methodology and historical data are discussed in more detail in Section 5.5.5 and Section 5.5.7. These approaches are included here as empirical approaches. It should be appreciated that their use is not restricted purely to empirical applications.

**Some Advantages of Case-Study-Based Empirical Research**

Consider some of the advantages of case-study-based empirical research.

- Case-study-based approaches are well established and well understood.
- The use of case study material is compatible with the natural thought process where a person does one thing knowing that it may be representative of another thing.
- Different types of case study can be used effectively together: for example, longitudinal and cross-sectional case study types.
- Case-study-based research can make use of a range of different sources of information.

**Some Disadvantages of Case-Study-Based Empirical Research**

Case-study-based empirical research has some obvious disadvantages. Some of these are:

- The case study chosen may not be representative of the population as a whole. It could be unique and could provide data that are relevant only to itself alone.
- Longitudinal case studies can last for a considerable period of time and can make excessive time demands on a researcher.
- In some cases there is no guarantee that a longitudinal case study will produce any useful results, and the researcher may have to write off a considerable amount of non-productive time.

### 5.5.4 Survey-Based Methodologies

Surveys are widely used in business and management research. Surveys generally take a sample from the population as a whole and assume that this sample is representative. They then extract data from this sample using survey techniques. Amongst other applications, surveys form the basis of most quality management systems. A company manufacturing bottles may have a continuous production
process. It is not feasible to test every single bottle, so the company may develop a quality control system where bottles are selected at random from each day's output. The sample bottles are subjected to a series of quality tests that may include:

- strength;
- glass clarity;
- incidence of minor flaws and imperfections;
- size and holding capacity;
- shape.

The sampling process has to be designed so that the sample of bottles selected for quality control testing is representative of the general population of bottles produced. This normally involves ensuring that the sample size is sufficiently large to be statistically significant.

Surveys are widely used in applications such as market research. Provided the sample chosen is representative of the population as a whole, it is possible to use the outcomes of the survey to predict patterns in the population as a whole with a high degree of confidence. Survey research is usually based on the quantitative analysis of data and as a result, may be relatively easily validated. Provided the survey design is reliable, the results should also generally be replicable.

Surveys are often based around structured questionnaires. These are detailed documents that ask the respondent to provide data in a highly ordered form. Qualitative questionnaire surveys are sometimes used, but these are generally much more difficult to process and interpret quickly. The most highly structured questionnaires may appear in very large surveys that may include thousands of respondents.

Alternatively, surveys may involve a much more detailed analysis of a smaller sample size. These are sometimes referred to as in-depth surveys in that they attempt to go into much more detail. In-depth surveys are much more likely to make use of a subjective qualitative element than standard surveys. A typical in-depth survey might include an initial questionnaire that asks for a combination of quantitative and qualitative information on a restricted range of subject questions. The researcher then considers this initial questionnaire in detail and develops a second questionnaire asking for more information on the most important areas from the initial questionnaire. Alternatively, the researcher might design a detailed interview where he or she talks to the respondent informally and asks for a subjective response to a series of questions based on the initial questionnaire. In providing a subjective response the respondent is usually prompted as little as possible and is encouraged to raise any issues that may have relevance to the research.

In-depth survey interviews are often recorded and then transcribed. The researcher can develop a clearer and more detailed understanding of the respondent's communication if he or she can read and re-read the transcript several times. The transcript may also be operationalised by the use of some form of content analysis where the words in the transcript are numerically coded and then analysed quantitatively. In-depth surveys are obviously more appropriate for a phenomenological
approach than are standard surveys, although in-depth surveys can also be based around a more structured and quantitative format.

Large-scale surveys have traditionally been carried out by mailing questionnaires direct to the intended respondents. This practice is now discouraged, as many companies have found themselves deluged by an increasing number of questionnaires each year from students in colleges and universities. Candidates should never use cold contact techniques, and should always ensure that the respondent has agreed to participate before he or she is included in any kind of survey. Increasingly, email is being used as the preferred communication medium for surveys.

**Some Advantages of Survey-Based Methodologies**

Consider some of the advantages of survey-based methodologies.

- Questionnaires and interviews are well-established data collection techniques.
- The format and structure of interviews and questionnaires can easily be varied to modify the phenomenological or positivist emphasis of the research.
- Structured survey results can be relatively easily validated and replicated.
- Case-study-based research can make use of a range of different sources of information.

**Some Disadvantages of Survey-Based Methodologies**

Survey-based methodologies have some obvious disadvantages. They are:

- People tend to dislike questionnaires unless they have been approached beforehand and have given their consent to participate.
- Structured questionnaires and interviews are incapable of generating the richness of detail required by most phenomenological researchers.

### 5.5.5 Observation-Based Methodologies

Direct and participant-based observation has already been mentioned in section 5.5.3 above. Most phenomenological researchers would agree that the best way to understand how a team works is to watch what it does, either as a detached observer or as a team member. As a detached observer the impact of the researcher on team behaviour is theoretically reduced, whereas as an embedded observer the degree of impact is increased.

Most observation-based methodologies concentrate primarily on behaviour. If the research is concerned with speech and what is actually said, there is no need for an observation-based methodology as the verbal content of team interaction could be captured by a sound recording. In most cases physical interaction is also considered because there is often a relationship between what team members say and what they do. In other words, physical actions are often a function of verbal communication.

There are two main types of direct or participant observation. These are considered below.
• **Naturalistic observation.** In this approach the team is observed in its natural environment. The researcher could sit in on a board meeting in the boardroom of the subject company concerned. Alternatively a naturalistic observer might consider the interaction of a team of football players when playing a game against real opposition. Most football fans make a subjective assessment of how well their team is playing by naturalistic direct observation every Saturday afternoon.

• **Managed observation.** This is the main alternative to naturalistic observation. In some cases there may be advantages in setting the subject team up in some kind of controlled environment. For example, in researching the behaviour of each member of a football team during a game, it might be necessary to play a practice game under controlled conditions where a large number of cameras can be set up so the behaviour of each player can be recorded from a number of different angles.

Observation-based methodologies are always subject to interpretation. Two different people may observe exactly the same team behaviour yet explain or interpret it in completely different ways. Most observation-based methodologies include a design element so that the observed actions are recorded and then subject to further analysis later in the research. For example, individual players in the football team could be asked why they passed the ball at a particular point rather than waiting until there was a clearer passing opportunity.

**Ethnography** is a type of naturalistic participant observation-based research in which the observer becomes embedded in the subject team and makes subjective observations from the viewpoint of being a full team member. The embedding process may itself take weeks or months, and the *in situ* observation process may last months or years. The result is an unparalleled understanding of the functioning of the team. The disadvantage is that the team is the only sample considered. In addition, because largely subjective observations are made, and because the sample size is unity, any results are unlikely to be directly replicable.

An ethnographic approach may be applicable in some cases in EBS DBA research. The candidate might be interested in the behaviour of senior managers in the period running up to and including the detailed negotiations necessary for a large-scale merger. The candidate might decide to adopt an ethnographic approach and effectively become a non-executive member of the board over the duration of the pre-negotiation and negotiation processes. Content analysis is a tool that could be used in this type of application. The researcher could sit at board meetings and merger negotiation meetings over a period of time and both observe the interaction taking place and record what actually happens. In some cases, although this is perhaps unlikely given the potential sensitivity of the information involved, the candidate might even record the discussions and subsequently analyse them for content. Through a combination of different content analysis methods the candidate might discover that the frequency of references to strategic alignment diminishes as the negotiation proceeds. This could lead the candidate to suspect that the relative importance of the strategic alignment concept diminishes as other issues such as share exchanges and contract negotiations develop.
The candidate could develop this theory by carrying out a series of structured interviews or issuing a range of specially designed questionnaires in order to develop the idea. The candidate might find that the relative importance of the strategic alignment concept does indeed diminish over time. The research might further indicate that this occurs because the relative importance of operational negotiating issues such as share prices increases. The candidate might be able to conclude that the relative decrease in strategic alignment long-term concerns diminishes over time as shorter-term tactical issues tend increasingly to capture the attention of the directors. The candidate might then theorise that, if control techniques are put in place to maintain the relative importance of strategic alignment, the previously observed deterioration in focus is reduced.

This type of approach would be an example of longitudinal ethnographic action research.

**Some Advantages of Observation-Based Methodologies**

Consider some of the advantages of observation-based methodologies.

- People are used to observing each other. By experience people understand facial expressions and other forms of body language. Most people can fairly quickly develop a subjective understanding of what is going on in an observed team.
- Observation-based research can make use of a range of modern technologies such as time-lapse video cameras, multiplex displays, and movement detection devices.

**Some Disadvantages of Observation-Based Methodologies**

Observation-based methodologies have some obvious disadvantages. Some of these are listed below.

- Teams of people exhibit complex behaviour. Even the simplest interactions can generate a very large number of different types of data. Researchers could attempt to record everything from verbal content and voice volume to facial expression and body movements. The number and range of measurable variables can be very large, and inexperienced researchers may well have difficulty in coping.
- A considerable amount of behaviour data is usually lost because the observation measurement systems are not sufficiently robust.
- Observed behaviour may not always be due to the normally expected causes. People can, and sometimes do, act in an irrational manner.

**5.5.6 Inferential Statistics-Based Methodologies**

As the name implies, inferential statistics-based methodologies are those based on the use of statistics to infer generalised outcomes. Generalisations allow researchers to define the characteristics of the population as a whole from the characteristics of a representative sample. The problem with any generalisation is that of likely error. A researcher using a methodology based on inferential statistics would express this likely error in terms of confidence limits.
Inferential statistics-based methodologies are clearly more appropriate for a positivist researcher who is concerned with showing ‘how’ something happens rather than ‘why’ it happens. Some form of quantitative data is collected and plotted. The data could be based on other methodologies. For example, an inferential statistics approach could be used where a researcher has collected a large amount of observation data from watching a team development process over the course of a year or more. The data might relate to occurrences of conflict in the team measured in terms of where the conflict originated, the subject of the conflict, and related variables and the subsequent behaviour of the conflict. Generally, over the observation timescale some conflict will be very minor and some will be very major, but most observed conflict will fall somewhere between these two extremes.

In parametric testing the data plot is assumed to approximate to a normal distribution whereas non-parametric testing makes no assumption about the characteristics of the data. In many cases the expected characteristics of a population approximate to a normal distribution. If a researcher plots the relative success of a large number of acquisitions made by all the companies in a particular sector, he or she will find that there are a few very successful acquisitions and a few very poor ones, while most have performed around the mean value. The extent to which measured events fall in areas away from the mean is a function of the standard deviation of the distribution.

Correlation approaches allow the researcher to analyse the degree of association between two variables. It is an approach for determining the degree of causality between two stated variables. In effect, the two variables are measured and then the extent to which they vary together is also measured. The two variables could be something as simple as number of hours of training courses attended and overall client feedback rating. Presumably, as attendance increases, so does overall customer feedback rating. Different values of attendance hours and corresponding feedback rating can be plotted graphically as a scatter diagram, and a regression line can be drawn through the best fit to the scattered sample points. This regression line can subsequently be used to predict the value of one variable where the value of the other variable is known. The regression line is, however, a best-fit line and there is always a degree of error. As a result, the regression line can be used only within the range of points in the scatter diagram. It should not be used to extrapolate beyond the range of known data. The strength of the correlation between the two variables is shown by how well the scatter points approximate to the regression line. The strength of this association is referred to as the correlation coefficient.

Forecasting approaches allow the researcher to consider current known data and extrapolate beyond what is known in order to forecast unknown and future values. Forecasting is based on regression and time series analysis. An obvious application is where a researcher can see a clear pattern now and in the past in relation to some type of financial performance. For example, a trader might attempt to predict the share prices of a given company based on past performance. Traders know that past performance is no indication of future success, but a company whose share prices have consistently performed well over a number of years becomes an attractive target to a potential investor. There is a considerable body of knowledge on forecasting and prediction research, and statistical tools such as
Monte Carlo simulation have been developed to allow companies to forecast the probability of success of, for example, a particular product sale price.

**Futures research** uses techniques such as scenario mapping and brainstorming techniques. Unlike forecasting, futures research is not based so much on past and current events. In scenario mapping the researcher isolates all the individual drivers that affect a given outcome. For example, the researcher might consider the likely future pattern of world oil prices. He or she might isolate the various drivers determining whether world oil prices increase or decrease. Some obvious examples are listed below.

- US domestic demand.
- US strategic reserve demand.
- Chinese demand.
- OPEC producers’ output.
- Non-OPEC producers’ output.
- Middle East political situation.
- Iraqi output.
- Demand for transportation fuel oils.
- Development of alternative fuels for transport.

These drivers all affect the likely level of demand and, therefore, the price of oil over the next 10 years. Some are more significant than others. For example, US demand is the largest single determinant. Iraqi production is another important determinant as Iraq is potentially the world’s second largest producer after Saudi Arabia, but whether or not such a level of output is ever achieved is uncertain.

The scenario analyst assigns weightings to each driver and then calculates a probability of alternative outcome for each driver. For example, the researcher might assume that US domestic demand will increase with 100 per cent certainty. If US demand increases, world demand increases. If Iraqi output increases, world supply increases and so on. The net score for each scenario is a function of the weighted components of that scenario and the likelihood of each driver outcome occurring.

### Some Advantages of Inferential Statistics-Based Methodologies

Consider some of the advantages of inferential statistics-based methodologies.

- The approach uses well-tried statistical tools and techniques.
- There are established major software packages such as SPSS that researchers can use. These contain all the standardised and more advanced statistical tools and techniques in a simple-to-use format.
- Trends and distributions represented graphically are generally more easily and more readily understood than text-based equivalents.

### Some Disadvantages of Inferential Statistics-Based Methodologies

Inferential statistics-based methodologies have some obvious disadvantages. Some of these are:
• Non-numerate candidates should avoid the use of complex statistical tools and techniques unless they know how to use them.
• There is always a danger that the researcher will become preoccupied with the statistics at the expense of the detailed design of the research programme.

5.5.7 Other Methodological Approaches

This section briefly considers some further methodological approaches likely to be encountered in management and business research and likely to be considered differently in this context than in the pure sciences and engineering.

5.5.7.1 The Use of Field-Based Research

Most business and management research is field based in that it is conducted within existing organisations using data generated from those organisations under their normal conditions of operation. This is in contrast to the pure sciences and engineering, where a large proportion of empirical research is conducted under some kind of controlled laboratory conditions. This has obvious advantages. Provided the laboratory conditions are properly designed and controlled, they can remove a great deal of the uncertainty associated with an experiment. They do not, however, accurately represent conditions in the ‘real world’. For example, a researcher might design a series of experiments to measure the effects of greenhouse gases such as chlorofluorocarbons (CFCs) on ozone depletion. This is an important research area as the earth’s ozone layer is currently being depleted by CFCs released by a number of sources such as waste refrigerant evaporation. Ozone in the earth’s atmosphere has an important function in that it filters out a proportion of the ultraviolet radiation in sunlight that impacts on the earth’s surface. The experimental research might generate a whole series of results that model the likely effects of CFCs on ozone. The laboratory-based experimentation, however, is of limited validity in relation to the real situation in the atmosphere because it cannot mirror the scale and complexity of the earth’s atmosphere. In the real atmosphere, the effects of CFCs on the ozone layer can be influenced by an enormous number of different variables including:

• other types of pollutant;
• cycles in sunspot activity;
• wind and pressure systems,
• temperature variations;
• the effects of continental masses and the oceans;
• population distribution and growth;
• variations in the sources of ozone generation;
• other forms of climatic change.

These variables cannot be accurately modelled in a laboratory setting and yet they influence real observations in the field. A laboratory-based experiment is extremely useful within limits in some disciplines. It does, however, suffer from reliability limits when it is extended to apply to the environment.
In business research the range of variables that influence a decision-maker in a real environment are often so complex that it is simply not possible to allow for them all in a laboratory-based setting. Most EBS DBA candidates will probably therefore elect to pursue field-based research. In field-based research all the research is carried out in situ, with no use of laboratories or other form of artificially constructed controlled environment.

Field research is in many ways more complex and demanding than laboratory-based research. In the field there are numerous factors that could impact on the research. Whether or not all of these factors need to be taken into consideration in the design of the research strategy depends on the nature of the research itself. For example, the discussions and conversations that a company director has over the course of a month may well have an impact on a decision that he or she makes at the end of this time. It could be that the director would have made decision X if he or she had not had a certain conversation with a colleague, but after having had the conversation, the director made decision Y.

A laboratory-oriented researcher who is concerned with the decision-making processes adopted by directors might argue that the conversation affected the judgement and decision-making processes of the director, and that researcher would be right. To the phenomenological field-based researcher the influence of the conversation is not an issue. It is one part in the chain of reasoning followed by the director in making decision Y. In some ways the value of the director as a decision-maker is linked to his ability to listen to others and take advice where necessary. In other words, the conversation did not damage the validity of the fieldwork-based approach in any way because the influencing conversation was an intrinsic part of the director’s decision-making process.

Field-based research is often criticised by laboratory-based positivist researchers. The argument put forward is that fieldwork lacks structure and rigour because of the mass of potentially conflicting influences that act on subjects in their home environment. In fact, the very complexity of the equation adds to the richness of the data extracted using this approach.

5.5.7.2 The Use of Historical Research

Business and management research often makes use of historical data. Historical research is based on the investigation of past events. The great value of historical research is that it helps current researchers to understand how and why present-day conditions are what they are.

In extreme cases historical researchers might concern themselves with events that took place thousands of years ago. For example, a researcher who is trying to find out why the Teutoburg Massacre of AD09 occurred will have to rely on purely historical data, because all events relating to the battles occurred long ago. Historical records in themselves are a valid source of data, and such data can still be used to contribute to the current knowledge base. For example, for many years there were numerous theories as to where the site of the main Teutoburg battle was. Recent research isolated the most likely site at Kalkriese, and this was more recently confirmed by archaeological evidence. Both the discovery of the site and the large
amount of archaeological material recovered have added considerably to the knowledge base on the subject of the massacre.

Historical researchers generally try to make use of primary sources. These are sources that relate directly to the event. For example, a primary source in relation to Teutoburg would be an account from an eye-witness who actually fought in the battle and who recorded the account himself. Historical research is often weakened by the use of secondary sources. These are accounts or records prepared by people who did not witness the event in question. In some cases the author may have been writing about what he heard from an eye-witness. Secondary sources are generally much more unreliable than primary sources and should be used with caution.

An inspection of historical events can often be used as the basis for current research. For example, a researcher who is trying to identify a particular problem area, or an area where improvements could be made within a company can often make the initial identification and analysis using historical data. The researcher might look at the historical data on a series of acquisitions that have taken place over a number of years. The historical data might indicate that, in the short term, some acquisitions have been considerably more successful than others. It could be that there has been a growing trend for more recent acquisitions to be less successful in the short term than was previously the case. The researcher could then develop a methodology to identify the cause of the success deterioration and develop tools and techniques for correcting it.

5.5.7.3 The Use of Action Research

Action research is an approach that is sometimes adopted in applied doctoral research. In action research the researcher identifies a specific area within the sample organisation where some form of change or improvement is required. This area could be identified by the researcher alone, or jointly and in consultation with the senior managers of the organisation. The researcher then analyses the problem area and arrives at a potential course of action. The potential action is implemented and its effects are noted. The action researcher often embeds himself or herself within the organisation using the standard phenomenological approach discussed earlier. The researcher experiences the effects of the action at first hand, and over time evaluates the extent to which the action has addressed the problem. In most cases the initial action is not sufficient to address the problem alone, and a second analysis and corresponding action are required. Again the researcher analyses the problem and evaluates the extent to which the first action addressed it. The researcher also evaluates what further action is needed and designs and implements that action.

It will be appreciated that, in the case of action research, the researcher has the opportunity to generate major changes within the organisation. The research itself becomes a catalyst for change.

In all cases action research contains the following phases.

- An initial analysis of the problem by the researcher, resulting in a potential course of action to resolve the problem.
The design and implementation of an appropriate course of action and an evaluation of the extent to which it has addressed the problem, together with an evaluation of what further action is necessary.

The design and implementation of a second appropriate course of action and evaluation of the extent to which it has addressed the remaining problem, together with an evaluation of any further action still required.

The action researcher therefore identifies the problem, suggests a solution, sees what effect this solution has, and proposes further solutions as necessary in order to address the problem fully. The action researcher becomes part of the subject that he or she is trying to improve.

Action research may be of particular importance to EBS DBA students. Action research is particularly relevant where the research is designed to be applied. One possible application of DBA research is to diagnose a particular problem within an organisation and design a suitable corrective mechanism. The process of identifying, evaluating and assessing the problem could act as the basis of the research, while the process of designing and implementing the correction is clearly a project, and project management tools and techniques can be applied. Project management tools and techniques are covered in detail in the EBS DBA text *Project Management*.

EBS DBA students could develop very useful action research. For example, the research subject could be the candidate’s own company. The candidate could develop a research methodology for identifying a particular type of problem and then develop a theory for addressing the problem. The theory could then be put into practice as part of the research methodology. In this case the corrective action could be measured using standard project management monitoring and control tools. The effectiveness of the action could be evaluated over a period of time by some form of empirical observation. This kind of longitudinal action research would be ideal for an EBS DBA candidate.

5.5.8 The Final Choice of Research Methodology

The choice of research methodology is obviously a very important decision. The candidate should be absolutely certain that the research method adopted is appropriate and compatible with the research. At research proposal stage the candidate is not expected to have developed a detailed understanding of the final design and application of the research methodology. The final choice and precise design and application will be developed later with the assistance of the supervisor. The supervisor will have successfully completed doctoral-level research in the past and will, therefore, be familiar with the usual considerations to be taken into account when choosing a methodology.

At research proposal stage the candidate is expected to know what final research methodology will be used in the research. In order for the research proposal to be accepted by the EBS Research Committee, the Committee itself will have to be satisfied that the candidate has read sufficient literature and has developed a sufficient understanding of the research methodology required for the candidate to carry out the research with a reasonable likelihood of success. For example, the
Research Committee will be looking for evidence that the research methodology proposed is compatible with the stated research aims and objectives. It would be inappropriate to suggest a quantitative methodology for what is essentially a set of qualitative aims and objectives.

The candidate should also make every effort to adopt a balanced methodology that includes a range of different approaches. The strongest and most robust methodologies are often those that combine longitudinal and cross-sectional case studies and contain both positivist and phenomenological philosophies and a balance of objective-quantitative and subjective-qualitative approaches. The Research Committee will be looking for evidence of this type of balanced approach and the use of triangulation wherever possible to strengthen the overall research outcomes.

5.6 Reliability, Validity and Generalisability

5.6.1 Introduction

The previous section considered the different types of research methodology that the candidate may consider when developing his or her research strategy. This section examines three important issues that are relevant and significant in all methodological types. These are reliability, validity and generalisability.

5.6.2 Reliability

Reliability is a measure of the extent to which a set of results can be regarded as being dependable. In the context of research, reliability is usually measured in terms of the extent to which the same results will be generated on successive occasions using the same methodology. For example, a researcher might dissolve zinc in sulphuric acid and note that hydrogen gas is given off as part of the reaction. He or she might repeat the same experiment 100 times and, each time, hydrogen is given off. The researcher could reliably conclude that hydrogen gas is given off when zinc is dissolved in sulphuric acid. This observation can be regarded as being reliable based on experience using an empirical approach.

The issue of reliability is the primary reason why replication is so important in any kind of scientific research. Researchers attempt to demonstrate reliability by replicating their research. In general terms the greater the degree of replication the greater the reliability of the results.

The issue of reliability has different implications for positivist and phenomenological paradigms. It is generally much easier to replicate research that is based on an objective-quantitative approach than it is for research based on a subjective-qualitative approach. The hydrogen gas emission example is easy to replicate provided the purity and amount of zinc and the mass and strength (molarity) of the acid are stated. Theoretical positivist research can also be replicated. For example, a mathematician may derive a new theoretical equation that explains the observed oscillation of a distant star. Other mathematicians could repeat the calculations and arrive at the same general equation. In positivist research the key to reliability is
information. The researcher must supply a high level of detail on all aspects of the methodology used. Candidates may find the easiest way to think of this is probably in terms of the cake recipe example mentioned earlier. In order to bake the same cake, another cook needs to know the exact types and quantities of ingredients, the order of mixing, baking times, sequence of assembly if appropriate and so on. In positivist research the same level of detail is required. In doctoral-level research this level of detail must be included in the final thesis, although not necessarily in the research proposal.

Replication becomes more of a problem in phenomenological research. Some types of phenomenological research are clearly not replicable. For example, specific research findings in a research programme based on participant observation in an ethnological methodology will almost certainly not be replicable. The team or group that provided the research data would have been unique, and could never be reassembled in exactly the same form as it would have had at the start of the research. Even if the same people could be assembled at the same location, the people themselves will have experienced the individual and team development processes that formed the basis of the research. They would be more experienced than they were in the original research, and they would inevitably interact and respond in a different way.

Phenomenological research based on small sample sizes and using people as the primary source of data can be very difficult or impossible to replicate. For this reason, such research programmes are sometimes referred to as being indicative in that they indicate general patterns of behaviour. A set of indicative findings illustrates a general pattern or trend. This idea is similar to that of a person visiting his or her general practitioner. The patient may be suffering from a degree of hearing loss following a fall. The patient explains the perceived symptoms and the doctor may make an initial examination. This examination may reveal (say) suspected damage to the patient’s outer and inner ear. The doctor cannot make a detailed examination because he or she does not have the necessary specialised skills or equipment. The outcome of the doctor’s examination is indicative of the likely cause of the hearing loss. The doctor will, therefore, probably refer the patient to an appropriate specialist for a more detailed examination. The specialist will make a definitive assessment in that his or her specialist skills and equipment allow a degree of detailed examination enabling the problem to be clearly defined.

Phenomenological research, therefore, may produce results that are more indicative than definitive. These results may be more reliable as indicative, than they are as definitive, of an outcome.

Phenomenological researchers may attempt to increase the reliability of their findings by maintaining detailed and accurate records of all aspects of their research. The idea here is that the greater the degree of information available to a potential reliability assessment, the more likely it is that somebody else will be able to replicate the results. This is logical to some extent in that the more information available, the more likely it is that another researcher can set up the same conditions and duplicate the methodology.
Data could be unreliable for a number of reasons. Some examples are briefly discussed below. These are the issues that a researcher who is attempting replication may consider when he or she cannot duplicate the original researcher’s results.

- **Methodological error.** The research methodology could be flawed. A questionnaire may be worded so that the underlying meaning of a question is unclear and/or the question could be answered equally well in two or more different ways.

- **Processing/analytical error.** This is surprisingly common, especially where candidates write their own computer programs for processing data. Alternatively, proprietary software may be faulty and/or data may be corrupted when being transferred between programs. This often happens when candidates cut and paste spreadsheets that contain dynamic links. Candidates also often use proprietary packages incorrectly or draw unreasonable conclusions from sets of results.

- **Presentation error.** The research methodology may be in order, and all the data processing may be correct, but there could still be an error in presentation. For example, the candidate might produce a graph linked to the wrong table of data.

- **Subject misdirection.** People who are providing data for the research do sometimes attempt to misdirect the researcher. This could be by mistake or it could be deliberate. Possible reasons for deliberate misdirection include personal resentment, cultural opposition to the research, or an attempt to influence wider issues by trying to influence the outcome of the research. This can be a particular problem where people are forced to take part in the research and/or where people see the research as being likely to affect wider issues such as promotions or closures.

- **Subject bias.** This type of error can arise where the subject is able to manipulate his or her response in line with existing bias. Interview and questionnaire questions should be carefully worded so that the effects of subject bias are minimised.

- **Researcher error.** The researcher may make mistakes, either in developing the questions for the interview or questionnaire or in administering the tool used. Observer error may generally be minimised by a highly structured interview schedule.

- **Researcher bias.** The researcher may be biased. Researchers have opinions and ideals just like everybody else, and there is always a risk that the researcher will try to get the results to show what he or she wants or expects them to show. Even experienced researchers are sometimes guilty of allowing bias to react with the research. In some cases this reactance occurs unconsciously.

### 5.6.3 Validity

**Validity** is a measure of how well the results can be justified and considered to be a true and accurate reflection of reality. The concept of reality has its own connotations, as discussed earlier in this course. Reality could be defined in terms of a theory defining a state that cannot actually be verified. This reality is real enough because it holds for all conditions as far as we know and it has never been falsified.
There is also the issue of the reality of what has to be measured in order to explain a causality.

A researcher may conduct an experiment to test the basic law that the force acting on an object in a gravitational field is the product of the object’s mass and its acceleration due to gravity. An object on a table stays on the table because the force acting downwards on the object due to gravity is exactly matched by the equal and opposite reaction force pushing upwards from the table (Newton’s third law of motion). If the same object is thrown from a high building it will accelerate because now there is no opposing force. It will continue to accelerate until the force pulling it downwards due to gravity is exactly matched by the reaction force generated by the air pressure underneath it. When the force due to gravity and the air pressure reaction force are equal the object will stop accelerating and will be at terminal **velocity** and in **free fall** (Newton’s first law of motion). The gravitational force acting on a mass at sea level on earth is 9.81 newtons per kilogram, so a 1kg mass should initially accelerate at a rate of 9.81 metres per second.

The researcher might try to test the basic law by using a table tennis ball. He or she might throw the ball from a high building and note that (a) the ball reaches its free fall terminal velocity much more quickly than expected, and (b) the terminal velocity itself is much lower than expected. The researcher may conclude that the general law linking force, mass and acceleration is wrong because the gravitational force acting on the ball, and its consequent acceleration due to gravity, appears to be much less than expected.

This conclusion is invalid because the researcher is not measuring only what he or she thinks is being measured. An object falling through the air does so because gravity exerts a downward force on it. The terminal velocity of an object is, in fact, directly inversely proportional to the ratio of its surface area to its mass. In other words the larger the surface area per unit weight, the slower the terminal velocity of the object in free fall. This is why a steel ball bearing weighting 0.25kg would fall as expected but an air-filled balloon also weighing 0.25kg would float on the wind and only fall very gradually. The researcher has not allowed for an influencing factor as simple yet important as surface area to weight ratio and, as a result, his or her conclusions are invalid.

This example itself generates a potentially interesting theory. It should be impossible for sky divers to play table tennis in free fall because (a) the sky divers would fall downwards away from the table while (b) the balls would fall upwards away from the table. One answer might be to tie the table to the sky divers (although this configuration would surely be unstable) and use lead balls. This could be hard on the wrists, and the whole procedure is not recommended.

In terms of allowing for validity, the candidate should make every effort to ensure that the research methodology is properly designed so that it measures what it is supposed to measure. This may seem obvious, but it is surprising how often methodologies are encountered where the data collection and analysis do not measure or only partially measure what is supposed to be measured.
Validity can be reduced by error and bias in exactly the same way as reliability. The validity of a set of findings can be reduced by errors in calculation or methodology and in the other areas discussed in the context of reliability in Section 5.6.2.

There are several different types of validity. Some examples are considered below.

- **Representation validity.** This is the most common area of concern in relation to validity, and relates to the extent to which the research methodology, research design data and other aspects of the research programme actually measure what they are supposed to measure. There are numerous component elements to be considered.
  - Is the sample representative?
  - Are the data representative?
  - Does the analysis generate representative outcomes?
  - Are the conclusions representative?

- **Conceptual validity.** This type of validity issue arises where there is ambiguity within or surrounding the conceptual framework of the reasoning behind the research. A typical example is a research programme concerned with the variables that determine motivation in individuals in their place of work. The researcher might develop a list of ten primary variables that he or she intends to measure as a basis for determining motivation levels. The choice of variables may make good sense and may be based on similar groups of variables used in the literature, but it cannot automatically be assumed that these variables accurately measure motivation in the sample concerned; a much deeper level of analysis and investigation may be needed to verify this.

  For example, a researcher may develop a ten-variable list based on both the literature and on what employees in the target company say in preliminary interviews. The researcher may not be aware of deeper underlying drivers such as perceived job insecurity. It could be that internal rumours suggest that (say) the HR department may be outsourced within a year. Members of this department may feel particularly insecure and may modify their responses accordingly. They may hope that some aspect of the research filters back to the strategic decision-makers and may try to modify the results. As a result, the general response from the HR section may be different from the average response. This could undermine the whole conceptual framework of the data collection process.

- **Extension validity.** This type of validity issue arises where the research is attempting to link one variable with another. For example, a researcher might conduct a research programme that itself has an acceptable level of validity. He or she may then attempt to link the findings of that research with another variable, and this compromises the validity of the whole programme. An example is research into DBA candidate performance. A researcher might conduct research to find out what variables determine DBA examination performance. The research may show that the main drivers are:
  - intelligence;
  - motivation;
learning ability;
- memory;
- integrative ability;

The researcher might produce findings that show that the greater the levels of these variables in an individual the better these individuals perform in DBA examinations. The research may also show that the relative importance of each driver is as they are listed. The researcher might conclude that candidates who have the highest levels of the five variables are most likely to complete the DBA successfully.

This extension is invalid. The research considered only examination performance and not research performance. It could be that the thesis element requires a completely different set of drivers compared with the examinations element. For example, ‘creativity’ or ‘vision’ or similar is likely to feature somewhere in the top five drivers. In this case the initial valid research was invalidated by the incorrect extension. The researcher made an assumption that the extension was valid when in fact it was not.

### 5.6.4 Generalisability

**Generalisability** is a measure of how well the conclusions of the research can be applied to the population as a whole. Generalisability is sometimes referred to as external validity. It is an important concept, especially in EBS DBA research, where candidates are encouraged to produce applied research that is of direct use and relevance to the sample company and to wider business and management sectors in general. Results shown to be applicable to one particular company are useful to that company and may be useful to other similar companies, especially in the context of being indicative of that type of company in general. Results that are generalisable and which carry external validity are useful to companies in general and have potentially much greater application value.

Research intended to be definitive usually has a requirement for a high degree of external validity. It is possible to produce definitive research on a single case, but the applicability of the results would be limited to that case. The case itself could be anything from an individual person to a nation.

External validity is particularly important in research in the pure sciences and engineering. Most medical research is based on the concept that findings and advances will apply to the population as a whole. It is only in the more exploratory-based research in pure science and engineering that the requirement for generalisability becomes more relaxed. The whole issue tends to be somewhat more relaxed in the more phenomenologically based research characteristic of management and business.

Where a high degree of external validity is required, the design of the research programme becomes much less flexible and open to individual preferences. The entire research philosophy becomes highly structured, and there is a requirement to define clearly any terms or even words that could be interpreted in different ways. For example, in research involving acquisitions and long-term success, the word ‘acquisition’ and the term ‘long-term success’ are the variables for which the
research is examining causality. Both the words ‘acquisition’ and the term ‘long-term success’ must be clearly defined as they could mean different things to different people. For example, consider some of the aspects of the acquisition that could influence the degree to which it is likely to be successful.

- The acquisition could be made at the invitation of the board and shareholders of the target, or it could be hostile.
- The target could continue to operate more or less as before the acquisition, or it could be completely assimilated with the acquirer. In some cases the target could even be wound up, for example if the acquirer is seeking to reduce output capacity in the market concerned.
- The target could be large or small in relation to the acquirer, or it could be of similar size.
- The target and acquirer could have a compatible strategic alignment, or it could be entirely different.
- The acquisition could be made during a period of excellent economic and sector growth, or it could be made during a slow-down.

These and numerous other variables could affect the likely success or otherwise of the acquisition. If the results of the research are to have external validity these and other such variables must be addressed. For example, the results developed from the research may indicate a certain pattern of outcome under current economic and sector conditions. These current conditions may be unusual. At the time of writing there has been a sustained five to six year reduction and stagnation of share prices. This downturn has been longer than any other on record, and has had severe implications for individuals and companies that depend on making money from share dealings. Obvious examples include pension fund managers, life assurance companies and individuals holding endowment (with profits) policies.

In most types of business or management research variables like these that could affect external validity are usually identified at an early stage in the research and are dealt with in a number of different ways.

- **Incorporation.** Sometimes the variables can be designed into the research by including the variable within the research title. For example, the title of the acquisition example could be modified to include the words ‘in periods of sustained low levels of economic growth’. This adjustment effectively limits the scope of the research to acquisitions made under current economic conditions.

- **Recognition.** The importance of the variable could be recognised and included as one of the variables measured and allowed for in the methodology. For example, the degree of hostility could be given a rating from 1 to 10, and all acquisitions used in the research as either longitudinal or cross-sectional cases could be rated.

- **Exclusion.** In other cases it may be possible to accept that the variable could have an impact but record it as being outside the scope of the current research. It is not possible to include and address every single variable that could have an impact, provided the important ones are dealt with. The scope of the research is
usually made clear in the introduction chapter of the thesis, and is one of the first elements a reader comes to.

Reliability, validity and generalisability are all issues to be considered in great detail when the main research methodology is designed. The candidate should remember that he or she will have the supervisor to assist in considering and addressing these issues.

For the purposes of the research proposal the candidate is expected to be able to demonstrate that he or she is aware of these issues and has given sufficient thought to them to allow a compatible and appropriate research methodology to be designed. The EBS Research Committee will have to be convinced that the research proposal contains sufficient promise and potential to be developed successfully in order for them not to reject it.

5.7 Research Design

5.7.1 Introduction

This section considers some aspects of research design.

At research proposal stage the candidate is not expected to be able to design a complex research programme in detail, but the research proposal must demonstrate a basic understanding of how the literature review and main study will be designed, and how the various components of the research programme will fit together.

5.7.2 Some Aspects of Research Design

The research element of the DBA programme is completed in three stages. These are the research proposal, the literature review submission and the methodology, analysis, results and conclusions. The EBS Research Committee considers the first two submissions, while the last stage, together with the literature review bound together as the thesis, is considered at viva voce examination by the examiners.

In the research proposal the candidate must demonstrate that he or she has thought through the structure of the research, and that the basic elements and components of the programme have been considered. Some of these elements could be modified before the final thesis is completed, but it is important to show that the candidate has considered the programme and has at least developed a basic research design.

The various stages contained in a possible research design are shown in Figure 5.1. It is important that the candidate is able to think through the design of the research in detail before committing to any single approach. The diagram shows the basic stages involved in developing an overall outline design.

Having identified and developed appropriate research objectives, as discussed in Module 4, the first major design decision is on the principal research paradigm. Both alternatives can be equally appropriate in management and business research. A candidate might decide to adopt a positivist paradigm and base the research on an empirical approach. There are numerous different empirical approaches that could
be used. One of the most common is that of conducting a detailed literature review and developing a literature synthesis. This is then used to develop a basic theory, which is then assessed using a simple pilot study. The pilot study itself may be based on some form of correlation analysis where data are collected and analysed for patterns and trends. The results of the pilot study are used to support and develop the basic theory into a research theory. This research theory is then expressed as a research question and/or as a series of hypotheses. Empirical data are collected and analysed using the accepted methodology and are applied to the research and operational hypotheses.

The operational hypotheses are assessed and are either accepted or rejected. The overall acceptance or rejection of the operational hypotheses leads to the acceptance or rejection of the main research hypothesis. This in turn acts as the basis for the results that emerge from the research.

In this example the results are used to develop the research theory that emerged from the literature synthesis and pilot study evaluation. The results are presented in the context of the research theory and the theory itself is developed in relation to the results. The literature is reappraised in the light of what has been discovered in the course of the research. This may be a very important stage, as the candidate will have learned a great deal in the course of the research programme, and it is common for candidates to be able to understand the literature much more easily and to a greater depth than was possible previously. It is often possible for the candidate to use this greater understanding to extract more from the existing literature base, and this can sometimes add to the overall value of the research.
In this particular case the final outcome is a new theory developed by the candidate and based on the literature, a pilot study and a main study. This theory is put forward to explain the empirical observations that took place in the research programme. The theory is put forward for critical evaluation by other researchers. The theory itself could form the basis of future doctoral research programmes.

Candidates will eventually have to be able to design their own research programme. The design itself could look very different from the example shown in Figure 5.1. The candidate might adopt a phenomenological paradigm and choose an observation-based methodology with no formal hypotheses. In this case the
The candidate could alternatively choose to develop a more exploratory-based approach with no formal hypotheses. This type of research design would be appropriate where the candidate wishes to evaluate some kind of new phenomenon with the objective of explaining how (positivist) or why (phenomenological) the observed events are taking place. In this case the candidate could design a research programme that evaluates a single sample in detail. The results will be indicative, and may not apply to the population as a whole. The same candidate, or other researchers, could then take the research on to the next stage.

The basic alternative levels at which to base the research are shown below.

- **Exploratory based – single sample.** This design is used where the candidate wants to look at one sample in detail and explore its characteristics as a one-off. The objective could be to develop an application solely for that individual sample or to develop an indicative explanation for observed behaviour in the individual sample to be applied later to the population as a whole.

- **Exploratory based – multiple sample.** The next stage in developing the indicative research results from the single sample is to extend the research to include a multiple sample. If the same observed behaviour takes place in a larger number of samples, the indicative case is strengthened.

- **Hypothesis based – single sample.** Assuming the multiple sample results support the indicative theory there may be a case for assembling and testing a formal hypothesis. This may be done initially on a single sample as a pilot study or as a one-off case study.

- **Hypothesis-based – multiple sample.** The final stage in developing full definitive results is to conduct a full hypothesis based research programme with a multiple sample.

It should be clear that these levels follow on one from the other. Doctoral research could be based at any level or could cross one or more levels. The levels are logical and reflect the process involved in conducting research in most contexts. For example, consider the research programme that is put in place to find whether there is a link between drug abuse and a theoretical new disease. The disease appears to be a mutation of an established disease, and the cause is unknown. A researcher might examine the body of a person who has died of the disease and find, for example, that the dead person was a drug abuser. This may suggest a causal link between drug abuse and the disease. Researchers might then extend the sample to include 10 or 15 more bodies of people who have died of the disease, and may find that in each case the person involved was a drug abuser.

The exploratory element has indicated a causal link. Researchers may now wish to determine whether there is a definitive causal link, and so extend the research using formal hypotheses, first on a small sample and then, if the results are supportive, on a larger sample. The final level of the research, using a formal set of research and operational and research hypotheses on a large sample, may provide definitive results that show a link between drug abuse and the disease.
It should also be noted that the process of finding a cure for the illness follows more or less the same basic sequence from initial testing on a small number of volunteers to full clinical trials using large numbers of volunteers and real patients.

Any one of these research levels would be acceptable as a basis for doctoral research. The choice of level really depends on the individual preferences of the candidate. The small sample-exploratory end of the continuum obviously lends itself more to a phenomenological approach, whereas the formal hypothesis-large sample end lends itself more to a positivist approach.

5.8 Choosing Methodologies

5.8.1 Introduction

This section attempts to summarise the methodologies available, and to link them to the basic positivist and phenomenological paradigms. The final choice of research methodology will always depend on the characteristics of the individual research programme. The candidate should always discuss the proposed methodology carefully with the supervisor before committing to it.

5.8.2 Choosing Methodologies

The choice of research methodology depends on how the candidate wants to approach the research programme. The first decision to make is that of choice of paradigm. Some methodologies are characteristic of positivism, while others are characteristic of phenomenology.

Positivism is generally most suitable for candidates who have a more numerate background and perhaps a more structured approach. Most candidates who are mathematicians, statisticians, pure scientists or engineers will tend to think in positivist terms because that is how they have been taught to approach problems. These candidates naturally look at a problem as an analytical challenge, and they break the problem down into smaller pieces to be examined and tested.

Positivism is generally regarded as being ideally suited to most forms of empirical research. It is also compatible with most forms of inferential statistics-based research. Positivism may be applicable to some observation-based research and to some survey-based research.

Phenomenology is more suitable for candidates who have a less numerate background and who are perhaps less formally structured. Most business and management people tend to think in more phenomenological terms because they are used to dealing with people and realise that a more qualitative and subjective approach is needed where people are involved.

Phenomenology is ideally suited to observation-based research and survey-based research. It is obviously less compatible with empirical approaches and with the use of inferential statistics.

Some candidates have a preferred methodology right from the start of the research programme. Others have a more open view and are happy to adapt and
develop an appropriate methodology as the research progresses. At research proposal stage the candidate is required to indicate the paradigm and methodology that is to be used, although a full and detailed explanation is not required. Typically the level of detail required is as summarised below.

- **The research paradigm.** The candidate should indicate whether the research is based on a positivist or phenomenological paradigm.
- **The research level.** The candidate should indicate the proposed research level. This could be exploratory-single sample, exploratory-multiple sample, hypothesis-based single sample or hypothesis-based multiple sample. Additionally, the candidate could propose to work at more than one level.
- **The basic approach.** The candidate should make it clear whether the research is based on an empirical, survey-based, observation based or inferential statistics-based approach, and/or if a combination of approaches is to be used.
- **The basic methods.** The candidate should describe the proposed samples and basic data collection techniques. This could include the proposed use of longitudinal or cross-sectional case studies, experimental work and/or laboratory-based work etc. The candidate should detail the proposed tools and techniques to be used, such as interviews, questionnaires, email-based surveys, or embedded participant observation.
- **The basic process.** The candidate should also make it clear how the methodology is to be implemented and what the various outcomes will be – for example, if the end result is to be a test on an existing theory or the generation of a new theory.
- **Triangulation.** The candidate should make clear any proposed approaches to achieve triangulation. This area is discussed in more detail in the following section.

### 5.8.3 Triangulation

**Triangulation** is the outcome achieved by successfully using different research methods in the same research programme. The basic idea is to use different tools and techniques to arrive at the same conclusion. For example, a research argument may be significantly strengthened if the results that lead to that argument include a combination of hard statistics and more subjective interview results. If both the statistics and the interview responses point to the same conclusion, this is a stronger position than just having one set of results pointing to the relevant conclusion.

Triangulation as a concept is widely used in the physical and natural sciences. Surveyors use triangulation to establish exact locations. If the position of two objects is known the position of a third object can be determined if the distances to each of the two objects is known or can be measured. Modern global positioning satellite (GPS) systems use two or more satellites in orbit around the earth. Radio waves travel at the speed of light. The position of each satellite relative to the ground (or sea) is known by measurements from ground-based control stations. If the satellite transmits a radio wave to a ground- (or sea) based receiver, the time taken for the radio wave to travel from the satellite to the receiver can be accurately determined. The position of the third object can be determined using the time taken for the radio wave to travel from each of the two objects to the receiver, and the position of the two objects relative to the receiver.
measured. This time is a direct function of the distance between the satellite and the receiver. A computer incorporated with the receiver can calculate the distance from one or more satellites to an accuracy of a few metres each way. This enables the ground-based receiver/computer to calculate its own position relative to the known position of the satellites. It does this by a process of triangulation using basic laws of geometry.

Nearly all aircraft and ships use this GPS approach in navigation. The application has extended even to the mundane use of tracking cabs in major cities. Another computer at the cab head office can calculate the location of the nearest available cabs to the fare. This process gives the cab company the potential to make the most efficient use of its resources.

Exactly the same principle can be applied to research. Findings generated by one research method can be triangulated against results generated by another research method. The obvious example is the triangulation of data generated by a longitudinal study against research generated by a series of cross-sectional studies. Provided the research method is the same, and provided the two data sets are properly calibrated, triangulation can be used to demonstrate research validity.

Triangulation is not restricted to the use of different methods. Some alternative types are considered below.

- **Methodological triangulation.** This is the most common method of triangulation. The research results are generated by the use of a number of different research methods. Ideally both qualitative and quantitative types of data are used. This type of triangulation can usually be incorporated into the methodology when the research is being designed.

- **Researcher triangulation.** Another common form is the use of references where other researchers are cited. If a candidate can identify a number of other researchers who have generated supporting or compatible results these can be used to triangulate the candidate’s findings. It is unlikely that exactly the same results will ever be generated by two separate researchers, but there may be numerous research programmes in the literature where the results and conclusion are compatible with the candidate's work and can be used for triangulation.

- **Chronological triangulation.** Another possibility is time-related triangulation. This type is really more appropriate in the pure sciences and engineering, where there are immutable laws that do not change over time. For example, Archimedes’ principle holds as effectively today as it did when Archimedes first conceived it around 4000 years ago.
• **Interdisciplinary triangulation.** It is sometimes possible that laws or theories that explain something in one discipline can be used to provide an explanation for something in another discipline. For example, Galileo first theorised that the world is round in the seventeenth century. He saw the motion of the planets and the sun and moon and realised that these bodies were all in motion relative to each other with the sun at the centre. Galileo was a mathematician, but he also made contributions in other disciplines including astronomy and physics. Galileo effectively invented the telescope and used his early models to look at the moon and planets, confirming these bodies were round. What had been predicted by mathematical calculation was reinforced (triangulated) by astrological observation.

• **Geographical triangulation.** This type of triangulation would again not be appropriate in the pure sciences and engineering, although it could have implications in the natural sciences. An example is catastrophe theory. Many geologists and palaeontologists suggest that there have been a series of major catastrophes in the history of the earth, one of which was an asteroid impact some 65 million years ago that resulted in the extinction of the dinosaurs. This theory of a major impact is triangulated by evidence from the fossil record of 65 million years ago all over the world. The evidence from all over the world suggests that there was a major event 65 million years ago, and that it had severe effects all around the planet.

• **Cross-cultural triangulation.** This type of triangulation again would not be applicable in the pure sciences and engineering. It could be applied where findings in one society are mirrored in another. An example could be the use of the facial expression we refer to as smiling to indicate happiness or satisfaction. Smiling can be seen to have the same meaning in virtually all cultures around the world.

• **Evolutionary triangulation.** There are many examples of evolutionary traits that are common both within species and across species around the world. For example, although humanity has one set of common ancestors possibly dating back to *Australopithecus afarensis* some 3.2 million years ago, the various races and racial groups of humanity spread out and evolved separately around the world. People all over the world, however, evolved common characteristics, despite being geographically separated by thousands of miles for millions of year. For example, the human ear is most sensitive to sound frequencies between 2 and 4 kHz. This applies to all people everywhere. This sensitivity range almost certainly evolved because it reflects the most common frequency range of the human voice.

One of the simplest forms of developing triangulation is through the use of both quantitative and qualitative research methods. A researcher who is attempting to measure how likely senior managers are to leave a company after it has been acquired by another company could develop a two-stage methodology. Stage 1 could involve the use of structured interviews and questionnaires, where common patterns of areas of concern are isolated. Stage 2 could then involve a series of much more detailed unstructured interviews, where the researcher attempts to obtain more information on the main areas raised in the stage 1 survey.
5.9 The Pilot Study

5.9.1 Introduction

This section considers the issue of a pilot study. The candidate will not be required to design a detailed pilot study at research proposal stage. The candidate will, however, have to show whether a pilot study is proposed for the main research and, if so, how it will fit in with the main study design. This section briefly summarises the main components of a pilot study and considers how a pilot study can contribute to the overall research outcomes. Candidates should note that a pilot study is not necessarily required in all cases. In some cases a pilot study may considerably strengthen the overall research programme, whereas in other cases it may be unnecessary. The candidate should consider the issue of whether or not a pilot study is required at an early stage in the research design process.

5.9.2 The Concept of a Pilot Study

A pilot study is simply a small-scale study carried out to allow a preliminary evaluation of the suitability or viability or otherwise of the proposed main study. The idea is similar to the idea of pilot bores that are widely used in tunnelling and mining. The engineers know where the main tunnel has to go, and as they dig the main tunnel they drill a pilot bore ahead of the main tunnel to check for any possibly dangerous elements such as water or gas. The pilot bore is a miniature version of the main tunnel, and it is used to ensure the safety and viability of the main tunnel.

In research, a pilot study is normally used fairly early in the research. The typical application is in developing the basic theory into a research theory that can be tested as part of the main study. The basic sequence is usually as shown below.

- **The literature review.** The researcher studies the existing knowledge base in the chosen research area. The review is a critical evaluation of a wide range of different sources, from research journal papers to newspaper articles.
- **The literature synthesis.** The synthesis is a collectivisation of all the material covered in the literature review. The synthesis pulls everything together into a compact and concise form.
- **The development of a basic theory.** The basic theory is developed from the literature synthesis. It is based on the existing knowledge base and the candidate’s own ideas.
- **The pilot study.** The pilot study is a small-scale study carried out to assess the viability or otherwise of the basic theory.
- **The development of a research theory.** The basic theory is adapted and modified to incorporate any valid outcomes from the pilot study.

The pilot study therefore plays a central role in the development of the research theory. If the research theory is the bridge spanning the literature review and the data analysis sections, the pilot study is the foundation that underpins the bridge.

In the case of a research design based on a longitudinal study and a supporting series of cross-sectional studies the pilot study could be a mini-longitudinal study. For example, if the candidate proposes the main study to involve working with a
project team over a year and a half, the pilot study may involve working with a similar team over a one-month period. The timescale and degree of involvement necessary for the pilot is generally short compared with the main study.

The pilot study is generally designed to be a replica of the main study. It should make use of all the data collection tools and techniques proposed for the main study. If it is intended to use interviews and questionnaires in the main study, these should ideally be used in the pilot study as well. Their use in the pilot study can be very informative in that it can identify some of the elements listed below.

- Confusing questions.
- Questions that do not measure what was intended.
- Areas of incompatibility between questionnaire and structured interview responses.
- Results that were not as expected.
- Research design omissions.

When thinking about the design of the pilot study it is often useful to consider working with a data source different from the source to be used for the main data collection process. For example, a candidate who is developing a research programme that will use a main longitudinal study and a series of cross-sectional studies may decide to distribute the data sources among a number of companies. It would be most logical for the candidate to base the longitudinal study in his or her own company where appropriate. The cross-sectional studies will probably use data from the same company where possible, or from other companies that agree to collaborate. Ideally, the pilot study should use data from yet another company. Running the pilot using an unrelated data set minimises the risk of reactance.

The candidate should remember that the pilot study may generate some results that are unusable. There may be cases of research questions that are unanswerable and hypotheses that cannot be accepted or rejected with any certainty.

Candidates should also note that, although pilot studies are generally carried out ahead of the main study, time or cost constraints might require that there is a degree of overlap between the two. This often happens where both the pilot and main studies are based on longitudinal studies and where the main longitudinal study lasts for a significant period of time. This type of pilot study is sometimes referred to as a phased pilot, because the pilot is not complete before the main study starts. The idea is shown diagrammatically in Figure 5.2.
In Figure 5.2 the pilot study is evaluating the three main elements of the main study. These are the direct observation phase, the questionnaire phase and the interviews phase. The observation phase of the main study commences as soon as the pilot study observation phase is complete. Note that the rest of the pilot study is still in progress and is incomplete when the first phase of the main longitudinal study starts. The researcher in this case would be conducting the main study observations while piloting the questionnaires. There is some spare time between the completion of the pilot study questionnaire evaluation and the point at which the main study questionnaires have to start. In this particular case there is a pause in the pilot between the end of the questionnaire evaluation and the start of the interview evaluations. This could be as a result of the workload demands generated by the main study questionnaires.

Phased piloting is a useful way of saving the overall time required to conduct both the pilot and main studies. A greater degree of control is required than is the case with standard sequential piloting.

**Learning Summary**

The candidate should now have an understanding of:

- the importance of developing a research strategy;
- the differences between cross-sectional and longitudinal research;
- the different research methodological approaches that are known;
- the advantages and disadvantages of the different research methodologies;
- the concepts of reliability, validity and generalisability;
- the basic types of triangulation;
- the concept of a pilot study;
- how to be able to design a suitable research method for the current research.
The following section briefly summarises the primary learning outcomes from each section included in this module.

**Research Strategy**

- Strategic planning basically works by looking at where something is now, at where that same something needs to be in X years' time, and then developing a plan to bring that required transition about.
- The strategic planning process defines clear start and finish points, and examines all the processes that take place in achieving the conditions of the end point.
- Having planned a strategy for achieving its strategic objectives a company or an individual still needs to retain an ability for short-term or tactical response. The strategic plan may attempt to define the starting and end positions and all the transitional events expected, but it cannot allow for all possible eventualities.
- Research programmes need a detailed level of strategic planning. In most cases the time and money involved represent very significant investments by the candidate.
- It is very much in the candidate’s best interests to ensure that the research programme is planned as carefully as possible, and to ensure that any divergences or variances from what is planned are identified immediately so that appropriate corrective actions can be carried out.
- The two main alternative forms of research are empirical research and theoretical research.
- Empirical research is based on observation of actual events.
- Theoretical research is based on theoretical projections.
- Good empirical research requires a thorough knowledge and understanding of the relevant theory, and good theories require detailed observation and knowledge of what is observed in the appropriate area.
- The empiricist designs his or her empirical research to be compatible with all known theories.
- Empirical research tends to be dominant in management and business research simply because of the nature of the subject areas concerned, and also because these are relatively new disciplines and there has not been sufficient research and development time to allow a detailed theoretical framework to evolve.
- Candidates should feel at liberty to choose either an empirical approach or a theoretical approach.
- Depending on the literature review and the stated aims and objectives of the current research the candidate might decide to go for one of the following options.
  - Test an existing theory.
  - Test a new branch to an existing theory.
  - Test an entirely new theory.
- Develop a new theory for testing.
- Develop a new branch to an existing theory for testing.
- Develop an entirely new theory for testing.

- The logical process for developing a theory as an outcome is as shown below.
  - Literature review.
  - Literature synthesis.
  - Basic theory.
  - Pilot study.
  - Final theory.
  - Design of research methodology, data collection and analysis.
  - Results.
  - Literature reappraisal and theory development.
  - Conclusions and statement of final theory.

- The strategy is concerned with research design at a number of different levels. These are listed below.
  - The philosophical level.
  - The analysis level.
  - The operational level.
  - The candidate level.

- It is common for the candidate to underestimate the time required to complete different stages of the research.
- Candidates often underestimate the intellectual challenge offered by doctoral research. It is very important that the candidate makes a truthful and frank assessment of his or her own skills, experience and aptitude before committing to a final research strategy.
- In all cases it is advisable for the candidate to design a research strategy that includes only approaches and techniques with which he or she is familiar.

**Cross-Sectional Research**

- Cross-sectional research is one of the most popular approaches used in business and management research.
- The idea of cross-sectional research is that it bases itself on the characteristics of the sample at one given time. In some ways cross-sectional research provides a still photograph of somebody whereas a video clip provides a longitudinal ‘photograph’, comprising a series of still photographs linked together to represent movement.
- Cross-sectional studies have the advantage that they can be executed fairly quickly and in most cases are cheap and easy to perform.
- Cross-sectional studies are reductionist, and as such they are generally included in positivist approaches as they may be adequate to explain how something is occurring as opposed to why it is occurring.
- An obvious example of a cross-sectional study is a census.
As a result of the limited value of cross-sectional study outcomes it is often advisable to use cross-sectional studies in connection with more detailed longitudinal studies.

Cross-sectional studies can be used in three primary roles as shown below.
- Support.
- Validation.
- Initiation.

If carefully designed, cross-sectional studies can provide data that approximate to those provided by a much larger and more time-consuming longitudinal study.

Cross-sectional studies are often relatively simple and quick to design and implement.

Cross-sectional studies allow the researcher to consider a wider range of different samples than would be possible with longitudinal studies alone. Using a wider range of samples as validation can significantly strengthen longitudinal main study findings.

Cross-sectional studies may produce results or outcomes with restricted value because the timescale for their implementation is short and therefore the amount of data they can provide is limited. In most cases there has be a number of different cross-sectional case studies taken at different times if the cross-sectional studies are to act in support of a full longitudinal study.

Very careful calibration is required where the research is time based and where the cross-sectional studies are intended to demonstrate time-based variations.

Cross-sectional research is generally inappropriate where detailed understanding and explanation are required. Cross-sectional studies tend to be more appropriate for supportive and comparative uses.

Cross-sectional studies are often used to increase the overall sample size included in the research. Where this is the case, a reliable sample classification system is required to ensure that any cross-sectional data are compatible across the sample data it provides.

**Longitudinal Research**

- In some cases the longitudinal study may encompass one or more entire lifecycle phases of the study.
- A longitudinal study is the obvious approach where the researcher is looking at long-term developments where the main aspects of the research are time based.
- Longitudinal research is associated with both positivist and phenomenological paradigms, and is equally suitable for a quantitative or qualitative approach.
- In its simplest form a longitudinal study could look at something as simple as the development of team conflict over the course of a project team lifecycle.
- Longitudinal studies have the advantage that they provide rich data and assist in developing a deeper knowledge and understanding of what is actually hap-
pening within a set of observations. In the case of social research they allow
the researcher the access and time required to fully embed and make full use
of the phenomenological approach.

- In some cases, especially in social contexts, the longitudinal approach may be
  the only viable way of ever understanding complex and ever-changing social
groupings.
- Longitudinal studies work well with associated cross-sectional studies
  provided the overall research design is carefully controlled.
- Longitudinal research is expensive in terms of time and money. A researcher
  might spend a year or more in a project team longitudinal study.
- If the results generated by the longitudinal study are in any way compro-
  mised or inconclusive, the considerable time and money spent on a
  longitudinal case study may have to be entirely written off.
- Longitudinal studies tend to rely heavily on one sample. This sample must
  therefore be very carefully selected. Any failings in the selection of the sam-
  ple could have potentially disastrous results.
- A single sample is much more susceptible to the effects of both foreseeable
  events such as staff migration and unforeseeable events such as the actions of
  a competitor. As a consequence, ether the research design has to become
  more complex or the overall level of risk increases.
- A single sample may mean that the research study can only effectively be
  used as indicative and exploratory rather than definitive.

Research Methodologies

- A research methodology is a body of methods.
- A method is a procedure or process for achieving an object.
- In terms of business and management research one possible classification
  system for research methodologies is as shown below.
  - Empirical research methodology.
  - Survey-based methodology.
  - Observation-based methodology.
  - Inferential statistics-based methodology.
  - Other methodological approaches.
- There are numerous types of empirical research, ranging from highly struc-
tured laboratory experiments to the analysis of individual behaviour under
naturalistic conditions.
- Empirical research is concerned with developing and testing theories and
  hypotheses in order to identify and explain causalities.
- Empiricism is sometimes referred to as the ‘scientific approach’. Its real
  strength lies in the degree of control that the researcher can exercise over
  the data.
- A case study is basically a subject that is selected from a larger sample size
  for detailed investigation, usually on the basis that the sample is representa-
tive of the population as a whole.
• The classic types of case study are listed below.
  – The one-off.
  – The indicator.
  – The replicator–validator.
  – The multiple.
• The main types of data-gathering approaches used in case studies are the following.
  – Direct observation.
  – Participant observation.
  – Structured interviews and questionnaires.
  – Unstructured interviews.
  – Historical data.
• Case-study-based approaches are well established and well understood.
• The use of case study material is compatible with the natural thought process where a person does one thing knowing that it may be representative of another thing.
• Different types of case study can be used effectively together, for example longitudinal and cross-sectional case study types.
• Case-study-based research can make use of a range of different sources of information.
• The case study chosen may not be representative of the population as a whole. It could be unique and could provide data only relevant to itself alone.
• Longitudinal case studies can last for a considerable period of time and can make excessive time demands on a researcher.
• In some cases there is no guarantee that a longitudinal case study will produce any useful results, and the researcher may have to write off a considerable amount of non-productive time.
• Surveys are widely used in business and management research. Surveys generally take a sample from the population as a whole and assume that this sample is representative.
• Surveys are often based around structured questionnaires.
• In-depth survey interviews are often recorded and then transcribed. The researcher can often develop a clearer and more detailed understanding of the respondent’s communication if he or she can read and re-read the transcript several times.
• Questionnaires and interviews are well-established data collection techniques.
• The format and structure of interviews and questionnaires can easily be varied to modify the phenomenological or positivist emphasis of the research.
• Structured survey results can be relatively easily validated and replicated.
• People tend to dislike questionnaires unless they have been approached beforehand and have given their consent to participate.
Structured questionnaires and interviews are incapable of generating the richness of detail required by most phenomenological researchers.

Most observation-based methodologies concentrate primarily on behaviour.

There are two main types of direct or participant observation:
- naturalistic observation;
- managed observation.

Observation-based methodologies are always subject to interpretation. Two different people may observe exactly the same team behaviour yet explain or interpret it in completely different ways.

Ethnography is a type of naturalistic participant observation-based research in which the observer becomes embedded in the subject team and he or she makes subjective observations from the viewpoint of being a full team member.

People are used to observing each other. By experience, people understand facial expressions and other forms of body language. Most people can fairly quickly develop a subjective understanding of what is going on in an observed team.

Observation-based research can make use of a range of modern technologies such as time-lapse video cameras, multiplex displays, and movement detection devices.

Teams of people exhibit complex behaviour. Even the simplest interactions can generate a very large number of different types of data. Researchers could attempt to record everything from verbal content and voice volume to facial expression and body movements. The number and range of measurable variables can be very large, and inexperienced researchers may well have difficulty in coping.

A considerable amount of behaviour data is usually lost because the observation measurement systems are not sufficiently robust.

Observed behaviour may not always be due to the normally expected causes. People can, and sometimes do, act in an irrational manner.

Inferential statistics-based methodologies are those based on the use of statistics to infer generalised outcomes. Generalisations allow researchers to define the characteristics of the population as a whole from the characteristics of a representative sample.

Inferential statistics-based methodologies are clearly more appropriate for a positivist researcher who is concerned with showing ‘how’ something happens rather than ‘why’ it happens.

In parametric testing the data plot is assumed to approximate to a normal distribution, whereas non-parametric testing makes no assumption about the characteristics of the data.

Correlation approaches allow the researcher to analyse the degree of association between two variables.
• Forecasting approaches allow the researcher to consider current known data and extrapolate beyond what is known in order to forecast unknown and future values.
• Futures research uses techniques such as scenario mapping and brainstorming techniques.
• The inferential statistics approach uses well-tried statistical tools and techniques.
• There are established major software packages such as SPSS that researchers can use. These contain all the standardised and more advanced statistical tools and techniques in a simple to use format.
• Trends and distributions represented graphically are generally more easily and more readily understood than text-based equivalents.
• Non-numerate candidates should avoid the use of complex statistical tools and techniques unless they know how to use them.
• There is always a danger that the researcher will become preoccupied with the statistics at the expense of the detailed design of the research programme.
• Field-based research addresses some of the issues associated with trying to measure the behaviour of groups and individuals in artificial settings.
• Field-based research is often criticised by laboratory-based positivist researchers. The argument put forward is that fieldwork lacks structure and rigour, because of the mass of potentially conflicting influences that act on subjects in their home environment.
• Historical researchers generally try to make use of primary sources. These are sources that relate directly to the event.
• Action research is an approach that is sometimes adopted in applied doctoral research. In action research the researcher identifies a specific area within the sample organisation where some form of change or improvement is required.
• The candidate should make every effort to adopt a balanced methodology that includes a range of different approaches.

Reliability, Validity and Generalisability
• Reliability is a measure of the extent to which a set of results can be regarded as being dependable.
• In the context of research, reliability is usually measured in terms of the extent to which the same results will be generated on successive occasions using the same methodology.
• The issue of reliability is the primary reason why replication is so important in any kind of scientific research. Researchers attempt to demonstrate reliability by replicating their research. In general terms the greater the degree of replication, the greater the reliability of the results.
• Replication may become an issue in phenomenological research.
• Phenomenological researchers may attempt to increase the reliability of their findings by maintaining detailed and accurate records of all aspects of their research.

• Unreliability could originate from the following areas.
  – Methodological error.
  – Processing/analytical error.
  – Presentation error.
  – Subject misdirection.
  – Subject bias.
  – Researcher error.
  – Researcher bias.

• Validity is a measure of how well the results can be justified and considered to be a true and accurate reflection of reality.

• There are several different types of validity. Some examples are considered below.
  – Representation validity.
  – Conceptual validity.
  – Extension validity.

• Generalisability is a measure of how well the conclusions of the research can be applied to the population as a whole.

• Generalisability is sometimes referred to as external validity.

• External validity is particularly important in research in the pure sciences and engineering.

• In most types of business or management research, variables that could affect external validity are usually identified at an early stage in the research and are dealt with in a number of different ways, including those listed below.
  – Incorporation.
  – Recognition.
  – Exclusion.

**Research Design**

• The research element of the DBA programme is completed in three stages. These are the research proposal, the literature review submission, and the methodology, analysis, results and conclusions.

• The EBS Research Committee considers the first two submissions; the last stage, together with the literature review bound together as the thesis, is considered at *viva voce* examination by the examiners.

• In the research proposal the candidate must demonstrate that he or she has thought through the structure of the research and that the basic elements and components of the programme have been considered.

• The different levels at which to base the research are shown below.
  – Exploratory based – single sample.
  – Exploratory based – multiple sample.
Choosing Methodologies

- The choice of research methodology depends on how the candidate wants to approach the research programme. The first decision to make is that of choice of paradigm. Some methodologies are characteristic of positivism, others are characteristic of phenomenology, and still others are characteristic of both paradigms.
- Some candidates have a preferred methodology right from the start of the research programme. Others have a more open view, and are happy to adapt and develop an appropriate methodology as the research progresses.
- At research proposal stage the candidate is required to indicate the paradigm and methodology that are to be used, although a full and detailed explanation is not required. Typically the level of detail required is as listed below.
  - The research paradigm.
  - The research level.
  - The basic approach.
  - The basic methods.
  - The basic process.
  - Triangulation.
- Triangulation is the outcome achieved by successfully using different research methods in the same research programme.
- Some alternative types of triangulation are listed below.
  - Methodological triangulation.
  - Researcher triangulation.
  - Chronological triangulation.
  - Interdisciplinary triangulation.
    - Geographical triangulation.
    - Cross-cultural triangulation.

The Pilot Study

- A pilot study is simply a small-scale study carried out to allow a preliminary evaluation of the suitability or viability or otherwise of the proposed main study.
- The basic sequence of work involved in developing a research theory is listed below.
  - The literature review.
  - The literature synthesis.
  - The development of a basic theory.
  - The pilot study.
  - The development of a research theory.
- The pilot study plays a central role in the development of the research theory. If the research theory is the bridge spanning the literature review
and the data analysis sections, then the pilot study is the foundation that underpins the bridge.
- The pilot study is generally designed to be a replica of the main study. It should make use of all the data collection tools and techniques proposed for the main study. If it is intended to use interviews and questionnaires in the main study, these should ideally be used in the pilot study as well.

Review Questions

True/False Questions

Research Strategy

5.1 Research strategy is the general plan used when answering the research question(s) that have been set. T or F?

5.2 The research strategy generally contains clear objectives and considers the constraints such as time, money, access to data, and location. T or F?

5.3 Empirical research is guided by the results of observation or experiment. T or F?

5.4 Theoretical research reflects on ideas and develops a different perspective that may subsequently come to be regarded as a new theory. T or F?

5.5 Empirical and theoretical research are entirely separate. T or F?

5.6 Existing theories are never superseded. T or F?

Cross-Sectional Research

5.7 Cross-sectional research is an approach usually, but not exclusively, associated with a positivist paradigm. T or F?

5.8 Cross-sectional research is never associated with a phenomenological paradigm. T or F?

5.9 Cross-sectional studies collect data over a relatively long period of time. T or F?

5.10 Cross-sectional studies are not scientifically valid. T or F?

5.11 A government census is an example of a cross-sectional study. T or F?
Longitudinal Research

5.12 Longitudinal research provides a snapshot of conditions at one particular moment in time. T or F?

5.13 Longitudinal research produces data that are always reliable. T or F?

5.14 Longitudinal research produces data that are always replicable. T or F?

5.15 Longitudinal research should always be conducted in association with appropriate cross-sectional research. T or F?

Research Methodologies

5.16 A research methodology is a collection of research methods. T or F?

5.17 Field research is based on laboratory experiments. T or F?

5.18 Laboratory-based experiments are extremely useful, within limits, in some disciplines. T or F?

5.19 A survey is a positivist approach and is widely used in business and management research. T or F?

5.20 Survey research is based on drawing a sample from a population. T or F?

5.21 Forecasting research is often based on retrospective historical analysis. T or F?

5.22 Action research is based purely on theoretical analysis. T or F?

5.23 Action research cannot be validated. T or F?

5.24 Case studies can form a valid method for the collection of data. T or F?

5.25 Case study data are rarely valid. T or F?

5.26 Historical research has no validity in current research. T or F?

5.27 Historical research should always be based on primary sources. T or F?

5.28 Ethnography is a phenomenological methodology derived from cultural anthropology in which the researcher becomes a full working member of the group being studied. T or F?

5.29 Ethnographic research cannot be developed on a longitudinal basis. T or F?
Reliability, Validity and Generalisability

5.30  Reliability and validity are effectively the same thing. T or F?

5.31  Reliability is linked to replicability. T or F?

5.32  Subject error is one possible source of error in reliability. T or F?

5.33  Validity is the extent to which differences found with a measuring instrument reflect true differences among those being tested. T or F?

Research Design

5.34  Research programmes should always be carefully designed in consultation with the supervisor. T or F?

Choosing Methodologies

5.35  Action research is applicable primarily to the phenomenological paradigm. T or F?

5.36  Case studies are applicable to both the positivist and phenomenological paradigms. T or F?

5.37  In-depth surveys are generally applicable to the interpretivist rationale of the positivist paradigm. T or F?

The Concept of a Pilot Study

5.38  In most cases it is advisable to conduct some kind of pilot study. T or F?

5.39  The results of the pilot study should never be used to influence the design of the main research. T or F?
Multiple-Choice Questions

Research Strategy

5.40 Empirical research is guided by:
A. theory.
B. application.
C. the results of observation or experiment.
D. historical evidence.

5.41 Empirical and theoretical approaches can:
A. never be mixed.
B. always be mixed.
C. often be mixed.
D. very occasionally be mixed.

5.42 An EBS DBA candidate can develop an acceptable research strategy based on:
I. reiterating an existing theory.
II. extending an existing theory.
III. developing a new theory based on existing work.
IV. developing an entirely new theory.
Which of the above are true?
A. I only.
B. I and II.
C. II and III.
D. II, III and IV.

Cross-Sectional Research

5.43 A census is an example of:
A. longitudinal research.
B. cross-sectional research.
C. action research.
D. ethnographic research.

5.44 Cross-sectional research is most often associated with:
A. a positivist paradigm.
B. a phenomenological paradigm.
C. a minimalist paradigm.
D. an interventionist paradigm.
Longitudinal Research

5.45 Typical validity issues in longitudinal research may be addressed by:
I. taking account of any major unforeseen events during the course of the research.
II. ensuring that the researcher uses an identical collection instrument for each sample.
III. minimising losses in the sample due to staff leaving or refusing to cooperate.
IV. randomising the days upon which the data are collected during the study.

Which of the above are true?
A. I and IV.
B. I, II and IV.
C. I, II, III and IV.
D. III and IV.

Research Methodologies

5.46 Methodology is concerned with:
I. the data to be collected.
II. sample design.
III. locations from where data are collected.
IV. setting aims and objectives.

Which of the above are true?
A. I and II.
B. I, II and III.
C. I and III.
D. I and IV.

5.47 Examples of methodologies include:
I. action research.
II. case studies.
III. historical research.
IV. positivism.

Which of the above are true?
A. I only.
B. I and II.
C. I, II and III.
D. I, II, III and IV.

5.48 The level of control available in field experiments is generally:
A. much higher than can be achieved in a laboratory setting.
B. slightly higher than can be achieved in a laboratory setting.
C. about the same as can be achieved in a laboratory setting.
D. lower than can be achieved in a laboratory setting.
Reliability, Validity and Generalisability

5.49 Subject bias originates in the:
   A. sample respondent.
   B. research methodology.
   C. researcher.
   D. laboratory.

5.50 Validity is a measure of:
   A. the accuracy with which the research is measuring what it intends to measure.
   B. the extent to which the research cannot be replicated.
   C. the operational bias of the researcher.
   D. the statistical confidence of the sample size.

Research Design

5.51 In most cases the research design:
   A. can be based on existing designs with no amendments.
   B. is specifically developed for the research.
   C. is randomly selected.
   D. is borrowed from another researcher.

Choosing Methodologies

5.52 Case studies are appropriate to:
   A. the positivist paradigm only.
   B. the phenomenological paradigm only.
   C. both the positivist paradigm and the phenomenological paradigm.
   D. neither paradigm.

5.53 In most cases it is possible to:
   I. use only one methodology in isolation.
   II. use two methodologies provided they use the same data collection techniques.
   III. use several methodologies provided they all start at the same time.
   IV. generate results from several methodologies using triangulation.
   Which of the above are true?
   A. I only.
   B. I and II.
   C. II and III.
   D. IV only.
The Concept of a Pilot Study

5.54 The pilot study is often used for evaluating the:
I. proposed research methodology.
II. achievability of the proposed research aims and objectives.
III. feasibility of the research design.
IV. academic ability of the researcher.
Which of the above are true?
A. I and II.
B. I, II and III.
C. II, III and IV.
D. II and IV.
Module 6

Writing the Research Proposal

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Learning Objectives
By the time the candidate has completed this module, he or she should understand:
• the essentials of what is required to produce an acceptable research proposal;
• the primary likely sections of the research proposal;
• why these various sections are required;
• how these sections should link together;
• how to define research intentions in sufficient detail to satisfy the EBS Research Committee;
• how to describe any major hurdles to be overcome in gaining access to organisations in order to conduct the research;
• any ethical problems likely to arise in carrying out the research;
• how to write an acceptable research proposal;
• how to make modifications to the research proposal if required.

6.1 Introduction
The text has now considered all of the primary elements that are required for the preparation of the research proposal. This module is concerned with the process involved in actually writing the research proposal as a document for consideration by the EBS Research Committee. The way in which the research proposal is written is very important. A candidate may have thought through his or her proposed research strategy in great detail. He or she may have thoroughly researched the literature, and an appropriate research methodology, and have developed a clear and achievable set of aims and objectives. The candidate, however, must be able to communicate this knowledge and understanding to the EBS Research Committee. No
matter how promising and well-developed the research strategy, if the candidate cannot communicate it effectively to the Research Committee then the Committee is unlikely to be in a position to accept the research proposal. The research proposal is the vehicle for this communication. This module attempts to develop an understanding of how to make the best use of this vehicle to communicate ideas and intentions.

It is important to understand the significance of the research proposal. It is an integrated and comprehensive summary of what the candidate intends to do and how he or she intends to do it. It is carefully scrutinised by the DBA Research Committee, and it has to achieve an acceptable standard and be accepted by the DBA Research Committee before the candidate can proceed to the supervised stage.

Once the research proposal has been accepted by the DBA Research Committee, it acts as an ongoing term of reference for the rest of the research stage. The design of the research may still be subsequently changed, but any significant changes have to be reported back to the DBA Research Committee for approval. In other words, candidates, in consultation with the supervisor, may make subsequent minor changes to the research design, but major proposed changes have to be referred back for approval. This procedure ensures the DBA Research Committee is kept informed of any major changes and is able to scrutinise and control them as required.

6.2 Problems of Access

6.2.1 Introduction

This section briefly considers the issue of access. The candidate should take great care to ensure that he or she will have access to the data required to complete the research. It is common for students to develop their research proposal on the assumption that the necessary data will be available. It is advisable to check any collaborating companies carefully before relying on the assumption that they will provide the necessary data.

6.2.2 Typical Access Concerns

Most business and management research is based on the use of subject companies or other forms of organisation. In many cases the candidate is familiar with the subject organisation. For example, he or she may be directly employed by that organisation. In such cases access, at least at certain levels, should not be an issue. The problem arises where the candidate is trying to access an unknown organisation and is asking this organisation to contribute to the research. Such prospective contributors often have a series of reservations about becoming involved. Some typical examples are listed below.

- Security. The most obvious concern is that collaborating with the research could lead to the loss of sensitive company information. The organisation may
try to reduce the risk of any such occurrences by requiring the candidate to sign a confidentiality agreement and/or by limiting the level of access allowed, but many organisations simply refuse to collaborate as working partners with candidates because they feel exposed and the risks involved are not justified.

- **Return.** In some cases the research may be of direct relevance to any companies that become involved as working partners. In most cases, however, the degree of return for collaborating companies is relatively low, and senior managers within these companies may feel that the potential payback does not justify the risks involved.

- **Input.** Organisations are becoming increasingly reluctant to collaborate with researchers because of the potential time demands that occur as a consequence. Over the past 20 years or so there has been an enormous increase in the amount of social science/management and business research, and there has been a proliferation in the use of questionnaires and other forms of survey-based data collection techniques. Many companies now return these to sender as a matter of policy because it is simply not possible to respond to them all.

- **Commitment.** Some organisations already collaborate with researchers as partners in long-term research programmes. In such cases the organisation may refuse to provide data for new research programmes as this may compromise the relationship with the long-term researcher.

- **Retraction.** Companies sometimes agree to provide research data initially but later retract this approval. This sometimes occurs where the company has underestimated the amount of time and commitment required and/or has misunderstood the type of data and level of detail required by the client.

- **Change.** It is surprisingly common to encounter candidates who have spent weeks or months carefully building up a research relationship with a large company only for everything to be thrown up in the air because of a major change within the organisation. For example, a set of poor figures might lead to a decision to outsource one or more functions and/or to subcontract elements overseas. A candidate who has just spent nine months developing a research methodology applicable to the home-based manufacturing facility might find that it has been time wasted.

- **Conflict.** Companies sometimes refuse to collaborate with researchers, or they retract previously given permissions because the research itself causes conflict. Senior managers who participate may feel that the research is asking too many potentially awkward questions, and operatives who participate may feel that they are being watched and their output monitored.

It is important that the candidate adopts the correct approach when contacting unknown companies. The candidate should generally make a written response supported by further details of the research. On reading these details, the company senior managers should be able to develop a reasonable understanding of what the research involves and what the likely demands on the company will be. In most cases the most important single element to stress is confidentiality.

EBS DBA candidates often sign confidentiality agreements (see below) with their own companies and with unknown companies that agree to contribute. A confiden-
Confidentiality agreement is basically a contract between the candidate and the company stating that the candidate will not publish, release, publicise, or otherwise communicate any part of the research data or findings to any third parties. This can include both the research development period and an agreed timescale after the research is completed. In this case there may also have to be an agreement with the university to classify the relevant thesis as being ‘restricted access’ for a period of years. Theses that are classified as restricted access are not available for general inspection and can be released only on the consent of the candidate and (usually) the Head of School that provided the supervision services for the student.

The other major security and confidentiality issue revolves around the workforce in the companies concerned. Even with good communication systems, people often resent being told that they have to participate in research within the company. There is a natural tendency for employees to feel that they are being spied upon, and that the researcher will act as a communication channel feeding information back to functional heads and senior management. There is an obvious danger in such cases that respondents will attempt to obstruct the research, and in extreme cases may even give deliberately falsified answers to the researcher’s questions. The most usual response to this type of concern is an undertaking to guarantee some form of anonymity. For example, all interview and questionnaire responses will be stored and processed with no direct identification of who supplied the data. The candidate could put forward a general undertaking that names and job titles will never be used, and that all information will be identified by codes to which the company senior management has no access.

It is also important to recognise that some people will probably not want to take part in the research, perhaps because they feel it is invasive or time consuming. It is generally a good idea to ensure that any agreement with participating organisations states that people who do not want to participate will not be required to do so.

A typical contribution/partnership proposal that is presented to a prospective company might address these areas by containing information and, where appropriate, assurances on the main points listed below.

- The name and address of the researcher.
- The name and address of the university.
- The title of the research.
- The main aims and objectives of the research.
- A summary of the type of data required.
- A statement of how the specific company can provide these data.
- A statement of the exact range and type of data to be collected.
- A summary of exactly how the data are to be collected.
- A summary of who will be interviewed and when.
- A programme for the issue of any questionnaires or other forms of survey.
- An assurance that all information will be treated with confidentiality.
- An assurance that all individuals will be treated with complete anonymity.
- An assurance that no part of the work will be published without the company’s agreement.
• An assurance that the company will be allowed to view and modify any part of the information relating to that company in the final thesis.
• An assurance (where required) that the dissertation will be stored and classified as restricted access where release is strictly controlled.

In some cases it may be necessary for the candidate to contact and discuss involvement with lower levels within the company. For example, trades unions still play a role in industrial relations in some countries. There is always a possibility that a researcher may trigger some form of industrial relations problem if he or she conducts research affecting union members, even where the agreement of senior managers has already been secured. Where this is a possibility, the candidate should ensure that all necessary contacts and negotiations are identified and concluded before any data collection actually takes place.

6.2.3 Confidentiality Agreements and Restricted Access Classification

A question that often arises, both in relation to companies as a whole and in relation to individual respondents, is the issue of commercial confidentiality. In some cases the candidate may be involved in areas the company considers to be commercially sensitive. Most research concerned with financial considerations may fall into this category. Companies may be understandably reluctant to allow the candidate access to information that is commercially sensitive. In such cases, whether the organisation is the candidate’s own company or a collaborating company, such concerns can sometimes be addressed by the use of a confidentiality agreement.

A confidentiality agreement is usually a form of contract issued to protect the interests of a given company. The confidentiality agreement sets out a number of terms and conditions relating to the non-disclosure of research information by the candidate. Such agreements give the company a degree of protection against the unauthorised distribution and dissemination of such material. The confidentiality agreement may relate to all or part of the work. In some cases the sensitive material may be restricted to one small section of the final thesis, while in other cases the entire thesis may be affected. The level of protection afforded by such agreements is not always clear. For example, if a candidate breaks a confidentiality agreement by publishing a paper that contains commercially sensitive information, the company concerned would presumably attempt to recover any damages it suffers as a result of the publication. The company would presumably have to (a) show that it had indeed suffered a loss as a result and (b) quantify the scale of this loss. In reality, the company might have considerable difficulty in establishing these items.

A further degree of protection can be given by the final level of access classification of the thesis. Under University regulations candidates must submit a number of bound copies of the final version of the thesis. The document itself is normally bound after any amendments or changes have been made as a result of the viva voce examination. The University normally retains one bound copy for the use of the University Library. Another copy usually goes to the British Library. These copies are intended for the use of other researchers. In some cases the British Library may make a microfiche copy for ease of transmission. Other researchers around the world can request copies of the thesis either on paper or more usually on micro-
fiche. It is usually possible for a researcher anywhere in the world to obtain a copy through a university interlibrary loans system. Most Western countries have such systems. They are designed to promote the dissemination of research and other materials quickly and efficiently throughout the academic community.

There is obviously the potential for widespread dissemination of a thesis within a relatively short time after completion. Commercial or other sensitive data could reach a wide audience very quickly. One way around this problem is for the University to classify the thesis as ‘restricted access’. Under this classification the thesis is not available for general use. There is usually some form of control system in place where the thesis is held in a secure area and it can be accessed only under controlled conditions. In many UK universities anybody who wishes to access a restricted access thesis must first secure the consent of the author and (sometimes) of the current head of department or school in which the research was carried out.

Confidentiality agreements and restricted access classifications are often used when companies are apprehensive about giving the candidate access to sensitive information. The candidate should discuss the matter with the mentor or supervisor if there is likely to be an issue. Used together, they can usually go a long way towards addressing the concerns of prospective collaborating companies.

6.2.4 Written Access Guarantees

It will be recalled from Module 1 that, because EBS DBA research is highly applied research, candidates can expect to have to obtain research data from real organisations. In order to obtain this data, candidates may have to conduct semi-structured interviews, issue postal or email questionnaires, or examine organisation files and records etc. Research data obtained by the researcher directly from individuals or organisations are often referred to as primary data in that they are obtained directly and for the first time by the researcher. Data obtained from published results, such as financial performance characteristics taken from published profit and loss accounts that are already in the public domain, are often referred to as secondary data.

In most cases, to obtain primary data a DBA candidate has to work closely with a given organisation, and this obviously requires the consent and agreement of that organisation. If the viability of the proposed research depends on that primary data, it follows that the viability of the proposed research equally depends on the consent and agreement of the organisation or organisations who are to provide that data. It is vitally important, therefore, to understand that guaranteed access to the necessary data is a key aspect of DBA research design. Candidates must demonstrate that they have guaranteed and unrestricted access to all necessary data from the earliest stages in the research design process. In most cases, when assessing a research proposal, the DBA Research Committee will require written access guarantees to be provided as part of the submission.

A written access guarantee is usually a signed letter on company headed paper that clearly states the company or organisation will allow the candidate access to all necessary data, whether this is people to interview or company documents and records. The written access guarantee has to be submitted along with the research proposal. Research proposals that do not contain adequate access guarantees will be
rejected. It is worth noting that the DBA Research Committee has previously rejected a number of otherwise promising research proposals simply because they were not supported by adequate written access guarantees.

6.3 Research Ethics

6.3.1 Introduction

In preparing the research proposal the student should also consider the issue of research ethics. Doctoral researchers should always behave in an ethical manner. The reputation of the candidate and the University are both at stake.

6.3.2 The Concept of Research Ethics

The word ‘ethics’ is derived from the Middle English ethik, which in turn was derived from the Latin ethice and the Greek ethikos. Ethics is concerned with the difference between good and bad and the duties and responsibilities of people. For example, a person has a moral obligation to act for the good. People who act for the bad are immoral.

Ethics is a very important concept in business and management research. It impinges on how the candidate interacts with a whole range of different people, including:

- the internal and external examiners;
- the supervisor;
- the senior managers of subject/sample companies;
- other people who work for subject/sample companies;
- the relevant research community;
- the University;
- people who contribute to the knowledge base;
- future readers and researchers.

For example, if the candidate embellishes a section of results because he or she desperately wants the overall results to support his or her hypotheses, the candidate is effectively building this embellishment into the contribution that the research makes to the knowledge base. This embellishment could be minor or major. In either case, it is presenting a flawed contribution to the knowledge base.

Time Out

Think about it: life on Mars.

Embellishments occasionally reach major proportions. The classic example is the concept of canals on Mars. Both orbiting and landing spacecraft from Earth dating from the mid-1970s to the present day suggest that Mars is a dead world with no evidence of life, and with little evidence to suggest that life could ever have been sustained there. The atmosphere is around 95 per cent carbon dioxide with traces of nitrogen and carbon monoxide. There appears to be a
suggestion that there may have been surface water at some time, and there is also some evidence to suggest frozen water at the poles.

The Italian astronomer Giovanni Schiaparelli was one of the first astronomers to study Mars in detail. He conducted a detailed survey of the visible surface of the planet. In doing so he saw lines of different shades radiating around the surface of the planet, and he called them canali (Italian for grooves or channels). This became misinterpreted as canals in English. The myth of canals on Mars was born.

The most significant support for Schiaparelli’s observations came a few years later when the US astronomer Percival Lowell spent a great deal of time observing these ‘canals’. Lowell commissioned the famous Flagstaff Observatory in Arizona US in 1895, and spent much of the rest of his life studying Mars and the ‘canals’. Lowell and a team of people who worked for him made thousands of observations of Mars, and began to ‘chart’ the canals. According to Lowell the canals crossed the Mare Erithraeum (one of the great flat seas on the surface of Mars). Lowell also noted that there appeared to be seasonal colour changes on the surface of the planet, particularly along the courses of the canals. Lowell discussed these phenomena in his book of 1896. He theorised that the canals had been built by an ancient civilisation to carry water from the poles to the equatorial regions of the planet, and that the colour changes were the result of vegetation growing and receding as water availability varied. In many ways, Lowell’s book gave rise to the modern idea of life on Mars.

In fact, as we now know, there never were any canals on Mars. Lowell was a wealthy astronomer who had fallen under the spell of the mistranslated canali myth. Lowell commissioned some very impressive astronomical equipment and then used it to see non-existent canals on Mars. He probably saw much the same as what Schiaparelli saw, but he effectively embellished his visual data with what he truly imagined he could see, which was canals. In some ways, Lowell’s research was a good example of non-scientific research. Lowell saw the canali but his theorisation of what they actually were was not put forward for scientific evaluation.

Lowell’s observations gave rise to a series of related events. One of the most obvious was the publication in 1898 (only two years after the publication of Lowell’s book) of The War of the Worlds by H.G. Wells. This book led to the subsequent global interest in the possibility of life on Mars, which in turn has generated numerous books, films and songs. In making the observations leading to this plethora of developments Lowell was not deliberately trying to mislead anybody. He simply reported, in good faith, what he thought he was seeing through his telescope. Ideally he should have subjected his observations to some form of scientific scrutiny and testing before publishing his results.

Embellishment is one issue to consider under the general heading of ethics. Candidates should always conduct themselves in an ethical manner, maintaining the
standards expected by the University. Some obvious ethical considerations to be made when working with companies are listed below.

- **Honesty.** The candidate should always be completely truthful when dealing with sample companies and individual employees. It is not acceptable for candidates to mislead potential collaborators and contributors in order to increase the chance of agreement being reached. An obvious example is a candidate who deliberately misleads a managing director about the amount of time his company will be required to give to the research. The candidate may feel that he or she has a better chance of securing the agreement of the director if he or she estimates that 10 hours of input time will be required when the actual estimated time is nearer 30 hours. Any such misleading actions are likely to backfire anyway and may cause problems when the senior managers realise just how much time is being consumed.

- **Integrity.** The candidate should ideally present a constant and unvarying image of scientific and academic reliability. The candidate should try to maintain the same attitude throughout the research programme, and should project an image where comments or feedback from one part of the organisation are seen to have no effect on behaviour. One negative event, such as the candidate losing his or her temper, could undermine the entire moral integrity of the candidate.

- **Professionalism.** In enrolling on a doctoral research programme the candidate assumes the standing of a doctoral candidate who is matriculated to a leading UK university (Heriot-Watt). In order to comply with this standing the candidate should adopt an appropriate standard of manner and behaviour. This may go as far as adopting a suitable dress code in some applications, although this depends very much on the person the candidate is meeting.

- **Preparation.** The candidate should ensure that he or she carries out all relevant preparation before meeting anybody from any prospective contributing companies. Ideally, the candidate should do some background research into the company itself, especially in relation to how it is organised and how the authority structure works. The candidate should have a clear list (either written down or mental) of what he or she intends to ask and say.

- **Trust.** It is imperative that the candidate is able to convey an acceptable level of reliability and trust. The candidate should make it absolutely clear to all people involved in the organisation that all information provided is confidential and anonymous (unless the person providing the information specifically requests otherwise). The candidate should also avoid relating information. For example, if a person says something of particular interest in an interview, the candidate should avoid the temptation to quote what he or she said as a means of inviting other interviewees to expand on it. This approach may assist the interviewer, but it alerts the interviewees to the fact that responses are fed back directly, albeit anonymously.

- **Objectivity.** The candidate should make every effort to be as objective as possible. In most forms of research any emotional or personal attachment and sentiment should be disregarded, and the candidate should make it clear that he or she is concerned solely with gathering information and data that will lead to
the establishment of facts. This even applies in phenomenological research where the candidate embeds himself or herself with a subject team. Personal and emotional involvement is likely to compromise the reliability and validity of any collected data.

- **Code of conduct.** It is also important to establish some kind of code of conduct that will regulate the behaviour of both the candidate and any interviewees. For example, the code of conduct might stipulate that the candidate will not ask any questions about issues X, Y and Z at the moment because these are particularly sensitive issues. The code of conduct may also make clear the following points.
  - No responses will be identified with individuals.
  - Interviewees may refuse to answer any question without giving a reason.
  - Interviewees may refuse to be interviewed without giving a reason.
  - Interviewees may object to being recorded without giving a reason.
  - Information will be checked internally before being processed.
  - The company will see all draft conclusions before submission of the thesis.

- **Transparency.** The candidate should clearly declare any interests he or she may hold. If the candidate works for company X and that company is in competition with company Y, the candidate must declare that interest. If company X is not aware of the association, the candidate may possibly be given greater access to internal information than would otherwise have been the case. It is not sufficient for the candidate to avoid denying any such association if asked. The association should be declared from the outset.

- **Neutrality.** The research may involve exploring the differences between two opposing points of view. For example, data may be collected on attitudes towards a forthcoming merger at senior management and operational levels to see whether there is a significant difference in attitude as a function of authority. In this case the candidate would have to ensure that he or she adopts a neutral attitude and does not associate with one level or the other.

  The standards and approaches adopted vary with the nature of the sample organisations. For example, restricting the relaying of previous responses is vital in small organisations but may be of much less significance in larger organisations where it is much more difficult to link particular comments or statements with individuals.

  Candidates should also be aware of any statutory provisions that may apply. These obviously vary from country to country. In the UK, the relevant statutes include the examples listed below.

- **The Data Protection Act 1998.** The Data Protection Act (DPA) became necessary as the proliferation in the use of computers and databases increased the amount of individual personal information stored by organisations. The growth of centralised information repositories such as credit reference agencies, which store and sell individual personal information was one of the main drivers behind the act. The underlying rationale was that people should be able to see what personal information on them is held by organisations, whether public or private. Obvious examples of personal individual information include credit performance, dental records, medical records, and financial details.
Under the provisions of the Act people may demand to see any personal information that is held about them by a specific organisation. For example, with a credit reference agency a person may require the agency to send a copy of his or her complete credit history as held by the agency’s databases. There is usually a small charge for this service. If the person finds any mistakes or omissions he or she can require the agency to correct these within a stipulated time period. The provisions of the Data Protection Act cover research information including separately identifiable personal details and identifiable sections of information such as interview responses that are transcribed and identified as originating from an individual.

- **The Freedom of Information Act 2000.** This could apply where the candidate works for and is sponsored by a local authority or other public sector organisation. The idea of the Act is that it enables people to apply to see information held by public bodies. The underlying rationale is that, because the public finance a range of public bodies through local and central taxation, the public has a right to see what decisions are being made and how the various public bodies are spending public money. If the candidate is involved in one aspect of publicly funded research then information relevant to the research is open to the same level of public scrutiny. The Freedom of Information Act does not cover personal information as this is covered by the Data Protection Act. It also does not cover most forms of environmental information as this is covered by the Environmental Information Regulations (EC Directive) 2004.

- **Privacy and Electronic Communications (EC Directive) Regulations 2003.** These regulations were introduced in an attempt to address the growing volume of marketing and other forms of messages using electronic and telecommunication media. The regulations could impact on candidates who are sending out questionnaires or other forms of communication asking organisations to collaborate with the research. The regulations contain a number of provisions, such as a requirement for all senders to identify themselves and to include an opt-out facility. It is unlikely that EBS DBA candidates will be directly affected by these regulations, although it remains a possibility.

### 6.3.3 General Rules on Ethics

There is no single list of ethical rules that apply to all research programmes as the individual ethical considerations vary from programme to programme. Ethical considerations are likely to be complex, as, for example, in phenomenological research where the researcher embeds with a sample group. In this case the researcher becomes part of the sample that generates the data and ultimately the results of the research. There is a likelihood of the researcher becoming personally involved, and bias and opinions may affect the researcher’s interpretation of events. Ethical considerations are likely to be less complex in the case of highly quantitative research conducted under a positivist paradigm.

Some general rules are listed below.
In designing and setting up the research

- Consult the University code of ethics and ensure the research complies with it.
- Do not exaggerate the potential benefits or returns the research may offer contributing companies.
- Do not underestimate the likely commitment required from contributing companies.
- Ensure all data and results are anonymous and cannot be traced to a specific contributor.
- Always declare any interests.
- Try to anticipate ethical problems in advance and design the research according-ly.
- Think about any possibility the research might have to harm or hurt people.

During the research

- Do not relay statements made previously by others when interviewing people.
- Do not use deception or tell lies.
- Do not put people under pressure or demand answers.
- Immediately accept the situation where people refuse to answer a question.
- Immediately accept the situation where people refuse to be recorded.
- Do not infer hidden meanings in questions.
- Remain detached and do not become personally involved.
- Think about and be aware of the potential impact of personal views and bias.
- Do not use loaded questions.
- Do not criticise individuals, teams or sections.

After the research

- Process only those data that have been validly received.
- Always maintain impartiality.
- Do not dismiss data that contradict the general pattern.
- Do not infer causality from correlation.
- Try to use and demonstrate triangulation as much as possible.
- Develop only those results that can be supported by the data.
- Do not embellish results to support the general pattern.
- Do not modify or fabricate results to support the general pattern.
- Always observe the standards of security and confidentiality that were previously agreed.
6.4 Writing the Research Proposal

6.4.1 Introduction

The process of writing the research proposal is likely to be one of the most challenging parts of the entire research programme. The main reason for this is that the research proposal is the first major piece of work the candidate has to put forward for close scrutiny. The research proposal itself has to convey the candidate’s proposals and ideas in a clear and unambiguous way so that these can be clearly understood by the EBS Research Committee. This section goes through the background to writing the research proposal and then considers the most likely structure for the research proposal.

6.4.2 Writing the Research Proposal

The research proposal is a very important part of the research programme because it is the first element of the programme that has to be accepted by the EBS Research Committee. The research proposal is basically a statement of exactly what the candidate proposes to do as part of the research and a statement of exactly how he or she intends to do it. It is written in a form where these two elements can be quickly and effectively communicated to the reader. After reading it the appropriate EBS Research Committee members should have received enough information to allow them to make a straightforward assessment on whether or not the proposed research is viable.

The research proposal can fall short of EBS Research Committee requirements in a number of areas. Some of these are briefly considered below.

- **Failure to convey.** The candidate may have worked out a very interesting research area and in consultation with the mentor may have developed a viable approach and outline methodology. The research proposal, however, may fail to convey accurately the full detail and potential of the proposed research. It may fail to do so because of poor writing skills, poor structure, or for a number of other reasons.

- **Omissions.** This is another common problem area. Research proposals are often largely viable but miss one or more vital pieces of information. For example, the background section may fail to make reference to a particularly important piece of relevant research that has just been published, or may fail to refer to one or more of the key aspects of the existing knowledge base in the relevant subject area.

- **Contradictions.** One part of the research proposal may contradict one or more other parts. For example, the proposed research methodology may be incompatible with or inappropriate for one of the stated aims of the research. Contradictions are clearly unacceptable, and they will result in the research proposal being rejected and referred back to the candidate for further development.

- **Lack of development.** This is another common problem area. The proposal itself contains some interesting and promising aspects but some areas may contain insufficient detail to allow an informed decision on overall viability to be
made. A problem of a general lack of development is frequent in the methodology section, where candidates often fail to think about the methodology in sufficient detail in advance.

It should be apparent that the research proposal is very important, and the candidate should take great care in writing it. It is obviously desirable that the EBS Research Committee accepts the research proposal first time if possible. If they do reject the research proposal there will be a delay of several weeks or months, as the Committee meets only on preset dates, typically four to six weeks apart.

The research proposal should be written on A4 paper and should follow the format described in Section 6.4.3. The candidate should think about the research proposal very carefully before starting work. Where necessary, the mentor should be approached for guidance and general advice. The mentor has considerable experience in assisting in the development of research proposals, and he or she is aware of the common areas where research proposals fail to achieve the required standard.

Candidates should allocate plenty of time for writing the research proposal. The necessary background work and research could go on for several months before the research proposal is actually written, and it is common for candidates to underestimate the time required to develop and write the proposal. There is no standard time allocation, as the time required depends on the nature of the research and on the abilities of the candidate. The research proposal is not a particularly large document. The main time requirement comes in the preparation and background work and in the drafting and re-drafting that are usually necessary in order to refine and develop the content to the required standard.

Different people have different ways of approaching a problem. One possible approach to writing the research proposal is considered below.

1. **Think about it.** The first stage is to think about the proposed research in great detail and try to isolate some outline aims and objectives. These are important, because everything else radiates outwards from them. In some cases the aims and objectives are more or less known at the outset, as may be the case where the candidate is sponsored to conduct a particular piece of research for his or her own company. In other cases the candidate may be free to choose a research area. In this case many candidates find it useful to read all around the general area of interest and talk over a series of possible more detailed interest areas with the mentor. In yet other cases candidates may find it useful to discuss potential areas with colleagues at work and or with senior managers.

2. **Short list.** The next step is to develop a short list of a relatively small number of possible aims and objectives. These should then be analysed individually using an approach such as SWOT (strengths, weaknesses, opportunities and threats) analysis. The shortlist should then be refined and perhaps one or two clear favourites identified. These should then be developed as discussed in Module 4. When the candidate has a clear idea on, say, no more than two or possibly three alternatives, he or she should approach the mentor and ask for an opinion. After a series of discussions it should be possible for the candidate to arrive at a final set of aims and objectives that will form the basis for the research proposal.
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3. **First draft.** The candidate should then develop a first draft research proposal, addressing each of the areas listed in section 6.4.3. Each section should be carefully thought through and the linkages between the sections should be carefully examined. The first draft should then be sent to the mentor. The mentor will go through the first draft and issue any feedback and advice.

4. **Final draft.** The final draft could take anything from weeks to months to complete. It can only be considered as a final draft when the mentor feels that the draft adequately addresses each of the main areas in the required structure. The final draft, once agreed, should be sent to the EBS Research Committee for consideration.

### 6.4.3 The Structure of the Research Proposal

The structure of the research proposal can vary considerably depending on the scope of the research and the approaches to be adopted. This section considers a ‘typical’ structure for illustrative purposes. The EBS DBA research proposal template calls for the candidate to address the ‘typical’ sections listed below.

1. Abstract.
2. Summary.
3. Background (literature review).
4. Research questions, aims, objectives and hypotheses.
5. The research paradigm and theoretical framework.
7. Sample design and details of the data collection process.
8. Accessibility.
9. Research ethics
10. Deliverables.
11. Significance.
12. The resources required to implement the research.
13. A timetable indicating the expected completion date for each part of the research.
14. References, bibliography, letters of support and appendices.

Consider each section in turn.

*Note:* the maximum and minimum word counts given below are for indicative purposes only. The actual number of words in each section depends on the nature of the research and on the structure and format of the research proposal. The candidate may decide to include more or fewer words than the values stated in the following text. Ultimately it is the responsibility of the candidate to develop the research proposal to such a level that it convinces the research committee of the potential and viability of the research. The word counts stated below should, therefore, be regarded as guideline values only.

1. **Abstract.** The abstract is a short and precise summary of the proposal. Abstracts of theses (as opposed to research proposals) are often used in research catalogues to give a flavour of what is involved in the research. As a general guide the abstract might contain 200–300 words.

The abstract is usually written last as it has to refer to a number of the sections that follow it. The abstract should state the following elements.

- The research field and question.
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- The context of the question and the aims and objectives of the research.
- The importance and relevance of the research.
- The basic research methodology used.
- The outline results.
- The potential use and application of these results.

Having read the abstract a reader should have a basic grasp of what the research is about. The reader should be able to identify the field in which the research is set, and he or she should appreciate the basic aims and objectives of the research. The reader should also have an idea of how the data were collected and processed, and what the basic results were. The reader should also have an understanding of the significance or importance of the research and of the results. It can be a challenge to convey all this information in 200 words or less.

The abstract has to be brief because the idea is that it is read quickly. In the final thesis the abstract will be the main method by which other researchers assess whether or not to request a copy of the work. The abstracts of theses and other types of work are often stored as abstract listings. Other researchers can search these, access an abstract and, by spending a minute or less time reading the abstract, make a judgement on whether or not to look at the piece of work in more detail.

2. Summary. The summary is equally important. In many cases the summary is the most important part of the research proposal because it communicates the main contents and most important elements of the research proposal in a short and easily read section.

The summary should follow the same basic line of thought as the abstract. Each important element in the abstract should be developed and extended slightly in the summary. The summary should communicate the overall concept and aims of the research as clearly and succinctly as possible. Anybody reading the introduction should be able to have a basic grasp of what the research is about as soon the section has been read. A well-written introduction is both easy to read and interesting. If possible, the introduction should be designed to fire the imagination of the reader.

The summary should also define and delineate the area of research chosen, why the topic is important, and how the research will be done. It should also state any assumptions made, and should clearly identify the scope and limitations of the research. As a general guide the summary section might contain 300–500 words.

3. Background (literature review). This section is required in order to provide an overview of the previously published work by other researchers and to demonstrate that the candidate has developed a reasonable understanding of the existing knowledge base. The background literature review also demonstrates that there is a viable literature base in the proposed area of research. It is basically a mini-literature review for the research proposal, in contrast to the main literature review that forms the backbone of the final thesis. It shows that the candidate is aware of the published work in the chosen research area, and acts as evidence that the student has read the works of the main authors and has used this knowledge in the development of the research proposal.
The background should clearly identify and review the existing literature and demonstrate a viable literature base. It should also place the current research proposal in the context of the existing literature, particularly in relation to the existence of any gaps in the literature and how the current research is positioned in relation to these gaps. The background should clearly identify any other areas in the overall discipline to which the current research proposal relates. In the case of identified literature gaps the background should include an assessment of why the necessary research has not already been addressed by other researchers. As a general guide the background literature review section might contain 1000–2000 words, depending on the size of the literature base.

4. **Research questions, aims, objectives and hypotheses.** This section should contain a clear statement of the research aim and objectives, and should also state any operational and research hypotheses that have been adopted. The candidate will recall that the aim is the overall outcome desired. The objectives are the individual actions necessary to achieve the aim. The research question is effectively the link between the aim and objectives and the research methods to be used. The candidate should also appreciate that there has to be a link between the aim and the objectives.

For example:

**Aim:**
- To explain why staff migration increases when a merger announcement is made by a given company.

**Objectives:**
- To measure staff migration over a period of time.
- To compare normal migration with pre-merger migration.
- To interview migrating staff and statistically analyse response data.

In order to achieve the aim, the individual objectives first have to be achieved. The research hypotheses should relate to the aims and objectives. For example:

- **H₀:** Staff migration does not increase when a merger announcement is made as a result of increased uncertainty.
- **H₁:** Staff migration does increase when a merger announcement is made as a result of increased uncertainty.

If the research hypotheses are complex, they may be subdivided into a series of operational hypotheses. For example:

- **H₀:** Staff migration does not increase after the merger announcement is made.
- **H₀:** Staff uncertainty does not increase after the merger announcement is made.
- **H₀:** Staff migration is not a function of uncertainty.

In each case there will be a corresponding alternative hypothesis.

- **H₁:** Staff migration increases after the merger announcement is made.
- **H₁:** Staff uncertainty increases after the merger announcement is made.
- **H₁:** Staff migration is a function of uncertainty.

In accepting the three operational hypotheses the candidate is in a position to accept the main research hypothesis. By showing that both migration and uncertainty increase, the inference is that there may be a functional relationship.
between the two variables. This element is considered in the third hypothesis, and can be tested using relatively simple correlation techniques.

As a general guide the research aims, objectives and hypotheses section might contain 300–500 words.

5. **Research paradigm and theoretical framework.** This section should make clear the intended paradigm positivist or phenomenological and the theoretical framework behind the research questions, aims, objectives and hypotheses. The paradigm(s) and the theoretical framework of the work must be clearly stated, together with an outline of the research strategy and a general plan of how the research questions will be addressed. The strategy should contain the various stages outlined in Module 5 and the links between the various stages of strategy development should be clearly shown.

The candidate should consider the choice of paradigm and strategy carefully. In DBA research candidates must select either a positivist or a phenomenological paradigm (one or the other). Within the selected paradigm, the candidate may select a quantitative methodology or a qualitative methodology, or a combination of both. In most EBS DBAs the data handled will generally be both quantitative and qualitative. The candidate should ensure that the paradigm and corresponding methodology are appropriate to the research area. The EBS Research Committee may reject research proposals that have based the approach on an inappropriate paradigm. For example, if the research is concerned with understanding the underlying political considerations influencing senior management decision-making, it is very likely that a significant phenomenological element will be required. The EBS Research Committee may be concerned if there is no reference to an appropriate phenomenological approach in the research proposal and if the candidate proposes a largely quantitative approach.

As a general guide the research paradigm and theoretical framework section might contain 200–300 words.

6. **Research methodology.** This section should give sufficient detail on the proposed research methodologies for the pilot and main studies. It is not possible to detail the complete methodology in the research proposal, and the description should be limited to an overview of the proposed methodology and tools. The overview should provide enough information to allow the reader to develop a basic understanding of the research methodologies proposed and how these will generate data that can be used in addressing the stated aims and objectives of the research.

The research methodology section should clearly identify the underlying approach, such as empirical or observation-based research. It should give an indication of any longitudinal or cross-sectional case studies that are to be included, and it should identify any data collection and analysis tools such as questionnaires and interviews. The section should give a clear indication of sample size and of the type and range of data to be collected. It should also briefly show how the data will be processed and analysed, and how any results will be developed.

The research methodology section has to be clear and contain sufficient detail to allow the Research Committee to ascertain whether or not the methodology put
forward is sufficient to meet the demands of the proposed research. Where appropriate, the choice of methodology and specific research methods should be supported by literature. It is particularly useful to cite examples of other researchers who have successfully used a similar methodology in similar research.

As a general guide the research methodology section might contain 500–1000 words.

7. **Sample design and details of the data collection process.** These details are usually presented separately from the research methodology. The sample design information refers to the number and type of organisations or teams or individuals that are used as the samples to provide the research data. The research proposal should provide sufficient information for the EBS Research Committee to satisfy itself as to the suitability of the samples used for the research.

Typical information provided here, assuming the research is based on a number of different manufacturing companies, includes details of the number and type of companies used. For example, the subject used for the main longitudinal study might be stated as being company X. Additional background information on company X would also be provided. This would include details such as the age and size of the company, number of employees, turnover, and profitability. The sample might also include a number of similar companies to be included on a cross-sectional basis. For example: the longitudinal study will go on for six months, and the main results will then be triangulated against results obtained in a series of cross-sectional studies, each lasting two days and involving the other sample companies.

In some cases the candidate might design a classification system for the sample. In the above example, the various companies could be allocated a code depending on company characteristics such as age and number of employees. Coding systems tend to be useful where large numbers of subjects are contained within the sample.

Details on the data collection process should also be provided in this section. The candidate should make clear the approaches and methods used in data collection such as postal surveys using questionnaires backed up by fully structured interviews. The candidate should ensure that the section contains enough detail to satisfy the EBS Research Committee. Typical information provided might include the number of questionnaires, type of questionnaires, frequency and dates of issue and methods of data extraction. In a questionnaire survey, data might be extracted by simple transfer of tick-box responses to a database. In other cases it might be necessary to record more qualitative written detail using some type of transcription.

As a general guide the sample size and details of the data-collection process section might contain 200–700 words.
8. **Accessibility.** The candidate should make it clear that he or she has thought carefully about the accessibility of the data required for the research. This section should include a comprehensive listing of the proposed sources of data and a clear summary of the degree of accessibility that has been secured. In some cases it may be appropriate to refer to direct letters of support (see below) in this section. It is very common for candidates to overestimate the degree of accessibility that contributing companies are likely to provide. It is therefore essential to check access to carefully beforehand, and to make sure that the contributing companies will definitely provide at least the level of access stated in this section. As a general guide the accessibility section might contain 200–500 words.

9. **Research ethics.** This section summarises the candidate’s approach to research ethics. This can normally be summarised fairly quickly. This section should be worded so as to convince the Research Committee that the candidate’s ethical approach has been thought through and is acceptable. As considered under section 10 of the research proposal and discussed below, some EBS DBA candidates will be senior managers within companies. Such senior managers may have access to resources of considerable assistance in the development of the research. For example, a company director may be able to call on the assistance of a number of company employees to act as ‘assistants’ in developing the research. Obvious examples include people who can conduct structured interviews, record the responses, transcribe them and process the results.

Candidates are required to make a judgement about the validity of such additional resources as part of the research ethics consideration. Under University regulations the research is required to be ‘substantially the author’s own work’. The candidate must give serious ethical consideration as to whether or not the use of assistants invalidates the assumption that the research will be substantially the author’s own work. Any such concerns must be clearly recorded under the research ethics and resources required sections of the research proposal.

It must be stressed again that doctoral candidates have a series of ethical obligations. Failure to disclose any relevant matter under the research ethics section of the research proposal could invalidate the entire research programme. In other words, if the candidate is receiving assistance on any part of the research programme, he or she is ethically obliged to disclose such assistance. The Research Committee is likely to look for at least a bare minimum ethical statement covering the items discussed in Section 6.3, including an undertaking to act honestly and professionally, to maintain the anonymity of individual managers and other employees, to use the research data fairly and responsibly, and to maintain the security of all data and results. Depending on the nature of the research the ethical considerations could become much more complex. For example, research that involves any kind of sensitive or potentially sensitive personal information could be subject to greater ethical consideration. As a general guide the research ethics section might contain 200–500 words.

10. **Deliverables.** This section summarises the results of the research in terms of what will actually be available for the use of other researchers, public and private companies, charities, etc. The deliverables are the ‘goods’ generated by the re-
search. In some cases the deliverables will be limited to the thesis itself. In other cases the candidate may intend to publish at least two refereed academic journal papers before submitting the thesis. The research might involve the development of a model or prediction tool that can be applied in real companies, or the candidate might develop some new professional guide or handbook in his or her research area. This section should summarise every deliverable the candidate expects to generate in the course of the research and, in some cases, afterwards. Research programmes sometimes go on and lead to the development of new textbooks. In other cases a sponsoring company might produce a new internal code of practice based on the findings of the research. In extreme cases the research could lead to the establishment of a new school of thought or even a new discipline.

As a general guide the deliverables section might contain 100–200 words.

11. **Significance.** This section, although small in size, is very important. The candidate must make clear the significance of the research, particularly in relation to applicability. This section should show how the proposed research fits in with and complements other research. An important consideration here, given the integrative nature of DBA research, is the extent to which the research will integrate across business disciplines.

This section should, where appropriate, focus specifically on areas where the research will directly address an identified area of difficulties. For example, the candidate might decide to concentrate specifically on the development of an enterprise-wide fully integrated risk profile model. The literature may suggest that, although most large companies use risk management systems to some extent, there are very few existing systems offering an interactive capacity. The literature may further reveal that there is a real need for risk management systems to be both enterprise-wide and integrated across the various risk levels. These levels might be identified as:

- strategic risk;
- operational risk;
- change risk;
- unforeseeable risk.

The literature may suggest that most large companies have risk management systems that address one or more of these risk levels. Relatively few companies have any kind of system that considers all four levels, and nobody appears to have developed a system that considers them together, simultaneously, and allowing for the effect that risks at one level have on risks at all other levels and on an enterprise-wide basis.

The literature review conducted in the preparation of the research proposal might confirm that:

- nobody has yet developed an enterprise-wide integrated risk-profiling system;
- there is a need and commercial demand for an enterprise-wide integrated risk-profiling system.

The candidate might design his or her research to address this capability gap. If the candidate can develop a fully integrated enterprise-wide risk profiler, the
research deliverables will clearly be very significant because they will respond directly to an identified area where there is commercial demand for a product that does not yet exist. The deliverables will also clearly be highly applied in that they will be used to address an identified gap. 

As a general guide the significance section might contain 200–500 words.

12. **Resources required to implement the research.** This section should summarise any assumptions on resource availability. In research proposals for research council funding, the applicants are expected to detail the exact resources required and the duration of requirement. In such cases the researcher might decide that two research associates and one post-doctoral research student are needed for two years. The research contract bid includes the salary and expenses costs of such individuals. In most EBS DBA research proposals the resources required will be limited to those that can be provided by the candidate. In some cases the candidate might declare the proposed use of assistants in processing statistical data. The research must be the candidate’s own work, but it may be acceptable for the candidate to make use of assistants in processes such as the transcription of interview responses and the analysis of data for correlation. These are mechanistic tasks, and it may be that they can be performed by assistants without this having any impact on the underlying requirement for the thesis to be the candidate’s own work. All such use of resources must be stated. It is unethical for a candidate to make use of any kind of assistance unless it has been declared. As a general guide the resources required to implement the research section might contain 100–200 words.

13. **Timetable of expected completion dates.** This section should show the expected completion date for each part of the research. Any Gantt chart or other kind of diagram should show the relevant information as clearly as possible. Candidates should consider developing a simple research schedule with a calendar of key dates, as discussed in Module 2. In the research proposal all research dates and deadlines are for indicative purposes only. It is permissible for the times and dates to be altered as the research programme proceeds. As discussed in Module 2 it should be appreciated that the research process is time-consuming and frequently takes longer than planned. There are numerous reasons for this. Some possible reasons are listed below.

- The candidate encounters unexpected work pressures.
- The candidate encounters unexpected family or other personal problems.
- The initial project proposal is too ambitious.
- The various activity durations are unduly optimistic.
- Additional problems and considerations emerge.
- Key sources become delayed or unavailable.
- Additional work has to be included.
- Completed work becomes abortive.
- The candidate makes changes to the original aims and objectives.
- The candidate redefines the scope of the research.
– The candidate is forced to make new assumptions, or to redefine the research limitations.

As a general guide the timetable of expected completion dates section might contain 100–250 words.

14. References, bibliography, letters of support and appendices. The candidate should ensure that all citations in the background, methodology and other sections are fully referenced. The list of references should normally be alphabetical by author surname. There is no single ideal number of references as this very much depends on the size and distribution of the relevant literature. As a general rule the candidate should try to include all of the major researchers who are active in the field. The EBS Research Committee includes professors who are eminent in a number of fields related to strategic alignment. These professors are very familiar with the literature, and will expect to see a number of key researcher ‘names’ jump out right away from the background section literature. There will be an immediate concern if one or more of the key names in the field or discipline are not referred to.

The bibliography should identify any non-referenced sources used in the preparation of the research proposal. This could include textbooks on research proposal writing or any other relevant source of information.

Letters of support are provided by companies or other collaborating organisations or individuals. At the candidate’s request, these companies may provide a letter, which in the simplest form identifies the company and confirms that the company supports the research and is prepared to provide collaborative input. The letter may make it clear that the company has agreed to allow the candidate access to its workforce for the application of interviews or questionnaires, and/or that the company is prepared to assist in other ways such as in providing access to historical records.

Candidates should note that letters of support significantly strengthen the research proposal and significantly reduce the likelihood of its being rejected by the EBS Research Committee. Letters of support act as direct evidence of the applicability of the research and confirm that the candidate has considered and secured the necessary level of research data accessibility (see below).

The appendices can contain any other relevant material that, if placed in the main body of the research proposal, would have interrupted the flow of the presentation of information. Candidates should avoid the temptation to include masses of irrelevant and semi-relevant material to make the research proposal ‘look bigger’. Candidates should note that the size of the research proposal is irrelevant. The ideal size is determined solely by the minimum amount of information required to communicate adequate knowledge and understanding of the research to the Research Committee.

The completed research proposal should inform the EBS Research Committee of:
– **what** the candidate wants to do;
– **why** he or she wishes to do it,
– **how** the proposed research fits into the existing knowledge base;
– **how** significant the research is likely to be;
– what the candidate is attempting to achieve;
– how he or she intends to achieve it;
– the timescales and work elements required;
– what the results of the research are likely to be;
– what contribution these results may make to the knowledge base.

As a general guide the references, bibliography and letters of support section might contain 500–1000 words, depending on the size of the literature base.

6.5 Evaluating the Research Proposal

6.5.1 Introduction

This section stresses the importance of the candidate’s evaluating the research proposal before submitting it. It can be very disheartening if a candidate spends a great deal of time and effort in developing a research proposal, only to have it rejected by the EBS Research Committee. In many cases it is possible to reduce the likelihood of rejection simply by performing a self-evaluation of the research proposal prior to submission.

6.5.2 Evaluating the Research Proposal

The EBS Research Committee will study the research proposal in detail. The Committee members are all qualified to doctoral level and have supervised doctoral theses to successful completion. The Committee members are therefore familiar with the rigour and demands of doctoral research, and they are sufficiently qualified and experienced to be able to make a decision on whether or not a given research proposal contains sufficient detail and/or whether the proposed research strategy has a sufficient level of promise to have a chance of being developed successfully to the next EBS stage, which is the literature review.

The members of the EBS Research Committee will look at the research proposal in great detail. They will check to see whether all the various section headings discussed above have been adequately addressed. The Committee must reject a research proposal if any single aspect of the proposal is suspect.

Candidates are again reminded that acceptance of the research proposal by the EBS Research Committee does not indicate or suggest that the candidate will go on and successfully complete the research element. Acceptance simply means that the research proposal has been developed to an adequate standard, and that the contents and structure suggest that the research proposal has demonstrated sufficient potential for the candidate to be allowed to proceed to the next stage.

In making its assessment the EBS Research Committee will ask itself a number of questions. Some of these questions are specific to research proposals generally, whereas others are specific to this particular research proposal. Some typical questions are listed below.
• **Is the title of the research valid?**
  The title says a great deal about the research. An experienced researcher in the field can immediately see what the candidate is trying to achieve simply from the wording of the title. The EBS Research Committee will be looking for evidence that the title identifies a suitably defined research area, and that the rest of the proposal adequately and accurately reflects the wording of the title.

• **Are the aims and objectives of the research appropriate?**
  The stated aims and objectives are central. Once fixed and established it is very difficult for these to be significantly altered. Once the Research Committee accepts them, the research becomes anchored firmly in that particular area. The Committee has to be certain that the aims and objectives are achievable and reflect what the candidate is trying to achieve.

• **Have the aims and objectives been clearly derived through a process of reasoning?**
  It will be recalled that the aims and objectives of the research must be developed through a logical sequence of reasoning. The Research Committee will be looking for evidence of this deductive process. Any inconsistencies in the chain of development and reasoning are likely to be isolated.

• **Will the proposed findings make any direct contribution?**
  There are two levels of consideration under this heading. The research must make a contribution to the knowledge base, evidenced either by the discovery of new facts or by demonstrating high-level independent critical thought. The EBS DBA is also an applied doctorate, and the Committee will be looking for evidence that the contribution will be of a sufficiently applied nature.

• **Is there a viable knowledge base?**
  The DBA Research Committee is unlikely to accept any research proposal that fails to demonstrate a viable literature base in the proposed area of research.

• **Is there any evidence of the candidate linking the proposed research to current developments in the appropriate knowledge base?**
  This is only a consideration, and may or may not have an impact on whether the Research Committee accept or reject a given proposal. The proposal generally may be strengthened if it clearly links to recent high-profile research developments in the appropriate field.

• **Will any contribution be evidenced by the discovery of new facts or by high-level independent critical reasoning?**
  Either method of contributing is acceptable, but it is important that the expected type of contribution matches the research paradigm and strategy. For example, a phenomenological qualitative based programme is more likely to contribute through high-level critical thought than it is through the discovery of new facts. Either approach is acceptable provided the selected approach is matched by the research design.

• **Has the candidate demonstrated a sufficiently detailed knowledge of the existing knowledge base?**
  The detailed literature review is not submitted until well after the research proposal. The candidate must, however, still demonstrate a reasonable
understanding of the existing knowledge base when writing the research proposal. As a bare minimum the candidate must show that he or she is aware of the main schools of thought and primary researchers in the appropriate area, and that the research is clearly compatible with all aspects of the existing knowledge base.

- **Are the research paradigm and methodology appropriate?**
  At this relatively early stage it is common for candidates to include incompatibilities between the research paradigm, strategy, proposed data collection techniques and expected results. The Research Committee will look to identify any obvious incompatibilities or contradictions.

- **Is the research field sufficiently focused?**
  A very common error is for a candidate to attempt to cover a research field that is either too focused or not focused enough. If the field is too narrow, the results may be meaningless. If the field is too wide, the candidate may find that he or she does not have the time and resources to finish the research within a reasonable timescale.

- **Will the candidate be able to gather enough detailed data on the stated research field?**
  This can be assessed by an examination of the proposed field in the context of the resources and accessibility information provided. The candidate may be proposing to work in a very strictly defined field, where there is very little available literature and where the degree of access being proposed is also low. The concern of the Committee in this case could be that it will not be possible for the candidate to gather enough detailed and reliable data to allow the generation of valid results.

- **Is the amount of work implied by the research proposal achievable within the timescale provided?**
  The Research Committee will look at the overall scope of the proposed research and the level and nature of research suggested, and decide whether or not it is likely that the candidate will be able to complete within the timescales shown. This depends to some extent on resource availability (see below).

- **Is the candidate likely to complete on time with the resources stated?**
  Most candidates have never completed anything like a research proposal before, and may have assembled the proposed timescale for completion with the assistance of the mentor. The Research Committee will look carefully at the stated levels of resources and make an assessment as to whether the timescale stated by the candidate is realistic.

- **Is there evidence that sufficient industrial access has been obtained?**
  The Committee will look at the stated levels of access, and will also closely examine the letters of support. They will be looking specifically at the names and authority levels of the individuals who have signed the letters of support to ensure that sufficiently senior people have given access undertakings. The Committee will also be looking for evidence of any time or resource limits or constraints on collaboration.
6.5.3 Questions to Ask Before Submitting the Research Proposal

Based on the preceding discussion it becomes clear that the candidate should consider his or her research proposal carefully, and should ask a number of questions before it is submitted. Some example questions are listed below.

- Does the research proposal address all the areas required? If any areas are not addressed, is there a good and substantiated reason?
- Does the research proposal put forward a suitably applied research area? What is the degree of direct application, and can it be improved?
- Is the choice of paradigm clearly defined?
- Is the proposed research area sufficiently original? Will the results make a contribution to the knowledge of the proposed research field?
- Is there a viable literature base?
- Can the proposed research be completed with the resources available and within the time limits stipulated?
- Does the research proposal contain a clear research question and/or hypothesis that has been logically derived from the research field?
- Are the sources of data clearly defined? Will the data themselves be sufficiently robust? If not can the data source or sources be strengthened?
- Does the proposal identify organisations that have agreed to support the research and supply data? Are all necessary letters of support included?
- Does the research proposal show that the research will be able to generate new facts or allow the candidate to demonstrate independent critical reasoning?
- Has the research proposal been thoroughly checked and proofread? Is all spelling and grammar correct?
- Is the proposed research methodology sufficiently defined? If not, should further details be provided?

The candidate should carefully consider these issues before submitting the research proposal. Where necessary, the advice and general guidance of the EBS mentor should be sought. The candidate should submit the research proposal for consideration by the EBS Research Committee only once he or she is satisfied that all of the issues listed above have been adequately addressed.

6.6 Submitting the Research Proposal

6.6.1 Introduction

This section summarises the process involved in submitting the research proposal and the possible outcomes and actions that may be necessary. The candidate should remember that the research proposal is a vital part of the research process, and it will be carefully scrutinised by the Research Committee. The candidate should make every effort to write the research proposal carefully and then evaluate it fully before submitting it for consideration.
6.6.2 Submitting the Research Proposal

Candidates should check any appropriate deadlines carefully and make sure that they are observed. The EBS Research Committee meets at regular intervals and the mentor will advise the candidate as to the date of the next appropriate meeting and of any submission deadlines that may apply. The candidate should check for any submission deadlines for any given Committee meeting and then make sure he or she adheres to those dates. Research proposals have to be submitted well before the actual Committee meeting because they have to be circulated to the Committee members in advance of the relevant meeting so that they have time to read and consider the contents. Committee members may be provided with several different research proposals to read and consider before discussion at the relevant meeting. It is therefore necessary to impose research proposal submission deadline dates.

Research proposals are usually submitted electronically as attachments to email messages and/or as attachments on web board posts.

Once submitted, the research proposal enters the system and appears on the list of research proposals to be discussed by the Research Committee, which discusses each research proposal in turn and makes a decision. Where research proposals are very well written, and where the research strategy is sound, there may be relatively little discussion. In other cases there may be differences of opinion, and there may be long and detailed discussion on a particular research proposal. If any differences of opinion cannot be resolved at the meeting, the chairperson of the Research Committee makes the final decision.

6.6.3 Possible Outcomes

The Research Committee can make two possible decisions on a research proposal.

- The Research Committee accepts the research proposal.
- The Research Committee rejects the proposal.

6.6.3.1 The Research Committee Accepts the Research Proposal

The Research Committee may decide to accept the research proposal. In this case the candidate is notified that the research proposal is acceptable. The candidate can then pass the corresponding milestone in the EBS DBA programme and start the literature review. The candidate is also matched with a supervisor. The supervisor is qualified to doctoral level and has supervised doctoral students to successful completion of their theses. The candidate and supervisor communicate regularly by web board and/or telephone for the duration of the supervised phase. The candidate eventually completes the research and prepares a thesis that goes forward for examination.

The fact that the EBS Research Committee accepts the research proposal does not mean or imply that the candidate will necessarily go on to complete the literature review and complete the thesis. Non-rejection by the Research Committee simply means that the Committee considers the research proposal to be of a sufficient standard and to carry sufficient promise and potential to justify allowing the candidate to proceed to the literature review.
6.6.3.2 The Research Committee Rejects the Proposal

The Research Committee may reject the proposal. Rejection may occur because one or more of the areas contained in the research proposal are not addressed correctly. This does not mean that the candidate has necessarily included errors or misunderstood anything. It could be that the Research Committee feels that further explanation in one or more areas is required.

Some typical potential concerns in relation to each section of the research proposal are listed below. The list of possible concerns is not intended to be exhaustive.

**Abstract**
- The abstract is too short or long.
- The abstract does not adequately reflect the research.
- The abstract contains errors or omissions.

**Summary**
- The summary does not go into sufficient detail.
- The summary does not reflect the other stated content.
- The summary is incompatible with the abstract.

**Background (literature review)**
- The literature review is not properly developed.
- Key existing research results have not been referred to.
- The literature review is not sufficiently integrated.
- There is no viable literature base in the chosen area of research.

**Research questions, aims, objectives and hypotheses**
- The research aims and objectives are not clearly defined.
- The aims and objectives are not sufficiently aligned.
- The hypotheses do not relate sufficiently to the objectives and/or the question.

**The research paradigm and theoretical framework**
- The stated paradigm is inappropriate for the research.
- The stated paradigm is incompatible with the proposed methodology.
- The stated paradigm is incompatible with the research hypotheses.

**Research methodology**
- The proposed methodology is suspect.
- One or more proposed research methods are suspect.
- Opportunities for triangulation have not been exploited.

**Sample design and details of the data collection process**
- The proposed sample size is too small.
- The data collection processes are suspect.
• There are concerns about data reliability.

**Accessibility**

• There is a lack of evidence that the necessary data will be available.
• The stated availability relies on assumptions rather than fact.
• There is insufficient evidence for the stated accessibility remaining in place.

**Research ethics**

• The proposed research ethics are not sufficiently developed.
• There are specific concerns about respondent privacy.
• There could be future problems with information safeguard.

**Deliverables**

• The stated deliverables are unrealistic and/or over-optimistic.
• Further deliverables could be developed.
• The stated deliverables are insufficient.

**Significance**

• The research deliverables appear to be insufficiently significant.
• The stated significance is suspect.
• Significance could be improved by further development.

**The resources required to implement the research**

• The stated resources are inadequate.
• The stated resource requirements are unrealistic.
• The use of some stated resources is unethical.

**A timetable indicating the expected completion date for each part of the research**

• The timetable is unrealistic.
• The duration allowed for one or more work packages is suspect.
• The balance or sequence of activities is suspect.

**References, bibliography, letters of support and appendices**

• The references are not adequately defined.
• There are no letters of support, or those that are present are inadequate.
• The appendix details are inadequate.

As stated, this is not intended to be a complete listing of all of the areas of concern that may be raised by the Research Committee. In some cases one or more of the possible concerns listed above may be raised by Committee members, but the subsequent discussion may lead to a Committee decision that the concern itself is not sufficient to justify rejecting the research proposal.
Candidates should appreciate that it is very difficult to write a near-perfect research proposal. In most cases the Research Committee will require some form of amendment. Such amendment could range from minor corrections to major adjustments.

6.6.4 What to Do if the Research Proposal Is Rejected

If the research proposal is rejected the candidate will receive a report from the EBS Research Committee highlighting its concerns and reservations. As stated above, these could range from minor points to major issues. The candidate should read the report carefully before taking any action. The most important immediate action is to go through the report in detail and make sure that the extent and content of the required amendments are understood. The candidate should read the required amendments list carefully and develop an action plan for responding to them.

Some possible responses are considered in the next section.

Note: This section contains example EBS Research Committee comments. The actual comments provided by the EBS Research Committee will be specifically related to the research proposal produced by the candidate. It is not possible to give examples of all possible comments, and the examples described below are for illustrative purposes only.

6.6.4.1 Some Examples of Research Committee Responses

Example 1. Abstract

The comments of the Research Committee may be:

*The abstract does not fully reflect the totality of the proposal and is too large. The abstract should be modified to refer more accurately to the research proposal and should be reduced in size.*

These comments suggest two primary action areas.

- The abstract needs to be reworded so that it is a more accurate representation of what is contained in the rest of the proposal.
- The abstract needs to be reduced in size.

The candidate will recall that the abstract is intended to act as a short and precise overview of the research proposal. It should be worded so that it refers or relates to the various main sections of the research, including:
  - the problem;
  - the context of the problem;
  - the significance of the problem;
  - the general research methods used;
  - the type of results;
  - the potential use of these results.

The candidate should re-read the abstract carefully to see where the current text fails to refer either sufficiently or at all to one or more of the areas listed. Candidates often fail to refer to the significance of the problem and/or potential use of the
research results. If the current abstract refers to these areas only in passing, or if they are not referred to at all, the candidate should reword the abstract accordingly. It is important to try to include a balance of these areas in the abstract so that no single area dominates.

The comments on the size of the abstract should be self-explanatory. The abstract should contain around 200 words. If it becomes any larger than this it starts to lose its value as a quick reference tool. The candidate should carefully reword the abstract in order to refine it down to around 200 words.

**Example 2. Background**

The comments of the Research Committee may be:

*The literature referred to in the background is not sufficiently focused and is not entirely relevant to the research question and does not refer either to the pioneering work of Smith (2003) or the Jones school (2001). The background should be reworded to include these references and should be generally more carefully scoped, and all unnecessary references should be removed.*

These comments suggest that there may be a combination of superfluous references and missing references. The literature review generally appears to be too wide ranging and is not sufficiently focused around the research question. The comments on two named researchers who are not included are particularly problematic.

The candidate should go back through the background literature in detail and identify those references that are not relevant to the research question. In some cases the candidate may have included some references peripheral to the stated question, objectives or hypotheses. Peripheral references are justifiable as long as they have relevance to the research. In this case the research proposal must have included some references outside the scope of the research. The words ‘not entirely relevant’ imply that the references concerned are probably relatively few in number.

The words ‘not sufficiently focused’ imply that the references that are valid do not concentrate sufficiently on the specific research question. The candidate may have failed to integrate one or more references that are directly related to the research question, and which also relate to each other. The candidate may have correctly identified several references applicable to the research question, but may have neglected to consider these references in relation to each other.

The comment on the two specific researchers who have not been referred to is a major problem. This implies that the background references are incomplete. In particular, the reference to the Jones School (2001) implies that the candidate may have missed a complete range of references that reflect a relevant school of thought. This is a serious problem. It indicates that the initial literature review and background reading is incomplete. The absence of a whole school of thought could threaten the entire research strategy. In this case the candidate would have to research the Jones school thoroughly and review it in relation to the other references included so that a coherent and complete background can be produced. The reference to the work of Smith (2003) suggests that perhaps some recent work by this specific author may be
relevant to the research. The most common reason for missing single, specific authors is that they have published recently. Smith may have published his or her work very recently (this distance learning course was written in 2003), and the candidate may have missed it because it was published only a few months before the research proposal was written.

Example 3. Research Methodology and Research Timetable

The comments of the Research Committee may be:

The research methodology appears to be intrinsically flawed. The research proposal indicates that the primary research methodology is to comprise a longitudinal study (company A) reinforced by one cross-sectional study (company B) using a comparable company. The primary research method is stated to be structured interviews on a sample population of 1200 employees in company A and a representative equivalent in company B. The proposed sample size is too small and should be increased. It is considered unfeasible for the candidate to complete 1200 structured interviews within the timescale allowed in the timetable (11 weeks). The candidate should reevaluate the number of structured interviews and the time allowed for completing them.

This series of comments is more challenging still. The Committee is obviously very concerned about both the proposed research methodology and the timescale allowed to complete the research. There is also a serious issue over the sample size and its statistical reliability.

The Committee is obviously very concerned, as shown by its assertion that the ‘research methodology appears to be intrinsically flawed’. This suggests that the flaws or inadequacies run throughout the methodology rather than applying to some areas of it. The Committee is clearly unhappy about the proposal to use only one longitudinal study and one cross-sectional study. They feel, with justification, that the research could be unreliable if based on such a small sample size. The Committee is also concerned that the timescale allowed for conducting a very large programme of structured interviews is inadequate.

In this case the candidate is faced with the prospect of redesigning large parts of the research methodology. The simplest approach would probably be to continue with one longitudinal study and introduce more cross-sectional studies. The number of cross-sectional studies should be as high as can be achieved in the timescale available, and at least sufficient to generate statistically reliable data. It is also apparent that the proposal to conduct 1200 structured interviews is not feasible within the timescale allowed, and is probably not feasible under any conditions. In some cases this could suggest that the candidate intends to make use of assistants. This may be acceptable provided the thesis is the candidate’s own work but, if so, the Committee would expect to see a clear statement to this effect in the research ethics and resources required sections of the proposal. These have not been referred to, so it can be assumed that no such entries are present.

Under the circumstances the candidate should clearly state the resources intended to be used, and should justify or revise the timescale allowed for the interviews as appropriate.
Example 4. Deliverables and Significance
The comments of the Research Committee may be:

The research objectives are not significant. They mirror work published by Bloggs (2000) but do not attempt to replicate. The objectives should be redesigned. If the current position is maintained, a research paper to justify this position is required.

In this case, the Committee considers that the research objectives are equivalent to research findings already published. This situation could arise from an incomplete literature review or a misunderstanding by the candidate of the outcomes of Bloggs’s research. In some cases it is acceptable at doctoral level to duplicate the research of another researcher. If this is the intention, the candidate should clearly state it as part of the research objectives. The fact that the Committee has not referred to any such statement implies that it is not present in the research proposal.

The candidate should remember the University regulations in relation to the requirements for the award of a doctoral degree by research:

The thesis shall form a contribution to the knowledge of the subject and afford evidence of originality, shown either by the discovery of new facts or by the exercise of independent critical power.

Within this context, duplication is acceptable so long as it is a stated objective of the research. In some cases it may be acceptable to attempt to duplicate Bloggs’s results by a different research methodology using a process of triangulation. In all cases, any such intention must be stated. An intention to conduct research where the desired objectives have already been achieved is invalid.

The Committee has gone on to say that ‘If the current position is maintained, a research paper to justify this position is required.’ The Committee therefore presumably feels that there may be a case for the candidate to maintain the current position, provided this case is justified in a research paper put forward for critical review amongst peers in the academic community. This suggestion is providing the candidate with a high-risk option. He or she can accept the low-risk option and redesign the research strategy. He or she can alternatively adopt the high-risk option and publish his or her intent in the context of Bloggs’s work and await the response of the academic community. If the response of the academic community is favourable then everything is fine. If the response is negative, the candidate has major problems.

Example 5. The Resources Required to Implement the Research
The comments of the Research Committee may be:

The candidate appears to be proposing the use of others as assistants in the data collection and analysis process. The contribution of these others is excessive and should be curtailed.

In this case, the Research Committee is concerned that the use of assistants has developed beyond that which is acceptable under normal research practice and in
the context of the requirement that the research should be substantially the work of the candidate. This is a particularly difficult issue to resolve.

The Research Committee here is concerned that the candidate is proposing a research strategy where he or she receives an excessive degree of assistance. The wording of the Committee’s comments suggests that the level of assistance proposed has probably been declared under the research ethics section and the resources required section, but is still too large to allow the candidate to assert that the research is predominantly his or her own work.

Under these circumstances the candidate has no choice other than to revise (down) the level of assistance proposed and resubmit the research proposal.

6.6.4.2 General Points

The candidate should appreciate that the EBS Research Committee is concerned primarily with the maintenance of quality standards on the DBS research programme. There is no point in the Research Committee allowing through flawed research proposals. If this were to occur, the candidate would simply develop a flawed research strategy and go on to produce flawed research results and conclusions. These flawed results and conclusions would immediately be detected by both the internal and the external examiners (see Module 1), and the candidate would then be required to make late-stage amendments to the thesis. It is much more efficient and effective for any flaws to be detected and corrected at an early stage.

In general terms the candidate should remember that:

• the Research Committee is there to help him or her;
• there is no point in allowing flawed research strategies to develop;
• it is better to resolve flaws earlier rather than later;
• late-stage amendments may result in a considerable amount of abortive work;
• the candidate should not be annoyed by negative comments from the Committee;
• all comments are designed to improve the research;
• the candidate should implement any comments as thoroughly and quickly as possible;
• if resubmissions are required, the candidate should implement these as quickly as possible;
• all Committee comments should be very carefully considered;
• all Committee comments should be acted upon.

6.7 Sample Research Proposal

6.7.1 Introduction

This section contains a sample research proposal. This is followed by a brief critique where the primary weaknesses in the literature are identified and discussed.
Candidates should note that the sample is based on an examination paper for *Introduction to Business Research 1*. The draft research proposal is somewhat smaller than would normally be required for a real submission.

Candidates should also note that the sample research proposal shown in Section 6.7.2 contains mistakes. These are placed deliberately and are identified in the critique.

6.7.2 A Research Proposal

Note: the research proposal and critique refer to type B orientation (hypothesis-based single sample) and type A orientation (hypothesis-based with a multiple sample size). These classifications are introduced and explained in *Introduction to Business Research 3* but are included here for completeness.

**Draft Research Proposal**

*Introduction*

The research is concerned with the extent to which risk interdependency can be modelled by an organisation that is about to undergo a period of significant planned change. Organisations operate within conditions of both planned and imposed change (Smith 2000). In some ways organisations can be considered as being similar to organisms in that they have to evolve in order to survive because the environment is characterised by conditions of change (Dawson 1999, Creek 2000). There is considerable evidence to suggest that organisations that best respond to change are more likely to be successful.

Companies have to evolve within conditions of both planned and imposed change. Planned changes include internal reorganisations (Goblin 1998), new product launches (Orc 1999) and acquisitions (Troll 1997). Imposed change includes the action of competitors (Elf 1998), government regulations (Dwarf 2000) and general environmental impacts (Mann 2000). These planned and imposed changes are interdependent (Strider 2001) and have to be managed as a whole so that the overall risk profile facing the company is managed at an acceptable level.

The research examines risk interdependency from the point of view of a large organisation that is about to embark on a period of significant change, and attempts to model the risk interdependency within the risk profile that results from the period of change. The research results are useful because they can be used by companies that are about to undergo similar change processes. The research will attempt to prove that the use of an effective risk interdependency model can improve overall long-term company success.

*Abstract*

The research will consider the profile risk interdependency of a large company that is about to undergo a period of sustained change. This research is important because all companies undergo change and have to be able to manage it. Companies need to be aware of the overall risk profile that faces them when they undergo conditions of change. Failure to understand the risk profile
adequately increases the overall sensitivity and degree of exposure of the company.

The research uses a company called Waster. This company is UK based and employs around 1500 people. Waster has been in existence since its formation in 1998. The company manufactures waste disposal systems for local authorities. The range includes mechanical grinders and macerators and all associated pipework and disposal systems. The company has agreed to allow the candidate to collect change data in the months both before and after a major change takes place within Waster. In this case the change is a breakthrough into supplying private sector clients over and above the well-established local authority customer base.

The research will concentrate on the development of a risk interdependency model (RIM). The RIM will be developed using Waster as the primary subject. Risks will be mapped and categorised over time as changes occur, and the interrelationship between the various risks will be analysed. The alteration of the RIM over time will be monitored and used to develop the model through a feedback loop.

The research will continue over a period of approximately three years, by which time the RIM will be fully developed. The RIM will then be calibrated and tested against a range of other companies in an attempt to evaluate and verify its accuracy.

The results are expected to show that the RIM changes over time, and that an awareness of such modelled changes in the risk profile can improve the overall effectiveness of the management of change. This in turn can lead to an overall increase in the effectiveness of the company.

**Summary**

The research is primarily aimed at the production of a modelling tool that will allow managers to monitor and assess the changing risk profile that faces an organisation under conditions of major change. This is important because conditions of change lead to the development of specific change risks. It is easy for a company to fail to identify change risks because they are time dependent and do not necessarily relate to the existing risk profile. The research is also concerned with showing that the use of this model improves the likelihood of overall company success.

The research uses a collaborating company as the primary data source. This company is closely observed as it plans for and moves through a period of high levels of change. The company in this case is undertaking a major transition in its customer target focus, in that it is moving away from its traditional customer base in local authorities and is venturing into private sector competition. In making this transition the company involves itself in a number of new risk types. These involve the change risks that are associated with the transition itself together with the risks associated with the new marketplace. These risks are
interdependent in that variations in any one risk in the overall profile may impact on risks elsewhere in the profile.

The research involves a detailed longitudinal analysis of the risk profile of the collaborating company over time. Direct observation will be used. The candidate will work with senior managers within the company to build up a dynamic risk map for each major identified risk associated both with the transition and with the new marketplace. Senior managers will be interviewed on a weekly basis and will be issued with predesigned questionnaires that invite them to assess individual risk in relation to the timescale involved in the transition process.

Questionnaires and interviews have a long track history in research of this type. Risk profile was assessed within a range of manufacturing companies in a series of research programmes in the 1990s (Bread 1992, Butter 1994, Jam 1998). These researchers reported varying degrees of reliability depending on the nature of the subject and the design of the questionnaire itself. Other researchers used structured interviews in an attempt to measure respondent perceptions of risk profile (Bunn 1995, Cake 1997, Muffin 1998).

**Background (literature review)**

The literature agrees that organisations operate within conditions of both planned and imposed change (Smith 2000). Change is constant and unavoidable (Shifter 2000). Companies are similar to organisms in that they have to evolve in order to survive because the environment is characterised by conditions of change (Dawson 1999, Creek 2000).

The literature makes it clear that companies have to evolve within conditions of both planned and imposed change. Planned changes include company restructuring (Snaga 1995) internal reorganisations (Goblin 1998), new product launches (Orc 1999), mergers (Gorbag 2000), acquisitions (Troll 1997) and staff movements (Mahur 2001). Imposed change includes the action of competitors (Elf 1998), government regulations (Dwarf 2000) and general environmental impacts (Mann 2000), regulator actions (Wizard 2000), and customer variations (Hobbit 2000). Planned changes are brought about by the organisation with the objective of improving the overall position of the company. Imposed changes are forced on the company and can have both positive and negative impacts.

These planned and imposed changes are interdependent (Strider 2001), and have to be managed as a whole so that the overall risk profile facing the company is managed at an acceptable level. Risk is always present and is unavoidable (Stake 1998). Companies should not even try to eradicate risk as this is generally not possible (Safe 2001) or desirable (Gamble 2001). Risk is necessary in order to create and allow opportunity. Generally the greater the risk the greater the opportunity. The important thing is to identify the risk profile that faces an organisation and then treat the risks to bring them to a level that is acceptable in terms of the risk response of the organisation (Card 1998). The
overall risk profile should be managed so that the company can absorb one or more profile risks and still survive (Armour 1995).

There have been some attempts at developing risk models in the literature. The ‘global model’ developed by Seer (2000) attempted to measure the entire risk profile faced by companies in the UK retail sector. The main problem with the model was the lack of flexibility in terms of allowing for changes in the risk profile to be tracked. Docker’s (1999) ‘port model’ attempted to model external risks using an interface evaluation system where the risks were analysed and categorised as and when they became identified by the organisation.

Relatively few researchers have addressed the issue of risk interdependency. Nett (2000) conducted doctoral-level research on the links between strategic and unforeseeable risk. The results were largely inconclusive, primarily because of the problems associated with identifying the full range of unforeseeable risks facing the sample organisation. Mesh (1999) considered the relationship between unforeseeable risk and cascade events. Mesh (1999) concluded that cascade events can easily develop into major unforeseeable risk events with potentially catastrophic consequences.

There is no research in the literature that suggests that interdependency risk models are related to long-term company success. Based on the literature review, however, it seems reasonable to assert that effective risk management through an interactive risk model must be of competitive value to any organisation.

**Research questions, aims, objectives and hypotheses**

The research question is:

- Does the use of an accurate risk interdependency model improve the long-term success of an organisation?

The aim of the research is:

- To show that the use of an accurate risk interdependency model improves the long-term success of an organisation.

The objectives of the research are:

- To show that an effective risk interdependency model can be developed.
- To show that this model can accurately predict the risk profile during times of organisational change.
- To show that the use of the model reduces overall risk impacts over a period of time.
- To show that the use of the model improves long-term organisational success.

The operational hypothesis is:

- $H_0$: The use of an accurate risk interdependency model does not improve the long-term success of an organisation.
- $H_1$: The use of an accurate risk interdependency model improves the long-term success of an organisation.
The research hypotheses are:

- H₀: An effective risk interdependency model cannot be developed.
- H₁: An effective risk interdependency model can be developed.
- H₀: This model cannot accurately predict the risk profile during times of organisational change.
- H₁: This model can accurately predict the risk profile during times of organisational change.
- H₀: The use of the model does not reduce overall risk impacts over a period of time.
- H₁: The use of the model reduces overall risk impacts over a period of time.
- H₀: The use of the model does not improve long-term organisational success.
- H₁: The use of the model improves long-term organisational success.

The research paradigm and theoretical framework

The research will be conducted using a positivist approach. In the longitudinal study a large number of Waster employees will be subjected to structured interviews. The responses will be subject to quantitative analysis in order to identify trends in patterns of perception. These trends will be taken as indicative of popular opinion. Variations in questionnaire responses will be matched against variations in the organisational risk profile in order to establish a link between the two variables. The research will include a significant qualitative/subjective element in that extensive use will be made of qualitative data and assessments in order to set the main study results in context. Much of the qualitative element will be addressed by the use of general discussions with Waster employees and by the subjective analysis of qualitative data.

The research is based on a type B orientation (hypothesis-based single sample). This orientation is regarded as being appropriate, given the nature of the research and the small sample size chosen. If time permits, the research may be expanded to type A (hypothesis-based with a multiple sample size).

Research methodology

There is considerable justification for the use of research interviews and questionnaires in research of this type. Bread (1992) used interviews and questionnaires in assessing risks levels in a manufacturing environment. Butter (1994) used both interviews and questionnaires in measuring perceived risk levels in managers who were involved in moving companies through periods of uncertainty and change. Jam (1998) used online questionnaires backed up by interviews when assessing risk profile characteristics in mergers and acquisitions. Other researchers such as Bunn 1995, Cake 1997 and Muffin 1998 made extensive use of questionnaires in measuring perceptions of risk profile.

The research methodology will use the research methods of questionnaires and structured interviews as the primary sources of research data. In the longitudinal study, organisational members will be interviewed over a period of time of between two and three months. Responses will be fed into a purpose-designed...
database, and basic statistical tools and techniques will be used to identify patterns in response data (Ryan 2001; Sarah 2001; Naan 2002; Ail 2003). In the cross-sectional case studies, additional interviews will be carried out using the same structured interview questions (Jurana 1998; Neill 1999; Ross 1999; Eilidgh 2000). The case studies will be matched to the longitudinal study in terms of a separate typology that will subsequently be developed. It is envisaged that this typology will be based on Sahashrala (1997).

The questionnaires will be developed in line with the recommendations of Skeesome (2000), and will be tested initially within the collaborating organisation prior to being finalised (Trial 1997). A total of ten postal questionnaires will be used. The results of the questionnaires will be triangulated with the results from the structured interviews. The case for the use of longitudinal studies backed up by cross-sectional studies was first made by Jurana (1990). In her pioneering research on mergers and acquisitions in relation to cultural responses, Jurana successfully used a longitudinal case study to extract valid research data, and was able to triangulate it using a different research paradigm with her results from a series of cross-sectional studies. The current research will adopt the same approach. Similar approaches have subsequently been used with varying degrees of success (Flounder 1995; Trawler 1996; Caster 1997; Spinner 1998; Fly 1999; Hooker 2000).

**Sample design and details of the data collection process**

The sample will be based on a long-term longitudinal study and a series of short-term cross-sectional studies. In all cases the basic data source will be senior managers and specifically risk managers within the company. The sample size will therefore be one, although within this sample a large number of individual questionnaires and surveys will be carried out. A rough timetable for data collection has been agreed (see timetable below). Data collection within the smaller case study projects will be as per the main study.

**Accessibility**

Waster has agreed full access for the duration of the research period. No problems with accessibility are foreseen. Three other companies have given outline approval to allow access for the collection of secondary data. It is anticipated that these companies will be used in a validation role with observations made in support of the main study findings. Final approval from these companies will be sought as soon as a definite research timetable can be agreed.

**Research ethics**

Not applicable.

**Deliverables**

The end result of the research programme will be a thesis that will meet the requirements of the University through the approval of the internal and external examiners. The research thesis will be submitted and examined within the time limits set by the University.
Significance

The literature on risk management is well developed, and there are numerous publications on virtually all aspects of risk management system design and execution. The literature is much less developed in relation to risk interdependency and the use of risk interdependency models to monitor and control the risk profile of an organisation under conditions of change. There appears to be no literature linking risk interdependency modelling and organisational success. It appears to be reasonable to assume that risk management is a driver of success. Organisations that have good and reliable risk management systems in place are more likely to be successful than organisations that do not. It therefore seems reasonable to suggest that, where risk interdependency modelling can be used in the assembly of a risk management system, the model itself will directly contribute to organisation success.

Successful research in this field will lead to the development of a practical tool that can be used by companies in monitoring and controlling their risk profiles, and therefore their sensitivity to risk impacts, as conditions change around them. It is suggested that the end result will be a commercially viable risk impact prediction tool that will be of direct value to organisational risk managers.

The resources required to implement the research

The research will be conducted solely by the candidate. No further research resources are required.

A timetable indicating the expected completion date for each part of the research

The proposed research programme timetable is as follows.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initialisation:</td>
<td>2–6</td>
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<td>Background reading:</td>
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</tr>
<tr>
<td>Formulation of the research proposal:</td>
<td>8–12</td>
</tr>
<tr>
<td>Submission of the research proposal:</td>
<td>12</td>
</tr>
<tr>
<td>Literature review:</td>
<td>12–18</td>
</tr>
<tr>
<td>Submission of the literature review:</td>
<td>18</td>
</tr>
<tr>
<td>Development of the research methodology:</td>
<td>18–20</td>
</tr>
<tr>
<td>Longitudinal study:</td>
<td>20–22</td>
</tr>
<tr>
<td>Cross-sectional studies:</td>
<td>22–23</td>
</tr>
<tr>
<td>Writing up:</td>
<td>23–24</td>
</tr>
<tr>
<td>Viva voce:</td>
<td>24</td>
</tr>
</tbody>
</table>

References, bibliography, letters of support and appendices

Nil.
6.7.3 Critique of the Sample Research Proposal

Each section of the research proposal will be considered in terms of weaknesses and areas that could be challenged by the EBS Research Committee.

The research proposal as it stands is clearly well below the minimum required standard for a pass. It is badly written and contains numerous major problems where some modification is required.

- **Introduction.** The introduction is badly assembled and incorrectly located. Most researchers would expect to see the abstract as the first section of any research proposal. This is not a hard-and-fast rule, but in general any alternative layout and order of presentation should be developed only if it adds something to the overall proposal. In this case the introduction does not appear to add anything. The introduction introduces references. This appears to be inappropriate, as the references and the general use of citations appear too early in the presentation. The introduction also uses some terms that the reader may not fully understand. Obvious examples are ‘risk interdependency’ and ‘risk profile’. These terms should either not be used here, or if they are used, they should be defined. A glossary of terms early in the paper (although not in the introduction section) may help here.
  
The terms ‘change processes’ and ‘significant change’ should also be expanded upon and clarified. Change in an organisational context can mean almost anything, and some scope or limitation should be developed.
  
The use of the word ‘success’ is particularly dangerous as it is not defined. Success can be measured using numerous different variables. Short-term financial success is one possibility; long-term stability is another. The two are measured using very different criteria.
  
The candidate appears to use the words ‘organisation’ and ‘company’ interchangeably. This is to be avoided. All companies are organisations, but not all organisations are companies. The candidate should decide which he or she is concerned with and use the appropriate term throughout.
  
The wording of the introduction implies some confusion between change and change drivers. Organisations may experience impacts that suggest change, but the change itself may or may not follow. This area should be clarified.
  
The closing paragraph is inappropriate. The entire research programme and how it concludes will determine whether or not the results are useful to real organisations.

- **Abstract.** The abstract is wrongly positioned. It should be the first part of the proposal unless there is a good reason for locating it behind an unnecessary introduction section.
  
Ideally the abstract should be worded in the past tense.
  
The text as it stands is rambling and much of it is irrelevant. For example, the abstract does not need to contain the level of detail on Waster that is present. It is sufficient to say that a large company of one sort or another is used as the primary data source.
  
The abstract is too short and contains insufficient detail. It is not clear, from reading it, exactly what the research is about. It appears that the candidate is
attempting to develop a risk interdependency model (RIM), but it is not clear what this model will do or how it will be used. It should be remembered that the research should contribute to the knowledge base.

The abstract fails to mention the chosen research paradigm or combination of paradigms. This is crucial, as the Committee has to be sure that the chosen paradigm is both relevant to the chosen research methodology and compatible with the identified research field. The model will presumably be based on some kind of quantitative element. The abstract does not make this clear, but it can be reasonably assumed that the model will in some way mirror the characteristics of the RIM. If a quantitative approach is to be used, the relationship between this and the adopted paradigm should be made clear.

The abstract does not mention the proposed research methodology. Presumably some form of direct observation within Waster will be used. A summary of the research methodology is very important in the abstract as it helps the Research Committee to make an immediate evaluation of the applicability of the proposed methodology in the context of the proposed research. The description need not be particularly detailed so long as it gives the reader a basic overview of the research methodology to be adopted.

The abstract mentions Waster as the primary data source. It does not make clear the extent to which Waster is involved, nor the degree or level of information or data that will be provided.

The final paragraph is ineffective. An understanding of risk profile is central to the risk management system of any organisation. It also goes without saying that the risk profile is dynamic, as most risks are time dependent. It is not clear how the development of the RIM will add to this knowledge. Presumably the RIM will allow risk managers to look at some kind of picture of how the risk profile is changing over time, particularly in relation to the evolution and management of high-impact, high-likelihood risks. If this is the case, it should be clearly stated.

- **Summary.** Much of the summary repeats information already presented in the introduction and abstract.

  ‘Change risk’ is not defined, and although an association is made between change risk and the risk profile, the nature of this association is not made clear. ‘Dynam-ic risk map’ is also not defined, and should be included in a glossary (see above). The candidate appears to want to use Waster as a longitudinal case study. The timescale for data collection and analysis is not specified. It is necessary to give some indication of the type of data to be gathered and the timescale over which data collection will continue. It would also be useful to provide some information on how the data are to be processed. The text mentions the use of a ‘longitudinal’ study, but no time indication is given.

  The text mentions the use of structured interviews and preset questionnaires. No indication is provided on how the interviews and questionnaires are to be used collectively. There is also no mention of the possibility of using data from two different sources such as these for triangulation. The candidate should define exactly what is meant by ‘senior managers’, and should give some indication of the proposed sample selection process and proposed sample size. If not carefully chosen, the sample managers may not be representative of the company as a
whole. The candidate should make it clear whether or not sample managers have been or are to be chosen for representation or for another reason. All choices should be justified.

The candidate has made some effort to justify the use of research interviews and questionnaires. The justification is, however, weak in that it does not justify these approaches in relation to the proposed research. The references cited are of little use since the text does not explain the degree of relatedness between the cited research and the current research. The fact that some of the cited subjects were based in manufacturing industry is insufficient.

The summary makes no reference to the pre-research risk profile. The sample company has an existing risk profile that will presumably change as the company moves through the transition process. The calibration process for the model depends on an accurate assessment and inclusion of the pre-transition characteristics of the profile. There is no mention of how any of the risks are to be classified, and the text refers only to identified risks. There will almost certainly be some unidentified risks and unforeseen risks involved, and these could have a significant effect on the profile. These risks may be significant, and the RIM should allow for them in one way or another.

The summary appears to link the use of a risk interdependency model with the effectiveness of the user company, whereas the abstract related the use of the model to company success. These represent two entirely different outcomes, and clarification is very important.

There is no direct reference to a coherent validation study. The use of validation samples is mentioned, but apparently incorrectly (see below) in the context of the cross-sectional studies. Ideally, the candidate should include a validation study in addition to the main longitudinal and cross-sectional studies. This approach is particularly important in this case as the main study sample size is small.

The proposal up to this point lacks a clear focus. It is not clear whether the main thrust of the research is concerned with the development of the model or in the application of the completed model.

- **Background (literature review).** The section opens with the statement: ‘The literature agrees that’, and yet there is no justification for this statement in the review provided. It is important that generalisations of this type are fully substantiated.

The literature review is short and contains relatively few references, although what references there are appear to be reasonably up to date.

The review makes it clear that companies operate under conditions of planned and imposed change. It could be argued that this element is common sense and does not require extensive literature support. The section of the review on modelling is very short and contains too few references. The literature on risk modelling is not particularly large, but it is clear that the candidate has not addressed a reasonable cross-section of the literature in developing this section.

The same comments apply to the section on risk interdependency and RIM approaches. These sections could have been expanded to include more references to current research in these areas. Virtually all risk managers are aware that risks
are interdependent in some form or another. Although it is true to say that relatively few researchers have attempted to model this interdependency, the literature review itself is not representative and should be expanded.

There is an overall lack of connectivity between the sections contained within the literature review. These is also a lack of critique. The candidate has addressed each section separately and has made no attempt to connect the areas together. This could have been achieved by simple cross-referencing. For example, research on change risk could have been linked to research on risk interdependency by citing researchers who have considered change risk as part of the interdependent risk profile. Linkages of this type are particularly important in developing the overall level of understanding of the reader, and in building up a clear and precise central theme that acts in support of the research question, theory and/or hypotheses. At the moment the literature review and research theory sections are disjointed and are not properly aligned. The literature review should follow the same basic chain of reasoning as that contained in the development of the theory or hypothesis.

- **Research questions, aims, objectives and hypotheses.** The research aims, objectives and hypotheses appear to be somewhat confused. The research question centres on the issue of the RIM improving the long-term success of the organisation. The word ‘success’ has still not been defined, although ‘long-term’ has now been introduced. The research question implies that the main focus of the research is on the use of the model in achieving organisational success, rather than in the development of the model itself. The research aim appears to substantiate this view.

The objectives of the research then split into two distinct areas. The first two objectives relate to the development of the model in terms of it being possible to develop and accurately calibrate the RIM. The second two objectives relate to the use of the model to reduce risk impacts and improve long-term success. This is rather confusing, as the ‘conditions of change element’ used in the initial stages of the research proposal has been dropped.

The research question appears to form the direct basis of the research hypothesis. The research objectives appear to form the direct basis of the operational hypotheses. As a result the hypotheses diverge into the two areas discussed above (production of the model and use of the model), with no apparent linkage between them. The problem here is that it may be possible to produce the model but may prove impossible to use it to improve organisation success. The hypotheses relate to two entirely separate issues, both of which are time dependent to varying degrees. For example, where an accurate model is developed but does not generate organisation success, the testing of the operational hypotheses does not assist in deciding whether to accept or reject the research hypothesis.

The development of the research hypothesis and the various operational hypotheses needs more explanation. The flow of logic is not clear, and the apparent gap between development and application appears to remain. The hypotheses as they stand are not workable, and any combination of acceptance or rejection would probably not actually tell the candidate enough to make the results usable.
• **The research paradigm and theoretical framework.** The choice of a positivist paradigm is subject to the limitations detailed in the text. Interviews are an accepted and established method of collecting data. They can, however, extract information only at a relatively superficial level, and the data generated reflect only the perception of the respondent. This is particularly important in this research, as a major element revolves around how well the RIM works. The extent to which the RIM is successful, and the extent to which people perceive it to be successful, are two different things. This research appears to address the latter rather than the former. It can be very dangerous to work on perceptions only. Ideally some form of triangulation that pulls in a less subjective appraisal of the actual performance of the model over a period of time should be used.

There is also the issue of validity. Structured interview respondents may not necessarily say what they really think. In addition, the interviewer may introduce the complications of intuition and bias, and the very presence of the interviewer may raise the problem of reactance. Positivism has the limitation that it cannot guarantee to explain the deeper levels of human reasoning, and it can totally miss the underlying cultural implications. This is important in a case like this, where the basic data appear to be based on perceptions rather than on actual process data.

The candidate appears to have a good understanding of the positioning of the research within the research orientation matrix. He or she appears to appreciate some of the issues involved in placing the research as either a type A or type B orientation.

• **Research methodology.** The research methodology section could be written more clearly and with a higher information content. It contains a number of distinct problem areas. The candidate has detailed the use of structured interview and questionnaire techniques, but there appears to be no attempt at any form of triangulation. Ideally, the candidate should attempt to reinforce the results gained by one research method with corresponding results gained by another method, such as the use of historical data. In addition, there is no mention of a pilot study. A validation sample is mentioned, but in the wrong context (see above).

Pilot studies are very important in that they allow the candidate to evaluate his or her initial research programme ideas and outline methodologies. A pilot study would be useful in this case as the candidate has clearly still to develop a detailed approach and methodology. Pilot studies can be particularly useful in assessing the applicability of a proposed methodology on a controlled sample. The findings can indicate shortcomings in the proposed methodology and areas where additional thought and attention are needed.

A formal validation study should be included at some point after the conclusion of the main longitudinal and cross-sectional studies, especially so in this case as the sample size is small. Validation studies are important in showing the generalisability of the results. This is particularly important in this case, where the primary research sources are based on a small (and potentially non-representative) sample size. In doctoral research, generalisability is important. It is often not sufficient to illustrate patterns in a small and non-representative
sample size. In most cases it is necessary to show that any research findings are applicable within the research field selected at the outset.

The research proposal as it stands does not include sufficient detail on interview question or questionnaire design to allow an evaluation to be made. This is not a major issue at research proposal stage, although it would be reassuring to see some evidence to show that the candidate has at least given some thought to the issue.

The candidate mentions using the longitudinal case study to appraise the initial questionnaire. Ideally, the candidate should develop a pilot study using a different sample in order to avoid the problems of reactance. The pilot study is an important aspect of most types of research, and the fact that the candidate has failed to refer to any kind of formal pilot study is an important omission.

The references to the works of Ryan (2001), Skeesome (2000) and Jurana (1990) are valid, provided they are relevant to the current research field. For example, the reference to Ryan (2001) is made in support of the use of regression analysis in order to extract results. Ryan’s approach may have been based on an entirely different data set within a completely different research field. The Research Committee would have to look in detail at this reference and make a decision on whether it is valid for the current research proposal. The reference to Skeesome (2000) appears to be a general reference in relation to questionnaire design. This reference may be relevant, but it may not be directly linked to research in the current proposed research field.

The review on the general use of questionnaires and interviews is particularly poor. The references are the same ones used in the summary. In both locations these references are not used properly. Further detail should have been given on how the approaches were used and on what the experimental outcomes were. This section is basically a short literature review. It has to be direct and to the point, and every citation should serve a purpose. It should also be a critical review. The candidate should use this review to demonstrate that he or she has read the relevant literature and is able to develop a reasoned critique as a means of improving his or her own research design. There is no direct evidence of this in the draft research proposal.

- **Sample design and details of the data collection process.** The candidate has not given any real indication of the size of the main sample company. *Waster* will have to be a very large company to have enough senior managers and especially risk managers to generate a significant number of responses. The candidate has also still not specified exactly how the data will be extracted and used in assessing the model or the changing risk profile. The main research thrust appears to be in the development of the RIM and then in assessing its applicability. Questionnaires and interviews will generate only data relating to the perceptions of the people surveyed. Actual performance measurement will probably be necessary, and the stated arrangements do not appear to make any provision for this. The same problems apply to the cross-sectional studies.

- **Accessibility.** There is no written confirmation that *Waster* has actually agreed to participate (see below). It is important that the candidate is able to substantiate the claim that *Waster* has agreed to full access. The same uncertainty applies
to the cross-sectional study contributors. It is dangerous to assume that these companies will cooperate.

There is some confusion over the use of validation studies. The basic approach seems to suggest that a longitudinal study will be used to generate the main research data, and a series of cross-sectional studies will be used to provide additional data. It is not clear what is meant by ‘secondary data’. A validation study is generally used after the main study or studies as a means of showing that the results are generally applicable. A validation study normally implies three levels of data (longitudinal, cross-sectional and validation). The wording of the research proposal appears to contradict this.

- **Research ethics.** Research ethics are an important issue in any research programme and must not be disregarded. As a bare minimum the candidate should give an undertaking to act in the interests of the University, any collaborating companies, any individual sample employees, the research community and the candidate himself or herself.

  Candidates are more specifically doctoral candidates of Heriot-Watt University. In conducting research, the candidate accepts an ethical responsibility to act in accordance with University regulations and in the professional interests and standards of the University. Any unethical conduct will reflect directly on the University.

  The candidate should also address the issues of ethical conduct in relation to collaborating organisations and individual employees of such organisations. The collaborating companies have a right to expect that any information provided will be related with due consideration and that any agreements on security will be honoured. Individual employees may feel threatened by the research. The candidate must accept his or her ethical responsibility to handle information from individuals with due care and responsibility. In some cases people may refuse to identify themselves or to allow recordings to be made of interviews. Individuals have every right to insist on this if they choose.

  The candidate also has an ethical responsibility to the research community. The candidate must never fabricate or falsify research data or findings. Contradictory data must always be included, even if they slow up the research or make the analysis element more difficult or prolonged.

  Candidates are also ethically responsible for declaring any assistance they may have in preparing the research thesis. In some cases additional resources such as those provided by support assistants are acceptable so long as any such support is stated (see also resources required to complete the research below).

- **Deliverables.** A good research programme can act as a basis for a significant number of deliverables, and the candidate should use the research proposal as a means to detail these to the Research Committee. The thesis itself is only a single deliverable. Most good doctoral research programmes will generate several potentially high-level research journal papers, especially where the candidate works with the supervisor to develop these. In many cases the candidate is new to the concept of doctoral research and research journal publication. The obvious answer to this is for the candidate and the supervisor to write a series of joint papers using the candidate’s own research results. Supervisors are research active
in their specialist field, and this means that they are familiar with the procedures and processes necessary for writing high-level research journal papers. In some cases the potential may exist for a candidate to write a book on his or her research. The term ‘book’ could include anything from a full textbook to a practice guide or internal code of practice for senior managers. It is common for candidates to conduct research in areas of concern within their parent companies. In such cases there is a real possibility that the candidate may be able to write internal procedural manuals or research reports that may eventually become company standards within the parent organisation. In other cases the outcome of the research could be a predictive or process model that may go on to be used as standard within the parent company. Other alternatives include the production of one or more conference papers. In some cases these could be written and delivered during the course of the research, and any published responses could be included within the literature review.

- **Significance.** There is no doubt that an accurate risk interdependency prediction model would have great commercial value. The text in this section does not make it clear that the model will be predictive. There is also no indication of how the model will be calibrated or made usable for companies or organisations other than the longitudinal subject company. It is also undeniable that effective risk management is a driver of long-term success, where success is measured in terms of the overall growth and development of the company. It should, however, be stressed that risks apply under conditions of risk and uncertainty. Risk impacts are not certainties. Even where a risk is identified and quantified, there is no guarantee that it will actually have an impact. Two organisations may have identical characteristics, but the model may identify a different specific risk impact for each. The risk may impact only on one organisation and not on the other. The existence of the model, therefore, has not made both companies equally successful. Precautions against risk are effective only if the risk impacts. Money and time wasted on precautions that are not called upon are themselves risk in that they use resources that could be used elsewhere within the organisation. The significance of this research is more likely to be based on the ability of the model to show risk managers a representation of the changing risk profile around them. Most risk managers do this anyway, using existing tools and techniques. The model will simply give them a software tool that, provided it is accurate and correctly calibrated, will show the profile in an alternative and more easily communicated format.

- **The resources required to implement the research.** The candidate has declared that he or she is the only resource required for the research. Candidates should remember that where additional resources are utilised, such as the use of assistants in collating information, all such uses should be clearly stated.

- **A timetable indicating the expected completion date for each part of the research.** The proposed research programme timetable is as follows.
### Activity

<table>
<thead>
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<th>Months</th>
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<td>24</td>
</tr>
</tbody>
</table>

There are several anomalies in this proposed timetable. A maximum of 6 months for the initialisation process is excessive, especially when the research proposal itself has to be submitted by month 12. The timetable allows only 3 months for the preparation of the literature review. This is clearly inadequate, and is likely to be acceptable only where the available literature on the chosen subject is very small. Even in such cases, the literature review and synthesis is likely to take longer than 3 months. The submission of the literature review after 18 months is possible but unlikely. The overall timescales allowed for the longitudinal study (1–2 months) and cross-sectional studies (1–2 months) are small. The longitudinal study is likely to last considerably longer than 2 months in most cases. The time allowed for writing up is also too small. Writing up a thesis can take anything from 3 months to 12 months depending on the amount of time that the candidate has available to spend on this activity. Overall, the research duration of 24 months is short, and most candidates are unlikely to be able to complete the entire research programme up to examination within this time.

- **References, bibliography, letters of support and appendices.** The research proposal would be considerably strengthened by the inclusion of both references and letters of support. The Research Committee is more likely to consider the proposal favourably where firm support from Wasted, and presumably other companies for the cross-sectional studies, can be demonstrated. Candidates often fail to appreciate the time and effort that can be required to secure the support of sample companies. Such support should always be secured and evidenced as part of the research proposal stage.

The proposal as a whole could be written more clearly and could be more focused. It is not clear whether the main thrust is on developing the model or on applying it. The proposal seems to suggest that both areas are of equal importance to the research. This approach is acceptable so long as it is clearly stated and it is achievable within the time and resource limits given. Judging by the information provided, it is very unlikely that the candidate could complete both aspects within the limits stated. A full evaluation of the applicability of the model would take a considerably longer time than that stated. The proposal also needs to show a clear
relationship between the two elements, and should address how this relationship can be investigated.

There also appears to be a fundamental problem in relation to measurement. It is not clear how interviews and questionnaires can be used (a) to develop the model and especially (b) to apply it. The application element and subsequent performance measurement need some form of quantitative analysis whereby the actual risk profile is compared with the modelled risk profile and any variances are identified and quantified for further analysis.

The abstract as detailed is poor. It is too short, and does not communicate enough information to allow the reader to build up a reasonable understanding of what the research is about. There is no single answer as to how the candidate should rewrite the abstract in order to improve it. Marks should be awarded to each particular answer depending on the assumptions made and approach adopted by each candidate. Some basic elements to be included are listed below.

- The overall length of the abstract should be increased to around 400 words. The existing abstract is too small.
- The content should make it clear that the research is concerned with (a) developing a RIM and (b) evaluating the RIM.
- Basic information on the collaborating companies should be provided.
- The scope of the research should be established.
- Reference should be made to the proposed research methodology. It should be made clear that interviews and questionnaires are used in order to measure perceptual response to the development of the model and to its performance.
- The proposed research paradigm should be made clear.
- The relationship between the risk profile and the model should be made clear. The method of analysing and classifying the profile should also be stated.
- Reference should be made to the proposed methods of data analysis.
- The content should make it clear that the RIM is to be applied directly. Timescales for this application should be stated.
- There should be a clear reference to the expected results and research outcomes, and the content should make it clear how these will be of use to the subjects and to organisations in general.

The candidate could include numerous additional areas, provided the abstract does not become oversized. Marks should be awarded for the clarity of the presentation and for the efficient use of words, as this is important in abstract design.

Learning Summary

This module has attempted to develop an understanding of the processes involved in preparing the research proposal. The candidate will appreciate that the preparation of the research report is a complex and involved process, and it should not be approached lightly. The research proposal should be prepared to the standard layout discussed in the text. Research proposals vary widely in terms of content and
emphasis. There is no single style or approach that should be used, as the specific
detail will vary, depending on the nature of the research.

The candidate should by now have a basic idea of how to prepare the research
proposal itself and what should be included in each section. The candidate should
remember that it is very difficult to write a good research proposal first time around,
and there is a high probability that the Research Committee will reject any given
research proposal and will require alterations to be made. In most cases any such
alterations may hopefully be minor.

The candidate should now have an understanding of:

• the essentials of what is required to produce an acceptable research proposal;
• the primary likely sections of the research proposal;
• why these various sections are required;
• how these sections should link together;
• how to define research intentions in sufficient detail to satisfy the EBS Research
Committee;
• how to describe any major hurdles to be overcome in gaining access to organisa-
tions in order to conduct the research;
• any ethical problems likely to arise in carrying out the research;
• how to write an acceptable research proposal;
• how to make modifications to the research proposal if required.

The following section briefly summarises the primary learning outcomes from
each section that is included in this module.

Problems of Access

• Most business and management research is based on the use of subject
companies or other forms of organisation. In many cases the candidate is
familiar with the subject organisation.

• Companies or other forms of organisation often have a series of reserva-
tions about becoming involved in the research. Some typical examples are
listed below.
  – Security concerns.
  – Lack of return.
  – Degree of input required.
  – Commitment to existing research.
  – Collaboration retraction.
  – Organisational change.
  – Conflict propagation.

• It is important that the candidate adopts the correct approach when contact-
ing unknown companies. The candidate should generally make a written
response that is supported by further details of the research. On reading
these details the company senior managers should be able to develop a rea-
sonable understanding of what the research involves and what the likely
demands on the company will be.
In most cases the most important single element to stress is confidentiality.

EBS DBA candidates often sign confidentiality agreements with their own companies and with unknown companies that agree to contribute. A confidentiality agreement is basically a contract between the student and the company stating that the candidate will not publish, release, publicise, or otherwise communicate any part of the research data or findings to any third parties.

The other major security and confidentiality issue revolves around the workforce in the companies concerned. Even with good communication systems people often resent being told that they have to participate in research within the company.

A typical contribution/partnership proposal that is presented to a prospective company might address these areas by containing information and, where appropriate, assurances on the main points listed below.

- The name and address of the researcher.
- The name and address of the university.
- The title of the research.
- The main aims and objectives of the research.
- A summary of the type of data required.
- A statement of how the specific company can provide these data.
- A statement of the exact range and type of data to be collected.
- A summary of exactly how these data are to be collected.
- A summary of who will be interviewed and when.
- A programme for the issue of any questionnaires or other forms of survey.
- An assurance that all information will be treated with confidentiality.
- An assurance that all individuals will be treated with complete anonymity.
- An assurance that no part of the work will be published without the company’s agreement.
- An assurance that the company will be allowed to view and modify any part of the information relating to that company in the final thesis.
- An assurance (where required) that the dissertation will be stored and classified as restricted access where release is strictly controlled.

In some cases it may be necessary for the candidate to contact and discuss involvement with lower levels within the company. For example, trades unions still play a role in industrial relations in some countries.

**Research Ethics**

Ethics is a very important concept in business and management research. It impinges on how the candidate interacts with a whole range of different people, including the following.

- The internal and external examiners.
- The supervisor.
- The senior managers of subject/sample companies.
• Other people who work for subject/sample companies.
• The relevant research community.
• The University.
• People who contribute to the knowledge base.
• Future readers and researchers.

• Embellishment is one issue to consider under the general heading of ethics. Candidates should always conduct themselves in an ethical manner, maintaining the standards expected by the University.

• Some obvious ethical considerations to be made when working with companies are listed below.
  – Honesty.
  – Integrity.
  – Professionalism.
  – Preparation.
  – Trust.
  – Code of conduct.
  – Transparency.
  – Neutrality.

• In designing and setting up the research:
  – Consult the University code of ethics and ensure the research complies with it.
  – Do not exaggerate the potential benefits or returns the research may offer contributing companies.
  – Do not underestimate the likely commitment required from contributing companies.
  – Ensure all data and results are anonymous and cannot be traced to a specific contributor.
  – Always declare any interests.
  – Try to anticipate ethical problems in advance and design the research accordingly.
  – Think about any possibility the research might have to harm or hurt people.

• During the research:
  – Do not relay statements made previously by others when interviewing people.
  – Do not use deception nor tell lies.
  – Do not put people under pressure or demand answers.
  – Immediately accept the situation where people refuse to answer a question.
  – Immediately accept the situation where people refuse to be recorded.
  – Do not infer hidden meanings in questions.
  – Remain detached and do not become personally involved.
- Think about and be aware of the potential impact of personal views and bias.
- Do not use loaded questions.
- Do not criticise individuals, teams or sections.

**After the research:**
- Process only data that have been validly received.
- Always maintain impartiality.
- Do not dismiss data that contradict the general pattern.
- Do not infer causality from correlation.
- Try to use and demonstrate triangulation as much as possible.
- Develop only those results that can be supported by the data.
- Do not embellish results to support the general pattern.
- Do not modify or fabricate results to support the general pattern.
- Always observe the standards of security and confidentiality that were previously agreed.

**Writing the Research Proposal**

- The research proposal is a very important part of the research programme because it is the first element of the programme that has to be accepted by the EBS Research Committee.

- The research proposal is basically a statement of exactly what the candidate proposes to do as part of the research and a statement of exactly how he or she intends to do it. It is written in a form where these two elements can be quickly and effectively communicated to the reader.

- After reading it the appropriate EBS Research Committee members should have received enough information to allow them to make a straightforward assessment on whether or not the proposed research is viable.

- Typical reasons why the EBS Research Committee might reject a research proposal include the following.
  - Failure to convey.
  - Omissions.
  - Contradictions.
  - Lack of development.

- The research proposal should be written on A4 paper and should follow the format given on the EBS DBA template provided.

- The candidate should think about the research proposal very carefully before starting work. Where necessary the mentor should be approached for guidance and general advice.

- Different people have different ways of approaching a problem. One possible approach to writing the research proposal is considered below.
  - Think about it.
  - Produce a short list.
  - Produce a first draft.
Module 6 / Writing the Research Proposal

- Produce the final draft.

- The EBS DBA research proposal template calls for the candidate to address the ‘typical’ sections listed below.
  - Abstract
  - Summary
  - Background (literature review)
  - Research questions, aims, objectives and hypotheses
  - The research paradigm and theoretical framework
  - Research methodology
  - Sample design and details of the data collection process
  - Accessibility
  - Research ethics
  - Deliverables
  - Significance
  - The resources required to implement the research
  - A timetable indicating the expected completion date for each part of the research
  - References, bibliography, letters of support and appendices

- The abstract is a short and precise summary of the proposal.
- Abstracts of theses (as opposed to research proposals) are often used in research catalogues to give a flavour of what is involved in the research.
- The abstract is usually written last as it has to refer to a number of the sections that follow it. The abstract should state the following elements.
  - The research field and question.
  - The context of the question and the aims and objectives of the research.
  - The importance and relevance of the research.
  - The basic research methodology used.
  - The outline results.
  - The potential use and application of these results.
- Having read the abstract a reader should have a basic grasp of what the research is about.
- The abstract should normally contain a maximum of around 200 words.
- In many cases the summary is the most important part of the research proposal because it communicates the main contents and most important elements of the research proposal in a short and easily read section.
- The summary should follow the same basic line of thought as the abstract. Each important element in the abstract should be developed and extended slightly in the summary.
- As a general guide the summary section might contain 300–500 words.
- The background section or literature review is required in order to provide an overview of previously published work by other researchers and to demonstrate that the candidate has developed a reasonable understanding of the existing knowledge base.
• The background should clearly identify and review the existing literature. It should also place the current research proposal in the context of the existing literature, particularly in relation to the existence of any gaps in the literature and how the current research is positioned in relation to these gaps.

• As a general guide the background literature review section might contain 1000–2000 words, depending on the size of the literature base.

• The research questions, aims, objectives and hypotheses section should contain a clear statement of the research aims and objectives, and should also state any operational and research hypotheses that have been adopted.

• The research question is effectively the link between aims and objectives and the research methods to be used.

• As a general guide the research aims, objectives and hypotheses section might contain 300–500 words.

• The research paradigm and theoretical framework section should make clear the intended paradigm, positivist or phenomenological, and the theoretical framework behind the research questions, aims, objectives and hypotheses.

• The paradigm(s) and the theoretical framework of the work must be clearly stated, together with an outline of the research strategy and a general plan of how the research questions will be addressed.

• As a general guide the research paradigm and theoretical framework section might contain 200–300 words.

• The research methodology section should give sufficient detail on the proposed research methodologies for the pilot and main studies. It is not possible to detail the complete methodology in the research proposal, and the description should be limited to an overview of the proposed methodology and tools.

• The overview should provide enough information to allow the reader to develop a basic understanding of what research methodologies are proposed and how these will be used to generate data that can be used in addressing the stated aims and objectives of the research.

• As a general guide the research methodology section might contain 500–1000 words.

• The sample design and details of the data collection process are usually presented separately from the research methodology.

• The sample design information refers to the number and type of organisations or teams or individuals that are used as the samples to provide the research data.

• Details of the data collection process should also be provided in this section. The candidate should make clear the approaches and methods used in data collection, such as postal surveys using questionnaires backed up by fully structured interviews.

• The research proposal should provide sufficient information for the EBS Research Committee to satisfy itself as to the suitability of the samples used
for the research and the data collection processes proposed for the research.

- As a general guide the sample size and details of the data-collection process section might contain 200–700 words.
- The accessibility section should include a comprehensive listing of the proposed sources of data and a clear summary of the degree of accessibility that has been secured. In some cases it may be appropriate to refer to direct letters of support (see below) in this section.
- As a general guide the accessibility section might contain 200–500 words.
- The research ethics section summarises the candidate’s approach to research ethics.
- The Research Committee is likely to look for at least a bare minimum ethical statement covering the items discussed in Section 6.3, including an undertaking to act honestly and professionally, to maintain the anonymity of individual managers and other employees, to use the research data fairly and responsibly, and to maintain the security of all data and results.
- As a general guide the research ethics section might contain 200–500 words.
- The deliverables section summarises the results of the research in terms of what will actually be available for the use of other researchers, public and private companies and charities.
- The deliverables are the ‘goods’ generated by the research.
- As a general guide the deliverables section might contain 100–200 words.
- The significance section should show how the proposed research fits in with and complements other research. An important consideration here, given the integrative nature of DBA research, is the extent to which the research will integrate across business disciplines.
- As a general guide the significance section might contain 200–500 words.
- The resources section should summarise any assumptions on resource availability.
- In some cases it may be acceptable for the candidate to use additional resources, such as the use of assistants in processing statistical data, provided these are declared.
- As a general guide the resources required to implement the research section might contain 100–200 words.
- The timetable section should show the expected completion date for each part of the research.
- Research programmes often last longer than expected. Some common reasons are listed below.
  - The candidate encounters unexpected work pressures.
  - The candidate encounters unexpected family or other personal problems.
  - The initial project proposal is too ambitious.
  - The various activity durations are unduly optimistic.
  - Additional problems and considerations emerge.
- Key sources become delayed or unavailable.
- Additional work has to be included.
- Completed work becomes abortive.
- The candidate makes changes to the original aims and objectives.
- The candidate redefines the scope of the research.
- The candidate is forced to make new assumptions or redefine the research limitations.

- As a general guide the timetable of expected completion dates section might contain 100–250 words.
- The candidate should ensure that all citations in the background, methodology and other sections are fully referenced. The list of references should normally be alphabetically by author surname.
- The bibliography should identify any non-referenced sources used in the preparation of the research proposal. This could include textbooks on research proposal writing or another relevant source of information.
- The appendices can contain any other relevant material that, if placed in the main body of the research proposal, would have interrupted the flow of the presentation of information.
- As a general guide the references, bibliography and letters of support section might contain 500–1000 words, depending on the size of the literature base.
- The completed research proposal should inform the EBS Research Committee of:
  - what the candidate wants to do;
  - why he or she wishes to do it,
  - how the proposed research fits into the existing knowledge base;
  - how significant the research is likely to be;
  - what the candidate is attempting to achieve;
  - how he or she intends to achieve it;
  - the timescales and work elements required;
  - what the results of the research are likely to be;
  - what contribution these results may make to the knowledge base.

**Evaluating the Research Proposal**

- In making their assessment the EBS Research Committee will ask itself a number of questions. Some of these questions are specific to research proposals generally, while others are specific to this particular research proposal. Some sample questions are listed below.
  - Is the title of the research valid?
  - Are the aims and objectives of the research appropriate?
  - Have the aims and objectives been clearly derived through a process of reasoning?
  - Will the proposed findings make any direct contribution?
  - Is there any evidence of the candidate linking the proposed research to current developments in the appropriate knowledge base?
Will any contribution be evidenced by the discovery of new facts or by high-level independent critical reasoning?

Has the candidate demonstrated a sufficiently detailed knowledge of the existing knowledge base?

Are the research paradigm and methodology appropriate?

Is the research field sufficiently focused?

Will the candidate be able to gather enough detailed data on the stated research field?

Is the amount of work implied by the research proposal achievable within the timescale provided?

Is the candidate likely to complete on time with the resources stated?

Is there evidence that sufficient industrial access has been obtained?

Before submitting the research proposal the candidate should ask the following questions.

Does the research proposal address all the areas required? If any areas are not addressed, is there a good and substantiated reason?

Does the research proposal put forward a suitably applied research area? What is the degree of direct application, and can it be improved?

Is the proposed research area sufficiently original? Will the results make a contribution to the knowledge of the proposed research field?

Can the proposed research be completed with the resources available and within the time limits stipulated?

Does the research proposal address a sufficient element of strategic alignment? If the strategic alignment element is weak, can it be increased?

Does the research proposal contain a clear research question and/or hypothesis that has been logically derived from the research field?

Are the sources of data clearly defined? Will the data themselves be sufficiently robust? If not can the data source or sources be strengthened?

Does the proposal identify organisations that have agreed to support the research and supply data? Are all necessary letters of support included?

Does the research proposal show that the research will be able to generate new facts or allow the candidate to demonstrate independent critical reasoning?

Has the research proposal been thoroughly checked and proofread? Is all spelling and grammar correct?

Is the proposed research methodology sufficiently defined? If not, should further details be provided?

**Submitting the Research Proposal**

- Candidates should check any appropriate deadlines carefully and make sure that they are observed.
- The Research Committee can make two possible decisions on a research proposal.
  - The Research Committee accepts the research proposal.
The Research Committee rejects the proposal.

- The Research Committee may decide to accept the research proposal. In this case the candidate is notified that the research proposal is acceptable. The candidate can then start the literature review.

- The fact that the EBS Research Committee accepts the research proposal does not mean or imply that the candidate will necessarily go on to complete the literature review and complete the thesis. Acceptance by the Research Committee simply means that the Committee considers the research proposal to be of a sufficient standard and to carry sufficient promise and potential to justify allowing the candidate to proceed to the literature review.

- The Research Committee may reject the proposal. Rejection may occur because one or more of the areas contained in the research proposal are not addressed correctly. This does not mean that the candidate has necessarily included errors or misunderstood anything. It could be that the Research Committee feels that further explanation in one or more areas is required.

- If the research proposal is rejected, the candidate will receive a report from the EBS Research Committee highlighting its concerns and reservations. These could range from minor points to major issues.

- The candidate should appreciate that the EBS Research Committee is primarily concerned with the maintenance of quality standards on the DBA research programme. There is no point in the Committee allowing through flawed research proposals. If this were to occur the candidate would simply develop a flawed research strategy and go on to produce flawed research results and conclusions. These flawed results and conclusions would immediately be detected by both the internal and external examiners, and the candidate would then be required to produce major late-stage amendments to the thesis.

- In general terms the candidate should remember that:
  - the Research Committee is there to help him or her;
  - there is no point in allowing flawed research strategies to develop;
  - it is better to resolve flaws earlier rather than later;
  - late-stage amendments may result in a considerable amount of abortive work;
  - the candidate should not be annoyed by negative comments from the Committee;
  - the candidate should remember that all comments are designed to improve the research;
  - the candidate should implement any comments as thoroughly and quickly as possible;
  - if resubmissions are required, the candidate should implement these as quickly as possible;
  - all Committee comments should be very carefully considered;
all Committee comments should be acted upon.

Review Questions

True/False Questions

Problems of Access

6.1 Candidates can safely make the assumption that all required data will be accessible. T or F?

6.2 Access to organisations is generally becoming more difficult over time. T or F?

6.3 In attempting to gain access to a company for research the candidate should always be honest and forthright. T or F?

6.4 Once a company consents to access, the candidate is more or less certain to be able to secure all necessary data. T or F?

6.5 Companies are never concerned about the potential commercial implications of research. T or F?

6.6 A confidentiality agreement limits the degree to which research information can be disseminated. T or F?

6.7 A thesis has to be made available to anybody who requests it. T or F?

Research Ethics

6.8 Ethics relate to the validity of the research data. T or F?

6.9 Ethical issues do not need to be addressed in the research proposal. T or F?

6.10 The candidate should never declare any discovered issues in which he or she may have an interest. T or F?

6.11 It is generally useful to relay survey respondent information between respondents. T or F?

6.12 The candidate should generally be as objective as possible during the data collection process. T or F?
Writing the Research Proposal

6.13 The research proposal should be written on A4 paper and should follow the format given on the EBS DBA template provided. T or F?

6.14 The candidate should think about the research proposal very carefully before starting work. T or F?

6.15 The candidate can seek the advice of the EBS mentor if required. T or F?

6.16 In very general terms the abstract might contain about 200–300 words. T or F?

6.17 The abstract must always contain a detailed statement of hypotheses. T or F?

6.18 The aim of the abstract is to communicate the main elements of the research quickly and effectively. T or F?

6.19 The summary should follow the same basic line of thought as the abstract. T or F?

6.20 The summary should communicate the overall concept and aims of the research as clearly and succinctly as possible. T or F?

6.21 In very general terms the background literature review section might normally contain around 1000–2000 words. T or F?

6.22 The background should clearly identify and review the existing literature. T or F?

6.23 The research paradigm and theoretical framework should identify and justify the paradigm intended for use in the research. T or F?

6.24 The research methodology section should also detail the various research methods to be used. T or F?

6.25 The deliverables section should contain a projection of the expected outcomes of the research. T or F?

6.26 The development of a framework for a subsequent textbook cannot be regarded as a deliverable. T or F?

6.27 If required the research can be entirely insignificant. T or F?

6.28 The candidate is not allowed to receive assistance from anyone. T or F?
Evaluating the Research Proposal

6.29 The research proposal should be clearly defined but not so narrowly defined that it becomes trivial. T or F?

6.30 The research proposal should contain research objectives that have been translated into hypotheses expressing a relationship between variables and able to be tested empirically. T or F?

6.31 The research proposal should contain evidence to suggest that a clear and controllable sample design has been developed. T or F?

Submitting the Research Proposal

6.32 Research proposals can only be considered by the EBS Research Committee on a periodic basis according to the dates of the meetings of the Committee. T or F?

6.33 The Research Committee cannot reject the research proposal. T or F?

6.34 If the research proposal is rejected, the candidate cannot resubmit it. T or F?

6.35 The Research Committee could reject a research proposal on the grounds that the abstract is too long. T or F?

Multiple-Choice Questions

Problems of Access

6.36 Companies on the whole sometimes deny access because they:
I. are often inundated with requests from researchers.
II. are concerned about commercial confidentiality.
III. fundamentally oppose the idea of research.
IV. often resent academics.
Which of the above are true?
A. I and II.
B. I, II and III.
C. II, III and IV.
D. III and IV.
6.37 Normally, when asking a company to cooperate, the candidate should provide at least:
   I. a summary of the research objectives.
   II. a description of the type and amount of data required, with an estimate of when it
       will be needed.
   III. an assurance of data confidentiality and the anonymity of respondents.
   IV. a promise that the organisation will see any proposed report prior to publication.
Which of the above are true?
A. I and II.
B. I, II and III.
C. I, II, III and IV.
D. II, III and IV.

6.38 A restricted access thesis is kept in a secure location and is normally released only with
the written consent of the:
   I. author (the candidate).
   II. person requesting to see it.
   III. company or companies that supplied the data.
   IV. appropriate head of school.
Which of the above are true?
A. I only.
B. I and II.
C. I and III.
D. I and IV.

Research Ethics

6.39 In general terms, when conducting the research, the candidate should always:
   I. be sincere.
   II. be honest.
   III. declare any interest.
   IV. respect the privacy of the respondent.
Which of the above are true?
A. I and II.
B. I, II and III.
C. I, II, III and IV.
D. II, III and IV.

Writing the Research Proposal

6.40 The abstract should be a:
A. summary of the letters of support provided.
B. summary of the detailed research methods used.
C. comprehensive list of references.
D. short and efficient summary of the research.
6.41 The abstract should normally summarise the:
   I. research problem.
   II. context of the problem.
   III. general research methods used.
   IV. ethical standards adopted in the research.
Which of the above are true?
   A. I only.
   B. I and II.
   C. I, II and III.
   D. I, II, III and IV.

6.42 The summary should:
   A. follow the same basic line of thought as the abstract.
   B. bear no resemblance to the abstract.
   C. develop some areas of the abstract but ignore others.
   D. concentrate purely on references.

6.43 In very general terms the summary section might normally contain a maximum of around
   A. 200 words.
   B. 500 words.
   C. 1000 words.
   D. 5000 words.

6.44 The research paradigm and theoretical framework section normally follows directly on from the:
   A. abstract.
   B. summary.
   C. research questions, aims, objectives and hypotheses section.
   D. research methodology section.

6.45 The research methodology section should contain a:
   I. sufficiently detailed description of the research methodology.
   II. sufficiently detailed description of the various research methods.
   III. justification of the chosen methodology in the context of the literature.
   IV. sufficiently detailed description of the proposed sample.
Which of the above are true?
   A. I only.
   B. I and II.
   C. I, II and III.
   D. I, II, III and IV.
6.46 Examples of deliverables include:
   I. the thesis.
   II. research journal papers.
   III. conference papers.
   IV. textbooks.
Which of the above are true?
   A. I and II.
   B. I and III.
   C. I, III and IV.
   D. I, II, III and IV.

6.47 The completed research proposal should clearly communicate to the Research Committee:
   I. how much the research will cost the candidate.
   II. what the candidate wants to do.
   III. why he or she wishes to do it.
   IV. what the candidate is attempting to achieve.
Which of the above are true?
   A. I and II.
   B. II and III.
   C. II, III and IV.
   D. II and IV.

**Evaluating the Research Proposal**

6.48 The candidate should carefully evaluate the quality of the research proposal against the following criteria.
   I. The research proposal is original to the extent that it will make a contribution to knowledge.
   II. The research proposal is clearly defined but not so narrow as to be trivial.
   III. The research proposal is timely and will address an applied problem in business and management.
   IV. The research proposal contains clear research objectives derived logically from the general focus research questions.
Which of the above are true?
   A. I only.
   B. I and II.
   C. I, II and III.
   D. I, II, III and IV.
Submitting the Research Proposal

6.49 If the EBS Research Committee does not reject the research proposal this means that the:
I. candidate will definitely go on to complete the thesis.
II. candidate should withdraw.
III. research proposal shows sufficient promise for the candidate to proceed to the literature review.
IV. research methodology is suspect.
Which of the above are true?
A. I only.
B. I and III.
C. II and IV.
D. III only.

6.50 In practice, when first considered by the Research Committee most research proposals:
A. are not rejected.
B. are rejected and are not allowed to be re-submitted.
C. are rejected with a requirement to implement minor amendments.
D. are rejected with a requirement to implement major amendments.

6.51 Typical reasons for the Research Committee being concerned about the background section are that the section:
I. contains too many words.
II. presents insufficient development and detail.
III. fails to make full use of available literature.
IV. fails to include letters of support.
Which of the above are true?
A. I only.
B. I, II and III.
C. II, III and IV.
D. II and IV.
Appendix 1

Practice Final Examinations

These two papers are practice examinations. They are designed to give a basic appreciation of the level of detail and understanding that is likely to be required in the examinations.
Practice Final Examination 1

- Assume that an EBS DBA candidate has developed the following draft research proposal. He or she is now considering the content prior to developing it into a full research proposal for submission and subsequent consideration by the EBS Research Committee.
- This research proposal example is shorter than would normally be expected for submission by the EBS Research Committee. This shortened example is used for examination purposes only.

Title: The impact of the degree of strategic alignment on cultural attitudes in mergers

Abstract

The research is concerned with measuring the cultural attitudes of employees during the period immediately before and after a strategically focused (key business activity related) merger. A longitudinal case study will be executed with the cooperation of a collaborating financial-based company. The results will be strengthened using a series of three cross-sectional case studies. The research data will be collected by means of 10 structured interviews and 10 postal questionnaires. The results are expected to show that there is a functional relationship between the degree of strategic alignment in a merger and the cultural attitudes of employees.

Summary

Researchers have long been aware that cultural attitudes vary significantly in the period immediately preceding, during and after a merger. Cultural attitudes are important, as they form one of the main drivers determining whether or not the merger eventually achieves a successful outcome (Ernest, 1998). In some well-known cases, cultural opposition has been sufficiently powerful to create a decision for subsequent de-merger. There is also strong evidence that mergers that are strategically focused tend to have a greater likelihood of success than mergers involving non-related diversification (Plumb, 2001).

Nutt and Bolt (1996) have shown that cultural attitude is driven by a number of definable variables. Attitudes tend to be more positive where the organisations concerned:
- establish effective communication systems;
- initiate conflict avoidance and conflict management practices;
- minimise operational disruption;
- are seen to be improving the overall competitive position of the company.

Nutt and Bolt’s work suggests that positive attitudes are driven by those variables. It therefore seems reasonable to suggest that negative attitudes are driven by the inverse of the variables. Of the four, the most important to the research is the last one. Cultural attitude tends to be positive where the merger is seen to be improving the overall competitive position of the company.

Most strategically focused mergers are initiated specifically to improve the overall competitive advantage of the organisation (Catkin, 2002), and in such cases the employees of the organisation are likely to see the merger as being intended to achieve this effect.
The research will use a longitudinal study developed in association with Join-up plc. This company has already undergone a series of mergers over the past few years, and is about to merge with Target Ltd. Preliminary merger negotiations are already under way, and both companies are keen to maintain cultural opposition and disruption at low levels wherever possible. Join-up plc have agreed to assist in the research and will allow access to all levels of their organisational structure. The research will involve a series of interviews and questionnaires carried out over several months within Join-up plc. The data will be analysed using standard statistical testing techniques, and the results will be compared with results obtained from a series of cross-sectional case studies. The cross-sectional studies will be carried out immediately after the longitudinal study. The comparison of the results will act as the basis for the final conclusions.

The research interviews and questionnaires will be designed using established techniques such as those developed by Checker (2001). The data collected will allow the direct evaluation of cultural attitude as a function of time.

The research is expected to show that the extent of non-positive attitude change is an inverse function of the degree of strategic alignment involved in the merger. Such findings would be significant as they would go some way towards addressing the puzzling area of why so many mergers fail to achieve their original success objectives. Companies will be able to use the results and conclusions as an additional assessment and appraisal tool when deciding whether or not to proceed with a merger.

Background (literature review)

Note: All researcher names and date of publication are fictitious.

Bloggs (2001) has stated that cultural attitudes vary as a function of time relative to merger agreement. According to Bloggs, employee attitudes will vary between generally positive and generally negative in the period running up to the merger deal. After the deal is signed, employee attitudes tend to proceed in a generally negative attitude for some time. As time goes on, the degree of negativity decreases until a period of neutral attitude, followed by generally positive attitude emerges. Jones (2000) has suggested that the speed of the positive emergence (Walker, 1998) trait is a function of the degree of strategic alignment offered by the merger.

Numerous authors have suggested that mergers with a high degree of strategic alignment are more likely to succeed (Claridge, 1999; Jones, 1999; Pikelet, 1998). Most of these studies were based on theoretical research, but the pioneering work of Lubber (2001) produced direct empirical evidence in support of this theory. Lubber’s findings, although flawed on the grounds of small and non-representative sample size, provide the first real quantitative survey-based substantiation of the link between strategic alignment and success (Friedrichs, 2003). As yet no researcher has explored the connectivity between mergers, strategic alignment, merger success and employee attitude (Abdullah, 2002); the literature does, however, suggest a theoretical link.

Muffin (2001) has identified a causal link between cultural perception and timescale in mergers and acquisitions. Muffin suggests that there are generally negative attitudes in the period leading up to the deal followed by generally positive attitudes in the period immediately after the deal. Conversely, McIntosh (2002) has reported that there are generally fluctuating cultural perceptions before the deal, largely as a result of internal informal communications between employees, leading to speculation. The speculation effect can lead to perceptions that fluctuate between positive and negative as a function of time. According to McIntosh, these fluctuations swing towards a general negative in
the period immediately after the deal as people resent the impositions and changes necessitated by the merger. Neither Muffin nor McIntosh attempted to relate these variations to the degree of strategic alignment involved.

Davie (1996) has attempted to develop a link between strategic alignment and cultural attitude in his pioneering work at Cornbread University. According to Davie, the greater the degree of relatedness in a merger the greater the degree of cultural acceptance. In Davie’s research, relatedness was taken as the extent to which the core business activities (CBAs) of the merging organisations are related to each other. Davie’s research is as yet incomplete, but it does build on earlier work by Mack (1995) where the link between relatedness and cultural acceptance was established.

Research questions, aims, objectives and hypotheses

The research question is:
• Is there a functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees?

The aim of the research is:
• To show that there is a functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees.

The objectives of the research are:
• To show that where there is a high degree of strategic alignment cultural attitudes are generally positive.
• To show that where there is a low degree of strategic alignment cultural attitudes are generally negative.
• To evaluate variations in these trends over time.

The operational hypothesis is:
• H0: There is no functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees.
• H1: There is a functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees.

The research paradigm and theoretical framework

The research will be conducted using a positivist approach. In the longitudinal study a large number of employees will be subjected to structured interviews. The responses will be subject to quantitative analysis in order to identify trends in patterns of perception. These trends will be taken as indicative of popular opinion. Variations in questionnaire responses will be matched against the degree of strategic alignment in order to establish a link between the two variables.

Research methodology

The research methodology will use the research methods of questionnaires and structured interviews as the primary sources of research data. In the longitudinal study, organisational members will be interviewed over a period of time of between nine months and one year. Responses will be fed into a database and basic statistical tools and techniques will be used to identify patterns in response data (Ryan, 2001).
cross-sectional case studies, additional interviews will be carried out using the same structured interview questions. The case studies will be matched to the longitudinal study in terms of a separate typology that will subsequently be developed.

The questionnaires will be developed in line with the recommendations of Skeesome (2000), and will be tested initially within the collaborating organisation prior to being finalised. A total of 10 postal questionnaires will be used. The results of the questionnaires will be triangulated with the results from the structured interviews.

The case for the use of longitudinal studies backed up by cross-sectional studies was first made by Jurana (1990). In her pioneering research on mergers and acquisitions in relation to cultural responses, Jurana successfully used a longitudinal case study to extract valid research data and was able to triangulate it using a different research paradigm with her results from a series of cross-sectional studies. The current research will adopt the same approach.

The structured interviews will be recorded and then transcribed onto CD. The interviews will then be coded and subjected to content analysis. The content analysis will be concerned primarily with looking for patterns in the occurrence of selected words or phrases over time. Content analysis has been widely used in the analysis of political speeches (Robespere, 1998; McLaren, 1998; Johnson and Johnson, 1999) and works of literature (Jenkins, 2002). Concordance analysis has been widely used in the analysis of structured interview responses (McLaren, 2002; Pike, 2003). The analysis package used will be Sensor by Microhard Industries.

Sample design and details of the data collection process

The sample will be based on a long-term longitudinal study and a series of short-term cross-sectional studies. In all cases a representative sample will be used ranging from senior managers down to basic operatives. The sample will be based on 10 structured interviews and 10 questionnaires delivered to senior managers within Join-it plc.

Accessibility

Three companies have agreed to collaborate in the research. One company has agreed that structured interviews with a limited number of senior managers can be conducted. It is expected that all four companies will allow follow-up interviews and questionnaires.

Research ethics

Research ethics are not considered to be an issue in this case.

Deliverables

The primary deliverable will be a doctoral research thesis that complies with University regulations and satisfies the requirements of the internal and external examiners. The research thesis will be submitted and examined within the timescales set by the University.

Significance

There is a clear gap in the literature in the area of strategic alignment and cultural attitude in mergers and acquisitions. This research identifies the gap and attempts to address it.
The resources required to implement the research

Research resources will be provided by the candidate’s own company. The primary research resource will be the candidate himself/herself.

A timetable indicating the expected completion date for each part of the research

The proposed research programme timetable is as follows.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initialisation:</td>
<td>1–3</td>
</tr>
<tr>
<td>Background reading:</td>
<td>4–6</td>
</tr>
<tr>
<td>Formulation of the research proposal:</td>
<td>7–11</td>
</tr>
<tr>
<td>Submission of the research proposal:</td>
<td>12</td>
</tr>
<tr>
<td>Literature review:</td>
<td>13–23</td>
</tr>
<tr>
<td>Submission of the literature review:</td>
<td>24</td>
</tr>
<tr>
<td>Development of the research methodology:</td>
<td>25</td>
</tr>
<tr>
<td>Longitudinal study:</td>
<td>26–31</td>
</tr>
<tr>
<td>Cross-sectional studies:</td>
<td>32–33</td>
</tr>
<tr>
<td>Writing up:</td>
<td>33–35</td>
</tr>
<tr>
<td>Viva voce:</td>
<td>36</td>
</tr>
</tbody>
</table>

References, bibliography, letters of support and appendices

Nil.

Note: Candidates can make any assumptions they wish, provided these are reasonable and are clearly written down.

1 Critically evaluate the draft research proposal. Highlight any weaknesses and discuss how the research proposal could be improved prior to submission for consideration by the EBS Research Committee.

(50 marks)

2 Discuss and contrast the two primary research paradigms of positivism and phenomenology, summarising the advantages and disadvantages of each paradigm and considering the applicability of each paradigm to the research programme suggested in the example research proposal.

(25 marks)

3 Discuss the general characteristics and specific applicability to the research proposal of:
   • field experiments;
   • large-scale surveys;
   • action research.

(25 marks)
Practice Final Examination 2

Note: Candidates can make any assumptions they wish, provided these are reasonable and are clearly written down.

- Assume that an EBS DBA candidate has developed the following draft research proposal. He or she is now considering the content prior to developing it into a full research proposal for submission and subsequent consideration by the EBS Research Committee.
- This research proposal example is shorter than would normally be expected for submission by the EBS Research Committee. This shortened example is used for examination purposes only.
- Question 1 is based entirely on the sample research proposal and the answer should be fully applied to the sample research proposal.
- Questions 2 and 3 are general but should be applied in the context of the sample research proposal as much as possible.

Title: The effectiveness of an enterprise-wide risk management system in the achievement of medium-term profitability

Abstract

The research is concerned with the evaluation of the effectiveness of enterprise-wide risk management systems in securing medium-term profitability in retail organisations. Organisations are moving increasingly towards enterprise-wide risk management systems as it becomes more clearly established that enterprise-wide approaches to risk management are more reliable and effective than the traditional silo-based approach. The research is based on a longitudinal study of a major UK retail organisation that is currently designing and implementing an enterprise-wide risk management system. The profitability of the organisation before and after the introduction of the enterprise-wide risk management system in order to assess its effectiveness in terms of medium-term profitability. The longitudinal study is backed up by a series of cross-sectional studies using similar samples.

Summary

A major UK retailer, Boxers plc, is used as the primary sample. At the time that the research is to be conducted, Boxers plc is designing and implementing a full enterprise-wide risk management system (EWRMS) to improve the quality and reliability of its strategic risk handling. Boxers plc has experienced a number of risk impact problems over the last five years and the directors of the company see the development of a suitable EWRMS as being central to securing the medium and long-term success of the organisation over the years ahead. The directors of Boxer plc also feel that the introduction of a good EWRM will improve overall profitability as less money will be lost through risk impacts.

There has been some research interest in this area over the past ten years. Dodgy (2001) attempted to assess the organisational impact of the introduction of an EWRMS system in finance companies. Dodgy used earlier work by a number of researchers in developing his model of risk profile damping by the use of a comprehensive EWRMS.

This research attempts to show that there is a functional relationship between the development and implementation of an EWRMS and the medium-term profitability of the organisation. The research is based on a long-term longitudinal study of Boxers plc.
over the timescale where the company is designing and implementing its own EWRMS. The research data will be collected using a combination of financial records and responses from the people involved in the design and implementation of the EWRMS. These people are interviewed using unstructured interview techniques in order to ascertain their perceptions in relation to the introduction of the EWRMS. The results of the longitudinal surveys are compared with the results of the financial analysis in an attempt to triangulate findings on medium-term profitability changes as a function of the EWRMS.

The longitudinal study results are then validated by taking a sample of similar companies going through a similar process to show that the patterns observed in Boxers plc are, in fact, general to the population as a whole. The validation study will comprise a series of cross-sectional case studies of similar companies where the ‘before’ and ‘after’ picture, based on contemporary and historical evidence, will be compared to that observed in the main study.

Background (literature review)

Note: All researcher names and date of publication are fictitious.

The literature on risk management is extensive and well developed. The idea of the EWRMS approach was first put forward by Hackett (1997). Hackett proposed that risk management should be approached in a similar manner to quality management in that an enterprise-wide approach is more effective than operating separate systems in different parts of the organisation.

Risk management systems have traditionally tended to work on a functional basis. In a large manufacturing company, there may be different levels of risk assessment and reporting that apply to different functional units (Mockett, 1998). Traditionally, this functional silo based system has worked with reasonable effectiveness in terms of the individual sections concerned and from a silo-based perspective (Hodget and Dodget, 1999), but there have been numerous examples of large-scale risk impacts that have resulted from a lack of a general risk-based overview.

Weegie (2000) suggested that it is dangerous to consider risks in isolation. Although it may be possible to clearly categorise a given risk, for example, as strategic, this does not mean that the impact and effects of the risk, assuming it does impact, will necessarily be restricted to the strategic level. According to Weegie, it is much safer to consider organisational risks as being linked to other organisational links at various levels and stages.

The inherent interrelationship between organisational risk has been further examined by Potter (2000). Potter’s results largely reflected those of Rowling (1998) in that risk interdependency was found to operate both horizontally (across functions) and vertically (across risk types). It seems reasonable to classify risk types into strategic, operational, change and unforeseen risks and to classify functions into such elements as production, support, people, etc. Frisbee (2001) used a similar classification system in his research into enterprise-wide risk management applicability in the UK financial sector.

There has been some research into risk/risk management and profitability. Bond (2000) found that the functional relationship between risk profile and profitability is a function of the degree of risk that the organisation concerned is prepared to take as part of its normal business activities. For example, a speculative finance company takes more risk as part of its standard business activities than a construction company that
constructs office buildings to order.

**Research questions, aims, objectives and hypotheses**

The aim of the research is to show whether or not there is a functional relationship between the design and implementation of an EWRMS and the medium-term profitability of the organisation concerned.

The research question is as shown below.

- Is there a functional relationship between the design and implementation of an enterprise-wide risk management system and the medium-term profitability of an organisation?

The aim of the research is:

- To show that there is a functional relationship between the design and implementation of an enterprise-wide risk management system and the medium-term profitability of an organisation.

The objectives of the research are to show that:

- where an enterprise-wide risk management is in place, organisations become less vulnerable to adverse risk impacts.
- adverse impacts cost money and therefore reduce overall profitability.

The research hypothesis is as shown below.

- \( H_0 \): There is no functional relationship between the design and implementation of an enterprise-wide risk management system and the medium-term profitability of an organisation.
- \( H_1 \): There is a functional relationship between the design and implementation of an enterprise-wide risk management system and the medium-term profitability of an organisation.

**The research paradigm and theoretical framework**

The research paradigm is positivist, although there is a considerable qualitative element in the analysis of the historical data. The candidate intends to take the view that he or she is detached from the sample and can observe and measure it with impunity.

**Research methodology**

The structured questionnaires will be analysed using standard statistical techniques, based primarily on frequency and correlation. The responses on the questionnaires are transferred to a central database where they will be analysed using the proprietary software package Software Package for the Social Sciences (SPSS). The use of SPSS has the advantage that is it a well-established and widely recognised analysis tool that has been used on a large number of other doctoral research programmes. The questionnaires themselves will be designed along the lines recommended by Biffo (1976) and Dan (1990) who used structured questionnaires in similar applications.

The research interviews will be designed in accordance with the recommendations of Plug (1977) and Gnasher (1980), allowing for all relevant interviewer interaction and bias. Interview recordings will be transcribed and will form the basis of a purely qualitative assessment.

The use of combined quantitative questionnaire data and qualitative interview data provides a balanced approach.
Historical data will be also analysed using a combined quantitative–qualitative approach.

**Sample design and details of the data collection process**

The sample will be based on a long-term longitudinal study and a series of short-term validation studies. Boxers plc will form the primary sample and will generate all the data used in the main study. Boxers plc is considered to be representative of UK retail organisations generally. The organisations used in the validations study will be carefully analysed and classified according to age, size, turnover, etc. in order to allow a detailed classification system to be developed. The classification system will be linked to the validation studies and will provide full compatibility of data for comparison between the main study and validation studies.

**Accessibility**

Boxers plc have agreed to allow unlimited access to their employees at all levels. A total of three validation sample companies have, so far, consented to contribute to the research.

**Research ethics**

The usual provisions for research ethics apply.

**Deliverables**

The primary deliverable will be a doctoral research thesis which complies with University regulations and satisfies the requirements of the internal and external examiners. The research thesis will be submitted and examined within the timescales set by the University. The candidate also intends to produce at least one good research paper during the course of the doctoral research.

**Significance**

Risk is a major consideration for most types of organisation. Risk management systems that are ineffective or unreliable are also extremely dangerous. Companies that think they have an effective risk management system in place, when in fact they do not, are in an extremely dangerous position. In some ways, an ineffective risk management system can be more dangerous than having no risk management system at all, as the misleading apparent ‘defence’ offered by the system can lead to a false sense of security.

**The resources required to implement the research**

Nil.

**A timetable indicating the expected completion date for each part of the research**

The proposed research programme timetable is as follows.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Months</th>
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<tbody>
<tr>
<td>Initialisation:</td>
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</tr>
<tr>
<td>Background reading:</td>
<td>12–13</td>
</tr>
<tr>
<td>Formulation of the research proposal:</td>
<td>14–15</td>
</tr>
<tr>
<td>Submission of the research proposal:</td>
<td>16</td>
</tr>
<tr>
<td>Literature review:</td>
<td>17–19</td>
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<tr>
<td>Submission of the literature review:</td>
<td>24</td>
</tr>
<tr>
<td>Development of the research methodology:</td>
<td>25</td>
</tr>
<tr>
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</tr>
<tr>
<td>Viva voce:</td>
<td>36</td>
</tr>
</tbody>
</table>

**References, bibliography, letters of support and appendices**

Nil.

*Note: Candidates can make any assumptions they wish, provided these are reasonable and are clearly written down.*

1. Critically evaluate the draft research proposal detailed above. Highlight any strengths and weaknesses and discuss how the research proposal could be improved under each heading, prior to submission for consideration by the EBS Research Committee.

   *(50 marks)*

2. Discuss the primary characteristics of longitudinal and cross-sectional studies, exploring the advantages and disadvantages of each approach and considering the applicability of each approach to the research programme suggested in the example research proposal.

   *(25 marks)*

3. Discuss the primary characteristics of inductive-based and deductive-based research, highlighting the primary differences between the two approaches and considering the applicability of each approach to the research programme suggested in the example research proposal.

   *(25 marks)*
Examination Answers

Practice Final Examination 1

1 Note: The case study and the questions are deliberately open-ended. The candidate could draw numerous conclusions and make several assumptions in the interpretation of the information contained in the case study. This outline answer is for illustrative purposes only. Marks can be awarded for valid assumptions and interpretations falling outside the wording of this outline answer.

Abstract

The abstract is rather short and omits to mention several important areas. These include the following.

- The abstract does not mention the proposed research methodology. A summary of the research methodology is very important in the abstract as it helps the Research Committee to make an immediate evaluation of the applicability of the proposed methodology in the context of the proposed research.
- The abstract also fails to mention the chosen research paradigm. This is crucial as the Committee has to be sure that the chosen paradigm is both relevant to the chosen research methodology and compatible with the identified research field.
- The abstract does not mention any specific industrial collaboration and the particular sector or industry concerned. This is important in establishing the research field, which acts as the basis for the subsequent aims and objectives and development of operational and research hypotheses.
- The abstract also fails to detail whether the expected relationship between cultural attitude and degree of strategic alignment is expected to be fixed or variable, or positive or negative. The proposal could have stated the expected relationship more clearly and in more detail.

Summary

The candidate makes the comment ‘Researchers have long been aware that cultural attitudes vary significantly in the period immediately preceding, during and after a merger’ but does not reference it. It is unclear whether this is a statement appraised from the literature or is the candidate’s own opinion. The statement is particularly important as it forms the basis for the research programme. The statement ‘In some well-known cases, cultural opposition has been sufficiently powerful to create a decision for subsequent de-merger’ is equally important and, again, is not referenced. The summary could be significantly improved by referencing these statements.

The statement ‘Nutt and Bolt’s work suggests that positive attitudes are driven by those variables. It therefore seems reasonable to suggest that negative attitudes are driven by the inverse of those variables’ is optimistic at best and potentially dangerous. The candidate should provide some form of justification for such an important generalisation.

The statement ‘of the four [variables], the most important to the research is the last one. Cultural attitude tends to be positive where the merger is seen to be improving the overall competitive position of the company’ is very important because it forms a tenuous link between cultural positivity and a perception of an overall improvement in the competitive
position of the company. The statement does not identify which company, for example the larger company or the smaller company, and the statement is not placed in context. For example, Nutt and Bolt might have concentrated on retail outlet mergers, whereas the candidate may be focusing on bank mergers. The candidate should highlight any differences, and make use of additional references to support his or her own argument.

The statement ‘Most strategically focused mergers are initiated specifically to improve the overall competitive advantage of the organisation (Catkin, 2002), and in such cases the employees of the organisation are likely to see the merger as being intended to achieve this effect’ is dubious. Although it may be true (non-falsified) that most strategically focused mergers are intended to improve overall competitive advantage, it does not necessarily follow that employees and other members of the organisational culture necessarily perceive that this is so. The degree to which such intentions are disseminated depends on many factors, including formal and informal communication channels. These channels, and any other potential variables, would have to be thoroughly examined before this statement could be relied upon.

The information on the two companies is vague. It appears that Join-up plc is a financial-based company but no further information is given. There is no indication of the degree of strategic alignment or otherwise within the merger, and no indication is given of how the candidate would measure the degree of strategic alignment so that the longitudinal study can be calibrated against the cross-sectional studies.

It is not clear whether Checker’s work was carried out in related areas or under similar conditions. Another problem relates to the extent to which the merger process has already begun. The text indicated that initial negotiations are already under way. It is reasonable to infer that the staff of Join-up are therefore already aware of the merger, and their cultural attitude may already be in the process of changing. The research methodology would have to allow for this effect. There is no mention of any such allowance in the text.

**Background (literature review)**

The background sets out a reasonable argument, although there are obvious gaps. The first thing to note is that, just because somebody has published a paper, it does not mean that the paper presents results that are true. The presented results may appear to be true but may in fact be false for a number of reasons. The background should therefore contain an element of critical review, where the candidate identifies the strengths and weaknesses in other publications and uses these to justify his or her own position. The research proposal does include an element of critical review, especially in relation to the work of Lubber (2001), but this critical element is limited and restricted.

The background makes a clear distinction between empirical and theoretical research bases, and asserts that there is a gap in the literature in terms of the linkage between mergers, strategic alignment, merger success and employee attitude. This is a reasonable observation, although it does not imply that there is a link between cultural attitudes and strategically focused mergers. The wording of the background suggests a theoretical link, but this is not supported by any references.
The references to Muffin (2001) and McIntosh (2002), although valid, do not reinforce the argument for a link between strategic alignment and positive cultural attitudes. These are examples of sub-fields peripheral to the main research focus but not overlapping it. The candidate could strengthen the argument by altering the outcome field slightly and introducing new research references that do constitute an overlap.

The candidate quoting the work of Davie (1996) is an attempt at this, although the link is clearly tenuous.

Research questions, aims, objectives and hypotheses

The research question:

- Is there a functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees?

The immediate concern here is the process to be used for evaluating the degree of strategic alignment in any given merger. It may be possible to develop a measurement system for the degree of strategic alignment. If this is the case the measure will presumably be based on one or more determinants of strategic alignment such as correlation between products and customer bases.

The aim of the research is:

- To show that there is a functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees.

The objectives of the research are:

- To show that where there is a high degree of strategic alignment cultural attitudes are generally positive.
- To show that where there is a low degree of strategic alignment cultural attitudes are generally negative.
- To evaluate variations in these trends over time.

The objectives are not sufficiently defined. For example, one aim would be to develop a suitable measurement system for the degree of strategic alignment involved in any given merger. The candidate will also have to develop an evaluation scale in order to measure positive and negative attitudes in relation to each other.

The operational hypothesis is:

- \( H_0 \): There is no functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees.
- \( H_1 \): There is a functional relationship between the degree of strategic alignment offered by a merger and the extent of negative cultural attitude change among employees.

The hypotheses as stated are acceptable as a starting point. The candidate should, however, develop a series of operational hypotheses that can be individually tested. For example:

- \( H_0 \): As the degree of strategic alignment increases, cultural positivity does not increase.
- \( H_1 \): As the degree of strategic alignment increases, cultural positivity increases.
Provided the candidate can develop a scale and suitable measurement system for the degree of strategic alignment and cultural positivity, the functional relationship between the two variables can be developed. Ideally the candidate should develop a series of similar operational hypotheses where the evaluation of the operational hypotheses contributes towards the evaluation of the research hypotheses.

The research paradigm and theoretical framework

The positivist paradigm is subject to the limitations detailed in the text. Structured interviews are fine, but they can only extract information at a superficial level. There is also the issue of validity. Structured interview respondents may not necessarily say what they really think. In addition, the interviewer may introduce the complications of intuition and bias, and the very presence of the interviewer may raise the problem of reactance. Positivism has the limitation that it cannot guarantee to explain the deeper levels of human reasoning, and it can totally miss the underlying cultural implications. Positivism may be appropriate in some applications, but a research programme concerned with cultural issues almost certainly (but not always) requires some degree of phenomenological input. It could be argued that the only way to understand the complexities of cultural responses fully is to become directly involved in ethnographic research where the researcher becomes an actual part of the culture he or she is trying to research.

Research methodology

The research methodology section appears to be suspect. The candidate has detailed the use of structured interview techniques but there appears to be no attempt at triangulation. Ideally the candidate should attempt to reinforce the results gained by one research method with corresponding results gained by another method, such as questionnaires or the use of historical data. In addition, there is no mention of a pilot study or of a validation study.

Pilot studies are very important in that they allow the candidate to evaluate his or her initial research programme ideas and outline methodologies. Pilot studies can be particularly useful in assessing the applicability of a proposed methodology on a controlled sample. The findings can indicate shortcomings in the proposed methodology and areas where additional thought and attention are needed.

Validation studies are important in showing the generalisability of the results. This is particularly important in this case, where the primary research sources are based on a small (and potentially non-representative) sample size. In doctoral research, generalisability is important. It is often not sufficient to illustrate patterns in a small and non-representative sample size. In most cases it is necessary to show that any research findings are applicable within the research field selected at the outset.

The candidate has not included sufficient detail on structured interview or questionnaire design to allow an evaluation to be made. The candidate claims that the results of the questionnaires and interviews will be used for triangulation. The term ‘triangulation’ is used out of context here. There is no attempt at using two different research paradigms, for example. Evidence of an intention for triangulation could have been provided if the candidate had used, for example, a positivist approach in the use and application of the questionnaires and a phenomenological approach in
the design and implementation of the structured interviews. This may be the candidate's intention, but if it is, the intention has not been made clear.

The candidate mentions using the longitudinal case study in order to appraise the initial questionnaire. Ideally the candidate should develop a pilot study using a different sample in order to avoid the problems of reactance. The pilot study is an important aspect of most types of research, and the fact that the candidate has failed to refer to any kind of formal pilot study is an important omission.

The references to the works of Ryan (2001), Skeesome (2000) and Jurana (1990 are valid, provided they are relevant to the current research field. For example the reference to Ryan (2001) is made in support of the use of regression analysis in order to extract results. Ryan’s approach may have been based on an entirely different data set within a completely different research field. The Research Committee would have to look in detail at this reference and make a decision on whether or not it is valid for the current research proposal. The reference to Skeesome (2000) appears to be a general reference in relation to questionnaire design. This reference may be relevant, but it may not be directly linked to research in the current proposed research field.

The research methodology section states that content analysis will be used as the primary analysis tool. A number of references are cited, although these relate to different research subject areas. The candidate could improve this element by citing more relevant and directly appropriate research.

**Sample design and details of the data collection process**

The comment: ‘The sample will be based on a long-term longitudinal study and a series of short-term cross-sectional studies. In all cases a representative sample will be used ranging from senior managers down to basic operatives. The sample will be based on 10 structured interviews and 10 questionnaires delivered to senior managers within Join-it plc’ is worrying, as it appears to be a contradiction in terms. The survey sample must either be at senior management level or at different levels through the organisation. The sample design comment appears to be contradictory. In addition in the phenomenological approach, unless the research is specifically restricted to cultural attitudes among senior managers (which is not stated), the most obvious approach is to base the survey on a representative sample of the culture within Joint-it plc.

**Accessibility**

The details provided do not present a convincing argument that sufficient accessibility will be available. The candidates should prove that all of the stated collaborating organisations (four companies) have consented to full required access. The research proposal abstract mentions four companies but the accessibility section refers to only three. The fourth company may have either refused consent or not yet given consent. Either way there is a discrepancy between the abstract and accessibility sections.

In any event the research proposal does not include firm evidence that accessibility consent has been given. The research proposal could be considerably strengthened by the inclusion of appropriate letters of support. Provided these are correctly headed and signed by people at the appropriate level, letters of support provide firm
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Introduction to Business Research 1
Edinburgh Business School

Evidence that the companies concerned are committed to the research, agree with it, and have consented to the candidate conducting research within their organisation.

If any such letters of support have been received, they should be presented in the references section, and should be referred to in the accessibility section.

Apart from the issue of letters of support, the candidate should provide evidence that all necessary resources of data will be fully accessible within the time limits and other programme constraints.

Research ethics

Research ethics are an important issue in any research programme. They cannot be disregarded. As a bare minimum the candidate should give an undertaking to act in the interests of:

- the University;
- any collaborating companies;
- any individual sample employees;
- the research community;
- the candidate himself or herself.

Candidates are more specifically doctoral candidates of Heriot-Watt University. In conducting research, the candidate accepts an ethical responsibility to act in accordance with University regulations and in the professional interests and standards of the University. Any unethical conduct will reflect directly on the University.

The candidate should also address the issues of ethical conduct in relation to collaborating organisations and individual employees of such organisations. The collaborating companies have a right to expect that any information provided will be related with due consideration and that any agreements on security will be honoured to the letter. Individual employees may feel threatened by the research. The candidate must accept his or her ethical responsibility to handle information from individuals with due care and responsibility. In some cases, people may refuse to identify themselves or to allow recordings to be made of interviews. Individuals have every right to insist on this if they choose.

The candidate also has an ethical responsibility to the research community. The candidate must never fabricate or falsify research data or findings. Contradictory data must always be included, even if it slows up the research or makes the analysis element more difficult or prolonged.

Candidates are also ethically responsible for declaring any assistance they may have in preparing the research thesis. In some cases, additional resources, such as provided by support assistants, are acceptable so long as any such support is stated (see also Resources required to implement the research below)

Deliverables

A good research programme can act as a basis for a significant number of different deliverables, and the candidate should use the research proposal as a means to detail these to the Research Committee. The thesis itself is only a single deliverable. Most good doctoral research programmes will generate at least two or three high-level research journal papers. In many cases the candidate is new to the concept of
doctoral research and research journal publication. The obvious answer to this is for the candidate and the supervisor to write a series of joint papers using the candidate’s own research results. Supervisors are research active in their specialist field, and this means that they are familiar with the procedures and processes necessary for writing high-level research journal papers.

In some cases the potential may exist for a candidate to write a book on his or her research. The term ‘book’ could include anything from a full textbook to a practice guide or internal code of practice for senior managers.

It is common for candidates to conduct research in areas of concern within their parent companies. In such cases, there is a real possibility that the candidate may be able to write internal procedural manuals or research reports that may eventually become company standards within the parent organisation. In other cases, the outcome of the research could be a predictive or process model that may go on to be used as standard within the parent company.

Other alternatives include the production of one or more conference papers. In some cases these could be written and delivered during the course of the research, and any published responses could be included within the literature review.

**Significance**

The candidate has made the statement: ‘There is a clear gap in the literature in the area of strategic alignment and cultural attitude in mergers and acquisitions. This research identifies the gap and attempts to address it.’

This statement is fine as far as it goes. It fails, however, in addressing the full potential significance of the research. For example, if the candidate can indeed ‘prove’ that there is a link between the degree of strategic alignment presented by a merger and the positive attitudes of the organisational culture, the results could go a long way towards explaining why so many mergers fail. There is considerable current discussion in the literature on why mergers fail. It could be that one underlying reason is that, where mergers do not contribute towards strategic alignment, employees become more concerned than where mergers do contribute towards strategic alignment. Nothing has been shown yet, but the research, if successful, could show that this is indeed the case.

If the candidate can produce conclusive results in this area, the significance could be enormous. There is a well-established literature suggesting that mergers that are related perform better than mergers that are non-related. There may, however, be a gap in the literature in terms of why this is the case as a function of cultural attitudes. The candidate has not identified this gap, but it is the sort of area that an experienced supervisor might pick up on and perhaps advise the student to realign the research field to meet the new challenge.

Candidates often underestimate the potential value of their doctoral research. The research programme can yield real results of direct use to their parent companies and to the business community at large. It is very important that candidates think carefully about their research and appreciate its full significance.
The resources required to implement the research

The candidate has indicated that he or she is the primary research resource. This is fine as long as it is true. The candidate has an ethical responsibility to state any other resources that will be provided by his or her company or from elsewhere in support of the research. The candidate is obviously responsible individually for sitting the examinations in the taught element and for attending and defending at the *viva voce* examination for the research element. Over and above these requirements, the candidate may receive assistance in a number of different forms. For example, a candidate who is a senior manager in a large company may have resources available to assist in the basic processing of research data. He or she might have numerous assistants who can assist in the process of analysing data.

The candidate is reminded that University regulations require that the thesis is largely the candidate’s own work. Candidates have an ethical responsibility (see above) to ensure that all such assistance, in any form, is stated.

A timetable indicating the expected completion date for each part of the research

The timetable given is as follows.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initialisation</td>
<td>1–3</td>
</tr>
<tr>
<td>Background reading</td>
<td>4–6</td>
</tr>
<tr>
<td>Formulation of the research proposal</td>
<td>7–11</td>
</tr>
<tr>
<td>Submission of the research proposal</td>
<td>12</td>
</tr>
<tr>
<td>Literature review</td>
<td>13–23</td>
</tr>
<tr>
<td>Submission of the literature review</td>
<td>24</td>
</tr>
<tr>
<td>Development of the research methodology</td>
<td>25</td>
</tr>
<tr>
<td>Longitudinal study</td>
<td>26–31</td>
</tr>
<tr>
<td>Cross-sectional studies</td>
<td>32–33</td>
</tr>
<tr>
<td>Writing up</td>
<td>33–35</td>
</tr>
<tr>
<td>Viva voce</td>
<td>36</td>
</tr>
</tbody>
</table>

The basic structure of the timetable is acceptable, but it lacks specific detail. For example, the longitudinal study is set at six months, but there is no detail on what part of this period will be spent on what aspects of the study. When will the questionnaires be issued? When will the response data be processed? When will the structured interviews be carried out? When will the overall data be collated and analysed? Further detail is required so that the EBS Research Committee can assess the balance of actions. There are several other obvious anomalies. For example, the writing-up process is estimated to take only three months. This is very optimistic unless the candidate is able to write up sections of the thesis as the research continues. This may be possible, although it is a high-risk activity given the conditions of change under which it is performed.
The key milestone events such as the submission of the research proposal and
literature review are in line with EBS recommendations, although again more detail
is needed. It is not clear what slack or spare time, if any, has been included. The
candidate should always assume that things will go wrong and that additional time
will be required.

The candidate should also note that the *viva voce* examination is not necessarily the
end of the process. Most doctoral theses require a degree of amendment after the
examination. Some may require extensive amendment. In some cases it may be
another six months or one year before the candidate is able to conduct the necessary
amendments and re-submit the thesis. It is advisable to allow the time necessary to
achieve this on the timetable.

Generally, the timetable should include a work breakdown structure showing each
of the core activities broken down into its component work packages. The most
effective way of presenting the timetable is as a simple work breakdown structure
that is then represented as a Gantt chart.

**References, bibliography, letters of support and appendices**

The candidate should clearly list all references used in the research proposal,
together with a bibliography of any additional reading. As a minimum, the candidate
should include letters of support from Join-up plc and Target Ltd as conformation
that these companies have agreed to contribute to the research. The letters of
support should detail that the company is prepared to allow the level of accessibility
claimed by the candidate. Given that the sample size is low, the candidate should
seek to secure the cooperation of more companies, particularly in relation to future
validation and pilot studies.

### 2 Positivism

The answer should make it clear that positivism seeks to explain and predict what
happens in the social world by searching for regularities and causal relationships
between its constituent elements. A causal relationship is one where two entities are
linked by a relationship where the action of one causes an effect in the other. An
obvious example is the link between interest rates and high street spending. When
interest rates are low, people can borrow money more cheaply and their expenditure
on high street purchases is likely to be relatively high. There is, therefore, a causal
relationship between high street spending and interest rates.

In most cases, a causal relationship can be derived as a mathematical function. The
positivist researcher believes that the scientific method is the way to proceed to
validate knowledge and that it can be applied to managerial problems to derive laws
similar to those produced by researchers in engineering and the pure sciences such
as physics and chemistry. Positivists use empirical observation or experimentation,
usually based on an established theory or law-like generalisation in order to observe
data patterns and to make predictions, for example, on the relationship between
labour productivity and profitability in manufacturing companies. Under a positivist
approach a highly structured set of procedures is used to collect data that are
analysed by statistical techniques in order to test the hypothesis. The researcher
operates on the assumption that scientific analysis can be applied to the problem.
The answer should include an appreciation that positivism assumes that there are independent causes that lead to observed effects and that it is feasible to model the observed phenomena. Positivism proposes that meaningful statements are restricted to those that can be verified by observation, at least in principle.

The research proposal summary indicates that the study will make use of structured interviews and questionnaires and will be largely quantitative based. This approach suggests that a positivist approach will perhaps be more appropriate, although presumably there will be an element of phenomenological interpretation.

Phenomenology

The answer should stress that phenomenology is the main alternative paradigm to positivism. A primary driver behind the phenomenological approach is that the world analysed by positivists is not the everyday world we actually experience. People naturally adopt both a positivist and phenomenological approach to everyday life. Some things (such as balancing income and outgoings) can be analysed as straightforward mathematical functions and relationships whereas other things (such as relationship problems) cannot be analysed using such a simplistic approach. The only way to understand the extent of a relationship problem is to discuss it and make subjective judgements about the problem and what can be done to address it.

Phenomenology is an interactive paradigm informed by a concern to understand the world as it is and to comprehend the fundamental nature of the social world at the level of subjective experience. An understanding of social reality must be grounded in people's experience of that reality. This involves exploring the depths of human consciousness and subjectivity in a quest for the fundamental meanings that underlie social observation.

The answer should recognise that phenomenology is a perspective that advocates the study of direct experience taken at face value. In contrast to the positivist, the phenomenologist does not consider the world to consist of an objective reality; each situation is viewed as unique, and the meaning is a function of circumstances and the individuals involved. Phenomenology confronts the issue that people are not mere objects but essentially people with different values and beliefs who experience the world in idiosyncratic ways that positivism is ill equipped to understand. Researchers within the phenomenological paradigm are not objective but are part of what they observe, bringing their own values, cultural beliefs, and prejudices into the research arena. The researcher is not, as assumed by positivists, independent of what is being investigated but is involved with it.

The phenomenologist believes that the world is composed not of a single objective reality but of a series of multiple realities, each of which should be understood. The paradigm is sometimes referred to as the descriptive/interpretive approach and implies that every problem studied is unique. Managerial decision-making is influenced by intuition and gut-feeling, whether the business is engineering, architecture, textile manufacturing, banking or management consultancy. Judgements are made on the basis of subjective assessments of reality, rather than a dispassionate evaluation of objective evidence.

Perhaps most important of all, phenomenology is holistic. It is concerned with looking at the whole picture rather than just parts of it. Phenomenologists may
deploy a wide variety of data sources and methods such as case study, personal experience, interviews, life histories, participant observation and historical documents in order to deepen their understanding of their subject matter. Early collection of evidence suggests how to proceed to the subsequent phase of evidence collection and the interpretation of it. The phenomenologist recognises the subtle complexities of the world, and hence causal determinism and reductionism, which focus on quantifiable issues and modelling and are inherent in positivism, are regarded as obscuring these complexities. Phenomenologists are more likely to work with qualitative as well as quantitative data, use a variety of methods to collect them, and adjust to new ideas as they emerge.

Given the nature of the proposed research it is likely that positivism will form the underlying research methodology philosophy. The research proposal does not make clear the proposed use of subjective content analysis. In the absence of any relevant information it is safer to assume that the majority of the content analysis application will be applied using a positivist quantitative approach. There appears to be little or no scope for researcher-interaction with the sample.

Advantages and disadvantages of each approach

The answer should include a comparison of the advantages and disadvantages of each paradigm as follows.

<table>
<thead>
<tr>
<th>Positivism</th>
<th>Phenomenology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td><strong>Disadvantages</strong></td>
</tr>
<tr>
<td>• Economical collection of large amounts of data</td>
<td>• Inflexible – research often cannot be amended once data collection has started</td>
</tr>
<tr>
<td>• Large samples permit generalisation to populations</td>
<td>• Data collection can be time consuming</td>
</tr>
<tr>
<td>• Precise data, easily comparable</td>
<td>• Data analysis is complex</td>
</tr>
<tr>
<td>• Theoretical framework for the research at the outset</td>
<td>• Enables researcher to respond to changes that occur during the research</td>
</tr>
<tr>
<td>• Studies are replicable</td>
<td>• Examines totality of situation</td>
</tr>
<tr>
<td>• Easier for researcher to retain control of the research process</td>
<td>• Facilitates more comprehensive understanding of phenomena</td>
</tr>
<tr>
<td></td>
<td>Positivism</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td>• Weak at understanding social processes</td>
</tr>
<tr>
<td></td>
<td>• Reductionist – simplification of reality</td>
</tr>
<tr>
<td></td>
<td>• Seldom understands the meanings that people attach to social processes</td>
</tr>
<tr>
<td></td>
<td>• Ignores many variables</td>
</tr>
</tbody>
</table>

Adapted from Saunders et al. (2000).

The candidate could choose any six methodological approaches provided they are valid and relevant. Each listed alternative should be developed in some detail as set out below.

1. **Field experiments**
   In field experiments, although conducted in a real situation such as a company, the levels of control that can potentially be achieved are lower. For example, a field experiment could be conducted around a change of policy such as the introduction of incentive payments in a factory to boost labour productivity or, in the context of the case study, to measure cultural positivity as a function of strategically focused mergers and acquisitions.

   In a field experiment, investigating the relationship between cultural positivity and strategically focused mergers, the research should record positivity levels before and after one or more strategically focused mergers and seek to measure the difference generated by the merger. It may be difficult to isolate all the drivers that could affect positivity, such as pay levels and job security. Such extraneous variables, which are outside the experimenter’s control, threaten to invalidate the research. The internal validity of a study is determined by how much control has been achieved. In designing a research experiment, the objective should be to maximise internal validity. Field experiments in management research are less scientific but more authentic than laboratory ones and, hence, the results will often be interpreted in a more phenomenological way.

   Research in business management is overwhelmingly based on the observation of actual behaviour and processes as they occur or as they have occurred. Field experiments tend to be viewed as inappropriate, even assuming that an organisation will consent to cooperate and that it is also introducing a key intervention at the time the candidate wishes to conduct the investigation.

2. **Large-scale surveys**
   A survey is a positivist approach and is widely used in business and management research. Survey research is based on drawing a sample from a population. In the
case study the candidate could survey a large number of employees and measure changes in cultural positivity in each individual. If the sample in any application is representative, it will be possible to use the sample characteristics to generalise to larger population of the organisation with a high degree of confidence. By using highly-structured questionnaires to collect data in a form that can be analysed quantitatively, survey research is regarded as easily replicable and hence reliable. Large-scale surveys allow basic standardised data to be collected in an economical way concerning how many, how long or when. They are of limited use however when the researcher is interested in 'how' or 'why' questions. The structured questionnaire constrains respondents and gives little or no opportunity for them to articulate the ways in which they understand the subject of interest. Other approaches, such as in-depth personal interviews or case studies, are required if the aim of the project is to investigate causal relationships between variables and to explain a phenomenon. It may be possible to combine a large-scale survey, such as a postal questionnaire, with in-depth personal interviews in the same research project. This will supplement the raw data for a subsample.

Large scale surveys would appear to be appropriate to the research proposal, although the research appears to be limited to one organisation in the first instance.

3. Action research

Action research is designed to find an effective way of bringing about a conscious change in a partly controlled environment. An intervention is implemented in the real world and its effects are analysed. The action researcher is involved in an organisational context where there is not only an expectation that a contribution to knowledge will be made but also that it can be applied to action. Action researchers, therefore, actively participate in the phenomenon they are studying in order to develop the learning capacities of the organisation. An objective is identified, such as the need to increase labour productivity, the first phase of the action is implemented and its effects observed before modifying the overall plan, if necessary. It is concerned with diagnosing a problem in a specific context and trying to solve it. Action research essentially involves:

- an accurate description of an organisational setting at one point in time;
- designing and implementing an agreed intervention;
- describing and evaluating a second static picture of the organisation following the intervention.

Action research requires a high degree of trust and cooperation between the researcher and the company personnel involved as the mere presence of the researcher can exert an influence on the process of change. In the research proposal, the degree of trust between the company and the candidate should be carefully considered. Action research is predicated on the belief that people most affected by, or involved in, implementing changes should as far as possible be integral to the research process itself. It is difficult for the researcher, because of active involvement with the phenomenon being studied, to combine the tasks of a consultancy assignment and detached academic scholarship. Moreover, the context of action research and the possible commitments of the action research-
er may make the use of control groups very difficult. Criticisms of action research include:
- its lack of scientific rigour;
- its objective is situational and specific;
- its sample is restrictive and unrepresentative;
- it has little or no control over independent variables;
- its findings are not generalisable but usually restricted to the environment in which the research is carried out.

It is unlikely that an action research-based approach would be applicable in the sample outlined in the case study. The proposed research clearly adopts a positivist viewpoint and appears to be largely quantitative based. It is unlikely that the degree of involvement and interaction needed for reliable action research will be present.

Practice Final Examination 2

1 Note: The case study and the questions are deliberately open-ended. The candidate could draw numerous conclusions and make several assumptions in the interpretation of the information contained in the case study. This outline answer is for illustrative purposes only. Marks can be awarded for valid assumptions and interpretations falling outside the wording of this outline answer.

Abstract
The abstract contains a number of problems. The research proposal title is non-specific in terms of research subject sector yet the abstract makes it clear that the subject is the retail sector. This is an important scope issue and requires clarification. The abstract correctly says that the EWRM approach is growing in popularity as organisations move away from silo-based approaches. The abstract does not give any indication of how the effectiveness of the EWRMS is measured or evaluated. It also appears to make the assumption that the EWRMS is the only driver of organisational profitability when this is clearly not the case. Profitability is obviously driven by a wide range of interactive drivers and the EWRMS cannot be considered in isolation. The abstract does not give any indication of the expected outcomes of the research and contains insufficient detail on the research methodology. The abstract is written in present tense when ideally it should be written in past tense.

Summary
The summary is poorly defined and ineffectively structured. There is no clear definition of the EWRMS as a driver of long-term profitability. The summary specifically names the primary sample company. The candidate should not specifically name the company or companies concerned without their express approval and even then it would be better form to leave the company anonymous and use a designation such as ‘company A’.

The summary establishes that the primary focus of the research is on the relationship between the use of an EWRMS and medium term profitability. The interest area is clearly stated but it lacks firm foundation. The summary cites some previous research, but the importance of the research area could have been emphasised much more effectively.
The summary also makes it clear that Boxer plc is currently in the process of designing and implementing the EWRMS. This is a useful condition in that the candidate can study the design and implementation process in detail. The main problem, however, is that there may be a significant amount of time between the start of the research programme and the point at which the EWRMS becomes fully operational. It is only when the EWRMS is fully operational that a true ‘after’ picture is available. Large EWRMS can take years to calibrate and commission fully. The candidate may have problems in aligning the data collection process to the stage of development and evolution of the EWRMS.

There are few citations within the summary. Ideally, the development of the summary should be more rigidly supported by citations from the literature. The reference to Dodgy’s (2000) work refers to ‘earlier researchers’ but does not specifically identify the sources concerned.

One of the largest single weaknesses is the lack of development of the proposed functional relationship between the development and implementation of an EWRMS and medium term profitability. It seems logical to assume that there is a functional relationship between these two variables but there is the obvious additional consideration of risk impact. Clearly a good EWRMS will identify and reduce the impact of a risk, should that risk occur and actually impact. If no such risks actually impact, the EWRMS will not have contributed to overall profitability. It may, indeed, have detracted from it as large EWRMS can be very expensive both to develop and maintain. The summary should contain some reference to this problem together with an explanation or proposal on how the research could be modified to allow for it. Presumably, the candidate would have to propose some kind of classification system for the magnitude of actual impacting risks during the course of the data collection process and also in the past, considering the period over which the historical records apply.

**Background (literature review)**

The literature review is badly structured and features too few citations. The opening statement that ‘the literature on risk management is extensive and well developed’ is not borne by the number of subsequent citations. The underlying rationale of the silo based and EWRMS approaches are reasonably well set out although, again, further citations are required and there should, if possible, be an element of critique. Even where the total number of references on a subject is small, there is usually some difference of opinion within the literature. These should be identified and developed.

The concept of risk interdependency is introduced but is not fully developed. Risk interdependency is obviously a very important element in any consideration of EWRMS approaches. The area should have been much more fully developed as part of the background as it has a direct impact on the risk profile facing the organisation and, therefore, on the likelihood and impact of the risks that constitute that profile.

The existing literature on risk management and profitability is almost certainly larger than that implied by the background section. The candidate has, again, failed to establish a clear literature-based link between these two variables.
Research questions, aims, objectives and hypotheses
The research hypotheses are derived logically from the research question. The main problem is the continued lack of a clear measurable link between EWRMS and medium-term profitability. The candidate has still not made clear what the drivers of medium-term profitability are and how these can be linked to the EWRMS. Any that cannot be linked to the EWRMS will have to be evaluated as separate variables and will add considerably to the overall complexity of the analysis.

The research paradigm and theoretical framework
This section is rather brief and could be developed in more detail. For example, the analysis of the historical information will probably involve both a subjective and an objective element and there may be considerable subjective application in the interpretation of the figures.

Research methodology
The research methodology section is reasonably specific. The candidate states that the structured questionnaire data will be analysed using standard statistical techniques based primarily on frequency distributions and correlation analysis. The methodology refers to the use of SPSS (Software Packages for the Social Sciences). This is a widely-used package appropriate for a range of quantitative and (to some extent) qualitative analysis of data. It is sometimes useful to refer to well-known analysis systems like this, as the supervisor and members of the EBS Research Committee will almost certainly be familiar with the more widely known ones.

In referring to Plug (1977) and Gnasher (1980) the candidate is basing his or her research design on these authors. This may be a strong point if the references cited are appropriate.

The candidate should have provided more detail on the methods of analysis for the historical records. These are likely to be primarily financial as the pre-EWRMS data on profitability are likely to originate from company financial information. The candidate refers to a qualitative element but does not make clear what form this will take. Presumably, it will involve the use of some form of subjective consideration and/or interpretation of past financial information.

Sample design and details of the data collection process
The candidate does not provide any justification for his or her assertion that Boxers plc can be considered as representative of the UK retail sector generally. This is an important generalisation and should be backed up with some kind of evidence or support. In this case, such support is particularly important as the candidate is proposing to make use only of a longitudinal case study and a validation study. The main study sample size is, therefore, one, with all the implications and risks involved with this. It would certainly be less risky to introduce a series of cross-sectional case studies between the main longitudinal case study and the validation study.

The information provided gives almost no information on the data collection process. There is no indication of how many questionnaires will be issued or how many interviews will be carried out. There is also no information on the range and depth of historical information available, or on how the research data within it can be identified and extracted.
Accessibility

The entry in this section is acceptable, provided the candidate has, indeed, secured access to all relevant parts of the organisation. The candidate could provide more details on the levels of accessibility agreed in terms of the validation study samples.

Research ethics

Research ethics are an important issue in any research programme. They cannot be disregarded. As a bare minimum the candidate should give an undertaking to act in the interests of:

- the University;
- any collaborating companies;
- any individual sample employees;
- the research community;
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Candidates are more specifically doctoral candidates of Heriot-Watt University. In conducting research, the candidate accepts an ethical responsibility to act in accordance with University regulations and in the professional interests and standards of the University. Any unethical conduct will reflect directly on the University.

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Deliverables

A good research programme can act as a basis for a significant number of deliverables and the candidate should use the research proposal as a means to detail these to the Research Committee. The thesis itself is only a single deliverable. Most good doctoral research programmes will generate at least two or three high-level research journal papers. In many cases, the candidate is new to the concept of doctoral research and research journal publication. The obvious answer to this is for the candidate and the supervisor to write a series of joint papers using the candidate’s own research results. Supervisors are research active in their specialist field and this
means that they are familiar with the procedures and processes necessary for writing high level research journal papers.

In some cases, the potential may exist for a candidate to write a book on his or her research. The term ‘book’ could include anything from a full textbook to a practice guide or internal code of practice for senior managers.

It is common for candidates to conduct research in areas of concern within their parent companies. In such cases, there is a real possibility that the candidate may be able to write internal procedural manuals or research reports that may eventually become company standards within the parent organisation. In other cases, the outcome of the research could be a predictive or process model that may go on to be used as standard within the parent company.

Other alternatives include the production of one or more conference papers. In some cases, these could be written and delivered during the course of the research and any published responses could be included within the literature review.

**Significance**

The candidate is, to some extent, stating the obvious here. Risk is indeed an important consideration for most organisations and risk management systems that are unreliable represent major risks in themselves. The candidate should have strengthened this section by the use of references that support the basic argument that EWRMS approaches increase medium-term profitability. The candidate has already stated that there are few publications in this area, but has failed to include any references in this section.

The candidate could also have strengthened this section by introducing an applied element. For example, a national financial services authority, or similar, may allow banks and insurance companies to reduce contingency reserves if they have a functioning and proven financial risk management system in place. In some cases, the funds released by this allowance could be extremely large, and the EWRMS could, indeed, contribute directly to medium term profitability.

**The resources required to implement the research**

The entry of ‘nil’ is clearly inappropriate. Even if the candidate is the primary resource, the entry should be at least ‘one’ (the researcher) plus any other resources that are required and used.

**A timetable indicating the expected completion date for each part of the research**

The proposed research programme timetable provided in the research proposal was as shown below.
### Activity | Months
--- | ---
Initialisation: | 1–12
Background reading: | 12–13
Formulation of the research proposal: | 14–15
Submission of the research proposal: | 16
Literature review: | 17–19
Submission of the literature review: | 24
Development of the research methodology: | 25
Longitudinal study: | 26–31
Cross-sectional studies: | 32–33
Writing up: | 33–35
Viva voce: | 36

The proposed programme is obviously suspect. Initialisation is stated as twelve months, which is clearly too long. The time given for the literature review is four months, which is clearly too short unless exceptional circumstances apply. The timing of the literature review submission at month twenty four is late (assuming this timetable applies to full time on-campus candidate). The time allowed for writing up (four months) is far too short. Only the most able candidates could complete the entire writing up process in such a short time.

The programme as presented is clearly inappropriate and would attract the immediate attention of the supervisor and the EBS Research Committee.

**References, bibliography, letters of support and appendices**

The candidate has not included any material in this section. As a minimum, the candidate should have included the following:

- full list of references showing the complete publication information for each citation made within the research proposal.
- A bibliography of all sources consulted, although not necessarily cited, and listed as references.
- Letters of support, especially a suitable letter from Boxers plc and, where possible, additional letters of support from the validation study companies.
- Appendices containing elements such as sample questionnaires and list of interview questions.

A *longitudinal case study* involves the detailed analysis of data from one case study over a period of time. In the case study, the candidate is proposing the long-term study of Boxers plc over a relatively long period of time (although the actual time estimated is not made clear). The longitudinal approach has the advantage that the researcher can analyse the complete process in detail, thereby building up a complete and accurate picture of the processes involved and generating data over a period of time. The obvious disadvantage is that any data are based on a sample size of one, and are, therefore, potentially unreliable. This problem can often be addressed by the use of a number of cross-sectional studies.
The obvious danger with the use of a longitudinal study in the case study is that Boxers plc may turn out to be unreliable or there may be other company-specific changes that render the company unacceptable as a data source. For example, the company might reorganise or implement some other form of major change at a point well into the data collection process. This event could render the later stage data incompatible with the earlier stage data and/or may include new drivers and variables that have to be allowed for.

Longitudinal studies usually extend over a period of time and involve analysing the dynamics of a phenomenon by making repeated observations. Phenomena such as employee attitudes (in this case measured by questionnaire and structured interview) permit the researcher to examine change processes within a social, economic and political context. Alternatively (and again as in this case), the process could be reconstructed from historical accounts or retrospective reports, although such a methodology is less reliable. It should be possible to suggest explanations of the processes of change in a phenomenon from a longitudinal analysis, although dynamic models are usually reductionist in that only a limited number of variables may be observed over time. Observing events over time, the researcher is able to exercise a measure of control over variables being studied, provided the research process itself does not affect them. It may be feasible to base the research on secondary time series data. The government and other bodies publish a considerable range of socioeconomic data including, employment, inflation, industrial outputs, exports, home ownership, household expenditure and income. Time series analysis is useful for analysing such data collected in longitudinal studies.

Although longitudinal research is generally associated with a positivist methodology, a qualitative approach may also be adopted. The qualitative element contained within the proposed interviews could be considered as concatenated exploration in that there will be an extended chain of studies covering a range of employees. Each link in the chain is an examination or re-examination of a related group or social process; the early studies in the chain are mainly exploratory but, as the chain of studies progresses, grounded theory (see below) is generated. Since industrial and commercial settings display inertia, change is only likely to be observed over a period of months, or perhaps years. A key issue is to select the appropriate intervals between data collection phases. This idea of ‘forging a chain’ or building recognition and understanding from a sequence of observed events is well established and, again, mirrors the human cognitive process. In trying to solve a problem the brain breaks the problem down into components and analyses each component sequentially. As information is learned and accumulated, it impacts on the understanding of subsequent observed events.

There are practical problems in conducting any longitudinal study, the most notable being attrition and non-response. A longitudinal design is also expensive; the data collection process is very time consuming; it requires a high degree of cooperation from participating organisations; repeated interviewing may influence the responses of subjects and the analysis methods are complex, involving stochastic models. Longitudinal designs are, however, especially suited to studies of instability and change and in understanding causality. In the context of a thesis, it may be feasible
to use historical data and retrospective reconstructions combined with case studies to analyse change in organisations.

*Cross-sectional case studies* are short-term studies of other data sources. Rather than continuing over a period of time, cross-sectional studies provide an instantaneous or short-term view at different points in a longer-term process. If a longitudinal study is compared to a movie, a cross-sectional study can be compared to the movie stills often produced for publicity reasons. It may be possible to base the research method on a single longitudinal case study, backed up by a large number of cross-sectional studies. The longitudinal study may indicate time-based patterns and trends. For example, after an acquisition there may be a short period of apparent financial success followed by a general deterioration over the next few months. This finding may be unique to the longitudinal case study concerned. The researcher might seek to show that this finding is generally applicable by looking for a similar pattern in a series of cross-sectional studies. If the researcher does indeed find the same pattern in another 30 companies on a cross-sectional basis, this would act as a good indication that the pattern is generally applicable rather than being a one-off.

If the researcher does intend to use a longitudinal case study backed up by a series of cross-sectional studies (in this case used as validation studies), he or she must be satisfied that the necessary data will be available and will be in a format compatible with the research method. The danger with a longitudinal case study is that something goes wrong with the process halfway through or, worse, towards the end. A researcher might spend three to six months observing the pre-contract negotiations on a ‘friendly’ (non-hostile) acquisition, only to find that negotiations break down and the whole strategic rationale changes. This could result in a significant amount of potentially abortive work and an additional six months being added to the overall research duration. In some cases it may be possible to modify the scope of the research or modify the aims and objectives slightly, but the researcher is still likely to be faced with significant problems.

It is therefore essential to research any proposed longitudinal study very carefully before committing to it. In a significant proportion of cases the researcher would almost certainly base any such longitudinal case study within his or her own organisation. This is obviously a safer route than attempting to base the study in an external organisation.

Assuming the researcher does decide to conduct a longitudinal case study backed up by a series of cross-sectional studies, there will always be a limit to the number of cross-sectional case studies that can be conducted. Cross-sectional case studies are involved only in generating a ‘snapshot’ of the situation at a particular moment of time but it may take several weeks in each case to identify, extract and analyse the data required. It is often not possible to conduct sufficient cross-sectional studies to make the sample size reliable. Where this does occur, there may be a requirement for a *validation* study. A validation study is usually conducted over and above the main research in an attempt to show that the results generated are generally applicable. The main research might be based on one longitudinal and several cross-sectional studies. It may be advisable to conduct a validation study in order to increase the sample size by extending the range and number of data sources.
The validation study could be a simple questionnaire or a series of structured interviews where the results from the main study are summarised and presented to a range of different companies. If the researcher can show that, for example, 80 per cent of validation study respondents agree with a particular finding, this is a strong indication that the finding is valid.

Validation studies are not always essential but where they are conducted they can act to strengthen the research significantly. If the researcher feels that a validation study may be necessary, it is important that he or she researches the availability of potential validation study respondents at an early stage. In the research proposal the candidate has made it clear that he or she intends to use a series of cross-sectional studies as a validation study. This is a slight deviation from the normal route of using a longitudinal study and a series of cross-sectional studies as the basis of the main study results and then using a validation study to validate these main study results. The candidate is, in effect, in the position of trying to validate results from a sample size of one. This would appear to be a methodological weakness and should be carefully considered.

3 The answer should address a range of issues from the following discussion.

The deductive research method is the dominant approach in the natural sciences. It involves the development of a conceptual and theoretical structure prior to its testing through empirical observation. Researchers use deductive argument to infer the particular from the general, while inductivists infer general truths from the particular. Deductive reasoning is based on lines of reasoning where one term follows on from another. The answer here might use the example of a syllogism, where a premise and a conclusion are linked by a middle term that combines both. If the premises of this inductive argument are true, its conclusion is more likely to be true than false. By adding new premises, however, to the original pair, the resulting argument can be either strengthened or weakened.

Deductive research progresses through a series of stages starting with a theory from which one or more hypotheses are derived. These are essentially expectations about the way things ought to be in the world if the theory is valid. The researcher decides which concepts represent important aspects of the theory or problem under investigation. The theory and derived hypotheses link two or more concepts together in a causal chain – a set of untested assertions about the relationship between the concepts. The conclusion is drawn from principles and premises, and must be proved according to the rules of logic. As theoretical concepts are abstract and are not readily observable, the postulated relationships between concepts are not open to empirical testing until they are operationalised, i.e. the process involved in quantifying a variable.

In other words, deductive research involves the generation of a theory. The theory is then expressed in terms of one or more hypotheses. For example, the theory might state that ‘there is a link between strategic alignment and company success’. This theory can be broken down into hypotheses as shown below.

H₀: As the degree of strategic alignment increases, the likelihood of company success does not increase.
Hypothesis: As the degree of strategic alignment increases, the likelihood of company success increases.

The hypotheses link two variables contained in the theory. The hypotheses can be operationalised by introducing measures for strategic alignment and success. The term ‘success’, for example, could be measured in terms of sustainable competitive advantage, measured in relation to competitors.

When testing, priority is given to directly observable phenomena and behaviour, thereby ignoring the analysis of the subjective or intangible, as these phenomena cannot be observed in an unproblematic fashion and replicated by other researchers. The testing will either confirm the theory or imply the need for its modification. At the next stage an attempt may be made to verify the revised theory. This is the hypothetico-deductive approach.

The hypothesis will identify the independent variable(s) and the dependent variable. The null hypothesis (H₀) states that the two variables are independent of each other, and the alternate hypothesis (H₁) states the opposite, i.e. that they are associated with each other. For example, if the researcher theorises that labour productivity might be associated with firm profitability the null hypothesis (H₀) would be that:

- H₀: There is no functional relationship between EWRMS and medium-term profitability.

The alternative hypothesis (H₁) would be that:

- H₁: There is a functional relationship between EWRMS and medium-term profitability.

Use of the null hypothesis ensures that the researcher adopts a cautious approach when conducting statistical tests on the data; the null hypothesis is accepted if it is not refuted by the results of the test.

Theory often suggests a direction for a relationship: for example:

- H₂: There is a positive functional relationship between EWRMS and medium-term profitability.

In specifying a hypothesis, therefore, the researcher is faced with the task of formulating a statement that can be falsified.

In the deductive form of reasoning, each statement should be supported by a justification in terms of observed fact, a clearly understood assumption, or an
accepted rule of logic. Unfortunately, much of the writing in business research fails to define basic terms, neglects to state all assumptions and premises and ignores the rules of logic in reaching conclusions. Flawed deductive reasoning may arise because of:

- logical fallacies;
- ambiguous and vague definitions;
- too large a gap between statements in the proof.

The inductive approach, in contrast to the deductive one, starts from observed data and then seeks to discover patterns from which a theory is developed to explain the relationships between the objects observed. Inductive scholars argue that theory that develops from empirical evidence is more likely to explain the data. Inductive reasoning is based upon the premise that nature is orderly and uniform. If one instance after another supports a conclusion and no instance of similar circumstances refutes the conclusion, belief in the conclusion is strengthened.

Human behaviour cannot be understood in terms of causal relationships that do not take account of actors’ intentions, perceptions, motives, attitudes and beliefs and their interpretation of events. The behaviour of a snooker ball may be understood in terms of necessary responses caused by particular sets of stimuli in certain conditions; the actions of the snooker players can be adequately explained only through reference to their subjective motives, psychology and intentions, their interpretation of the situation, and their knowledge of the rules of the game. To summarise the above argument:

While both inductive and deductive approaches are valid, researchers may express a preference for one or other, depending in part on their disciplinary background. Economists may feel more at home with deductive theorising whereas management students may favour induction. The latter is a more difficult strategy to pursue and may not lead to success for a person who is not an experienced researcher.

One potential problem with the deductive approach is that prior specification of a theory may introduce a premature closure of the issues to be investigated. This in turn may limit the scope of the research and the potential richness and value of any research findings. Commencing with a theoretical perspective, however, may help the researcher to get started, link the research into the existing body of knowledge in the subject area and provide an analytical framework.

The researcher needs, therefore, to be adaptable and to develop an explanatory framework based upon theory and his or her own ideas. Scientific enquiry typically involves an alternation between deduction and induction. During the deductive phase the researcher reasons towards observation; during the inductive phase he or she reasons from observations. Both logic and observation are essential.
Appendix 2

Answers to Review Questions

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Module 1

Review Questions

True/False Questions

The EBS DBA Introduction to Business Research Courses Process Model
1.1 False 1.2 True 1.3 True 1.4 False

The EBS DBA Research Process
1.5 False 1.6 True 1.7 False 1.8 True 1.9 False
1.10 False 1.11 True 1.12 True 1.13 False

The EBS DBA Thesis
1.14 False 1.15 True 1.16 True 1.17 True 1.18 False

The People Involved in Supervision and Assessment
1.19 False 1.20 False 1.21 False 1.22 True 1.23 False
1.24 False

The Introduction to Business Research Courses
1.25 True 1.26 False 1.27 True 1.28 False

Some Important Issues to Remember
1.29 False 1.30 False 1.31 False 1.32 True
Multiple-Choice Questions

The EBS DBA Introduction to Business Research Courses Process Model
1.33 B 1.34 A

The EBS DBA Research Process
1.35 B 1.36 A

The EBS DBA Thesis
1.37 B 1.38 C 1.39 A 1.40 C 1.41 A

The People Involved in Supervision and Assessment
1.42 B 1.43 D 1.44 D

The Introduction to Business Research Courses
1.45 A 1.46 B

Some Important Issues to Remember
1.47 A

Module 2

Review Questions

True/False Questions

Establishing Research Aims and Objectives
2.1 False 2.2 True 2.3 False 2.4 False 2.5 True 2.6 True 2.7 False 2.8 True 2.9 False 2.10 False 2.11 True 2.12 True 2.13 False 2.14 True

The Research Work Breakdown Structure
2.15 True 2.16 True 2.17 False

Estimating the Time Required to Complete a Research Work Package
2.18 False 2.19 True 2.20 False 2.21 True 2.22 False 2.23 False

The Research Schedule
2.24 True 2.25 False 2.26 True 2.27 False 2.28 False
2.29 True

**Milestones and Checkpoints**
2.30 True 2.31 True 2.32 True 2.33 True

**Personal Progression Review**
2.34 False 2.35 True

**Delays, Contingencies and Responses to Major Progress Problems**
2.36 True 2.37 True 2.38 False

**Multiple-Choice Questions**

**Establishing Research Aims and Objectives**
2.39 A 2.40 B 2.41 B 2.42 A 2.43 D 2.44 C 2.45 B

**The Research Work Breakdown Structure**
2.46 B 2.47 A

**Estimating the Time Required to Complete a Research Work Package**
2.48 C 2.49 C 2.50 B

**The Research Schedule**
2.51 A 2.52 D

**Milestones and Checkpoints**
2.53 C 2.54 B

**Personal Progression Review**
2.55 C 2.56 B

**Delays, Contingencies and Responses to Major Progress Problems**
2.57 A 2.58 D
Module 3

Review Questions

True/False Questions

The Concept of Research Paradigms
3.1 False 3.2 True 3.3 False 3.4 True 3.5 True
3.6 True

The Concept of Positivism
3.7 True 3.8 True 3.9 False 3.10 False 3.11 True
3.12 True 3.13 False 3.14 True 3.15 True

The Verification and Falsification Issue
3.16 True 3.17 False

The Concept of Phenomenology
3.18 True 3.19 True 3.20 True 3.21 True 3.22 False
3.23 True

Comparisons between Positivism and Phenomenology
3.24 True 3.25 True 3.26 True 3.27 True 3.28 False
3.29 False 3.30 False

Deductive and Inductive Theory
3.31 False 3.32 True 3.33 True

Grounded Theory
3.34 True 3.35 False 3.36 True 3.37 True 3.38 True

Multiple-Choice Questions

The Concept of Research Paradigms
3.39 C 3.40 B 3.41 A

The Concept of Positivism
3.42 C 3.43 A 3.44 D 3.45 B

Verification and Falsification
3.46 D
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Phenomenology
3.47 C 3.48 D

Comparisons between Positivism and Phenomenology
3.49 A 3.50 C 3.51 B 3.52 B

Deductive and Inductive Theory
3.53 A 3.54 C

Grounded Theory
3.55 C

Module 4

Review Questions

True/False Questions

The Concept of Applied Business Research
4.1 False 4.2 False 4.3 False 4.4 False 4.5 True 4.6 False

Identifying Possible Business Research Areas
4.7 True 4.8 False 4.9 False 4.10 True 4.11 False 4.12 False

Generating a Specific Research Problem

Operational and Research Hypotheses
4.25 True 4.26 True 4.27 False 4.28 False

Multiple-Choice Questions

The Concept of Applied Business Research
4.29 A 4.30 C

Identifying Possible Areas of Interest
4.31 A 4.32 D 4.33 C 4.34 B 4.35 C
4.36 A  4.37 A  4.38 C  4.39 D

**Generating a Specific Research Problem**
4.40 C  4.41 B  4.42 D  4.43 D  4.44 A
4.45 B

**Operational and Research Hypotheses**
4.46 B  4.47 B  4.48 D

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**Module 5**

**Review Questions**

**True/False Questions**

**Research Strategy**
5.1 True  5.2 True  5.3 True  5.4 True  5.5 False  5.6 False

**Cross-Sectional Research**
5.7 True  5.8 False  5.9 False  5.10 False  5.11 True

**Longitudinal Research**
5.12 False  5.13 False  5.14 False  5.15 False

**Research Methodologies**
5.16 True  5.17 False  5.18 True  5.19 True  5.20 True  5.21 True  5.22 False  5.23 False  5.24 True  5.25 False  5.26 False  5.27 True  5.28 True  5.29 False

**Reliability, Validity and Generalisability**
5.30 False  5.31 True  5.32 True  5.33 True  5.34 True

**Research Design**
5.35 True  5.36 True  5.37 False

**Choosing Methodologies**
5.38 True  5.39 False
Multiple-Choice Questions

Research Strategy
5.40 C 5.41 C 5.42 D

Cross-Sectional Research
5.43 B 5.44 A

Longitudinal Research
5.45 C

Research Methodologies
5.46 B 5.47 C 5.48 D

Reliability, Validity and Generalisability
5.49 A 5.50 A

Research Design
5.51 B

Choosing Methodologies
5.52 C 5.53 D

The Concept of a Pilot Study
5.54 B

Module 6

Review Questions

True/False Questions

Problems of Access
6.1 False 6.2 True 6.3 True 6.4 False 6.5 False 6.6 True 6.7 False

Research Ethics
6.8 False 6.9 False 6.10 False 6.11 False 6.12 True

Writing the Research Proposal
Appendix 2 / Answers to Review Questions

6.23 True  6.24 True  6.25 True  6.26 False  6.27 False  6.28 False

Evaluating the Research Proposal
6.29 True  6.30 True  6.31 True

Submitting the Research Proposal
6.32 True  6.33 False  6.34 False  6.35 True

Multiple-Choice Questions

Problems of Access
6.36 A  6.37 C  6.38 D

Research Ethics
6.39 C

Writing the Research Proposal

Evaluating the Research Proposal
6.48 D

Submitting the Research Proposal
6.49 D  6.50 C  6.51 B
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