Contents

Preface	ix
Chapter 1 The aims of research	1
Learning outcomes	2
1.1 Introduction: What is research?	2
1.2 Scientific as opposed to non-scientific	
knowledge	3
1.2.1 Sources of non-scientific	
knowledge	3
1.2.1.1 Authority	3
1.2.1.2 Opinions of peers	3
1.2.1.3 Traditions	3 3
1.2.1.4 Debating	4
1.2.1.5 Accidental observation	4
Research Example I	4
1.2.2 Scientific knowledge	5
1.2.2.1 Systematic observation	5
1.2.2.2 Control	5
1.2.2.3 Replication	5
1.3 Qualitative and quantitative	
research cycles	6
1.4 Differences between quantitative and	
qualitative research methodologies	8
Summary	9
Test yourself	10
Chapter 2 The research topic.	
Chapter 2 The research topic, project title, and	
research problem	11
-	11
Learning outcomes	12
2.1 Introduction	12
2.2 The research process	12
2.2.1 Identifying a research topic	13
2.2.2 Defining the research problem	13

2.2.3 Determining how to conduct	
the study	13
2.2.4 Collecting the research data	13
2.2.5 Analysing and interpreting	
the research data	13
2.2.6 Writing the report	13
2.3 Statement of the research problem	14
Research Example II	17
Activity 2.1	18
Activity 2.2	19
2.3.1 The origin of research problems	19
2.3.1.1 Practical problems	19
2.3.1.2 Previous research	20
2.3.1.3 Theories	20
2.3.2 The purpose of research	22
Activity 2.3	24
2.3.3 The purpose of other forms of	
research	24
2.3.3.1 Historical research	
(Records)	24
2.3.3.2 Case study research	25
2.3.3.3 Action research	25
2.4 Research hypotheses	26
2.4.1 Formulating the research	
	27
2.4.2 Formalising the research	
hypothesis in terms of	
	28
2.4.3 The construct validity of the	
operationalisation of the	
independent variable and	
of the measurement of the	
	31
Activity 2.4	31

Activity 2.5 2.5 The cyclic progress of the scientific

Summary

expansion of knowledge

32

33

35

48

49

49

49

51

52

52

52

RESEARCH METHODOLOGY 3e

Test	t yours	self	35
Cha	apter	3 Literature review	37
Lea	rning	outcomes	38
3.1	Intro	duction	38
3.2	Litera	iture searches	38
	3.2.1	Significance of reviewing related	
		literature	38
	3.2.2	Tracing and recording relevant	
		literature	39
	3.2.3	Planning the literature search	40
3.3	Comp	oiling a literature review	40
	3.3.1	Integrating the studies	40
	3.3.2	Sources for literature searches	41
	3.3.3	Searches using computers:	
		CD-ROM databases	41
	3.3.4	Using the Internet	42
		Quotations	43
	3.3.6	Evaluating the relevance of	
		literature	43
3.4	The re	eference system	44
	3.4.1	References in the text	44
	3.4.2	Alphabetical order of sources	
		in the reference list	45
	3.4.3	Language of reference	45
	3.4.4	Journal articles in the list of references	40
	315		46
	3.4.5	Books and chapters in books Other sources	46
			46
	2/4.7	Date of publication unknown	47
Δct	3.4.6 ivity 3	Managing references	47
	ivity 3		47
4 14 4.	TATES O	· C	48

3.5 Literature and electronic sources

sampling types

Chapter 4 Population and

4.2 Population and sample

Summary

Test yourself

Learning outcomes

4.1 Introduction

Activity 4.1		56
4.3 Sampling		56
4.3.1 The sam	pling frame	57
4.3.2 Random	n sampling	59
4.3.2.1	Simple random	
	sampling	59
4.3.2.2	How to use a table	
	of random numbers	60
4.3.2.3	Stratified random	
	sampling	61
4.3.2.4	The advantages of	
	a stratified random	
	sample	62
4.3.3 Other ty	pes of probability	
samplin	g	64
4.3.3.1	Systematic sampling	64
	Cluster sampling	65
	bability sampling	67
	Accidental sampling	
	(incidental sampling)	68
	Quota sampling	68
	Purposive sampling	69
4.3.4.4	Snowball sampling	69
4.3.4.5	Self-selection sampling	69
	Convenience sampling	69
4.3.5 Sample :		70
Activity 4.2		72
4.3.6 Respons	se rate	73
4.3.7 Samplin		74
Summary		74
Test yourself		75
61		
	s of quantitative	
resea	arch designs	77
Learning outcomes	5	78
5.1 Introduction		78
5.2 Experimental		78
5.2.1 Characte	eristics of true	
experim	ental research	79
5.2.1.1	Control over the	
	independent variable	79
	Random assignment	
	of units of analysis	
	to groups	80
5.2.1.3	Nuisance variables	81

5.2.2 Causality in the human	
behavioural sciences	82
5.2.2.1 Correlation between	
variables	82
5.2.2.2 Cause must precede	
the effect	83
5.2.2.3 Control of the third	
variable	85
5.2.3 Laboratory versus field studie	
Activity 5.1 Activity 5.2	87 87
•	87 87
5.3 Quasi-experimental research 5.3.1 The non-equivalent control	07
group design	88
Activity 5.3	89
5.3.2 The interrupted time-series	0.5
design	89
Activity 5.4	92
5.4 Non-experimental research	92
Research Example III	93
5.4.1 Survey designs (relationships	
between variables)	93
Activity 5.5	93
5.4.2 Non-experimental research	
designs involving measuremen	nts
at a single time	94
5.4.2.1 Correlational design	94
5.4.2.2 The criterion-groups	
design	94
5.4.2.3 Cross-sectional design	
5.4.3 Longitudinal designs	95 06
Research Example IV 5.4.3.1 Panel designs	96 96
5.4.3.1 Faher designs 5.4.3.2 Cohort designs	96 96
5.4.3.3 Trend designs	90 97
Activity 5.6	97
5.4.4 Prediction studies	98
5.4.4.1 The retrospective	50
design	98
5.4.4.2 The prospective design	n 99
Activity 5.7	100
5.4.5 Opinion polls	100
Research Example V	100
5.4.5.1 Census	101
Summary	102
Test yourself	103

Chapter 6 validity of conclusions	105
Learning outcomes	106
6.1 Introduction	106
6.2 Internal validity and threats	107
6.2.1 Defining internal validity	107
6.2.2 Pre-experimental designs	108
6.2.3 Factors beyond the	
researcher's control	109
6.2.3.1 History	109
6.2.3.2 Spontaneous change	
(development,	
maturation, recovery	
or deterioration)	109
6.2.3.3 Other third-variable	
problems	110
6.2.3.4 Experimental research	,
non-experimental	
research, and internal	
validity	112
Activity 6.1	113
Activity 6.2	114
6.2.4 Factors that influence the	
researcher's control	115
6.2.4.1 The subject effect	116
Research Example VI	118
6.2.4.2 The experimenter	
effect	119
6.2.4.3 Pretest sensitisation	120
6.2.5 Measurement problems	120
6.2.5.1 Measurement	
reactivity	120
6.2.5.2 Instrumentation	120
6.2.6 Group differences	121
6.2.6.1 Selection	121
6.2.6.2 Interaction between	

spontaneous change

6.2.7 Random assignment to groups 122

6.2.8.1 Precision control

6.2.8.2 Multiple nuisance variable matching

within and between groups

6.2.9 Unplanned developments

6.2.8.3 Frequency distribution control

6.2.8 Matching

121

122

123

123

123

124

Chapter 6 Validity of conclusions

Contents

105

RESEARCH METHODOLOGY 3e

6.2.9.1 Communication

Detween treatment	
groups	124
6.2.9.2 Differential attrition	
of participants	124
6.3 External validity and threats	125
6.3.1 Introduction	125
6.3.2 Population validity	125
6.3.3 Ecological validity	127
Activity 6.3	128
Summary	130
Test yourself	131
Chapter 7 Data-collecting	
methods and	
measuring instruments	
in quantitative research	133
Learning outcomes	134
7.1 Introduction	134
7.2 Systematic observation and	
quantitative measurement	135
7.3 Measurement theory	135
7.3.1 The nature of measurement	136
7.3.2 The levels of measurement	138
7.3.2.1 Nominal measurement	
7.3.2.2 Ordinal measurement	139
7.3.2.3 Interval measurement	139
7.3.2.4 Ratio measurement	140
Activity 7.1	140
Activity 7.2	140
7.4 Validity (construct validity of	
the dependent variable)	142
7.4.1 Construct validity	142
7.4.2 Criterion-related validity	144
7.5 Reliability	145
7.5.1 Estimating reliability	145
7.5.1.1 Test-retest reliability	146
7.5.1.2 Parallel-forms	
reliability	146
7.5.1.3 Internal consistency	147
7.5.1.4 Split-halves reliability	147
7.5.1.5 Interrater/intercoder/	
tester/test or	
measurement-scorer	
reliability	147

7 C Pil 1:	
7.6 Pilot studies in the development of an instrument	148
	149
7.7 Measuring instruments 7.7.1 Introduction	149
7.7.1 Introduction 7.7.2 Unobtrusive measurement	150
7.7.2 Onobitusive measurement 7.7.2.1 Physical traces	150
7.7.2.1 Physical traces 7.7.2.2 Personal documents	150
and mass media	
material	151
7.7.2.3 Official statistics and	101
archival sources	151
7.7.3 Group contacts	152
7.7.3.1 Survey questionnaires	101
and postal dispatch	152
Activity 7.3	155
7.7.3.2 Standardised tests	155
7.7.3.3 Attitude scales	156
Activity 7.4	158
7.7.3.4 Rating scales and	
situational tests	159
7.7.3.5 Response styles and	
how to prevent them	161
Activity 7.5	162
7.7.4 Personal visits and	
communication by telephone	163
7.7.4.1 Personal visits	163
7.7.4.2 Telephonic interviews	164
7.7.4.3 Interviews	165
7.7.4.4 Conducting structured	
and semi-structured	
interviews	167
7.7.5 Individual apparatus	
(measurements/tests)	169
7.7.6 Direct observation (checklists)	170
7.8 Developing and constructing	
questionnaires, interview schedules,	
and attitude items	174
7.9 Ethical considerations	181
Research Example VII	181
Activity 7.6	183
Summary	183
Test yourself	184
Chapter 8 Qualitative research	
designs	187
Learning outcomes	188

8.1 Introduction	188
8.2 Historical research	188
8.2.1 The principles of historical	
research	189
8.2.1.1 Primary versus	
secondary sources	189
8.2.1.2 Stringent criticism	189
8.2.1.3 Causal explanations	190
8.3 The phenomenological approach	191
8.3.1 The role of the researcher	191
8.3.2 The importance of the	
context of the study	191
8.3.3 The aims of research	192
8.3.4 Research design and methods	192
8.4 Qualitative research methods	193
8.4.1 Case study research	193
8.4.2 Participant observation	194
8.4.2.1 Degrees of	
participation	195
8.4.2.2 The process/course	
of participant	
observation	195
Research Example VIII	197
8.4.3 Unstructured in-depth	
interviews	197
8.4.3.1 Nature	198
8.4.3.2 Process/course of the	
interview(s)	198
8.4.3.3 Ethical consideration	s 201
8.4.3.4 Advantages and	
disadvantages of	
unstructured	204
interviews	201
8.4.4 Focus groups	201
8.4.4.1 Compilation of focus	
groups	202
8.4.4.2 Phases in conducting	
focus groups	202
8.4.4.3 The questions	202
8.4.4.4 Advantages and	
disadvantages of	203
focus groups 8.4.4.5 Sampling responden	
6.4.4.5 Sampling respondent	ıs
interviews and	
focus groups	204
iocus groups	207

8446 Analysis of information

Contents

8.4.4.6 Analysis of information obtained from unstructured interviews		
and focus groups 8.4.4.7 Compiling a	204	
qualitative research		
report	204	
8.4.5 Participatory research	205	
8.4.5.1 Action research	205	
Activity 8.1	206	
Activity 8.2	206	
Summary	207	
Test yourself	207	
Chapter 9 Data analysis and		
interpretation of		
results	209	
Learning outcomes	210	
9.1 Introduction	210	
9.2 Qualitative data analysis	211	
9.2.1 Analysis of unstructured		
in-depth individual interviews		
and group interviews (focus		
groups)	211	
9.2.1.1 Preparing field notes		
and transcripts	211	
9.2.1.2 Theme identification		
methods	211	
9.2.1.3 Coding the data	213	
9.2.1.4 Displaying the data	219	
9.2.2 Content analysis	221	
Research Example IX	222	
9.2.2.1 Steps in performing a		
content analysis	222	
9.3 Quantitative data analysis	224	
9.3.1 Statistical validity	224	
9.3.2 The sensitivity of a research		
design	226	
9.3.2.1 Eliminating rival		
hypotheses	226	
9.3.2.2 Eliminating the		
variance	226	
9.3.2.3 Complex experimental		
research designs	227	
9.4 Statistical techniques (and coding)	227	
9.4.1 Levels of measurement	229	

9.4.2 Descriptive statistics	231
9.4.2.1 Histograms,	
bar diagrams, and	
pie charts	232
Activity 9.1	232
9.4.2.2 Mean/average and	
variability	233
9.4.2.3 Correlations and	
cross-tabulation	234
9.4.3 Inferential statistics	236
9.4.3.1 Chi-square (χ^2)	
analysis	236
9.4.3.2 <i>t</i> -tests	237
9.4.4 Using computers in statistical	
analysis (use the CD-ROM)	237
9.5 Presenting the results	237
Activity 9.2	239
Activity 9.3	241
Summary	241
Test yourself	242
	212
Chapter 10 Report-writing	245
Learning outcomes	246
10.1 Introduction	246
10.2 Writing papers and articles	246
10.2.1 Conferences	247
10.2.2 Articles	247
10.3 The sections of a research report	248
10.3.1 The title	249
10.3.2 The abstract (executive	
summary)	249
10.3.3 The introduction	249
10.3.4 The literature review	250
10.3.5 Problem statement and	
hypotheses	250
10.3.6 Methods and procedures	250
10.3.7 The results	252
10.3.7.1 Presenting	
the results	252
10.3.8 The discussions and	
conclusions	253
Activity 10.1	254
Activity 10.2	257
10.3.9 The list of references	259
10.3.10 Appendices or annexures	259
10.4 Conventions, grammar, and style	259

	10.4.1	Conventions	259
	10.4.2	Grammar and style	261
10.5	Evaluat	ion criteria for a research	
	report		262
Sumi	mary		264
Test :	yourself		264
Chaj	oter 11	The research proposal	273
_	ning out		274
	Introdu		274
11.2	Require	ments of a research topic	274
		ng a research project	277
		earch proposal	279
		Sections of a research	
		proposal	280
	11.4.2	The background (scope)	280
	11.4.3	The statement or	
		formulation of the	
		research problem	281
	11.4.4	The proposed method,	
		procedures, and statistical	
		analysis	281
		11.4.4.1 Research method	
		and procedures	281
		11.4.4.2 Statistical analysis	282
		The list of references	282
11.5		ion criteria for a research	
	proposa		282
		dent-study supervisor role	284
11.7		h proposal evaluation	005
	exampl	e	285
	ity 11.1		295
	ity 11.2		298 298
Sum	mary		290
App	endices	1	299
Appe	endix A:	Answers to Test Yourself	
		exercises	299
		Internet resources	302
		Table of random numbers	305
Appe	endix D:	Case studies	306
Моо	nStats	user guide	319
Refe	rences		334
Inde	×		337