Introduction to Business Research 3

Empirical Work, Thesis Presentation and Assessment

Professor Devi Jankowicz
Frances Pfab
Professor Patrick O’Farrell
Dr William Wallace
This course text is part of the learning content for this Edinburgh Business School course. In addition to this printed course text, you should also have access to the course website in this subject, which will provide you with more learning content, the Profiler software and past examination questions and answers.

The content of this course text is updated from time to time, and all changes are reflected in the version of the text that appears on the accompanying website at http://coursewebsites.ebsglobal.net/. Most updates are minor, and examination questions will avoid any new or significantly altered material for two years following publication of the relevant material on the website.

You can check the version of the course text via the version release number to be found on the front page of the text, and compare this to the version number of the latest PDF version of the text on the website.

If you are studying this course as part of a tutored programme, you should contact your Centre for further information on any changes.

Full terms and conditions that apply to students on any of the Edinburgh Business School courses are available on the website www.ebsglobal.net, and should have been notified to you either by Edinburgh Business School or by the centre or regional partner through whom you purchased your course. If this is not the case, please contact Edinburgh Business School at the address below:

Edinburgh Business School
Heriot-Watt University
Edinburgh
EH14 4AS
United Kingdom

Tel +44 (0) 131 451 3090
Fax +44 (0) 131 451 3002
Email enquiries@ebs.hw.ac.uk
Website www.ebsglobal.net

The courses are updated on a regular basis to take account of errors, omissions and recent developments. If you'd like to suggest a change to this course, please contact us: comments@ebs.hw.ac.uk.
Introduction to Business Research 3

Dr William Wallace BSc (Hons), MSc, PhD.
DBA Programme Director and Senior Teaching Fellow, Edinburgh Business School (EBS), the Graduate School of Business at Heriot-Watt University.
Dr William Wallace holds degrees from Leeds Metropolitan University (1981), Loughborough University (1983) and Heriot-Watt University (1987). He joined Edinburgh Business School in 2000 after 10 years’ project management experience in the UK public and private sectors. Dr Wallace is author of the EBS DBA texts Project Management and Alliances and Partnerships. He is joint author of Strategic Risk Management and Mergers and Acquisitions. He is also either author or joint author of the EBS DBA texts Introduction to Business Research 1–3. He is Chair of the EBS DBA Research Committee and has successfully mentored and supervised numerous EBS DBA students.

Professor Devi Jankowicz BSc, PhD, ABPsS.
Professor of Constructivist Managerial Psychology, Edinburgh Business School (EBS), the Graduate School of Business at Heriot-Watt University.
Professor Jankowicz gained a first degree in Psychology (1969) followed by a doctorate in Management Cybernetics (1975), both from Brunel University. He has taught organisational behaviour and research methods at universities in Ireland, the US, Poland and the UK, and has contributed to management education by developing two MBA programmes and a DBA programme prior to joining the faculty at Edinburgh Business School, where he teaches on the MSc and DBA programmes. His research interests include knowledge transfer across cultural boundaries, the use of virtual environments in distance learning, and applications of constructivist theory and techniques in business and management. He has more than 80 publications to his credit, including two textbooks on business research methods. His consultancy clients include JPL/NASA, Unilever, Rolls-Royce (Bristol) and the Employment Service UK; he has contributed to Ministerial Briefing seminars in the UK, and acted in an EU Expert role for the Ministry of Education in Poland.

Frances A. Pfab BSc (Hons), DipStat, MILT.
Retired Senior Teaching Fellow, Edinburgh Business School (EBS), the Graduate School of Business at Heriot-Watt University.
Frances Pfab has degrees from Sheffield University and Edinburgh University and has lectured in quantitative methods and management information systems for more than 20 years. She is the author of three other distance-learning texts and has contributed to texts on psychology and survey methodology. Previous experience includes work as a statistician advising on survey methodology and analysis in medical and social research. Recent consultancy work includes projects on housing stock, smoking, working conditions and logistics. She has recently been invited to join the National Health Service research ethics committee for Scotland, which advises on medical research applications. She is an elected Fellow of the Royal Statistical Society and a member of the Institute for Learning and Teaching.

Professor Patrick O'Farrell BA, PhD, MIPI.
Emeritus Professor of Economics, former Dean of the Faculty of Economic and Social Studies and Assistant Principal of the University.
Educated at Trinity College Dublin, Professor O'Farrell worked at Queen’s University Belfast, the University of Ulster and the University of Cardiff before moving to Heriot-Watt University in 1986. He has published 10 books and monographs and over 100 research papers in refereed journals. The major themes of his research include transport economics, regional economics, spatial statistics, foreign direct investment, the impact of multinationals on peripheral regions, industrial closures, new firm formation, entrepreneurship, small firm growth and international comparisons of the competitiveness of small manufacturing firms.
# Contents

<table>
<thead>
<tr>
<th>Module 1</th>
<th>Orientation</th>
<th>1/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Introduction</td>
<td>1/1</td>
</tr>
<tr>
<td>1.2</td>
<td>The IBR Courses Process Model</td>
<td>1/3</td>
</tr>
<tr>
<td>1.3</td>
<td>What Has To Be Submitted?</td>
<td>1/7</td>
</tr>
<tr>
<td>1.4</td>
<td>The Aims and Objectives of the Research Design Section</td>
<td>1/9</td>
</tr>
<tr>
<td>1.5</td>
<td>The Aims and Objectives of the Data Collection Techniques Section</td>
<td>1/12</td>
</tr>
<tr>
<td>1.6</td>
<td>The Aims and Objectives of the Analysis and Evaluation Section</td>
<td>1/13</td>
</tr>
<tr>
<td>1.7</td>
<td>The Aims and Objectives of the Outcomes Section</td>
<td>1/16</td>
</tr>
<tr>
<td>1.8</td>
<td>The Aims and Objectives of the Contribution Section</td>
<td>1/20</td>
</tr>
<tr>
<td>1.9</td>
<td>The Validation Study</td>
<td>1/23</td>
</tr>
<tr>
<td>1.10</td>
<td>The Supervisor, the Senior Supervisor and the DBA Research Committee</td>
<td>1/25</td>
</tr>
<tr>
<td>1.11</td>
<td>Progress Reports</td>
<td>1/26</td>
</tr>
<tr>
<td></td>
<td>Learning Summary</td>
<td>1/27</td>
</tr>
<tr>
<td></td>
<td>Review Questions</td>
<td>1/28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module 2</th>
<th>Forms of Analysis: Quantitative and Qualitative</th>
<th>2/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Introduction</td>
<td>2/1</td>
</tr>
<tr>
<td>2.2</td>
<td>The Concept of Quantitative Research</td>
<td>2/4</td>
</tr>
<tr>
<td>2.3</td>
<td>The Concept of Qualitative Research</td>
<td>2/15</td>
</tr>
<tr>
<td>2.4</td>
<td>Relationships between Quantitative and Qualitative Research Approaches</td>
<td>2/26</td>
</tr>
<tr>
<td>2.5</td>
<td>In Summary: The Case for a Combined Quantitative and Qualitative Research Approach</td>
<td>2/31</td>
</tr>
<tr>
<td>2.6</td>
<td>Frequently Asked Questions on the Quantitative–Qualitative Issue</td>
<td>2/37</td>
</tr>
<tr>
<td></td>
<td>Learning Summary</td>
<td>2/40</td>
</tr>
<tr>
<td></td>
<td>Review Questions</td>
<td>2/41</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Module 3</th>
<th>Preparation for Data Collection</th>
<th>3/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Introduction</td>
<td>3/1</td>
</tr>
<tr>
<td>3.2</td>
<td>Data Sources</td>
<td>3/2</td>
</tr>
<tr>
<td>3.3</td>
<td>Accessing Data</td>
<td>3/4</td>
</tr>
<tr>
<td>3.4</td>
<td>Representation: Replication and Sampling for Generalisation</td>
<td>3/13</td>
</tr>
<tr>
<td>3.5</td>
<td>Determining the Size of Sample</td>
<td>3/21</td>
</tr>
<tr>
<td>3.6</td>
<td>Maximising Response Rates</td>
<td>3/24</td>
</tr>
<tr>
<td>3.7</td>
<td>A Standard Framework for Choice and Use of Techniques</td>
<td>3/27</td>
</tr>
<tr>
<td></td>
<td>Learning Summary</td>
<td>3/35</td>
</tr>
<tr>
<td></td>
<td>Review Questions</td>
<td>3/36</td>
</tr>
</tbody>
</table>
## Module 4  Semi-Structured Data Collection and Analysis  4/1

4.1 Introduction  4/1
4.2 The Research Conversation and Storytelling  4/4
4.3 The Semi-Structured Individual Interview  4/18
4.4 The Key Informant Interview  4/37
4.5 The Focus Group  4/45
4.6 Ethnographic Observation and Netnography  4/53

Learning Summary  4/62
Review Questions  4/63

## Module 5  Fully Structured Data Collection and Analysis Techniques  5/1

5.1 Introduction  5/1
5.2 Structured Observation  5/2
5.3 The Structured Questionnaire  5/13
5.4 The Structured Interview  5/44
5.5 The Repertory Grid  5/49

Learning Summary  5/69
Review Questions  5/70

## Module 6  Statistical Data Analysis  6/1

6.1 Introduction  6/1
6.2 Statistical Distributions  6/2
6.3 Estimation  6/11
6.4 Hypothesis Testing  6/16
6.5 Hypothesis Testing Using Non-Parametric Tests  6/43

Learning Summary  6/53
Review Questions  6/55

## Module 7  Statistical Data Modelling  7/1

7.1 Introduction  7/1
7.2 Bivariate Linear Regression  7/2
7.3 Multivariate Regression  7/16
7.4 Spearman’s Rank Correlation Coefficient  7/24
7.5 Time Series Analysis  7/28
7.6 Structural Equation Modelling  7/39

Learning Summary  7/53
Review Questions  7/55
<table>
<thead>
<tr>
<th>Appendix</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Statistical Tables</td>
<td>A1/1</td>
</tr>
<tr>
<td>2</td>
<td>Examination Formulae Sheet</td>
<td>A2/1</td>
</tr>
<tr>
<td>3</td>
<td>Practice Final Examinations</td>
<td>A3/1</td>
</tr>
<tr>
<td></td>
<td>Practice Final Examination 1</td>
<td>A3/1</td>
</tr>
<tr>
<td></td>
<td>Practice Final Examination 2</td>
<td>A3/10</td>
</tr>
<tr>
<td>4</td>
<td>Answers to Review Questions</td>
<td>A4/1</td>
</tr>
<tr>
<td></td>
<td>Module 1</td>
<td>A4/1</td>
</tr>
<tr>
<td></td>
<td>Module 2</td>
<td>A4/3</td>
</tr>
<tr>
<td></td>
<td>Module 3</td>
<td>A4/4</td>
</tr>
<tr>
<td></td>
<td>Module 4</td>
<td>A4/5</td>
</tr>
<tr>
<td></td>
<td>Module 5</td>
<td>A4/6</td>
</tr>
<tr>
<td></td>
<td>Module 6</td>
<td>A4/7</td>
</tr>
<tr>
<td></td>
<td>Module 7</td>
<td>A4/8</td>
</tr>
<tr>
<td></td>
<td>Module 8</td>
<td>A4/8</td>
</tr>
<tr>
<td></td>
<td>Module 9</td>
<td>A4/9</td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>I/1</td>
</tr>
</tbody>
</table>
Module 1

Orientation

Contents

1.1 Introduction......................................................................................................................1/1
1.2 The IBR Courses Process Model......................................................................................1/3
1.3 What Has To Be Submitted?..............................................................................................1/7
1.4 The Aims and Objectives of the Research Design Section .............................................1/9
1.5 The Aims and Objectives of the Data Collection Techniques Section..............................1/12
1.6 The Analysis and Evaluation Section................................................................................1/13
1.7 The Aims and Objectives of the Outcomes Section..........................................................1/16
1.8 The Aims and Objectives of the Contribution Section......................................................1/20
1.9 The Validation Study........................................................................................................1/23
1.10 The Supervisor, the Senior Supervisor and the DBA Research Committee......................1/25
1.11 Progress Reports............................................................................................................1/26
Learning Summary..............................................................................................................1/27
Review Questions................................................................................................................1/28

Learning Objectives

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

- what has to be submitted for the viva voce examination;
- what the final format of the thesis should be;
- what should be included in the research design and methodology section of the thesis;
- what should be included in the data collection and analysis section of the thesis;
- how to reappraise the literature and develop the research theory;
- how to generate research results and conclusions;
- the continuing relationship with the supervisor;
- the role of the DBA Research Committee in assessing the thesis; and
- the requirement for continued progress reporting.

1.1 Introduction

It will be recalled from Section 1.5.4 of IBR1 that the EBS DBA research stage is structured to contain three distinct progression checkpoints. The first of these occurs at the end of the mentored phase, while the second and third occur during the supervised phase. The first checkpoint involves the submission of the research proposal, prepared with the mentor’s help; the second involves the submission of
the intermediate submission (comprising an introduction, literature review, literature synthesis, research hypothesis and design of the programme of empirical work); and the third involves the submission of the thesis itself, after work with the supervisor to complete it (including data collection and analysis, presentation of results and write-up).

This course focuses on empirical work (the collection and analysis of research data), knowledge generation (the presentation and discussion of the outcomes and conclusions, as part of the production of the complete thesis document) and final assessment (the preparation for examination by viva voce).

The present text builds on material presented in Module 3 of IBR1 on the basic epistemological assumptions (phenomenology or positivism) that underpin the choice of an approach appropriate to the aims of the research; and in Module 5 of IBR1 on the preparation of a research design and research method that address the aims while being compatible with the chosen approach. This course assumes that that choice and those preparatory steps are in place before the main empirical work begins, and that the design has been tested and if necessary amended during the pilot work described in Module 3 of IBR2.

This course aims to develop an understanding of the primary data collection and analysis techniques so that the candidate can proceed within that framework of approach, design and method. It also concentrates on the skills required to develop structured and supported research results and conclusions. In addition the course offers general information on the proposed format and structure of the thesis itself.

The textual material differs from IBR1 and IBR2 in one important respect. The candidate will notice that the various modules contain a greater number of references than the former volumes, and may wonder whether he or she is expected to access the referenced materials in preparation for the examination. This is not the case. As texts designed to support the distance-learning programme, the three courses are intended to be sufficient preparation in themselves. The reason for the provision of a substantial number of referenced items is so that the candidate will have ready access to a set of materials likely to be of practical help in the collection and analysis of research data, once the courses stage of the programme is complete and the research stage, especially the empirical work, has begun.

IBR3 is perhaps the most challenging of the three courses. It covers a number of issues from the selection and appropriate balance of quantitative and qualitative research techniques to the use of English when writing up the thesis. The scope of the material is considerably wider than in the first two courses. This is necessary because the final sections of the thesis cover a range of areas, each of which requires a separate skill. For example, it is important to produce a set of good research results and conclusions based on an examinable and acceptable research methodology and sample. It is equally important to be able to write the results and analysis sections of the thesis in a style and manner that communicate them effectively to the reader.

Whoever reads the thesis – the external examiner, the supervisor or another research student – receives only the information that is communicated by the writer.
The writer probably retains a great deal of information about the research programme in his or her head, but this is not communicated to the reader unless it is actually written down in the thesis.

1.2 The IBR Courses Process Model

The full process model for the research process, as introduced in IBR1, is reproduced in Figure 1.1. The process model shows all the research actions necessary to complete the programme. The actions relevant to IBR3 appear in the lower section of the process model.
Figure 1.1  The IBR process model
1.2.1 The IBR3 Sub-Process Model

The sub-process model relevant to IBR3 is shown in Figure 1.2. In IBR3 the candidate is provided with the information required to produce the final thesis.

![Figure 1.2 The IBR3 sub-process model](image)

The sub-process model outlines the activities necessary to complete the programme. It comprises five primary sub-processes, as follows. The way in which the resulting material is presented in the thesis, and the sections into which the thesis is divided to present the material, may differ from candidate to candidate, as indicated in Sections 1.3 and 1.4.

1.2.1.1 Research Method

This begins with an identification process in which the alternative epistemological approaches, and the balance of qualitative and quantitative emphasis, are considered in the light of the literature review, given the aims of the study. Access to data sources (respondents and supporting organisations) and decisions on how they are chosen in order to permit subsequent generalisation is an important part of the design. (This is an iterative process as the literature review develops, and most reviews will have a section on the theory underpinning the proposed research method and techniques, as well as material on the work that has been done by other researchers within the topic in question.) The initial methodological arguments for the method and techniques that appeared in the description of the pilot arrangements will be finalised into an overall research design.

1.2.1.2 Data Collection

This involves the elicitation of research data. The data could be quantitative or qualitative, or a combination of the two. For example, the data could be collected
using relatively unstructured techniques with a view to content analysis, or by means of structured interview techniques with a view to analysis of the correlation between variables. The data are usually organised and checked at an early stage.

1.2.1.3 Data Analysis

This involves a search for the patterns in the data that will provide information relevant to the research question and/or evidence pertinent to the hypothesis being investigated. The search is aided by a suitable research design. Results are initially very carefully evaluated to ensure that they are, in fact, acceptable readings of the issues and variables under investigation. In hypothesis-based research the results are used in support of the decision to accept or reject the research and operational hypotheses. In exploratory-based research the results are used as the basis for resolving the research question. Statistical analysis techniques can be used to test hypotheses formally, and to show the relationships between variables. These pertain to quantitative studies in particular, although statistical analysis can also be helpful in establishing the reliability of content analyses utilised in the more qualitative, semi-structured techniques.

1.2.1.4 Literature Reappraisal and Theory Development

This is an important activity and one that is often omitted or not properly addressed in doctoral theses. It consists of two components. First, the case must be argued and a formal theory arrived at. Information obtained from the analysis has to be highlighted in a way that shows the extent to which the objectives of the research have been achieved; this is done in the light of the literature that has been reviewed previously, and of any new literature recently identified. The overall research programme can last several years. By the time the candidate starts writing up the thesis, a year may have elapsed since the bulk of the literature review was completed. In some cases, there could be two years or more between the candidate completing the literature review and fully developing the results and conclusions. The candidate will have to go back and update the literature review before submitting the thesis but, even more importantly, should realise that his or her perceptions and interpretations of the literature may well have changed as a result of what has been learned in the research. The second component is a matter of presentation and involves decisions on how the case is expressed and where the material is presented in the final thesis document. This is partly to do with location within the text, the illustrative material and the appendices, and partly to do with the humble but important matter of grammatical and orthographical expression.

1.2.1.5 Conclusions and Contribution

This forms the final sub-process. The conclusions are derived from the results with reference to any additional insights provided during the literature reappraisal and theory development. The candidate should remember that the examiners will be looking for evidence that the thesis makes a contribution to the knowledge of a subject either by the discovery of new facts or by the exercise of independent critical power. It is necessary to refer to the literature and to the research findings when
highlighting this contribution. In the case of the DBA the contribution to professional business/management practice must also be made explicit. The final element is generally the suggestions for further research. These often act as useful pointers for future researchers.

1.3 What Has To Be Submitted?

1.3.1 Introduction

IBR3 covers the final aspect of the research programme, including the detailed research design and methodology, data collection and analysis, and results and conclusions. These sections are added after the literature review and synthesis, and this final assembly forms the basis of the thesis. The thesis itself is then submitted in fulfilment of the requirements for the award of the degree. This section discusses the primary characteristics of the stages that make up this final part of the thesis.

1.3.2 The Thesis Submission

The end product of the activities described in IBR3 is the thesis itself, which represents the cumulative efforts of the candidate across all three IBR courses. This sequence is shown in Figure 1.3.

Figure 1.3 The progression of the thesis in relation to the IBR courses

The candidate should appreciate that there is no formal submission on completion of the work described in IBR3 other than the submission of the thesis itself. The research design and methodology, data collection and analysis, and results and conclusions are not submitted separately.

The structure and format of the thesis are discussed in detail in Module 9. The thesis must be presented in hard-bound form in accordance with University regulations. In most cases, the thesis contains the main sections shown in Table 1.1. These follow the general sequence outlined in the process model but each section
will be titled to reflect the particular thesis and its topic. Not all these sections will appear in every thesis, and others that are not listed may be present.

<table>
<thead>
<tr>
<th>Table 1.1</th>
<th>The main sections of the thesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preliminaries</strong></td>
<td></td>
</tr>
<tr>
<td>Title page</td>
<td>Prepared at end; provided in thesis.</td>
</tr>
<tr>
<td>Abstract</td>
<td></td>
</tr>
<tr>
<td>Acknowledgements</td>
<td></td>
</tr>
<tr>
<td>Submission declaration form</td>
<td></td>
</tr>
<tr>
<td><strong>Contents</strong></td>
<td>Provided in intermediate submission; finalised in thesis.</td>
</tr>
<tr>
<td>List of tables</td>
<td></td>
</tr>
<tr>
<td>List of figures</td>
<td></td>
</tr>
<tr>
<td>List of appendices</td>
<td></td>
</tr>
<tr>
<td>Glossary</td>
<td></td>
</tr>
<tr>
<td><strong>Main body (see IBR2)</strong></td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>Started in research proposal; revised in intermediate submission; finalised in thesis.</td>
</tr>
<tr>
<td>Literature review</td>
<td></td>
</tr>
<tr>
<td>Literature synthesis and theory formulation</td>
<td></td>
</tr>
<tr>
<td>Pilot study; design and methodology statement</td>
<td></td>
</tr>
<tr>
<td>Pilot study and formal theory/research question</td>
<td></td>
</tr>
<tr>
<td>Research aims and objectives</td>
<td></td>
</tr>
<tr>
<td>Research hypotheses/belief statements</td>
<td></td>
</tr>
<tr>
<td><strong>Main body (see IBR3)</strong></td>
<td></td>
</tr>
<tr>
<td>Research design, procedures and their methodology</td>
<td>Started, developed and provided in thesis.</td>
</tr>
<tr>
<td>Data collection and analysis</td>
<td></td>
</tr>
<tr>
<td>Results</td>
<td></td>
</tr>
<tr>
<td>Literature reappraisal and theory development</td>
<td></td>
</tr>
<tr>
<td>Discussion and conclusions</td>
<td></td>
</tr>
<tr>
<td>Statement of contribution to theory and practice</td>
<td></td>
</tr>
<tr>
<td>Suggestions for further research</td>
<td></td>
</tr>
<tr>
<td><strong>Completion</strong></td>
<td></td>
</tr>
<tr>
<td>Bibliography</td>
<td>Started in research proposal; developed throughout.</td>
</tr>
<tr>
<td>Appendices</td>
<td>Started, developed and provided in thesis.</td>
</tr>
</tbody>
</table>
Although the literature review will have been largely completed by the time the candidate is given approval to proceed to the main study, it will still require modification and updating right up to the final submission of the thesis for examination. Having moved on to the main study data collection and analysis, the candidate is required to complete the research design and methodology; the data collection and analysis; the results and conclusions; and the literature reappraisal and theory development sections to complete the main body of the thesis.

The final stages of completing the thesis include writing the abstract, perhaps revisiting the introduction chapter, and completing the list of figures, list of tables, glossary, appendices and so on.

The supervisor will have been reading the draft chapters or sections as the candidate produces them. It is, however, advisable to provide the supervisor with a complete final draft of the thesis as soon as it becomes available. It may sound rather odd, but most supervisors would agree that a thesis can appear significantly different when it is presented as a complete draft rather than as individual chapters read over a period of time. There is the potential for developing a quite different impression of the thesis when it is viewed, for the first time, as a complete draft.

The final draft thesis is submitted to the DBA Research Committee for review. The Committee may suggest modifications before accepting the thesis, but these are suggestions rather than requirements (as in the case of the research proposal and the intermediate submission). The thesis then goes forward for viva voce examination.

1.4 The Aims and Objectives of the Research Design Section

1.4.1 Introduction

The presentation of the main aims and objectives of the empirical work and its methodological justification are considered below. The detailed description of the individual research techniques and the analysis of data are covered in Modules 3–6.

It should be noted (see Table 1.1) that the design relates to all the empirical work: the pilot study and the main study. Unless the pilot is trivial in scope, serving only to check the procedural arrangements planned for the main data collection, much of the methodological justification for the empirical work will apply to the activities undertaken in the pilot as well as to those in the main study. In the intermediate submission, it makes sense to present the design and its methodology at the start of the pilot study report, with a consideration of any alterations arising out of the pilot that might affect the main study presented after the analysis of the pilot data. The relevant material is presented in that sequence in Section 3.2 (and especially Section 3.2.4) of IBR2.

The same arrangement is advocated for the corresponding sections of the thesis itself. A single chapter covering all the empirical work is likely to be much too long; the structure of the breakdown into shorter chapters will depend largely on the size and scope of the pilot and main study, and on where different components of the description of the design and its methodology are placed; this is something to be discussed with the supervisor in some detail.
In moving from the intermediate submission to the thesis itself, the candidate will revisit the material on the pilot study that led to the basic theory development (shown in Figure 1.2 of IBR2), and shape it into a rationale for empirical work leading to a statement of research design (shown in Figure 1.2 of this course).

1.4.2 The Research Design

In the thesis the sections covering the research design serve a number of important purposes. It is essential that the material is presented as clearly and unambiguously as possible. A reader should be able to develop knowledge and understanding of the design, procedures and methodological rationale without the need to consult any additional sources.

A major function of this material is to act as a bridge between the theory and the application of that theory. The literature review and synthesis will have:

- developed a basic theory involving testable hypotheses or belief statements expressed as a research question;
- noted the approach, method and techniques typically used by other researchers to research this kind of theory (and may have addressed the conceptual or theoretical underpinnings of this approach and method).

These two components may be regarded as the theoretical phase of the research. The application phase follows, and this includes the data collection and analysis, literature reappraisal and theory development, and results and conclusions. In the application phase the ideas developed in the theoretical phase are tested using a variety of empirical techniques, to assess the outcomes and the implications for the aims of the research.

These two phases are quite different. The first involves developing a testable idea, whereas the second is concerned with testing that idea. The bridge between these two phases is the research design section, because it provides and justifies a mechanism whereby the research idea can be analysed.

The ‘bridging’ process usually starts with a consideration of which epistemological approach to adopt and of which research method would be the most appropriate and useful to test the hypotheses or belief statements that have emerged from the literature. When developing the design, the candidate should consider three things: what, why and how? Whether it is a matter of sample selection, data collection, data analysis or data validation, what is required is a clear statement of what will be done, a methodological justification for this, and a precise statement of how it will be done. The relevant issues have been presented in Section 3.2.4 of IBR2.

The final research design should be carefully evaluated to ensure that the data collection and analysis techniques are reliable and accurately measure what they are intended to.

Another major function of the research design is the provision for potential replication. This is an important part of any research programme, but it is particularly important, for example, in the case of major research and development projects, such as for a new drug, that might require a company to spend tens of millions of pounds. When one of the research teams finds a formula that appears to match the
specification without causing unacceptable side effects, the first task of the research director will be to organise a series of replication studies. The company will commit to the next phase of developing the new formula only if the replication studies show the same results.

To be able to replicate a piece of research, it is obviously important that the precise details of all aspects of the research are known. The replication teams can attempt to replicate only if they can duplicate all the characteristics of the original research programme. It is therefore essential that all aspects of the research procedures and their methodology are detailed in this section of the thesis.

It is also essential that this section is fully referenced. The level and detail of referencing should be at least equal to that in the literature review. This is important for two reasons.

- The use of references explicitly demonstrates that the candidate has read around the subject and developed an understanding of the approaches used by other researchers in the same field. The candidate can support his or her choice of design by citing other researchers who have used the same design in similar applications. There is less chance of an examiner criticising a design if it can be supported by similar choices made by a number of high-level researchers.
- The candidate can often obtain good advice by reading about the approach taken by other researchers. A choice of technique that may seem obvious, such as the use of a structured questionnaire, for example, may not seem so attractive when the candidate reads about the problems other researchers have experienced with the approach to address similar kinds of research question.

When writing this section of the thesis, the candidate should ensure that it:

- describes the research method and techniques in precise detail;
- fully details the reasons for choosing them;
- supports their use with citations from the literature;
- fully justifies their use;
- identifies and describes the samples used.

The thesis should highlight:

- the advantages and disadvantages associated with the chosen design;
- any limitations that may arise from its use;
- the way in which reliability and validity are conceptualised by the epistemological approach (phenomenological or positivist), and any limitations that may pertain.

Where modifications have been made to standard procedures adopted in the literature, the candidate should make clear:

- the reasons for the modification, both theoretical and procedural;
- any examples from the literature of similar modifications and successful use;
- any reservations associated with the modification;
- the extent to which the modification was tested in the pilot study;
- how any issues raised in the pilot study were addressed in the main study.
Candidates need not be shy of making such modifications. If well justified, in both the theoretical phase and the applied phase, changes of this kind can provide their own contribution to the knowledge. It is important to discuss with the supervisor in appropriate detail the rationale for, and nature of, such changes.

If the design makes use of pre-existing scales, tests or typologies, these should be included in an appendix and fully described in the text. If questionnaires or interviews are used, copies should be provided in an appendix and, again, a full description and evaluation given in the text. It is particularly important for the candidate to justify the design of individual questions and how these work within groups of questions to extract information. It is very common in doctoral theses for questionnaire and interview design to be inadequately described. In some cases, inadequate description can lower the standard of the entire thesis, particularly if, for example, one question clearly contradicts another and this contradiction is carried right through the data collection and analysis, and results and conclusions.

The candidate should remember that this material is central to the thesis. The examiners will read the contents carefully and will ask questions about any reservations they have in the viva voce examination. The candidate must be able to justify all aspects of the choice and use of the chosen design and its methodology in the current research.

1.5 The Aims and Objectives of the Data Collection Techniques Section

1.5.1 Introduction

The data collection and analysis is crucial to the effectiveness of the entire research programme. Whether phenomenological or positivist assumptions have been followed, the research is only as good as the data it uses and as the effectiveness with which it analyses those data. This section briefly considers the aims and objectives of the data collection section of the thesis.

1.5.2 Data Collection

The data collection fits into the overall programme as shown in Table 1.1. Once the decision on the final design has been made, data collection can start. Although the collection of data and their analysis take place in succession, it is important that the form of analysis is decided before data collection begins.

The relevant sections of the thesis should make the mechanics of data collection as clear as possible. For example, where the thesis refers to interview data, the details surrounding the system by which the data were obtained should be made explicit. A clear and accurate detailing of the data collection and analysis processes is an integral part of the replication process, and the level of detail required is therefore significant. The two most common problem areas in relation to data are reliability and validity.
Reliability is the extent to which the research procedures and/or data produce the same results over a period of time when conducted by different researchers or when separate measurements of the same phenomena have been made. In other words, if the conditions are constant and the same data are used, the output of the research should remain at about the same level. For example, a gas oven should always reach the same temperature, plus or minus 3 degrees, when it is set to gas mark 11. If the cooker always gets to the same temperature and stays there, the thermostatic control mechanism can be said to be reliable.

Validity is the extent to which measurements actually measure what they are supposed to. For example, a large data set on house sale prices might indicate that house prices rise steadily as interest rates drop. A researcher might conclude that there is an inverse functional relationship between interest rates and house sale prices. In fact, a steady increase in sale prices could be a result of a range of other variables not detected when looking only at sales figures.

The data collection section of the thesis should:

- detail the precise techniques used to collect data;
- describe collection system calibration, where appropriate;
- detail the reasons for choosing the techniques;
- detail any support from the literature for the use of the particular techniques.

The data collection section of the thesis should state:

- the advantages and disadvantages associated with the chosen techniques and any limitations that may be relevant;
- any information available in the literature about the reliability and validity of the chosen techniques, whether obtained from the literature or as measured during the piloting stage. Where the candidate has developed his or her own measurement scales or instruments, this kind of information can be quite detailed, and the candidate should be prepared to follow the standard procedures, available in the literature, by which the reliability and validity of the instrument can be assessed.

Data processing tools and techniques are discussed in detail in Modules 3–5.

1.6 The Aims and Objectives of the Analysis and Evaluation Section

1.6.1 Introduction

This section of the thesis considers the research data in considerable detail, and builds an argument based on them. It is followed by the outcomes section, in which a literature reappraisal and theory development discussion takes place, so that the analysed results can be used to develop the theory or research question of the thesis.

Candidates will recall from Section 1.3.2 that a variety of section arrangements is possible in the thesis. When deciding on the structure of the thesis, they can adopt an alternative format if preferred, and this is particularly the case with the data
collection and the analysis and evaluation components of the process model. Thus in some cases it may make sense to combine the account of how the data were collected with an account of the data analysis; in other cases, a heavy reliance on detailed statistical analysis and modelling techniques may merit a separate chapter or, indeed, chapters in the thesis.

### 1.6.2 Analysis and Evaluation

This section of the thesis presents the findings of the research in a logical, orderly and substantiated format. This may sound obvious, but it can be surprisingly difficult to present results and conclusions effectively.

The overall position of this section in relation to the rest of the thesis is shown in Figure 1.4. The candidate should consider a number of important issues concerning the results and conclusions. These are listed below.

- **Presentation.** The results and conclusions should be presented in a clear and logical way. Results that apparently support or criticise other results should be highlighted and discussed. The results should be divided into sections, ideally with each set of results addressing one operational hypothesis or research question. Different sections should be linked, and, where possible, results should be linked to other results and discussed in the context of the overall conclusions. Where qualitative data are used, the results section could include tables of results and supporting diagrammatic representations. If there are a number of tables and diagrams, it may be prudent to place them in an appendix and refer to them in the text. Where possible, candidates should place quantitative and qualitative results together and use each type to reinforce the other.

- **Positioning.** The results and conclusions should relate, wherever possible, to the preceding sections. If necessary, the results and conclusions can cite the results of other researchers, where they concur. There is no general requirement to reference the results and conclusions section, but referencing may be used if it adds to the value of the section.
Figure 1.4 Results and conclusions

- **Substantiation.** It is important to ensure that the results and conclusions as presented are substantiated by the data. Again, this may seem obvious, but it is surprisingly common in theses to find results and conclusions that extend beyond the data or do not accurately reflect the data presented. Candidates may make inferences, but these must be clearly identified and used in context.

- **Reference to research hypotheses or research questions.** The candidate should remember that the analysis is based on the research hypotheses or research questions stated in the literature review (see IBR2). The candidate should make every effort to develop the results and conclusions in association with, and in the context of, the relevant research hypotheses or research questions. It is useful to reproduce the research hypotheses, if possible, in diagrammatic form in association with the presentation of the results and conclusions.

The conclusions presented in this section are not the final conclusions of the research; rather they are the conclusions from the research before the literature is reappraised and the formal theory developed. The literature reappraisal may allow the candidate to refine the research conclusions with new or redefined evidence from the literature in a discussion that allows the formal theory to be developed.
### 1.7 The Aims and Objectives of the Outcomes Section

#### 1.7.1 Introduction

The reappraisal section is very important because it offers the candidate an opportunity to demonstrate that he or she really understands the research field. The data collection and analysis sections should have taught the candidate a great deal about the chosen subject area. In the literature reappraisal the candidate demonstrates to the examiners that he or she can recognise this understanding and apply it to the literature to provide greater strength to the research theory.

#### 1.7.2 Literature Reappraisal and Theory Development

The literature reappraisal and theory development section comes after the data collection and analysis and after the generation of the results and conclusions of the empirical stage. As data are collected and analysed, the candidate’s level of knowledge in the chosen subject area increases above the level acquired when preparing the literature synthesis and developing the original formal theory/research question. As a result, by the time the main results have been developed, the literature synthesis and formal theory may no longer fully reflect the candidate’s original knowledge and understanding of the research field. This does not mean that the original synthesis and formal theory are any less valid. It simply means that the candidate has acquired new knowledge from the analysis and sets out, carefully and deliberately, to argue the case he or she wishes to present. This is, of course, one of the main reasons for conducting doctoral research. It is, however, important that the candidate demonstrates this increased level of knowledge to the examiners. An effective way of expressing the case may be to provide a separate discussion chapter in which the literature is reappraised in the light of the new knowledge and, where appropriate, the formal theory is developed.

The position of the literature reappraisal and theory development section of the thesis is shown in Figure 1.5. The candidate goes back through the programme and re-evaluates the literature synthesis, pilot study results and development of the formal theory/research question, looking for areas where the newly acquired knowledge may provide any different insights from those that were originally envisaged. This section then considers the main study results and uses this collective information to develop the formal theory or question.

The formal theory or question is developed and strengthened using both the research results and the literature reappraisal. It should be remembered that the theory or question does not cease to exist on completion of the research programme. If the theory or question is substantiated by the research, then it forms a contribution to the knowledge of the subject area concerned. Other researchers will wish to verify or falsify it in order to assess its value. It is therefore important that it is refined and developed as much as possible using both the reappraised literature and the results of the current research.
Figure 1.5 Literature reappraisal and theory development

An obvious example of the re-evaluation approach is a police murder enquiry. In the initial stages the police may have no idea who committed a particular murder. All they have is a mass of potentially unrelated evidence. As the evidence is examined and various leads are followed up, some pieces may appear to be more relevant than others, and some will eventually be disregarded as irrelevant. As the investigation develops, more and more evidence might point to a particular suspect. The police might then arrest this suspect for questioning. In some cases, the accused may make a full confession to the police. At this stage, the police have full information about the circumstances surrounding the murder and can look back through the evidence and see which elements were relevant and which irrelevant. In some instances, evidence that was discounted at the time may be seen, in fact, to have been very relevant and important. In other instances, the new information might show that two or three lines of investigation that were thought to be very promising were, in fact, misdirected and a waste of time. It is only with hindsight that the full value, or otherwise, of each piece of evidence can be appreciated.

It is also important that the candidate demonstrates that he or she can use the literature reappraisal, where appropriate, to re-evaluate the formal theory. The candidate obviously has to be careful in this respect as it is too late at this stage to modify the formal theory because the entire data collection and analysis is based on the original formal theory (see IBR2). The theory can, however, still be developed. In
In this context, ‘developed’ means extended or amplified to reflect the new knowledge acquired by the candidate as a result of the analysis phase.

### 1.7.2.1 Handling Emergent Findings

Emergent findings (results that point to previously unanticipated relationships) are a particularly important contributor to this development, and it is probably true that these are more likely in work done in a type D exploratory stage, especially in a study taking a phenomenological approach. They appear in positivist work too, as can be seen in the following example.

A researcher working on strategically aligned mergers and acquisitions might carry out his or her analysis based on a theory that companies engaging in strategically aligned acquisitions have a greater likelihood of long-term success than companies engaging in non-related or diversified acquisitions. The original formal theory might be:

Companies that pursue a strategic policy of related acquisitions have a greater long-term probability of success than companies that do not pursue a strategic policy of related acquisitions.

The theory could be developed into a basic research hypothesis as follows:

- **H₀**: There is no positive functional relationship between following a strategic policy of related acquisitions and long-term success.
- **H₁**: There is a positive functional relationship between following a strategic policy of related acquisitions and long-term success.

As the analysis proceeds, it may become clear that there does indeed appear to be no positive functional relationship between the pursuit of a strategic policy of related acquisitions and long-term success. It may, however, also become apparent that the functional relationship is, itself, a function of another variable, such as sector competition. The research results might indicate that:

- **(a)** there is no positive functional relationship between following a strategic policy of related acquisitions and long-term success under conditions of normal sector competition; but
- **(b)** a functional relationship becomes more pronounced as sector competition increases.

The first finding was considered as a possibility, formed the basis for the (null) research hypothesis, and was tested in the analysis. The second finding was not anticipated, but emerged from the analysis. Candidates do not always realise the potential for the discovery of entirely unforeseen functional relationships within a well-designed data collection and analysis process. In some cases, the unforeseen finding can be more useful and interesting than the expected finding. In extreme cases, chance observations made during routine research can lead to entirely new research areas and even whole new branches of study.
This process of theoretical amendment in the light of the data is particularly important in some forms of research, based on the phenomenological approach, that use an iterative process of:

Belief statement 1
↓
Data collection to test
↓
Amendment of belief statement 2
↓
Data collection to test
↓
... etc.

until the resultant statement fits all the evidence currently and foreseeably available. Further particulars are given in the discussion of explanation-building technique in Section 4.3.4.2.

A good example is the chance observation made by Luigi Galvani in 1791. Galvani was conducting research on anatomy. As part of his experimental work he dissected a number of frogs. He hung a number of frogs’ legs on a metal wire to dry before dissecting them in order to assess their anatomical structure. The metal wire on which the legs were hanging was, by chance, positioned close to a metal balustrade. The wire and the balustrade were made of different metals, although history does not record what metals they were. During a break Galvani noticed with amazement that the frogs’ legs sometimes ‘jerked’, even though they were separated from the remainder of the frogs’ bodies. He noticed that the jerks occurred when the wind blew the wire on which the legs were hanging towards the metal balustrade and especially when the metal wire actually touched the balustrade. Galvani knew about electricity, although he was unaware that electricity could be generated as a result of the electrical potential difference between two metals (modern batteries work on exactly this principle). Galvani could not account for the source of the electrical charge but realised that the electricity was coming from somewhere and that it was this electricity that was making the legs jerk.

In making his observations, Galvani unwittingly originated what came to be known as the medical studies of neurophysiology and clinical neurology. It is an example of a major discovery that emerged by chance from standard research into something else. There have been numerous other such chance discoveries, a prime example being that of penicillin. Of course, what drives knowledge acquisition forward more effectively is when the researcher builds on observations of this kind by developing research designs to test them deliberately.

The candidate should therefore be aware that the nature of research is such that it can reveal unforeseen considerations and concepts that may not be directly related to the current research. It may not be too late to incorporate these unforeseen elements within the current research – they are important emergent findings, and it is essential to describe them – making sure the examiners appreciate that they have
appeared and been identified and that their full significance evaluated. In many cases, such unforeseen elements can act as the basis for suggestions for further research.

The end result of the literature reappraisal and theory development section is a fully developed theory (developed from a hypothesis) or answer (developed in response to a research question) that forms a contribution to the knowledge base. The theory or answer is fully supported both by the literature and by the results of the current research.

1.8 The Aims and Objectives of the Contribution Section

1.8.1 Introduction

This is the final section of the research, which is usually referred to as the ‘final conclusions’. In DBA programmes the final section is often referred to as ‘academic and professional contributions’.

1.8.2 The Contribution

This section contains the final conclusions of the research after the literature reappraisal and theory development. It is the last part of the research programme and occupies the last position in the thesis, as shown in Figure 1.6.

In a DBA, it consists of two distinct subsections: a statement of the contribution to the academic knowledge base, and a statement of the contribution to professional practice.
Figure 1.6  Final conclusions and contribution to theory and practice

In its simplest form, the final conclusions and contribution section could present a simple answer to a research question or a restatement of a research hypothesis as a statement.

Similar considerations apply in the case of work that follows the phenomenological approach. When the research question, decomposed as necessary into testable belief statements, has been addressed, a complete account is compiled that leads to a formal theory in which assertions are justified, with exceptions noted and accommodated in a way that shows that the issues in question are satisfactorily understood. By ‘satisfactory’ is meant that the discussion will attend particularly to the evidence available from triangulation within the empirical work so that a self-consistent understanding has been achieved. Some techniques associated with interpretive and case study method formally include the views of the research respondents as part of this process.

Whether the research follows positivist or phenomenological assumptions, it is important to establish that the theory:
was developed from the literature review and literature synthesis;
was initially expressed as a basic theory;
was evaluated during the pilot study as necessary;
was evaluated during the main study or studies.

It is therefore reasonable to say that the theory:

- is original, provided the research field has been correctly defined;
- is supported by the literature;
- is supported by the pilot study results;
- is supported by the main study results;
- is supported by the validation study results (where appropriate).

Finally, it is also reasonable to say that the theory:

- is original;
- is supported by the results of the research (which is valid and reliable);

It is therefore reasonable to suggest that the theory does indeed add to the knowledge of the chosen field. In other words, the final theory acts in compliance with University regulations regarding the standard of work required for the award of a doctoral degree. The final theory contributes to knowledge using either the discovery of new facts or by the exercise of independent critical power.

As well as presenting and discussing the contribution to knowledge, it is important that the thesis includes a separate subsection of this final contribution material to bring out the contribution to professional practice. This is an obvious outcome if a validation study has been conducted (see Section 1.9), and especially in the more participative methods used under the phenomenological approach; but it is essential in a DBA thesis (whether a validation study has been carried out or not), because of the professional character of the DBA as distinct from the conventional PhD.

The main contribution(s) to professional practice should be drawn out, and the candidate should:

- highlight the practitioner issues to which a contribution has been made;
- discuss, with reasons, any instances where the findings have contributed as anticipated;
- summarise the extent of the strategic contribution;
- list the operational implications for the people affected;
- identify implications for procedures, training and/or development; and
- address the constraints on the implementation of any change that might be advocated (with an attempt at costing the latter).

The last point is particularly important. It is fatally easy for the energised and committed candidate to assert that change is ‘vital’ and must be effected without considering the implications in full. A more measured approach would examine the various factors that influence the extent to which the advocated outcomes can realistically impact on professional practice.
1.9 The Validation Study

1.9.1 Introduction

As stressed earlier, the process model shows only one possible configuration for the research programme. Other sections may be necessary, and some of those shown may be omitted. A good example of this is the validation study. A validation study may or may not be necessary depending on the research design and on the sample. This section summarises the characteristics of a validation study and how such a study might fit into the research programme.

1.9.2 The Validation Study

As the name suggests, a validation study is conducted and included in the thesis if the validity of the research results and conclusions needs to be more firmly established. There could be a number of reasons for this, the most obvious being a restricted sample size. In the case of a restricted sample size, the validation study would attempt to increase validity by extending the research results and developed theory to a larger sample.

Another example might be the wish to examine the difference made to the results by some moderator variable that can be plausibly anticipated as being part of the process investigated – for example, the impact of the nature and quality of communication on the success with which project managers of strategic alliance partners interact to acquire and share knowledge (see Bstieler and Hemmett, 2008). Indeed, the use of cross-sectional case studies as outlined in Section 5.3.2 of IBR1 can be viewed as an arrangement for systematic validation. The ‘validator-replicator’ form of multiple case study is an example of this kind of arrangement, built in to the research design of the main study from the outset: see Section 5.5.3 of IBR1.

In its simplest form a validation study could comprise a questionnaire that lists the primary results of the research and the fully developed theory or answer to the research question and asks the respondent whether he or she agrees with the findings. Responses are usually invited on a scale rather than as a simple yes/no. The validation study would normally be carried out after the initial analysis and evaluation and at the same time as the literature reappraisal and theory development section, as shown in Figure 1.7.

In some cases it may be necessary to conduct more than one validation study, especially if the outcome of the initial validation study is inconclusive or unreliable. In some cases it may also make procedural sense to validate the validation study.

The validation study is used to develop the final conclusions and business contribution. It also has implications for the results and conclusions, and literature reappraisal and theory development sections. These implications are represented as dotted arrows in Figure 1.7. Occasionally, the validation study may highlight completely new considerations that have an impact on one or more of these sections. In other cases, the validation study might show a clear disagreement between the main study results and the validation study sample respondents. If this occurs, the candidate should consult the supervisor and ascertain whether it is a
result of poor validation study design or, more seriously, a fundamental error in the main study data collection and analysis processes.

A common problem encountered by candidates when executing a validation study is that of sample selection. In the case of a positivist hypothesis-based (orientation A or B) study, the validation sample clearly has to be a part of the same population of which the main study sample is representative, unless the candidate can make a suitable adjustment to allow for the difference in population characteristics. In other words, if the main study is concerned with strategically aligned acquisitions in car manufacturers, both the main study and validation study samples will have to be largely car manufacturers. This can cause problems. In some cases the validation sample has to be large relative to the sample used in the main study. In some sectors it may be difficult to identify a sufficiently large number of suitable organisations to include in the validation process. In phenomenological (orientation C or D) studies based on a collaborative approach, the validation sample is often the same group of people whose views were sought in the main data collection.
Validation studies can be very useful in that they may act to reinforce the findings of the main study and further strengthen the final conclusions and business contribution. They can also be very useful for developing the applied business contribution. Validation focus group attendees can provide valuable insights into how the findings of the research and the final theory could be used in organisations.

1.10 The Supervisor, the Senior Supervisor and the DBA Research Committee

1.10.1 Introduction

This section briefly introduces the role of the supervisor, the senior supervisor and the DBA Research Committee during the second part of the supervised phase (checkpoint 3), when the candidate conducts the empirical work. The roles of the supervisor and senior supervisor are more or less as during the preparation of the intermediate submission (see IBR2), but the role of the Research Committee is somewhat different.

1.10.2 The Supervisor

The supervisor is first introduced to the candidate when the candidate completes a research proposal that is accepted by the Research Committee. The candidate subsequently works with the supervisor throughout the development of the literature review to the point at which the candidate completes an intermediate submission that is accepted by the Committee.

Because the supervisor and candidate work together for the duration of the intermediate submission, they can be expected to form a close working relationship. This relationship continues into the data collection and analysis, and results and conclusions. There are, however, some significant differences.

The candidate is likely to require advice on a wider range of issues than during the work on the intermediate submission. In addition, the research design and methodology may involve a great deal of relatively specialist advice and discussion between the supervisor and candidate. It is also reasonable to suggest that linking the various sections of the thesis is more challenging at this point than it was for the intermediate submission. An example is the reasoning required to reappraise the literature in the context of the results of the present research in order to refine and strengthen the final theory. This type of approach is integrative, in that the candidate has to integrate a number of different aspects. This requires the candidate to be able to keep sight of the general picture but also to be able to focus on specific areas and think about the entire programme as a single entity. This may seem straightforward, but many doctoral students have problems developing integrative skills.

Candidates who wish to remind themselves of the advice on the supervisor–candidate relationship provided in IBR2 should refer to Module 4 of that text.
1.10.3 **The Senior Supervisor**

The role of the senior supervisor is unchanged. Candidates who wish to remind themselves of the general role of the senior supervisor should refer to Module 4 of IBR2.

1.10.4 **The DBA Research Committee**

The DBA Research Committee reviews the final draft thesis before it is put forward for viva voce examination. In doing so, the Committee acts in much the same way as when it reviewed the research proposal and the intermediate submission, with one significant difference. When considering the two earlier kinds of submission, the Committee is empowered to require a resubmission on two occasions after the first; and it may initiate procedures to terminate enrolment. In the case of a draft thesis submission, the Committee provides the same level of feedback, expressing opinions on the likely outcomes and making suggestions about improvement, but it cannot require a resubmission.

The thesis is formally submitted to the University for viva voce examination when the supervisor feels it is ready. This does not necessarily mean the supervisor thinks it is good enough to pass the examination. For example, it could mean that the supervisor thinks the candidate has achieved the highest standard possible and further work would not improve the quality of the thesis. At this stage the supervisor is required to submit to the University a submission of thesis declaration form, which confirms that the thesis is ready for examination. Once this has been accepted, copies of the thesis are sent to the internal and external examiners. The viva voce examination is usually scheduled six to eight weeks after submission.

Further details on the processes and procedures adopted by the University and examiners when processing and assessing the thesis are provided in Module 9.

1.11 **Progress Reports**

1.11.1 **Introduction**

The formal and informal progress reports produced during the final stage of thesis preparation are exactly the same as those produced during the preparation of the intermediate submission.

1.11.1.1 **Formal Quarterly Progress Reports**

These are required every three months, exactly as when preparing the intermediate submission, and supervisor feedback and advice is issued as described in Section 4.2.7.2 of IBR2. It is important that these reports are completed regularly and diligently by the candidate and that any feedback requirements from the supervisor are implemented without delay.
1.11.1.2 Personal Progression Reviews

Informal personal progression reviews are also recommended during the production of the final thesis, as described in Section 4.2.7.1 of IBR2.

Learning Summary

This module has described the main components of the thesis, its origins in the documents that have been previously submitted, and the role of the supervisor in supporting its preparation. The chief points to remember are as follows.

The thesis is submitted for formal assessment based on two elements: the thesis document itself, organised according to a standard set of headings, and a formal, face-to-face viva examination with external and internal examiners who have read the document.

The document is the result of material initiated in the original research proposal and intermediate submission (as described in IBR1 and IBR2), amplified by the inclusion of the account of empirical procedures and their outcomes, as described in the IBR process model. It is important to be clear about the design and its methodology, for they act as a bridge between the literature in the field and the empirical work that will, hopefully, make a further contribution to it. The data collection and analysis are intended to result in material of known reliability and validity, obtained by appropriate techniques that are suited to the epistemological assumptions and research methods outlined in IBR1.

The required contribution to knowledge needs to be discussed by addressing the empirical findings in the light of the literature, and with an explicit awareness of the difference that the findings may make to that literature. It is equally important, in a professional doctorate like the DBA, for the contribution to professional practice to be discussed, in a critical way and with the practical constraints addressed so far as this is possible. The role of the DBA Research Committee and the supervisor is to give constructive advice and feedback on all of this; the former cannot hold up progression but the latter can provide firm guidance on when submission for examination is merited.

The remainder of the present volume is devoted to the various techniques of data collection and analysis, their presentation as part of a complete thesis document, and the candidate’s preparation for final assessment and viva.