

Introduction to Business Research 3

Professor Alexander Roberts PhD, MBA, FCCA, FCIS, MCIBS.

Director, Centre for Strategy Development and Implementation.

Professor Roberts is Professorial Fellow of Edinburgh Business School (EBS), the Graduate School of Business at Heriot-Watt University. Professor Roberts is a doctoral (PhD) graduate of the London Business School (1987). He lectures, researches and consults for major organisations on strategy development and implementation and related issues. The practical relevance of his work is underpinned by 15 years in senior management, including 10 years at executive director level within multinational subsidiaries of American and European-based businesses. Professor Roberts founded the Doctorate in Business Administration (DBA) in Strategic Focus programme at EBS. He is author of the MBA/DBA distance learning course in *Making Strategies Work* and is joint author, with Dr Wallace and others, of the courses in *Project Management*, *Strategic Risk Management*, *Mergers and Acquisitions*, and the three DBA *Introduction to Business Research* courses.

Dr William Wallace BSc (Hons), MSc, PhD, MCIQB, MAPM.

Senior Teaching Fellow, Centre for Strategy Development and Implementation.

Dr Wallace is Senior Teaching Fellow of Edinburgh Business School (EBS), the Graduate School of Business at Heriot-Watt University. Dr Wallace chairs the MBA/DBA courses in Project Management and Strategic Risk Management. Dr Wallace has an extensive range of academic and industrial experience. The work for both his first degree (Leeds 1981) and masters degree (Loughborough 1983) established a project management and risk management academic framework. After completing his PhD (Heriot-Watt 1986) he worked as a senior practitioner in, and consultant to, a number of public and private sector organisations, before returning to academia in 1995. He served as a member of the Heriot-Watt University Faculty Board of Engineering from 1997 to 2001 and on the Heriot-Watt University External Studies Committee 1998–2001. Dr Wallace has supervised a number of full-time, part-time and distance learning Heriot-Watt PhD candidates to successful completion, and has experience of international video-link *viva voce* doctoral examinations.

Frances A. Pfab BSc (Hons), DipStat, MILT.

Frances Pfab is a Senior Teaching Fellow at the Edinburgh Business School, where she is the course leader for *Quantitative Methods*. She has degrees from Sheffield and Edinburgh Universities and has lectured in quantitative methods and management information systems for 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.

This Course text is part of the learning content for the Edinburgh Business School postgraduate course in this subject.

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 www.ebsglobal.net/coursewebsites.

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

Introduction to Business Research 3

Research Methodology, Data
Collection and Analysis,
Results and Conclusions

Professor Alexander Roberts

Dr William Wallace

Frances Pfab

First published in Great Britain in 2003

© Roberts, Wallace, Pfab 2003, 2005

The right of Professor Alexander Roberts, Dr William Wallace and Frances Pfab to be identified as Authors of this Work has been asserted by them in accordance with the Copyright, Designs and Patents Act 1988.

Release LS-A3-engb 1/2006 (1025)

All rights reserved; no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior written permission of the Publishers. This book may not be lent, resold, hired out or otherwise disposed of by way of trade in any form of binding or cover other than that in which it is published, without the prior consent of the Publishers.

Typesetting and SGML/XML source management by CAPDM Ltd. (www.capdm.com)

Contents

Module 1	Introduction	1/1
	1.1 Introduction	1/2
	1.2 The Process Model	1/3
	1.3 What Has To Be Submitted?	1/7
	1.4 The Aims and Objectives of the Research Methodology	1/9
	1.5 The Aims and Objectives of Data Collection and Analysis	1/13
	1.6 The Aims and Objectives of the Results and Conclusions Section	1/15
	1.7 The Aims and Objectives of the Literature Reappraisal and Theory Development	1/17
	1.8 The Aims and Objectives of the Final Conclusions and Business Contribution	1/21
	1.9 The Validation Study	1/23
	1.10 The Supervisor, Senior Supervisor and the EBS Research Committee	1/25
	1.11 Progress Reports	1/27
	1.12 Timescales for Completion	1/32
Module 2	Quantitative versus Qualitative Research	2/1
	2.1 Introduction	2/2
	2.2 The Concept of Quantitative Research	2/3
	2.3 The Concept of Qualitative Research	2/16
	2.4 A Comparison of Quantitative and Qualitative Research Approaches	2/22
	2.5 The Case for Combined Quantitative and Qualitative Research Approaches	2/28
	2.6 Frequently Asked Questions on the Quantitative versus Qualitative Issue	2/34
Module 3	Data Collection	3/1
	3.1 Introduction	3/2
	3.2 Aims	3/3
	3.3 Types of Research Methodology	3/4
	3.4 Main Factors	3/6
	3.5 Sample Selection	3/7
	3.6 Questionnaire Design	3/14
	3.7 Preliminary Data Analysis	3/21
Module 4	Data Analysis	4/1
	4.1 Introduction	4/2
	4.2 Statistical Distributions	4/3
	4.3 Estimation	4/12
	4.4 Hypothesis Testing	4/18
	4.5 Hypothesis Testing Using Non-parametric Tests	4/44

Module 5	Data Modelling	5/1
5.1	Introduction	5/2
5.2	Bivariate Linear Regression	5/2
5.3	Multivariate Regression	5/17
5.4	Spearman's Rank Correlation Coefficient	5/26
5.5	Time Series Analysis	5/28
Module 6	The Challenge of Writing	6/1
6.1	Introduction	6/2
6.2	The Challenge of Writing a Thesis	6/3
6.3	Structure and Enlightenment	6/14
6.4	Writing Style	6/18
6.5	Editing	6/29
6.6	Example of Checking for Good Writing Style	6/35
Module 7	Writing the Thesis and Attending the Viva Voce Examination	7/1
7.1	Introduction	7/2
7.2	Writing Up	7/3
7.3	Format	7/7
7.4	Thesis Structure	7/11
7.5	Chapter and Section Sequencing	7/26
7.6	Submitting the Thesis	7/30
7.7	The Viva Voce Examination	7/34
Appendix 1	Statistical Tables	A1/1
Appendix 2	Examination Formulae Sheet	A2/1
Appendix 3	Answers to Review Questions	A3/1
Appendix 4	Practice Final Examinations	A4/1
Index		I/1

Introduction

Contents

1.1	Introduction	1/2
1.2	The Process Model	1/3
1.3	What Has To Be Submitted?	1/7
1.3.1	Introduction	1/7
1.3.2	The Thesis Submission	1/7
1.4	The Aims and Objectives of the Research Methodology	1/9
1.4.1	Introduction	1/9
1.4.2	The Research Methodology	1/9
1.5	The Aims and Objectives of Data Collection and Analysis	1/13
1.5.1	Introduction	1/13
1.5.2	Data Collection and Analysis	1/13
1.6	The Aims and Objectives of the Results and Conclusions Section	1/15
1.6.1	Introduction	1/15
1.6.2	Results and Conclusions	1/15
1.7	The Aims and Objectives of the Literature Reappraisal and Theory Development	1/17
1.7.1	Introduction	1/17
1.7.2	Literature Reappraisal and Theory Development	1/17
1.8	The Aims and Objectives of the Final Conclusions and Business Contribution	1/21
1.8.1	Introduction	1/21
1.8.2	The Final Conclusions and Business Contribution	1/21
1.9	The Validation Study	1/23
1.9.1	Introduction	1/23
1.9.2	The Validation Study	1/23
1.10	The Supervisor, Senior Supervisor and the EBS Research Committee	1/25
1.10.1	Introduction	1/25
1.10.2	The Supervisor	1/26
1.10.3	The Role of the Senior Supervisor	1/27
1.10.4	The EBS Research Committee	1/27
1.11	Progress Reports	1/27
1.11.1	Introduction	1/27
1.11.2	Reporting Systems	1/27
1.12	Timescales for Completion	1/32
1.12.1	Introduction	1/32
1.12.2	Research Element Progression Gateways	1/32

1.12.3 Recommended Gateway Timescales	1/33
Learning Summary	1/37
Review Questions	1/44

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 look like;
- what should be included to cover the methodology and analysis section of the thesis;
- how the various parts of this section of the thesis fit together;
- how to generate research results and conclusions;
- how to re-evaluate the literature and develop the research theory;
- how to state the research question or hypothesis as a formal research outcome theory;
- the continuing relationship with the supervisor;
- the role of the EBS Research Committee in assessing the thesis;
- the requirement for continued progress reporting.

1.1 Introduction

This is the third in a series of three EBS courses that collectively form the *Introduction to Business Research* suite of courses. The first text, *Introduction to Business Research 1: The Research Proposal*, focused on developing the necessary knowledge and understanding to enable the candidate to progress from an assumed zero knowledge of research to a level where he or she could produce and submit a research proposal for consideration by the EBS Research Committee.

The second text, *Introduction to Business Research 2: The Literature Review*, focused on developing a sufficient understanding of the literature review to enable the candidate to produce a literature review to such a standard that it is accepted by the EBS Research Committee.

This third text, *Introduction to Business Research 3: Research Methodology, Data Collection and Analysis and Results and Conclusions*, focuses on the research methodology, data collection and analysis and results and conclusions sections of the thesis. The course aims to develop an understanding of the primary research methods and analysis techniques so that the candidate is able to select the most appropriate methodology for his or her research. It also concentrates on the issues involved in data collection and analysis and on the skills required to develop structured and supported research results and conclusions. The course also offers general information on the proposed format and structure of the thesis itself.

Introduction to Business Research 3 is perhaps the most challenging of the three research courses. It covers a wide range of issues, from the selection of quantitative or qualitative research methods to the use of English when writing up the thesis. The scope of the material included is considerably wider than in the first two research courses. This extended scope is necessary because the final sections of the thesis include a wide 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 section of the thesis in a style and manner that communicate the results and method of analysis to the reader.

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

It should therefore be appreciated that the candidate will be required to consider and understand a wide range of skills in *Introduction to Business Research 3*.

By the time the candidate has completed the *Introduction to Business Research 3* course he or she should be able to:

- design and develop a research proposal to a standard acceptable to the EBS Research Committee;
- design and develop a literature review to a standard acceptable to the EBS Research Committee;
- design a suitable research methodology;
- define a sample and collect and analyse quantitative and/or qualitative data;
- generate research results and conclusions;
- write the research up as a thesis to doctoral standard;
- successfully defend the thesis at *viva voce* examination.

Unlike the research proposal and literature review stages, the research methodology, data collection and analysis and results and conclusions stage is not subject to separate assessment by the EBS Research Committee. This stage is integral to the thesis and is assessed as part of the thesis as a whole.

1.2 The Process Model

It is important that candidates appreciate that the individual *Introduction to Business Research* texts are individual elements within a larger suite of research courses. The full process model for the research process, as introduced in *Introduction to Business Research 1*, is reproduced in Figure 1.1.

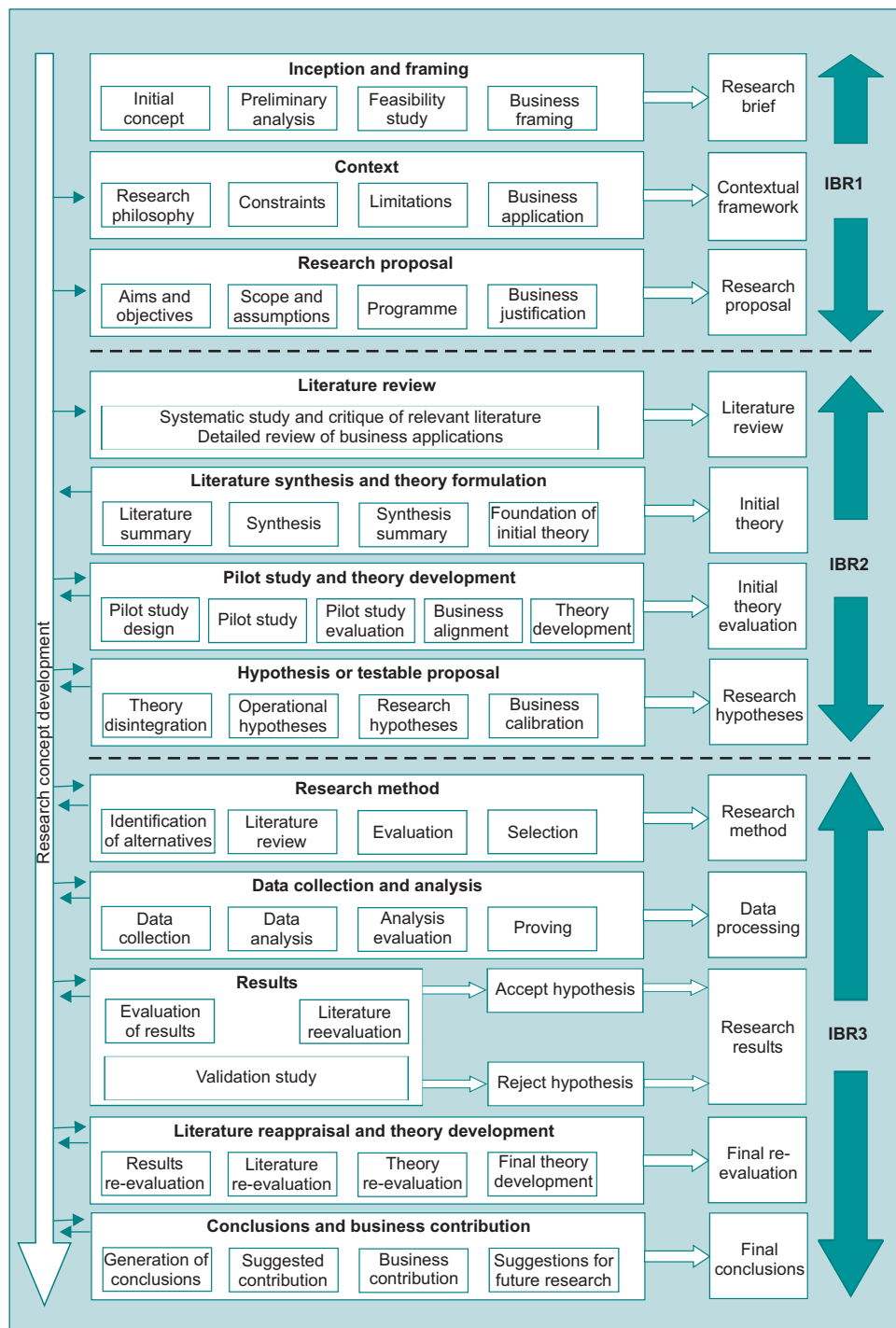


Figure 1.1 The Introduction to Business Research process model

The process models show the entire range of research actions necessary to complete the research programme. The elements relevant to *Introduction to Business Research 3* appear in the lower section of the overall process model. The subprocess model relevant to *Introduction to Business Research 3* is shown in Figure 1.2.

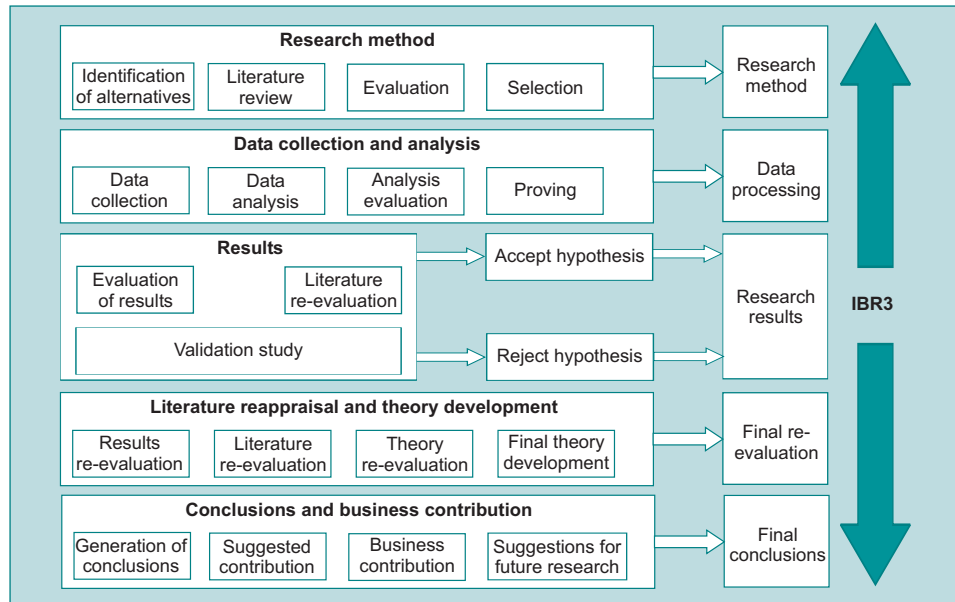


Figure 1.2 The subprocess model relevant to *Introduction to Business Research 3*

In *Introduction to Business Research 3*, the candidate is provided with the information required to allow the generation of a formal literature review. The process comprises five primary sub-processes.

- **The research method.** The research methodology is the set of tools used to collect and analyse data. Each tool could involve the use of a different method. One of the primary objectives of the research method is to standardise the way in which data are collected and analysed. If two researchers collect the same data using the same collection technique and then process the two sets of data in exactly the same way, then the results generated by each researcher may be essentially the same. In real research, this process is sometimes known as **replication** because the second set of results replicates the first set. In most research methods subphases there is usually an identification process where the various alternative methodologies are considered in the context of the current research. There is usually also a detailed literature review. The eventual methodology chapter of the thesis will be referenced, and it is important to show at methodology selection stage that the choice of method has been made after due reference to the research and relevant methodologies used by other researchers.
- **Data collection and analysis.** This phase involves the collection and analysis of quantitative or qualitative research data. The data could be any of several

types. They could be quantitative or qualitative or a combination of both. The data could be collected using structured interview techniques and then analysed for correlation between, for example, the occurrence of a fixed variable. The analysis could identify simple or complex patterns within the data. The data are usually checked or proved at an early stage.

- **Results and conclusions.** The results are the outcome of the analysis and are used to develop the research conclusion. Results are initially very carefully evaluated to ensure that they are, in fact, true measures of the variables under investigation. Results are often subjected to a validation study where the main study results are distributed among a new sample and are subjected to a second-level analysis. In some cases the validation study may raise serious issues with the results whereas, in others, the validation study may act simply to support the main study results. 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 addressing the research question.
- **Literature reappraisal and theory development.** This is an important sub-phase and one that is often omitted or not properly addressed in doctoral theses. The overall research programme can go on for several years. By the time the candidate starts writing up the thesis, a year or more 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, he or she should realise that the perceptions and interpretations of the literature may well have changed as a result of what has been learned in the research. This may seem rather obvious, yet it is sometimes surprising just how much a good research programme can change the attitudes and perceptions of a researcher. In some cases the researcher may now see the literature review 'in a whole new light', and may be now be able to draw far more from it.
- **Final conclusions and business contribution.** This forms the final subphase of the process model. The conclusions are derived from the results with reference to any additional insights provided by **literature reappraisal and theory development**. The candidate should remember that the examiners will be looking for evidence that the thesis contributes to the knowledge of a subject either by the discovery of new facts or by the application of independent critical reasoning. It is necessary to refer to the literature and to the research findings when highlighting this contribution. In the case of DBA research the business contribution made by the research must be 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

Introduction to Business Research 3 covers the final aspect of the research programme including the research methodology, data collection and analysis and results and conclusions. These sections are added after the literature review, and this final assembly forms the basis for 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 phase of the thesis.

1.3.2 The Thesis Submission

It will be recalled that the material covered in *Introduction to Business Research 1* provided the information necessary to complete the research proposal. The research proposal was then submitted and accepted before the candidate proceeded to *Introduction to Business Research 2*. This second course provided the information necessary to complete the literature. This was then submitted and accepted before the candidate proceeded to *Introduction to Business Research 3*. This third and final research text provides the information necessary to enable the candidate to complete the remaining sections of the thesis, including the research methodology, data collection and analysis and results and conclusions sections. The end product of *Introduction to Business Research 3* is the submission of the thesis itself, which represents the cumulative efforts of the candidate across all three *Introduction to Business Research* courses.

This sequence is shown in Figure 1.3.

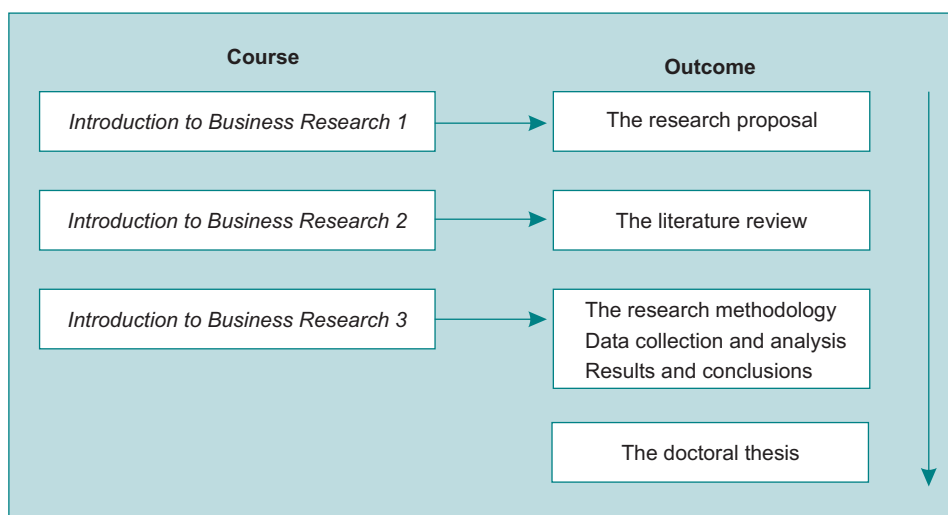


Figure 1.3 The progression of the thesis in relation to the *Introduction to Business Research* courses

The candidate should appreciate that there is no formal submission on completion of *Introduction to Business Research 3* other than the submission of the thesis itself. The research methodology, data collection and analysis and results and conclusions section are *not* submitted separately.

The structure and format of the thesis are discussed in detail in Module 7. The thesis has to be presented in hard-bound form in accordance with university regulations (*see* Module 7). In most cases, the thesis contains the main sections shown in Figure 1.4.

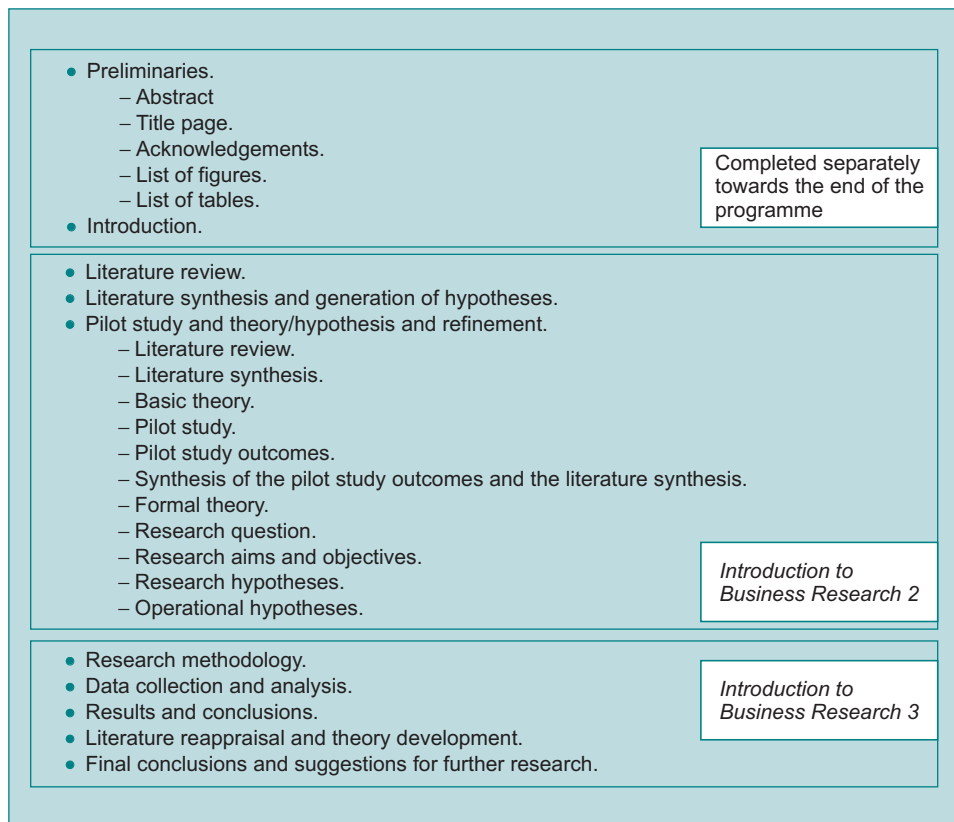


Figure 1.4 The main sections likely to be included in the thesis

These sections are typical of an average doctoral thesis. Some of these sections may not appear in an individual thesis whereas others, not listed above, may be present. The list is intended to be indicative.

The literature review will have been largely completed when the candidate was given approval to proceed to *Introduction to Business Research 3*. The literature review will still require modification and updating right up to the final submission of the thesis for examination, but most of the detailed searches and reading will be complete. Having moved on to *Introduction to Business Research 3*, the candidate is required to add the research methodology, data collection and analysis, results and conclusions and 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 and possibly the main introduction chapter and completing the various lists of figures, tables, formulae and so on.

The supervisor will have been reading the various 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 with all sections present rather than as individual chapters read over a period of time. There is the potential for developing a quite different view of the thesis when it is viewed, for the first time, as a complete draft.

Introduction to Business Research 2 provides the detail of what should be included in the literature review, literature synthesis, pilot study, synthesis of the pilot study report and literature synthesis and generation of basic and formal theory sections. Module 7 of *Introduction to Business Research 3* describes the structure and layout of the other chapters.

1.4 The Aims and Objectives of the Research Methodology

1.4.1 Introduction

This section considers the main aims and objectives of the research methodology section of the thesis. It does not consider the design or use of individual research method tools and techniques, as these are covered in Modules 3–6.

1.4.2 The Research Methodology

The research methodology section of the thesis serves a number of very important purposes. It is essential that the methodology is presented in as clear and unambiguous terms as possible. A reader should be able to develop a knowledge and understanding of the research methodology by reading the appropriate section in the thesis without the need to reference any additional sources.

A major function of the research methodology section of the thesis is to act as a **bridge**.

The research programme comprises a number of distinct phases that can be considered in terms of a series of subphases. For example, the literature review can be considered as a phase, with each component chapter acting as a subphase. In the case of collective phases, it could be considered that the entire process of conducting a literature review and pilot study to develop a hypothesis or research question is a single collective phase. This first collective phase could be called the **conceptual collective** phase or the **theoretical collective** phase as it basically reviews the literature and conducts a pilot study in order to develop a theory or question for subsequent testing. The second collective phase includes the data collection and analysis, literature reappraisal and theory development and results and conclusions phases. This second collective phase could be referred to as the **analysis** or **application** phase, as it takes the ideas

developed in the first collective phase and tests them using quantitative or qualitative methodologies.

It will be apparent that these two collective phases are quite different. The first collective phase is involved in developing a testable idea whereas the second collective phase is concerned with testing that idea. The bridge between these two collective phases is the research methodology because it provides a mechanism wherein the research idea can be analysed. The research methodology provides the link between the theoretical aspects of hypothesis design and the applied aspects of hypothesis testing.

The 'bridging' process usually starts with a consideration of which research methodology and specific research methods would be the most appropriate and useful in testing the operational and research hypotheses. In designing the research methodology, the candidate should consider:

- how to select the sample;
- how to collect the data;
- how to analyse the data;
- how to validate the data.

The final research design should be carefully evaluated to ensure that the data collection and analysis techniques defined in the methodology are correctly and accurately measuring what they are intended to measure. The sequence of events involved in developing the methodology bridge is shown in Figure 1.5.

Another major function of the research methodology is the provision for potential replication. This is an important element in any research programme but it is particularly important in the case of major research and development projects where companies may be spending tens of millions of pounds on developing (for example) a new drug. 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, very 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 system. It is therefore essential that all aspects of the research methodology are detailed in the methodology section of the thesis.

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

- The use of references in the research methodology section shows that the candidate has read around the subject and has developed an understanding of the methodological approaches used by other researchers in the same field. The candidate can support his or her choice of methodological design by citing other researchers who have used the same methodological design in similar research applications. There is less likelihood of an examiner

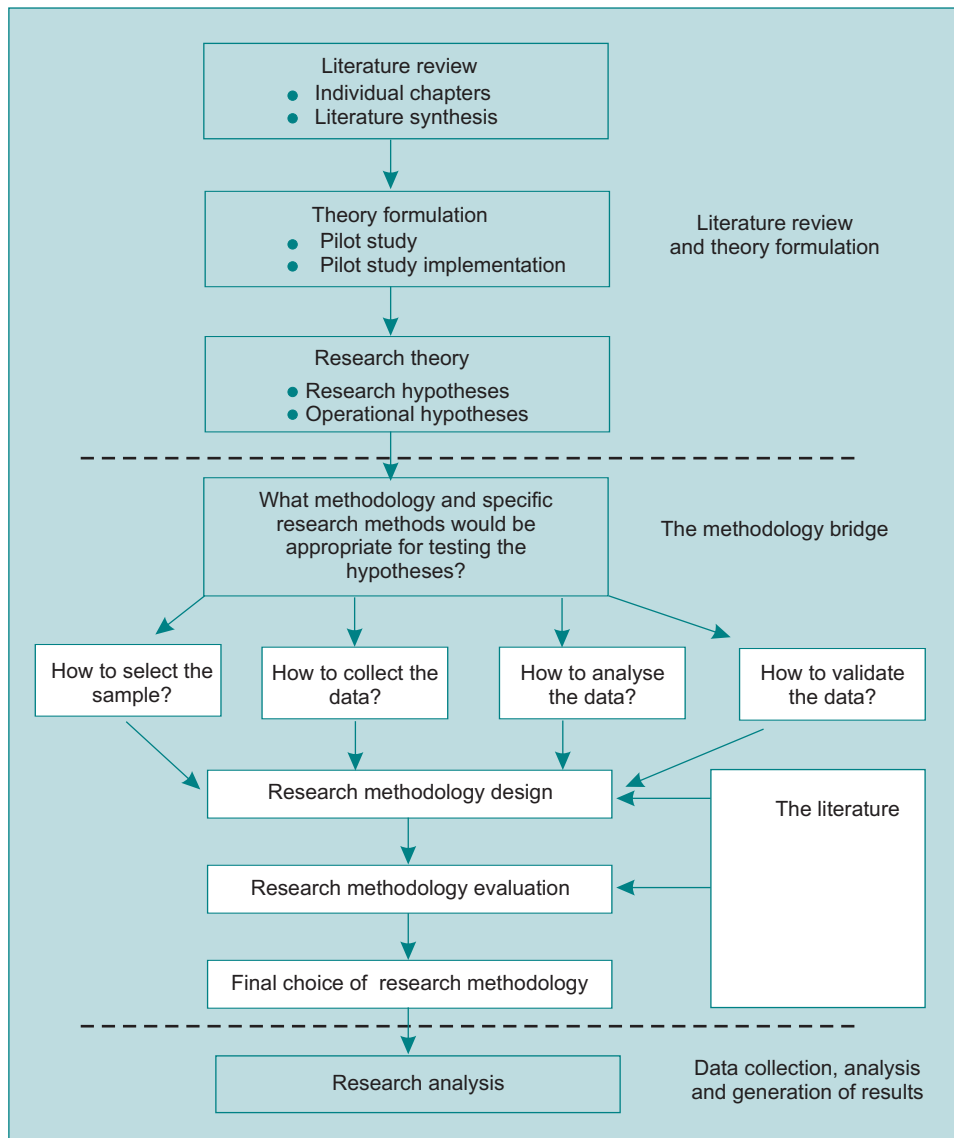


Figure 1.5 The research methodology bridge

criticising a chosen methodology if that choice can be supported by similar choices made by a number of high-level researchers.

- The candidate can often obtain good advice on methodology design by reading about the research methodology used by other researchers. A choice that may seem obvious, such as the use of formal questionnaires, may not seem so attractive as the candidate reads about the problems that other researchers have experienced with this approach.

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

- describes the methodology in precise detail;
- fully details the reasons for choosing the methodology;
- supports the use of the methodology with citations from the literature;
- fully justifies the use of specific research methods;
- identifies and describes the samples used.

The thesis should highlight:

- the advantages associated with the chosen methodology;
- the disadvantages associated with the chosen methodology;
- any limitations that may arise from the use of the chosen methodology;
- any problems associated with design validity;
- any problems associated with design reliability.

Where the methodology has been specifically designed for the research, or where an established methodology has been adapted or modified for use in the research, the methodology section should make clear:

- the reasons for choosing the basic methodology;
- the reasons for adapting parts of the basic methodology;
- any examples from the literature of similar adaptations and successful use;
- any reservations associated with the adaptation;
- the extent to which the adaptation was tested in the pilot study;
- how any issues raised in the pilot study were addressed in the main study.

Where the methodology makes use of pre-existing scales or typologies, these should be included in an appendix and fully described in the text. Where questionnaires or interviews are used, copies of these should be provided in an appendix and, again, a full description and evaluation should be provided in the text. It is particularly important for the candidate to justify the design of individual questions and how these work with 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 the contradiction carries right through the data collection, analysis, and results and conclusions sections.

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

1.5 The Aims and Objectives of Data Collection and Analysis

1.5.1 Introduction

The data collection and analysis stage of the research is crucial to the effectiveness of the entire research programme. Whether quantitative or qualitative, the research is only as good as the data it uses and the effectiveness with which it analyses those data. This section briefly considers the aims and objectives of the data collection and analysis chapter in the thesis.

1.5.2 Data Collection and Analysis

The data collection and analysis stage fits into the overall programme as shown in Figure 1.6. Once the decision on the final methodology has been made, data collection and analysis can start. In producing the thesis, the candidate should ensure that the text makes it absolutely clear how the data were collected and how they were analysed.

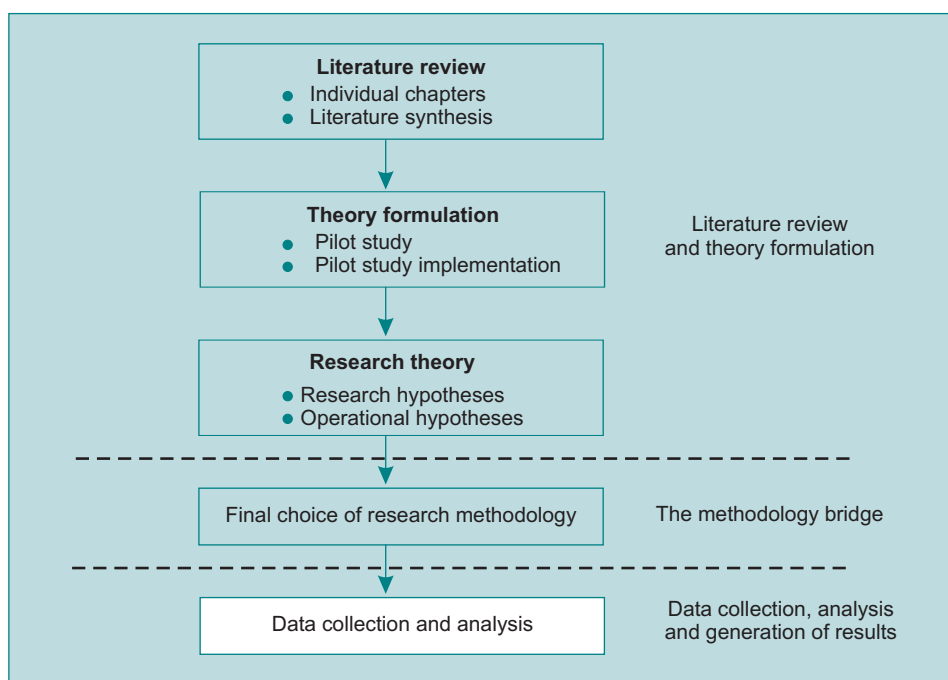


Figure 1.6 Data collection and analysis

The relevant sections in 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 interview data were obtained should be made absolutely clear. A clear and accurate detailing of the data collection and analyses processes is an integral part of the replication process, and the level of detail required is therefore significant.

The data collection and analysis section of the research should detail the collection and analysis techniques used and should also fully detail the data themselves.

The two most common problem areas in relation to data are reliability and validity.

Reliability is the extent to which the research methodology and/or data produce the same results over a period of time. In other words, if the conditions are constant and the same data are used, the output of the system should remain at about the same level. For example, a gas cooking oven should always reach the same temperature, within plus or minus two or three 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 measure. For example, a large data set on house sale prices might indicate that house prices rise steadily as interest rates remain low. A researcher might conclude that there is an inverse functional relationship between interest rates and house sale prices. In fact, a steady increase in house sale prices could be due to a range of other variables not detected when looking only at sales figures.

The candidate should consider the choice of data very carefully and ensure that the data collection and analysis section of the thesis contains sufficient information to show that:

- the data are reliable;
- the data are valid;
- in quantitative approaches, the data source is representative of the population as a whole;
- the characteristics of the data source are known.

In relation to data collection, the data collection and analysis section of the thesis should:

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

The data collection and analysis section of the thesis should identify:

- the advantages associated with the chosen data collection system;
- the disadvantages associated with the chosen data collection system;
- any limitations that may arise from the use of the chosen data collection system;
- any problems associated with operational validity;
- any problems associated with operational reliability.

A significant proportion of DBA data collection systems are based on:

- the investigation of historical evidence;
- the use of structured interviews;
- the use of unstructured interviews;
- the application of questionnaires.

In such cases data collection is relatively straightforward provided the wording of the interview/questionnaire is correctly designed.

The data analysis section of the data collection and data analysis of the thesis should address the same list of bullet points, as presented above, for data collection. Data processing tools and techniques are discussed in detail in Modules 2–5.

1.6 The Aims and Objectives of the Results and Conclusions Section

1.6.1 Introduction

This section considers the results and conclusions section of the research. In the EBS DBA process model the results and conclusions section is not the final section of the main text. The results and conclusions section is followed by the literature reappraisal and theory development section, where the results are used to develop the theory or research question that forms the basis of the analysis. This is only one possible format, and candidates can adopt an alternative format if preferred.

1.6.2 Results and Conclusions

The results and conclusions section 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 position of the results and conclusions section in relation to the rest of the thesis and programme sections is shown in Figure 1.7. The candidate should consider a number of important issues in relation to the presentation of 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. Where 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.

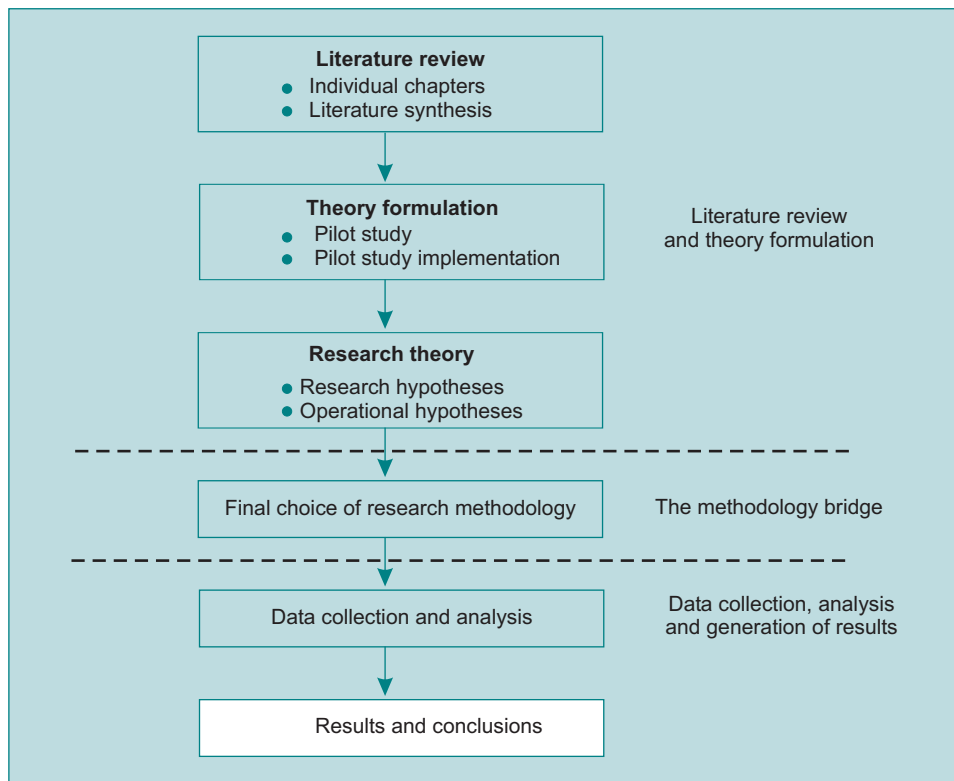


Figure 1.7 Results and conclusions

- **Positioning.** The results and conclusions should relate wherever possible to the preceding sections. If necessary, the results and conclusions can cite references where they concur with results from other researchers. There is no general requirement to reference the results and conclusions section but referencing may be used where required and where it adds to the value of the results and conclusion section.
- **Substantiation.** It is important to ensure that the results and conclusions as presented are substantiated by the data presented. This may, again, seem obvious but it is surprisingly common in theses to find results and conclusions that extend beyond the data and/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 section is based on the research hypotheses or research questions stated in the literature review (see *Introduction to Business Research 2*). 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.

It should be stressed that the conclusions presented in this section are not the final conclusions of the research. The conclusions presented in the results and conclusions section are the conclusions from the research before reappraising the literature and developing the final theory. The literature reappraisal may allow the candidate to refine the research conclusions with new or redefined evidence from the literature in order to allow the final theory to be developed.

1.7 The Aims and Objectives of the Literature Reappraisal and Theory Development

1.7.1 Introduction

This section considers the literature reappraisal and theory development section of the research. The subject area is covered in some detail in Module 7. The reappraisal section is very important because it offers the candidate an opportunity to prove 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 section 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 data collection and analysis and after the generation of the results and conclusions of the research programme. As data are collected and analysed, the level of knowledge in the chosen subject area increases to a level above that which existed when the candidate prepared the initial literature synthesis and developed the original formal theory. As a result, by the time the main results have been developed, the initial literature synthesis and formal theory may no longer fully reflect the candidate's knowledge and understanding of the research field. This 'knowledge gap' 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 phase. 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. The most effective way of achieving this is by including a separate chapter in which the literature is reappraised in the light of the new knowledge and, where appropriate, the final theory is developed.

The position of the literature reappraisal and theory development section of the thesis is shown in Figure 1.8. The candidate basically goes back through the programme and re-evaluates the literature, literature synthesis, pilot study results and the process of formulating the formal theory, and looks 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 research theory or question.

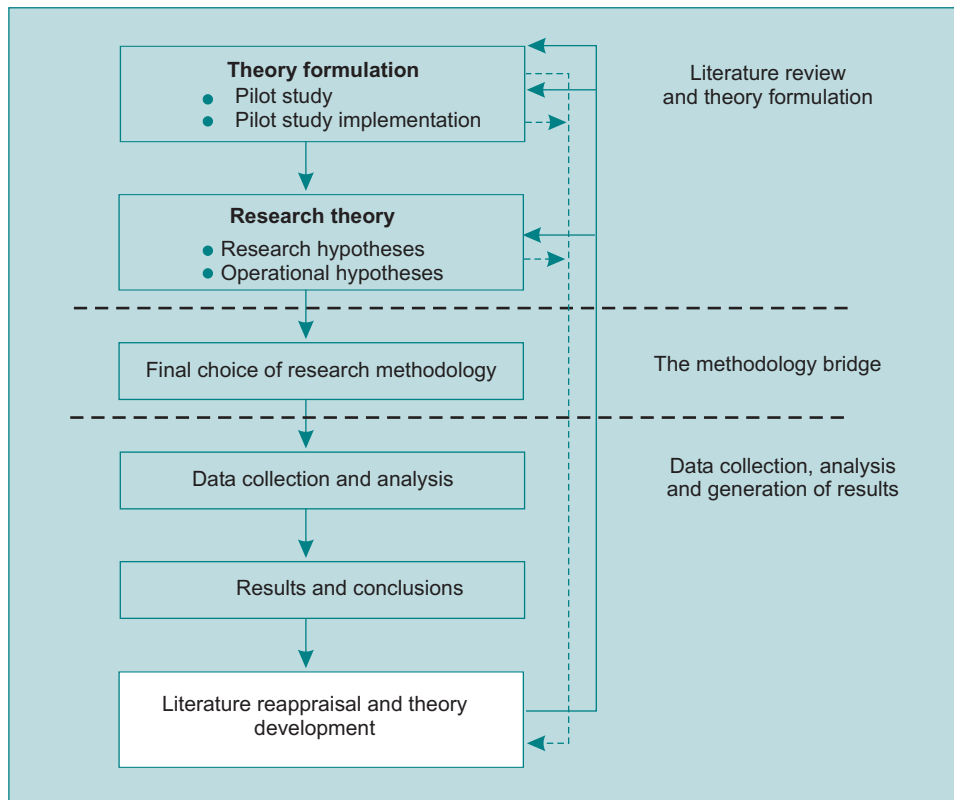


Figure 1.8 Literature reappraisal and theory development

The original research 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.

In reappraising the literature the candidate should revise the literature that he or she amassed during the main literature review phase. It will be recalled from *Introduction to Business Research 2* that the candidate should establish some kind of classification system for references during the literature review phase. The classification system should contain detailed information on each reference cited in the research, together with background information on the references not cited. The classification information should be sufficiently detailed so that the candidate can see quickly and easily what the main elements of each paper or article are. The candidate should also be able to see which references are relevant to the new knowledge acquired during the analysis phase.

An obvious example of the re-evaluation approach is in the case of a police murder enquiry. In the initial stages the police may have no idea who may

have 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 evidence 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 were irrelevant. In some cases, evidence that was discounted at the time may be seen, in fact, to have been very relevant and important to the case. In other cases, 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 as the entire data collection and analysis phase is based on the original formal theory stated in the literature review (see *Introduction to Business Research 2*). The theory can, however, still be *developed*. In this context, *developed* means extended or amplified to reflect the new knowledge acquired by the candidate as a result of the analysis phase.

A researcher working on strategically focused mergers and acquisitions might carry out his or her analysis phase based on a theory that companies engaging in strategically focused 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:

H_0 : There is a positive functional relationship between following a strategic policy of related acquisitions and long-term success.

H_1 : There is no 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 a 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 a positive functional relationship between following a strategic policy of related acquisitions and long-term success;
- (b) this functional relationship becomes more pronounced as sector competition increases.

The first finding was anticipated and formed the basis for the 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 entire new research areas and even whole new branches of study.

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 the anatomical structure of the legs. 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 frog's legs sometimes 'jerked', even though they were separated from the remainder of the frog's body. 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 he realised that the electricity was coming from somewhere and it was this electricity that was making the legs jerk.

In making his observations, Galvani unwittingly initialised what came to be known as the medical studies of neurophysiology and clinical neurology. It was an example of a major discovery that emerged by chance from standard research into something else. There are numerous other examples of such chance discoveries, a prime example being the discovery of penicillin.

The candidate should therefore be aware that the nature of research is such that it can reveal unforeseen considerations and concepts that may or may not be directly related to the current research. Although it is too late to incorporate these unforeseen elements within the current research, it is certainly worthwhile stating them and making sure the examiners appreciate that they have appeared and have been identified and 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 question answer is fully supported both by the literature and by the results of the current research. The only additional section that may be provided is one that includes suggestions for further research.

1.8 The Aims and Objectives of the Final Conclusions and Business Contribution

1.8.1 Introduction

This section introduces 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 'final conclusions and business contribution'. This section summarises the main outcome or outcomes of the research set in a business context.

1.8.2 The Final Conclusions and Business Contribution

This section contains the final conclusions of the research after the literature reappraisal and theory development. It forms the final stage of the research programme and occupies the last position in the thesis, as shown in Figure 1.9.

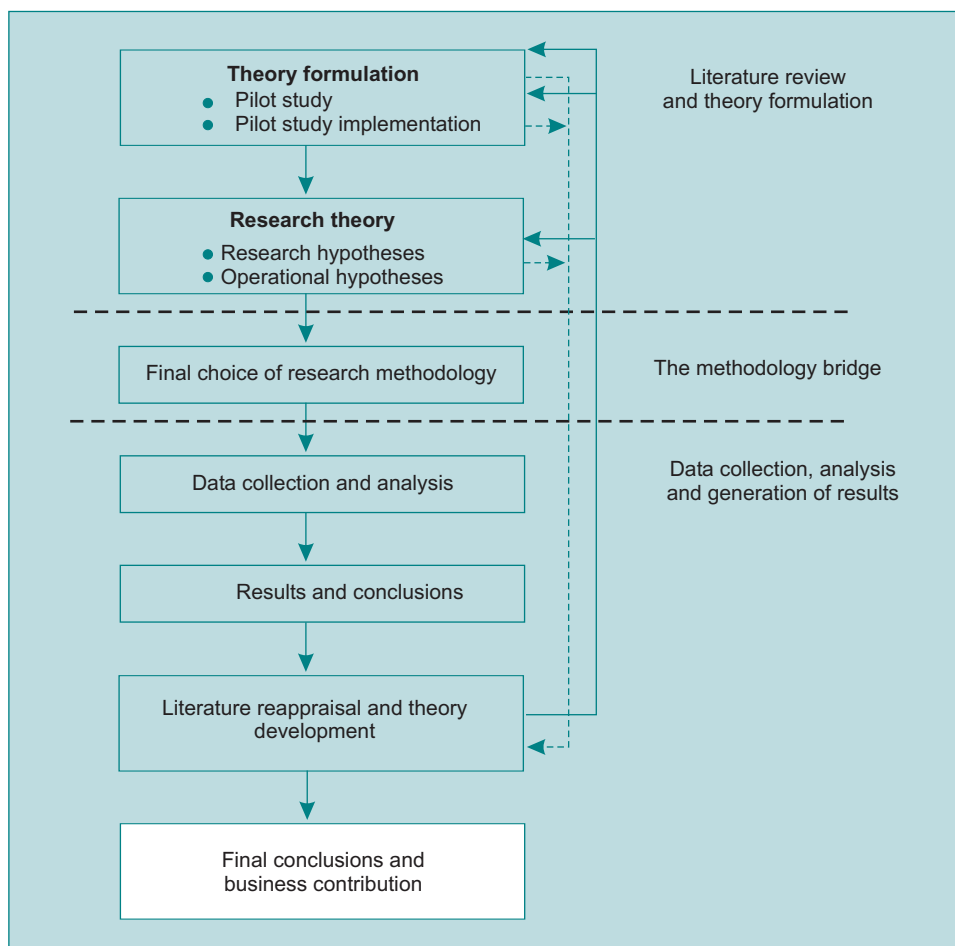


Figure 1.9 Final conclusions and business contribution

In the simplest form, the final conclusions and business contribution section could state a simple answer to a research question or a restatement of a research hypothesis as a statement rather than as a hypothesis. For example, the research hypothesis might have been:

H_0 : There is a positive functional relationship between following a strategic policy of related acquisitions and long-term success.

H_1 : There is no positive functional relationship between following a strategic policy of related acquisitions and long-term success.

The research may have led to a decision to accept the null hypothesis (H_0) and reject the alternative hypothesis (H_1). The candidate may have generated overwhelming evidence to support the acceptance of the null hypothesis. As far as the research is concerned, the statement is now a statement of fact rather than a hypothesis. To illustrate this concept, consider again one of the research hypotheses examined in *Introduction to Business Research 2*. The research hypothesis was:

H_0 : As the degree of strategic focus increases, the potential to develop the positive development of human capital increases.

H_1 : As the degree of strategic focus increases, the potential to develop the positive development of human capital does not increase.

The decision on whether to accept or reject the null hypothesis was based on the analysis of data in association with the acceptance of a series of related and dependent operational hypotheses. These operational hypotheses were:

H_0 : Strategic focus is related to long-term success.

H_1 : Strategic focus is not related to long-term success.

H_0 : Long-term success is related to cultural approval.

H_1 : Long-term success is not related to cultural approval.

H_0 : Strategic fit is related to strategic focus.

H_1 : Strategic fit is not related to strategic focus.

H_0 : The degree of strategic focus (focus engineering) is related to cultural positivity.

H_1 : The degree of strategic focus (focus engineering) is not related to cultural positivity.

H_0 : Cultural positivity is related to the positive development of human capital.

H_1 : Cultural positivity is not related to the positive development of human capital.

If each operational hypothesis is accepted, reasonable grounds exist for the acceptance of the research hypothesis. The field covered by this hypothesis then becomes the confirmed final theory, which acts as the primary outcome of the research and forms the contribution to the knowledge base. In the above example, the final theory is:

As the degree of strategic focus increases, the potential to develop the positive development of human capital increases.

This theory:

- was developed from the literature and literature synthesis;
- was initially expressed as a basic theory;
- was evaluated during the pilot study (where appropriate);
- was evaluated during the main study or studies.

It is therefore reasonable to say that this theory:

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

Finally, it is also reasonable to say that since the theory has the following two qualities:

- it is original;
- it 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 field of strategic focus and the potential exploitation of human capital. In other words, the final theory acts in compliance with university regulations in relation to the standard of work required for the award of a doctoral degree. The final theory contributes to knowledge both using the discovery of new facts and by the exercise of independent critical power.

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 characteristics of the sample. This section briefly summarises the main characteristics of a validation study and suggests how such a study might be fitted into the main research programme.

1.9.2 The Validation Study

As the name suggests, validation studies are included where the research results and conclusions lack validity. There could be a number of reasons for this, the most obvious being a restricted sample size. The validation study attempts to increase validity by extending the research results and developed theory to a larger sample size.

In the simplest form, a validation study could comprise a simple questionnaire where the primary results of the research and the fully developed outcome theory or answer to the research question are listed and the respondent is asked whether or not he or she agrees with the finding. Responses are usually invited on a scale rather than as a simple yes or no answer. The validation study would normally be carried out after the results and conclusions of the research have been generated and at the same time as the literature reappraisal and theory development section, as shown in Figure 1.10.

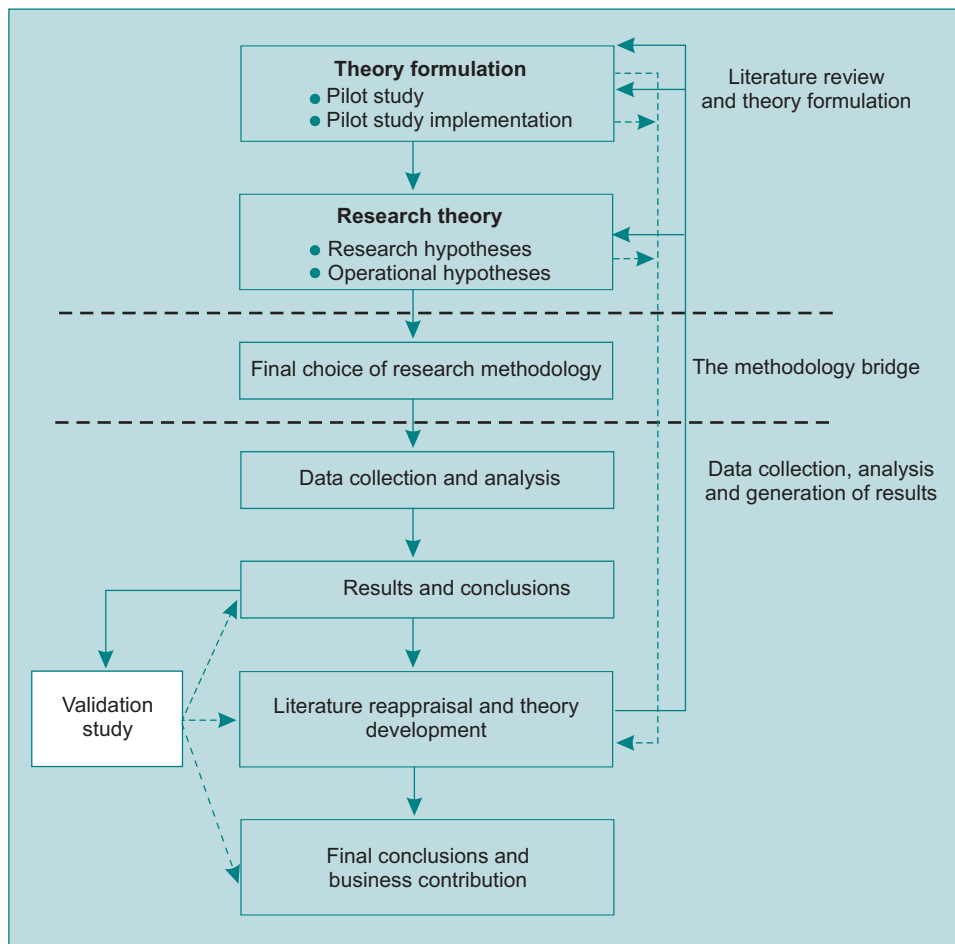


Figure 1.10 The validation study

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 in the development of 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 1.10. 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. Where this occurs, the candidate should consult the supervisor and ascertain whether this has occurred because of poor validation study design or, more seriously, because of a fundamental error in the main study data collection and analysis processes.

A common problem encountered by candidates in executing successful validation studies is that of sample selection. In the case of a 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 focused acquisitions in automobile manufacturers, both the main study and validation study samples will have to be largely automobile manufacturers. This issue can cause problems. In most 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.

Increasingly, doctoral students are addressing the validation issue by setting up focus groups. The candidate invites suitable validation companies to attend the focus group, which is usually arranged to coincide with the completion of the main results phase. The candidate presents some of his or her most significant findings to the focus group and then asks for comments from the assembled validation focus group. Candidates sometimes supplement such informal qualitative evaluation with structured questionnaires that ask focus group members for responses on specific research results and/or conclusions. Such questionnaire results are often analysed later and included in the final theory development stages.

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. Validation studies, particularly in focus group format, can also be very useful for developing the applied business contribution. Validation focus group attendees can often provide some very valuable insights into how the findings of the research and the final theory could be used in organisations.

The final conclusions and business contribution stage forms the final section of the thesis.

1.10 The Supervisor, Senior Supervisor and the EBS Research Committee

1.10.1 Introduction

This section briefly introduces the role of the supervisor, senior supervisor and research committee during the third and final stage of the research programme

where the candidate is conducting the research methodology, data collection and analysis stage of the research. The role of the supervisor and senior supervisor is more or less unchanged from the literature review stage (see *Introduction to Business Research 2*), but the role of the EBS Research Committee is somewhat different.

1.10.2 The Supervisor

The supervisor was first introduced to the candidate at a point when the candidate:

- completed the course element of the programme (passed gateway 2);
- completed a research proposal that was accepted by the EBS Research Committee (passed gateway 3).

The candidate subsequently worked with the supervisor through the development of the literature review to a point where the candidate:

- completed a literature review that was accepted by the EBS Research Committee (passed gateway 4).

Having worked with the supervisor for the duration of the literature review, the candidate and the supervisor should have established and developed a good working relationship. The relationship in the data collection and analysis and results and conclusions phase is more or less the same as in the literature review stage. There are, however, some significant differences.

The candidate is likely to require advice on a wider range of more variable issues than during the literature review. In addition, the methodology design may involve a great deal of relatively specialist advice and discussion between the supervisor and the candidate. It is also reasonable to suggest that linking the various sections of this stage is more challenging than it was in the literature review. An example is the reasoning required in reappraising the literature in the context of the results of the present research in order to refine and strengthen the general 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 system as a single entity. This may seem reasonably straightforward but, in fact, many doctoral students have initial problems developing integrative skills.

The general information provided on the candidate-supervisor relationship as covered in *Introduction to Business Research 2* is not reproduced here. Candidates who wish to remind themselves of the general advice on the relationship provided in *Introduction to Business Research 2* should refer to Module 4 of that text.

1.10.3 The Role of the Senior Supervisor

The role of the senior supervisor is unchanged from that during the literature review. The senior supervisor continues to act as a moderator on the progress reports sent to the EBS Research Committee. Candidates who wish to remind themselves of the general role of the senior supervisor should refer to Module 4 of *Introduction to Business Research 2*.

1.10.4 The EBS Research Committee

The role of the EBS Research Committee is more or less unchanged when compared with its role in the research proposal and literature review stages. The only significant change in the role of the EBS Research Committee during the research methodology, data collection and analysis and results and conclusions section is that it is not required to provide a separate assessment of the research methodology, data collection and analysis and results and conclusions section.

Candidates should note that the EBS Research Committee does not assess the completed thesis before it is passed to the internal and external examiners. The thesis is submitted when the supervisor feels it is ready. The supervisor is required to submit a **submission of thesis** form to the university, which confirms that the thesis is ready for examination. Once accepted, copies of the thesis are sent to the internal and external examiners several weeks before the date of the *viva voce* examination.

Further details on the processes and procedures adopted by the university and examiners in processing and assessing the thesis are provided in Module 7.

1.11 Progress Reports

1.11.1 Introduction

This section briefly summarises the reports required by EBS as the candidate progresses through the research methodology, data collection and analysis and results and conclusions section of the thesis.

1.11.2 Reporting Systems

1.11.2.1 Required Reports

Candidates are required to complete indicative and definitive progress reports in exactly the same way as was required during the development of the literature review. The function and structure of the progress reports are identical to the system described in *Introduction to Business Research 2* in the case of the literature review. The candidate must complete an indicative progress report and a definitive progress report during the course of the development of the research methodology, data collection and analysis and results and conclusions section.

- **The indicative progress report** is submitted when the candidate has made some initial progress on the research methodology, data collection and analysis and results and conclusions section. 'Initial progress' means that the candidate has done most of the necessary development of the research methodology and has started data collection. As discussed in *Introduction to Business Research 2*, the idea of the indicative report is that it gives an indication of how the candidate is progressing and also includes a sample chapter – in this case, probably the research methodology chapter. The indicative report gives the first clear indication of how well the candidate is progressing with the methodology while still working within the standards required. In most cases, the indicative report is submitted around one third of the way through the development of the overall literature review submission.

Assuming candidates are working to the recommended timescales for completion of the methodology, data collection and analysis and results and conclusions stage, the indicative progress report should be submitted as follows.

- Full-time candidates: 2 months into the methodology, data collection and analysis and results and conclusions stage.
 - Part-time candidates: 4 months into the methodology, data collection and analysis.
 - Distance learning candidates: 4 months into the methodology, data collection and analysis.
- **The definitive progress report** is submitted before the draft thesis is complete but at least after the methodology chapter has been written up. The definitive progress report should preferably include a number of written-up chapters. The definitive report should give a clear and detailed impression of how the final methodology, data collection and analysis and expected results and conclusions will look. In most cases, the definitive report will at least include a copy of the methodology chapter and preferably one other chapter from this stage. The definitive report is submitted approximately two thirds of the way through the development of the methodology, data collection and analysis and results and conclusions stage.

Assuming candidates are working to the recommended timescales for completion of the methodology, data collection and analysis and results and conclusions stage, the definitive progress report should be submitted as follows.

- Full-time candidates: 4 months into the methodology, data collection and analysis and results and conclusions stage.
- Part-time candidates: 8 months into the methodology, data collection and analysis and results and conclusions stage.
- Distance learning candidates: 8 months into the methodology, data collection and analysis and results and conclusions stage.

Note: The timescales for submission of the indicative and definitive reports mentioned above are outline only. The precise point at which the reports are submitted depends on the progress made by the candidate. Candidates must note that the completed thesis

will not be accepted by the EBS Research Committee unless both reports have been completed.

Both the indicative and definitive reports undergo the same basic process of evaluation. This basic process is discussed below. Candidates should make sure that they fully understand the evaluation process and appreciate the purpose of each stage of the process.

Both reports are submitted directly to the supervisor (rather than the EBS Research Committee). The supervisor receives the reports and studies them carefully. In the case of the indicative report, the supervisor will receive one chapter of the methodology, data collection and analysis and results and conclusions stage. In the case of the definitive report the supervisor will receive several or all chapters of the methodology, data collection and analysis and results and conclusions stage. Having studied the report and sample chapter(s) in detail, the supervisor drafts a feedback form. In the case of the indicative progress report this is **feedback form 1** or FB1. The feedback form relates to the progression of the methodology, data collection and analysis and results and conclusions stage. The full title for the first feedback form is, therefore, 'methodology, data collection and analysis and results and conclusions stage feedback form 1', which is abbreviated to **analysis feedback form 1** (AFB1). The corresponding form for the definitive report is abbreviated to AFB2.

These forms are designed to provide detailed feedback and advice to candidates. The supervisor uses the form to draw attention to any areas of concern or areas where the candidate should make any amendment or modification to his or her work as it progresses.

The feedback form relates to all the main areas covered in the research proposal and also asks for detailed information to ensure that the methodology and analysis remain compatible with the literature review submission (see *Introduction to Business Research 2*).

AFB1 and AFB2, therefore, specifically evaluate the extent to which the developing methodology, data collection and analysis and results and conclusions stage:

- is progressing satisfactorily;
- relates to the content of the research proposal and literature review;
- is correctly aligned to the stated research aims and objectives;
- covers a sufficient range of methodological considerations;
- makes use of a sufficient standard of methodology sources;
- demonstrates sufficient promise for further development;
- contains problem areas to be addressed.

As explained in *Introduction to Business Research 2*, the supervisor and senior supervisor must agree on the content of all feedback before it is sent to the candidate. The supervisor completes a draft feedback form and emails it to the senior supervisor. The senior supervisor then reads it and contacts the supervisor to discuss the matter. Sometimes the senior supervisor may be happy with the feedback provided by the supervisor, in which case the senior supervisor will agree to the feedback form being returned to the candidate without any further

modification. In other cases, the senior supervisor may disagree with one or two points. These can usually be resolved through communication and discussion between the supervisor and senior supervisor. Occasionally, there may be a major difference of opinion between the supervisor and senior supervisor. Where this occurs, the matter may have to be referred to the EBS Research Committee for a ruling.

The agreed feedback form AFB1 or AFB2 is then returned to the candidate. The form contains details of any amendments or corrections the candidate should make. The feedback comments represent consensus between the supervisor and senior supervisor. This is one area where the candidate really must take the advice of the supervisor. The EBS Research Committee will almost certainly take a negative view if a candidate ignores the advice contained in a feedback form.

Copies of indicative and definitive reports, together with all feedback forms, are copied to the EBS Research Committee. The committee looks carefully at each report or form and reserves the right to contact supervisors at any time for further details or elaboration. In rare cases the committee reserves the right to overrule the advice given by a supervisor.

The basic sequence of actions in relation to the required forms is as follows.

- 1 Candidate initiates methodology, data collection and analysis and results and conclusions stage.
- 2 Approximately one third of the way through the methodology, data collection and analysis and results and conclusions stage, the candidate completes the indicative progress report, attaches at least one completed chapter, and emails it to the supervisor with a copy to EBS DBA administration.
- 3 The supervisor reads the indicative report and draft chapter, and drafts AFB1. The supervisor emails the draft to the senior supervisor.
- 4 The senior supervisor reads the draft feedback form and discusses any necessary areas with the supervisor until agreement is reached.
- 5 Once agreed, AFB1 is emailed back to the candidate with a copy to EBS DBA administration.
- 6 The candidate reads the feedback form carefully and ensures that all points and recommendations are implemented before the next reporting stage or before formal submission of the thesis.

The sequence of the methodology, data collection and analysis and results and conclusions stage reporting process is as shown in Table 1.1.

1.11.2.2 Recommended Reports

It is recommended that candidates maintain the same sequence of monthly and milestone reports and reviews recommended for the literature review stage in *Introduction to Business Research 2*. Obvious milestones for reports in the methodology, data collection and analysis and results and conclusions stage include the completion:

Table 1.1 Required reporting sequence

Completion	Progression through gateway 4		
	Supervisor maintains contact with candidate.		
	• Programme agreed • Format agreed		
One third	Candidate completes indicative progress report (A1).	A1	
	Supervisor considers A1 and completes AFB1. Supervisor sends AFB1 to senior supervisor.	AFB1	Copy to DBA admin
	Supervisor/senior supervisor consider report and issue feedback to candidate; copy to Research Committee.	AFB1	Copy to DBA admin Copy to DBA RC
Two thirds	Candidate completes definitive progress report (A2).	A2	
	Supervisor considers A and completes AFB2. Supervisor sends AFB2 to senior supervisor.	AFB2	Copy to DBA admin
	Supervisor/senior supervisor consider report and issue feedback to candidate; copy to Research Committee.	AFB2	Copy to DBA admin Copy to DBA RC
	Candidate completes draft thesis		
	Supervisor examines draft thesis and approves it for submission.	Approval for submission	Copy to DBA admin
	Supervisor completes thesis submission forms.		Copy to DBA admin Copy to DBA RC
	Candidate completes modifications.		
	Thesis submitted		Copy to DBA admin Copy to DBA RC
	Viva voce examination		
	Progress to gateway 5.		

- of the research methodology design;
- of the research methodology evaluation;
- of the longitudinal case study (where appropriate);
- of the cross-sectional case studies (where appropriate);
- of the analysis of the main study results;
- of the evaluation of the hypotheses;
- of the literature reappraisal and theory development;
- of the final draft thesis.

The candidate should ensure that the informal reporting systems put in place during the literature review phase are maintained throughout the methodology, data collection and analysis and results and conclusions stage. The candidate will require at least as much assistance from the supervisor in this stage as he or she needed during the literature review phase.

1.12 Timescales for Completion

1.12.1 Introduction

The timescales for the completion of the various elements in the programme were discussed in *Introduction to Business Research 1*. The timescale for completion of the literature review was discussed in *Introduction to Business Research 2*. This section briefly examines the expected timescales for the completion of the thesis for the avoidance of any doubt.

Candidates are reminded that the research methodology, data collection and analysis and results and conclusions section of the research programme is not submitted separately for consideration by the EBS Research Committee. This section is incorporated with the updated literature review into a full doctoral thesis. The full thesis is submitted for assessment by formal *viva voce*. There is no separate assessment of the research methodology, data collection and analysis and results and conclusions section.

1.12.2 Research Element Progression Gateways

It will be recalled that the DBA programme is transacted by a series of progression gateways. These gateways are really progress control points and are in place to ensure that the thesis is developed in a systematic and controlled manner. It is important that candidates do not move on to the next thesis development process until they are ready to do so.

The gateways are:

- Gateway 1: entry to the course.
- Gateway 2: completion of the taught element.
- Gateway 3: completion of the research proposal.
- Gateway 4: completion of the literature review.
- Gateway 5: completion of the thesis and successful *viva voce*.

Candidates will now have successfully passed gateways 1–4. The final gate is gateway 5, which is passed upon successful completion of the *viva voce* examination. In order to pass gateway 5, the candidate must have:

- completed all 9 or 11 taught courses;
- developed the research proposal to a level where it is accepted by the EBS Research Committee;
- developed a literature review submission to a level where it is accepted by the EBS Research Committee;
- developed a full doctoral thesis that has been examined at *viva voce* examination and has been accepted and signed off by the internal and external examiners;
- paid all due fees;
- complied with all other EBS and University requirements.

It should be noted that the thesis may not necessarily be immediately accepted by the examiners at *viva voce* examination. The examiners may require minor or major amendments and, in some cases, a resubmission and a second *viva voce* examination.

1.12.3 Recommended Gateway Timescales

It is important to stress that the EBS DBA programme is specifically designed to be as flexible as possible. There are no maximum time limits apart from those specified under University regulations. The timescales recommended in the following section are for illustrative purposes only. In most cases the candidate can complete specific sections of the programme sooner, or later, than recommended. In all cases, the focus of the programme is on maximum flexibility.

1.12.3.1 Full-Time (On-Campus) Mode

The recommended time limits for passing the various progression gates on the full-time mode of the DBA programme are summarised in Figure 1.11.

The recommended timescale for completion of the thesis and progression through gateway 5 is 36 months, as shown in Figure 1.11. This timescale is flexible and is for illustrative purposes only.

1.12.3.2 Distance Learning Mode

The recommended time limits for passing the various progression gates on the distance learning mode version of the DBA programme are summarised in Figure 1.12.

The recommended timescale for completion of the thesis and progression through gateway 5 is 72 months, as shown in Figure 1.12. This timescale is flexible and is for illustrative purposes only.

Figure 1.11 Full-time mode gateways: recommended time limits

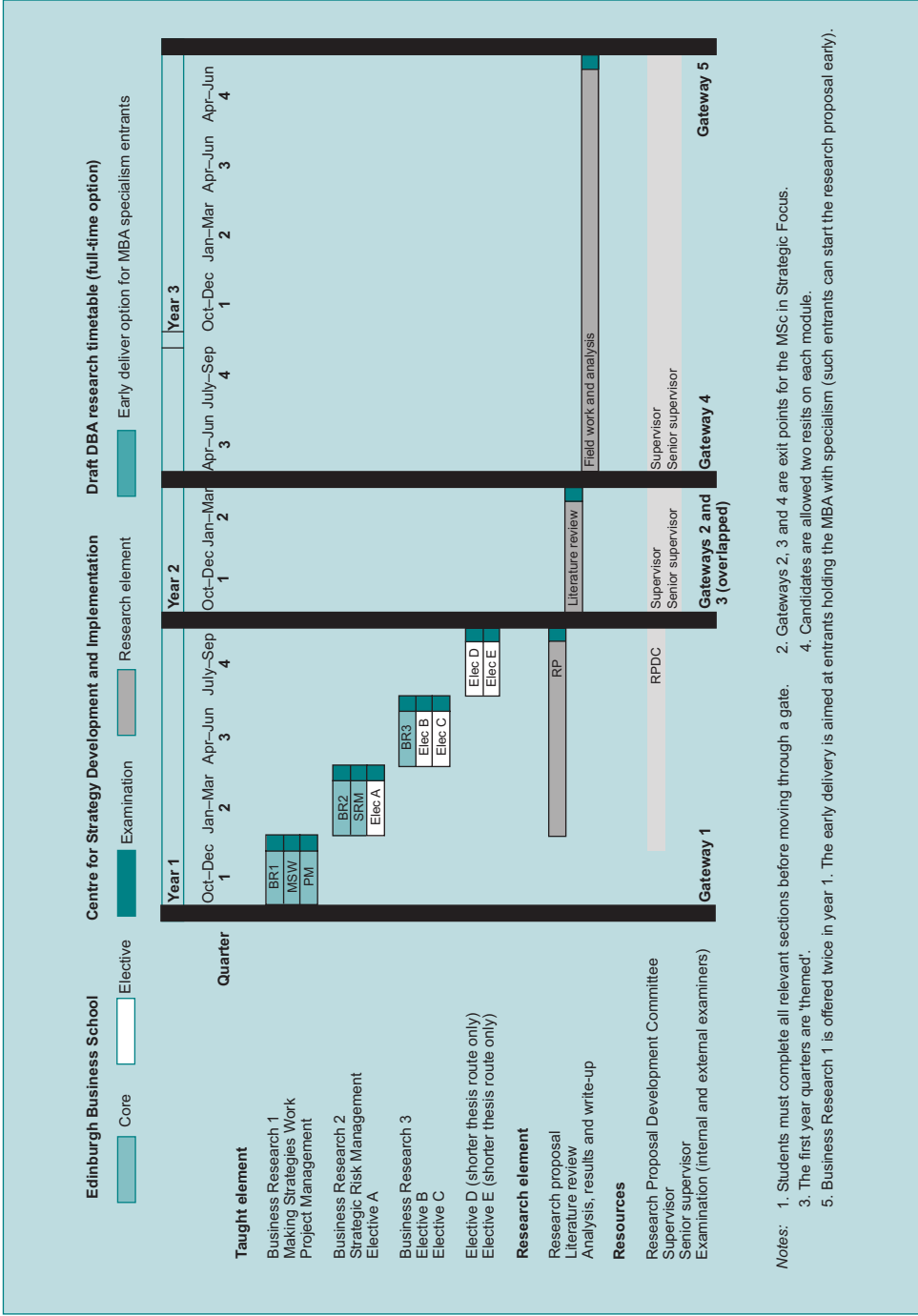
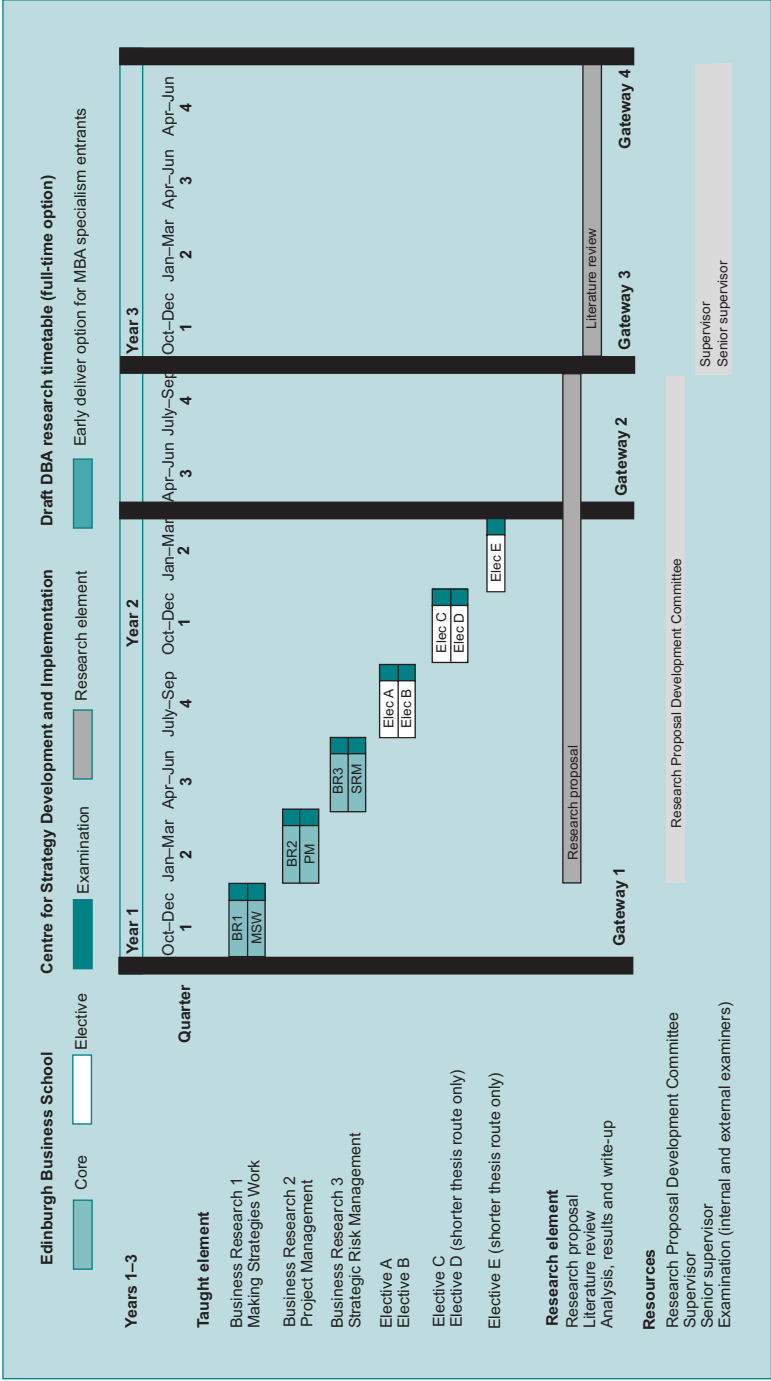


Figure 1.12 Distance learning and part-time mode: recommended time limits



[illegible]

Learning Summary

The candidate should now understand:

- what has to be submitted for the *viva voce* examination;
- what the final format of the thesis should look like;
- what should be included to cover the methodology and analysis section of the thesis;
- how the various parts of this section of the thesis fit together;
- how to generate research results and conclusions;
- how to re-evaluate the literature and develop the research theory;
- how to state the research question or hypothesis as a formal research outcome theory;
- the continuing relationship with the supervisor;
- the role of the EBS Research Committee in assessing the thesis;
- the requirement for continued progress reporting.

What Has To Be Submitted?

- There is no formal submission on completion of Introduction to Business Research 3 other than the submission of the thesis itself.
- The research methodology, data collection and analysis and results and conclusions section is *not* submitted separately.
- The thesis has to be presented in hard bound form in accordance with University regulations.
- Typical section headings are:
 - Preliminaries.
 - Abstract
 - Title page
 - Acknowledgements
 - List of figures, tables, formulae, etc.
 - Introduction.
 - Literature review.
 - Literature synthesis and generation of hypotheses.
 - Pilot study and theory/hypothesis and refinement.
 - Literature review.
 - Literature synthesis.
 - Basic theory.
 - Pilot study.
 - Pilot study outcomes.
 - Synthesis of the pilot study outcomes and the literature synthesis.
 - Formal theory.
 - Research question.
 - Research aims and objectives.
 - Research hypotheses.

- Operational hypotheses.
 - Research methodology.
 - Data collection and analysis.
 - Results and conclusions.
 - Literature reappraisal and theory development.
 - Final conclusions and suggestions for further research.
- The final stages of completing the thesis usually include writing the abstract and possibly the main introduction chapter, and completing the various lists of figures, tables, formulae and so on.
- The supervisor will normally have been reading the various draft chapters or sections as the candidate produces them. It is, however, usually advisable for the candidate to provide the supervisor with a complete final draft of the thesis as soon as it becomes available.

The Aims and Objectives of the Research Methodology

- A major function of the research methodology section of the thesis is to act as a **bridge** between the literature review and analysis sections.
- The bridging process usually starts with a consideration of which research methodology and specific research methods would be the most appropriate and useful in testing the operational and research hypotheses.
- In designing the research methodology the candidate should consider:
 - how to select the sample;
 - how to collect the data;
 - how to analyse the data;
 - how to validate the data.
- The final research design should be carefully evaluated to ensure that the data collection and analysis techniques defined in the methodology are correctly and accurately measuring what they are intended to measure.
- The research methodology also provides the potential for replication.
- The methodology chapter should be fully referenced.
- When writing the research methodology section of the thesis the candidate should ensure that it:
 - describes the methodology in precise detail;
 - fully details the reasons for choosing the methodology;
 - supports the use of the methodology with citations from the literature;
 - fully justifies the use of specific research methods;
 - identifies and describes the samples used.
- The thesis should highlight:
 - the advantages associated with the chosen methodology;
 - the disadvantages associated with the chosen methodology;
 - any limitations that may arise from the use of the chosen methodology;
 - any problems associated with design validity;
 - any problems associated with design reliability.

- Where the methodology has been specifically designed for the research or where an established methodology has been adapted or modified for use in the research, the methodology section should make clear:
 - the reasons for choosing the basic methodology;
 - the reasons for adapting parts of the basic methodology;
 - any examples from the literature of similar adaptations and their successful use;
 - any reservations associated with the adaptation;
 - the extent to which the adaptation was tested in the pilot study;
 - how any issues raised in the pilot study were addressed in the main study.

The Aims and Objectives of Data Collection and Analysis

- The relevant sections in the thesis should make the mechanics of data collection as clear as possible.
- The data collection and analysis section of the research should clearly detail the collection and analysis techniques used, and should also fully detail the data themselves.
- Reliability is the extent to which the research methodology and/or data produce the same results over a period of time.
- Validity is the extent to which measurements actually measure what they are supposed to measure.
- The candidate should consider the choice of data very carefully and ensure that the data collection and analysis section of the thesis contains sufficient information to show that:
 - the data are reliable;
 - the data are valid;
 - in quantitative approaches, the data source is representative of the population as a whole;
 - the characteristics of the data source are known.
- In relation to data collection, the data collection and analysis section of the thesis should:
 - detail the precise methods used in collecting data;
 - where appropriate, describe collection system calibration;
 - detail the reasons for choosing the data collection system;
 - detail any support from the literature for the use of the particular data collection system.
- The data collection and analysis section of the thesis should identify:
 - the advantages associated with the chosen data collection system;
 - the disadvantages associated with the chosen data collection system;
 - any limitations that may arise from the use of the chosen data collection system;
 - any problems associated with operational validity;
 - any problems associated with operational reliability.

- A significant proportion of DBA data collection systems are based on:
 - the investigation of historical evidence;
 - the use of structured interviews;
 - the use of unstructured interviews;
 - the application of questionnaires.

The Aims and Objectives of the Results and Conclusions Section

- The results and conclusions section presents the findings of the research in a logical, orderly and substantiated format.
- 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.
- Where there are numerous 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.
- The results and conclusions should relate wherever possible to the preceding sections. If necessary, the results and conclusions can cite references where they concur with results from other researchers.
- The candidate should ensure that the results and conclusions as presented are substantiated by the data presented.

The Aims and Objectives of the Literature Reappraisal and Theory Development

- The literature reappraisal and theory development section comes after data collection and analysis and after the generation of the results and conclusions of the research programme.
- As data are collected and analysed the level of knowledge about the chosen subject area increases to a level well above that which existed when the candidate prepared the initial literature synthesis and developed the original formal theory. As a result, by the time the main results have been developed, the initial literature synthesis and formal theory may no longer fully reflect the candidate's knowledge and understanding of the research field.
- This 'knowledge gap' 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 phase.
- The candidate should demonstrate that he or she can use the literature reappraisal, where appropriate, to modify the formal theory.
- The end result of the literature reappraisal and theory development section is a fully developed theory or question answer that forms a contribution

to the knowledge base. The theory or question answer is fully supported both by the literature and by the results of the current research. The only additional section that may be provided is a section for suggestions for further research.

- The final theory that forms the outcome of the research:
 - is developed from the literature and literature synthesis;
 - is initially expressed as a basic theory;
 - is evaluated during the pilot study (where appropriate);
 - is evaluated during the main study or studies.
- It is therefore reasonable to say that this theory:
 - is original, provided the research field has been correctly defined;
 - is supported by the literature;
 - is supported by the pilot study results (where appropriate);
 - is supported by the main study results;
 - is supported by the validation study results (where appropriate).

The Validation Study

- Validation studies are included where the research results and conclusions lack validity.
- The validation study often attempts to increase validity by extending the research results and developed theory to a larger sample size.
- In the simplest form a validation study could comprise a simple questionnaire where the primary results of the research and the fully developed theory or question answer are listed and the respondent is asked whether or not he or she agrees with the finding.
- 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.
- A common problem encountered by candidates in executing successful validation studies is that of sample selection.
- Increasingly, doctoral students are addressing the validation issue by setting up focus groups. The candidate invites suitable validation companies to attend the focus group, which is usually arranged to coincide with the completion of the main results phase. The candidate presents some of his or her most significant findings to the focus group and then asks for comments from the assembled validation focus group.
- 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.

The Supervisor, Senior Supervisor and EBS Research Committee

- Having worked with the supervisor for the duration of the literature review, the candidate and the supervisor should have established and developed a good working relationship.

- The relationship in the data collection and analysis and results and conclusions phase is more or less the same as in the literature review stage.
- The candidate is likely to require advice on a wider range of more variable issues than was the case during the literature review.
- The methodology design may involve a great deal of relatively specialist advice and discussion between the supervisor and the candidate.
- It could be suggested that the linking of the various sections of this stage is more challenging than was the case in the literature review.
- The role of the senior supervisor is unchanged from the role during the literature review.
- The role of the EBS Research Committee is more or less unchanged when compared with its role in the research proposal and literature review stages.
- The only significant change in the role of the EBS Research Committee during the research methodology, data collection and analysis and results and conclusions section is that committee is not required to provide a separate assessment of this section.

Progress Reports

- Candidates are required to complete indicative and definitive progress reports in exactly the same way as was required during the development of the literature review.
- The function and structure of the progress reports are identical to the system described in *Introduction to Business Research 2* in the case of the literature review.
- The candidate must complete an indicative progress report and a definitive progress report during the course of the development of the research methodology, data collection and analysis and results and conclusions section.
- The indicative progress report is submitted when the candidate has made some initial progress on the research methodology, data collection and analysis and results and conclusions section.
- In most cases, 'initial progress' means that the candidate has done most of the necessary development of the research methodology and has started data collection.
- Assuming that candidates are working to the recommended timescales for completion of the methodology, data collection and analysis and results and conclusions stage, the indicative progress report should be submitted as follows:
 - Full-time candidates: 2 months into the methodology, data collection and analysis and results and conclusions stage.
 - Part-time candidates: 4 months into the methodology, data collection and analysis
 - Distance learning candidates: 4 months into the methodology, data collection and analysis
- The definitive progress report is submitted before the draft thesis is complete but after at least the methodology chapter has been written up. The

definitive progress report should preferably include a number of written-up chapters. The definitive report should give a clear and detailed impression of how the final methodology, data collection and analysis and expected results and conclusions will look. In most cases the definitive report will include copies of at least the methodology chapter and preferably one other chapter from this stage as well. In most cases the definitive report is submitted approximately two thirds of the way through the development of the methodology, data collection and analysis and results and conclusions stage.

- Assuming candidates are working to the recommended timescales for completion of the methodology, data collection and analysis and results and conclusions stage, the definitive progress report should be submitted as follows:
 - Full-time candidates: 4 months into the methodology, data collection and analysis and results and conclusions stage.
 - Part-time candidates: 8 months into the methodology, data collection and analysis and results and conclusions stage.
 - Distance learning candidates: 8 months into the methodology, data collection and analysis and results and conclusions stage.
- Both reports are submitted directly to the supervisor (rather than the EBS Research Committee).
- Having studied the report and sample chapter(s) in detail, the supervisor drafts a feedback form.
- Feedback forms are designed to provide detailed feedback and advice to candidates. The supervisor uses the form to draw attention to any areas of concern, or where the candidate should make any amendment or modification to his or her work as it progresses.
- The feedback form relates to all the main areas covered in the research proposal, and also asks for detailed information to ensure that the methodology and analysis remain compatible with the literature review submission.
- It is recommended that candidates maintain the same sequence of monthly and milestone reports and reviews that were recommended for the literature review stage in *Introduction to Business Research 2*.
- The candidate should ensure that the informal reporting systems put in place during the literature review phase are maintained throughout the methodology, data collection and analysis and results and conclusions stage.
- The candidate will have a need for at least as much assistance from the supervisor in this stage as he or she needed during the literature review phase.

Timescales for Completion

- In order to pass gateway 5 the candidate must have:
 - completed all 9 or 11 taught courses;
 - developed the research proposal to a level where it is accepted by the EBS Research Committee;
 - developed a literature review submission to a level where it is accepted by the EBS Research Committee;
 - developed a full doctoral thesis that has been examined at *viva voce* examination and has been accepted and signed off by the internal and external examiners;
 - paid all due fees;
 - complied with all other EBS and University requirements.
- For full-time candidates, the recommended timescale for completion of the thesis and progression through gateway 5 is 36 months.
- For part-time and distance learning candidates, the recommended timescale for completion of the thesis and progression through gateway 5 is 72 months.

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 a reasonable level of understanding in each subject area has been developed.

What Has To Be Submitted?

- 1.1 The research methodology, data collection and analysis and results and conclusion section is submitted for approval by the EBS Research Committee before the thesis is submitted. T or F?
- 1.2 The thesis must contain some form of literature review. T or F?
- 1.3 There is no need to update the literature review before submitting the thesis. T or F?
- 1.4 The abstract is often written last. T or F?
- 1.5 It is advisable to let the supervisor have a complete draft of the thesis before submitting it. T or F?

The Aims and Objectives of the Research Methodology

- 1.6 The research methodology section acts as a bridge between the literature synthesis and the analysis. T or F?

- 1.7 The research methodology should generally provide sufficient detail to make the research replicable. T or F?
- 1.8 All research must be replicable. T or F?
- 1.9 The research methodology chapter should contain no references. T or F?
- 1.10 The choice of methodology should always be justified by reference to the literature. T or F?
- 1.11 It is never appropriate to use a pre-existing methodology for the current research. T or F?

The Aims and Objectives of Data Collection and Analysis

- 1.12 The data collection and analysis section of the research should clearly detail the collection and analysis techniques used, and should also fully detail the data themselves. T or F?
- 1.13 The two most common problem areas in relation to data are reliability and validity. T or F?
- 1.14 Reliability is the extent to which the research methodology and/or data produces the same results over a period of time. T or F?
- 1.15 The data collection and analysis section should identify the advantages and disadvantages associated with the chosen data collection system. T or F?

The Aims and Objectives of the Results and Conclusions Section

- 1.16 The results and conclusions section presents the findings of the research in a logical, orderly and substantiated format. T or F?
- 1.17 It is not necessary to substantiate all results. T or F?
- 1.18 It is acceptable to present contradictory results. T or F?
- 1.19 Results should be substantiated by references to the literature where appropriate. T or F?
- 1.20 The results and conclusions presented in the results and conclusions chapter represent the final outcomes of the research. T or F?

The Aims and Objectives of the Literature Reappraisal and Theory Development

- 1.21 The literature reappraisal and theory development section may be placed before the data collection and analysis section and after the generation of the results and conclusions of the research programme. T or F?
- 1.22 The literature reappraisal and theory development section allows candidates to show what they have learned from the research. T or F?
- 1.23 The literature reappraisal and theory development section ignores recent updates to the literature. T or F?

1.24 The developed theory may be derived directly from the research hypothesis. T or F?

1.25 The literature reappraisal and theory development section occasionally throws up whole new insights. T or F?

The Aims and Objectives of the Final Conclusions and Business Contribution

1.26 The final theory is in part developed from the literature and literature synthesis. T or F?

1.27 The final theory is in part evaluated during the pilot study (where appropriate). T or F?

1.28 The final theory should be original provided the research field has been correctly defined. T or F?

1.29 The final theory should be fully supported by the literature. T or F?

The Validation Study

1.30 A validation study is always necessary. T or F?

1.31 The validation study replicates the main study findings. T or F?

1.32 The validation study uses the same sample as the main study. T or F?

1.33 Validation studies are always valid and reliable. T or F?

The Supervisor, Senior Supervisor and EBS Research Committee

1.34 A new supervisor is appointed for the research methodology, data collection and analysis and results and conclusions section. T or F?

Progress Reports

1.35 There are no required progress reports in the research methodology, data collection and analysis and results and conclusions stage. T or F?

1.36 The indicative and definitive progress reports in the research methodology, data collection and analysis and results and conclusions stage are basically the same as those required in the literature review stage. T or F?

1.37 The definitive progress report is produced at an early stage in the development of the research methodology, data collection and analysis and results and conclusions stage. T or F?

1.38 Monthly and milestone progress reports are not recommended during the research methodology, data collection and analysis and results and conclusions stage. T or F?

1.39 Both the indicative and definitive reports undergo the same basic process of evaluation. T or F?

Timescales for Completion

- 1.40** Gateway 5 corresponds to successful completion of the thesis and all preceding elements. T or F?
- 1.41** The recommended completion time limit for completion of gateway 5 for full-time students is 48 months. 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.

What Has To Be Submitted?

- 1.42** The research methodology, data collection and analysis and results and conclusions stage is submitted:
- A separately for assessment prior to submission of the thesis.
 - B within the thesis prior to submission of the thesis.
 - C within the literature review submission.
 - D within the research proposal submission.
- 1.43** The preliminaries section of the thesis typically contains:
- I the abstract.
 - II the final theory.
 - III the list of figures.
 - IV the acknowledgements.
- Which of the above are true?
- A I only.
 - B I and II.
 - C I, III and IV.
 - D I and IV.
- 1.44** The research methodology, data collection and analysis and results and conclusions section typically contains:
- I the research methodology.
 - II the data collection and analysis.
 - III the results and conclusions.
 - IV the literature reappraisal and theory development.
- 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.

The Aims and Objectives of the Research Methodology

1.45 The research methodology section of the thesis should contain sufficient detail to show that it is:

- I invalid.
- II replicable.
- III original.
- IV adapted from an existing methodology.

Which of the above may be true?

- A I only.
- B I, II and III.
- C II and III.
- D II, III and IV.

1.46 In designing the research methodology the candidate should consider:

- I how the samples are to be selected.
- II the overall length of the thesis.
- III the wording of the abstract.
- IV how the data can be validated if required.

Which of the above are true?

- A I and II.
- B I, II, III and IV.
- C I and IV.
- D II and IV.

1.47 The research methodology chapter should:

- I synthesise the literature.
- II describe the methodology in precise detail.
- III justify the choice of methodology.
- IV describe in detail alternative methodologies that have been rejected.

Which of the above are true?

- A I, II and III.
- B II, III and IV.
- C II and IV.
- D III and IV.

The Aims and Objectives of Data Collection and Analysis

1.48 Reliability is a measure of the extent to which the research methodology:

- A can be replicated reliably.
- B contains accurate calculations.
- C consistently produces the same results over time.
- D reflects the main themes in the literature.

1.49 The data collection and analysis chapter should:

- I detail the precise methods used in collecting data.
- II where appropriate, describe collection system calibration.
- III detail the reasons for choosing the data collection system.
- IV detail any support from the literature for the use of the particular data collection system.

Which of the above are true?

- A I only.
- B I, II, III and IV.
- C II and IV.
- D III and IV.

The Aims and Objectives of the Results and Conclusions Section

1.50 The results presented in the results and conclusions chapter should be:

- I presented in tabular form only.
- II supported by references where appropriate.
- III partially fabricated where there are apparent gaps.
- IV fully substantiated.

Which of the above are true?

- A I, III and IV.
- B I and IV.
- C II, III and IV.
- D II and IV.

1.51 The data presented should be:

- I aligned directly towards the research hypothesis or question.
- II randomly selected from the data set available.
- III taken only from the pilot study.
- IV subject to validation where necessary.

Which of the above are true?

- A I and II.
- B I and III.
- C II, III and IV.
- D IV only.

The Aims and Objectives of the Literature Reappraisal and Theory Development

1.52 Literature reappraisal is important because:

- I the literature may have changed during the course of the analysis.
- II the candidate has probably developed new insights from the analysis.
- III the aims and objectives of the research have changed.
- IV the results of the pilot study are no longer valid.

Which of the above are true?

- A I and II.
- B I, II, III and IV.
- C II, III and IV.
- D III only.

1.53 The literature reappraisal and theory development contributes towards the final or outcome theory, which represents:

- A the final literature review.
- B the sum of the current knowledge on the subject.
- C the final operational hypothesis.
- D the candidate's contribution to the knowledge on the subject.

The Aims and Objectives of the Final Conclusions and Business Contribution

1.54 The final theory must:

- I contribute to the knowledge on the subject.
- II be original.
- III be expressed in mathematical terms.
- IV relate to the research question or hypotheses.

Which of the above are true?

- A I only.
- B I, II and IV.
- C II, III and IV.
- D III and IV.

1.55 The final theory should have been:

- I developed from the literature and literature synthesis.
- II initially expressed as a basic theory.
- III evaluated during the pilot study (where appropriate).
- IV evaluated during the main study or studies.

Which of the above are true?

- A I and II.
- B I, II, III and IV.
- C II, III and IV.
- D IV only.

1.56 The final theory should:

- I be supported by the literature.
- II be supported by the pilot study results (where appropriate).
- III be supported by the main study results.
- IV be supported by the validation study results (where appropriate).

Which of the above are true?

- A I, II, III and IV.
- B I, III and IV.
- C II, III and IV.
- D III and IV.

The Validation Study

- 1.57** The validation study is usually carried out
- I before the results and conclusions section.
 - II before the literature reappraisal and theory development section.
 - III at the same time as the final conclusions and business contribution section.
 - IV after the research methodology section.
- Which of the above are true?
- A I only.
 - B I and II.
 - C I, II and III.
 - D I, II, III and IV.

The Supervisor, Senior Supervisor and the EBS Research Committee

- 1.58** The final decision on the award of the degree is made by:
- A the supervisor.
 - B the supervisor and the senior supervisor.
 - C the EBS Research Committee.
 - D the internal and external examiners.

Progress Reports

- 1.59** During the research methodology, data collection and analysis and results and conclusions stage the candidate must complete:
- I an indicative progress report.
 - II a definitive progress report.
 - III monthly progress reports.
 - IV milestone progress reports.
- Which of the above are true?
- A I only.
 - B I and II.
 - C II, III and IV.
 - D III and IV.

Timescales for Completion

- 1.60** All timescales are flexible. The recommended timescale for completion of the thesis for a full-time on-campus candidate is:
- A 12 months.
 - B 24 months.
 - C 36 months.
 - D 72 months.

1.61 All timescales are flexible. The recommended timescale for completion of the thesis for a part-time or distance learning candidate is:

- A 12 months.
- B 24 months.
- C 36 months.
- D 72 months.