



**Harper Adams
University**

A Thesis Submitted for the Degree of Doctor of Philosophy at
Harper Adams University

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HARPER ADAMS UNIVERSITY

SERVICE PROVISION IN THE ANIMAL
HEALTH SECTOR

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A thesis submitted for the degree of Doctor
of Philosophy

April 2017

Abstract

Domesticated animals form an important part of modern life fulfilling roles as companion, working or food producing animals. Regardless of their role, the health care of animals is complex and can involve a range of health practitioners. The discerning nature of the veterinary client, in combination with the developing roles of professionals and changing demographics, has transformed market dynamics and highlighted the need for the sector to reflect on service quality.

Drawing on the extant literature in the domains of service quality and co-creation, the study focuses on sector stakeholder groups of clients, paraprofessionals and veterinarians with the aim of proposing a framework to understand service quality in the animal health sector, through three phases of research. Phase one comprises a detailed exploratory mapping exercise of the industry utilising an extensive range of secondary data. Phase two uses a critical incident technique and applies the principles of grounded analysis to semi-structured, interviews with sector stakeholders (n=13). Interview data is subject to thematic analysis utilising NVivo to identify emergent service quality dimensions. The third phase involves quantitative survey of stakeholders (n=663), including veterinarians, paraprofessionals and clients analysed through multivariate techniques to identify factors and test relationships between them.

Triangulation of literature, mapping results and primary data reveals six latent dimensions of service quality: *empathy; bespoke outcome; professional integrity; value for money; confident relationships and access.*

These results lead to the development of a conceptual framework for animal health service, confirming the importance of the notions of value co-creation and outcome. The thesis contributes to the theoretical debate on context-specific service quality and has the potential for impact on practice in the rapidly changing animal health businesses.

Acknowledgements

I would like to extend my thanks to my supervisory team, Professor Gill Wright, Dr Keith Walley and Dr Emma Bleach, for all their help and guidance throughout. Also to Julie Boone, for the many invaluable data discussions we have had. To my family, two legged and four legged, for their care and patience over the last four years and to my close work colleagues for unwavering support and motivational conversations.

“Animals are such agreeable friends- They ask no questions, they pass no criticism.”

George Eliot, Mr Gilfil's Love Story, 1857

Table of Contents

Chapter 1 Introduction

1.0	Introduction.....	1
1.1	Study Context	2
1.2	Animal Health and Veterinary Service.....	3
1.2.1	Multidisciplinary Teams.....	4
1.2.2	Service Provision	6
1.3	Social and Economic Importance of Domesticated Animals.....	7
1.3.1	Companion Animals	7
1.3.2	Horses.....	8
1.3.3	Food Producing Animals	10
1.3.3.1	Dairy Production	10
1.3.3.2	Beef and Lamb Production	11
1.4	Chapter Summary	12
1.5	Thesis Outline.....	12

Chapter 2 Literature Review

2.0	Literature Review.....	13
2.1	Focus and Purpose.....	13
2.2	Nature of Service.....	14
2.2.1	Service Quality.....	14
2.2.2	Evolving Service-Dominant Logic.....	15
2.3.2	Measuring Service Quality.....	18
2.2.3.1	Why Measure Service Quality	19
2.3	Models of Service Quality.....	19
2.3.1	Nordic School of Service Marketing.....	19
2.3.2	Perceived Service Quality Model	20
2.3.3	SERVQUAL.....	21
2.3.4	Gaps Model of Service Quality.....	24
2.3.5	SERVQUAL Application.....	26
2.3.6	SERVPERF.....	28
2.3.7	Foundation Premises of S-D Logic: Vargo and Lusch.....	29
2.3.8	Service-Dominant Axioms.....	33
2.3.9	Nordic School of Service Logic.....	34
2.4	Business Competitiveness and Service Quality.....	34
2.5	Service and Relationship Quality	36
2.5.1	Moments of Truth and the Part-Time Marketer.....	36
2.5.2	Dynamic Continuum of Relationships.....	37
2.5.3	Bonds.....	38
2.5.4	Dynamics of Client Expectations.....	38
2.5.5	Latent Variables of Service Quality.....	39
2.6	Co-creation of Value and Co-Production.....	39
2.6.1	Applied Value Co-creation and Involvement	41
2.6.2	Trust and Loyalty in Health Services.....	42
2.6.3	Communication	43
2.6.4	Empathy.....	44
2.7	Service Quality for the Animal Health Sector.....	45
2.7.1	Paradigm Shift in Animal Health Service	46
2.7.2	Service Quality Experiences in Human Health Provision	47
2.7.3	Distinguishing Features of the Animal Health Client	48
2.8	Conceptual Model of Service Quality for the Animal Health Sector.....	49
2.9	Research Aims and Objectives.....	52
2.10	Conclusion.....	54

Chapter 3 Methodology and Methods

3.0	Introduction	55
3.1	Aims and Objectives.....	55
3.2	Methodology.....	55
3.2.1	Research Philosophy.....	55
3.2.2	Postpositivism.....	56
3.2.3	Constructivism.....	56
3.2.4	Measuring Service Performance.....	56
3.2.5	Qualitative Research in Human Health Service.....	56
3.2.6	Grounded Theory and Analysis	57
3.2.7	Critical Incident Technique.....	58
3.2.7	Transcript Analysis: QDA and Coding	59
3.3	Interview Sampling Technique.....	60
3.3.1	Qualitative Research: Reliability and Validity	61
3.3.2	Mixed Methods Approach.....	61
3.3.3	Sequential Exploratory Design.....	62
3.3.4	Philosophy of Mixed Methods.....	63
3.4	Attitudinal Rating Scales.....	63
3.4.1	Pre-tests and Piloting.....	63
3.4.2	Quantitative Research: Validity and Bias.....	64
3.4.3	Questions.....	65
3.5	Quantitative Data Analysis Techniques.....	65
3.6	Summary	66
3.7	Methods.....	67
3.7.1	Defining the Problem.....	67
3.7.2	Research Process.....	68
3.8	Phase One: Sector Mapping.....	69
3.9	Phase Two: Interviews.....	70
3.9.1	Approach to Interviews.....	70
3.9.2	Data Collection and Identification of Interviewees.....	70
3.9.3	Sampling Technique for Interviews.....	70
3.9.4	Implementation and Management of the Interview Process.....	71
3.9.5	Interview Data.....	71
3.9.6	Thematic Analysis	72
3.10	Phase Three: Stakeholder Surveying	73
3.10.1	Survey Approach	73
3.10.2	Instrument Development	73
3.10.3	Sampling Categories.....	74
3.10.4	Sampling Technique.....	75
3.10.5	Implementation of the Survey.....	76
3.10.6	Management of Survey Data	76
3.10.7	Analysis of Survey Data.....	77
3.11	Summary.....	79

Chapter 4 Results

4.0	Results.....	80
4.1	Phase One Results: Animal Health Sector Mapping.....	81
4.1.1	Paraprofessionals	81
4.1.1.1	Musculoskeletal Practitioners.....	81
4.1.1.2	Farriers and Foot Trimmers.....	85
4.1.1.3	Pharmacists and Suitably Qualified Persons (SQPs).....	86
4.1.1.4	Equine Dental Technicians.....	88
4.1.1.5	Reproductive Technologists.....	89
4.1.1.6	Veterinary Nurses.....	91
4.1.2	Veterinarians.....	93
4.1.2.1	Veterinary Education	94

4.1.2.2	Demographical Changes in the Veterinary Sector	94
4.1.3	Legal Infrastructure for Animal Health Services.....	95
4.1.3.1	Veterinary Profession.....	95
4.1.3.2	Changes to Exemption Orders.....	98
4.1.3.3	Review of Minor Procedures Regime.....	98
4.1.3.4	Changing Business Models for Veterinary Practice.....	102
4.1.3.5	RCVS Strategic Plan	102
4.1.5	Sector Mapping	103
4.1.6	Summary of Phase One Results.....	108
4.2	Phase Two Results: Exploring the Dimensions of Service Quality.....	109
4.2.1	Defining Dimensions.....	109
4.2.1.1	Trust	110
4.2.1.2	Communication	110
4.2.1.3	Value for Money.....	111
4.2.1.4	Empathy.....	112
4.2.1.5	Bespoke.....	113
4.2.1.6	Integrated Care.....	114
4.2.1.7	Tangibles	115
4.2.1.8	Accessibility.....	115
4.2.1.9	Outcome Driven Service.....	116
4.2.1.10	Nine Defined Dimensions.....	117
4.2.2.	Value Co-creation.....	119
4.2.3	Phase Two Summary.....	119
4.3	Phase Three Survey Results.....	120
4.3.1	Pilot Results.....	120
4.3.1.1.	Pre-test Questionnaire Results	121
4.3.1.2	Survey Piloting.....	121
4.3.2	Final Solution.....	125
4.3.2.1	Presentation of the Final Survey Results.....	125
4.3.2.2	Sample Representation for the Groups.....	125
4.3.2.3	Gender Data.....	128
4.3.2.4	Age Data.....	129
4.3.2.5	Sample Bias.....	130
4.3.2.6	Client Responses.....	130
4.3.2.7	Companion Animal Client Service Perceptions.....	130
4.3.2.8	Equine Client Service Perceptions.....	132
4.3.2.9	Farm Animal Client Service Perceptions.....	136
4.3.2.10	Client Perceptions of Overall Service Quality.....	137
4.3.2.11	Summary of Client Responses.....	141
4.3.2.12	Client and Professionals' Perception of Team Working.....	142
4.3.2.13	Professionals' Perception of Service.....	143
4.3.3	Factor Solution	155
4.3.3.1	Explanation of Loaded Components.....	156
4.3.4	Stakeholder Dimensionality.....	164
4.3.4.1	Comparative Dimensionality: Clients versus Professionals.....	164
4.3.4.2	Comparative Dimensionality: Vets versus Paraprofessionals.....	166
4.3.4.3	Comparative Dimensionality: Clients.....	168
4.3.4.4.	Defining Service Quality Dimensions.....	170
4.3.5	Conclusion.....	172
4.3.5.1	Dimensions of Animal Health Service.....	172
4.3.5.2	Comparison of Animal Health Service and the SERVQUAL RATER dimensions.....	172
4.3.6	Summary of Phase Three Results.....	174
4.3.7	Summary of All Results.....	174
	Chapter 5 Discussion	
5.0	Discussion.....	176

5.1	Industry Mapping.....	177
5.2	Perception of Service.....	178
5.3	Interdisciplinary Working	183
5.4	Conceptualisation of Value Co-creation	185
5.5	Dimensions of Service Quality	188
5.6	Industry Recommendations.....	189
5.6.1	Creation of a Competitive Space.....	189
5.6.2	Portfolio of Health Service.....	190
5.6.3	Conceptual Framework.....	193
5.6.4	Development of Conceptual Models.....	195
	Chapter 6 Conclusion	
6.0	Conclusion	197
6.1	Study Design.....	197
6.2	Contribution to Marketing Theory	198
6.2.1	Unique Application of Service Quality Theory.....	198
6.2.2	Non-standardisation of Service Quality	198
6.2.3	Conceptualisation of Service Quality for the Animal Health Sector.....	198
6.3	Contribution to the Sector	199
6.3.1	Professional Transparency	200
6.3.2	Legislative Confidence.....	200
6.3.3	Stakeholder Differentiation.....	200
6.3.4	Value Co-creation and Relationships.....	201
6.3.5	Sector Frameworks	201
6.4	Recommendations for Further Study	202
6.4.1	Allied Health Professionals.....	202
6.4.2	Holistic Approach to Care.....	202
6.4.3	Industry Commitment to Value Co-creation.....	202
6.5	Reflection on Pathways to Impact	202
6.5.1	National Impact	202
6.5.2	International Impact	203
	References	
7.0	References.....	204
	Appendices	
8.0	Appendices.....	
8.1	Numbers of Animal Health Clients in the UK.....	228
8.2	Professional Engagement for Sector Mapping.....	229
8.3	Project Information Sheet.....	232
8.4	Questionnaires.....	233
8.5	Item Coding.....	249
8.6	NVivo Screenshots.....	251
8.7	Publications.....	255

Table of Tables

TABLE 1.1	ESTIMATED COMPANION ANIMAL NUMBERS (UK)	7
TABLE 2.1	UNDERLYING CONCEPTUAL TRANSITION FROM G-D TO S-D LOGIC	17
TABLE 2.2	KEY FEATURES OF OPERAND AND OPERANT RESOURCES	18
TABLE 2.3	TEN SERVQUAL DIMENSIONS OF SERVICE QUALITY	23
TABLE 2.4	DEFINITION OF THE FIVE SERVQUAL (RATER) DIMENSIONS	23
TABLE 2.5	SERVICE DOMINANT LOGIC FOUNDATION PREMISE MODIFICATIONS IN RESPONSE TO COMMENT AND SCRUNTINY	31
TABLE 2.6	FOUR AXIOMS OF S-D LOGIC	34
TABLE 2.7	DYNAMIC SERVICE MARKETING	37
TABLE 2.8	LILJANDER-STRANDVIK RELATIONSHIP QUALITY MODEL CONCEPTUALISED TO ANIMAL HEALTH SERVICE	38
TABLE 2.9	RANKED CRITERIA FOR CHOOSING A VETERINARIAN	42
TABLE 2.10	RESEARCH GAPS AND OBJECTIVES	52
TABLE 3.1	RESEARCH OBEJECTIVES AND ANALYSIS TECHNIQUE	67
TABLE 3.2	SUB-GROUPS SELECTED FOR INTERVIEW ANALYSIS	71
TABLE 3.3	SUB-GROUPS FOR QUESTIONNAIRE DATA ANALYSIS AND DATA COLLECTION VENUES	74
TABLE 3.4	TARGET SAMPLE SIZE FOR EFA	76
TABLE 4.1	DEFINING THE ANALYSIS TECHNIQUE FOR THE RESEARCH OBJECTIVES	80
TABLE 4.2	VETERINARY PHYSIOTHERAPY TRAINING COURSES	82
TABLE 4.3	ANIMAL CHIROPRACTIC TRAINING COURSES	84
TABLE 4.4	ANIMAL OSTEOPATH TRAINING COURSES	84
TABLE 4.5	SUMMARY OF EQUINE DENTAL PROCEDURE CATEGORISATION	89
TABLE 4.6	REGISTERED VETERINARY NURSE (RVN) TRAINING ROUTES	92
TABLE 4.7	AVERAGE ANNUAL SALARY BY QUALIFICATION YEAR FOR FULL TIME VETERINARY SURGEONS	94
TABLE 4.8	SUMMARY OF EXEMPTION ORDER PROVISIONS (UK) RELEVANT TO PARAPROFESSIONALS	97
TABLE 4.9	TIMELINE OF VETERINARY SERVICES AND EO REVIEW	100
TABLE 4.10	PROFESSIONAL STAKEHOLDER: TRAINING, REGISTRATION, ACTIVE REGISTRATIONS AND LEGAL FRAMEWORKS	106
TABLE 4.11	INTERVIEW PARTICIPANTS	109
TABLE 4.12	NINE DIMENSIONS OF SERVICE QUALITY IN THE ANIMAL HEALTH SECTORS (QUALITATIVE RESULTS)	117
TABLE 4.13	DEFINING CHARACTERISTICS OF THE EMERGENT DIMENSIONS OF SERVICE QUALITY FROM INTERVIEW DATA	118
TABLE 4.14	DIMENSIONS OF SERVICE QUALITY IN ANIMAL HEALTH MAPPED TO THE QUESTIONNAIRE	120
TABLE 4.15	FREQUENCY DATA BY PROFESSIONAL SUB-GROUP	121
TABLE 4.16	CRONBACH'S ALPHA SCORES BY FACTOR (PILOT)	122
TABLE 4.17	KMO AND BARTLETT'S TEST RESULTS (PILOT)	122
TABLE 4.18	TOTAL VARIANCE EXPLAINED RESULTS (PILOT)	123
TABLE 4.19	EFA: ELEMENTS OF ANIMAL HEALTH SERVICE REPORTING (PILOT)	124
TABLE 4.20	FREQUENCY BY GROUP	125
TABLE 4.21	FREQUENCY BY SUB-GROUP: ALL STAKEHOLDERS	126
TABLE 4.22	VETERINARY INDUSTRY AND SAMPLE DATA	126
TABLE 4.23	CLIENT FREQUENCY BY VET AND PARAPROFESSIONAL FOCUSED RESPONSE	127
TABLE 4.24	RESPONDENT FREQUENCY BY GENDER	128
TABLE 4.25	GENDER DATA VETS AND VETERINARY NURSES	128
TABLE 4.26	RESPONDENT FREQUENCY BY AGE: CLIENT GROUP	129
TABLE 4.27	RESPONDENT FREQUENCY BY AGE: VET AND VETERINARY NURSE GROUPS	129
TABLE 4.28	COMPANION ANIMAL CLIENT SERVICE PERCEPTION	131
TABLE 4.29	EQUINE CLIENT SERVICE PERCEPTION	132
TABLE 4.30	FARM ANIMAL CLIENT SERVICE PERCEPTION	136
TABLE 4.31	ALL CLIENT PERCEPTIONS OF PARAPROFESSIONAL SERVICE	137
TABLE 4.32	ALL CLIENT PERCEPTIONS OF VETERINARY SERVICE	140
TABLE 4.33	OUTLINE OF CLIENT RESPONSE	142
TABLE 4.34	SUMMARY OF PROFESSIONALS' RESPONSES	143
TABLE 4.35	CLIENT RESPONSES CROSS REFERENCED TO SIGNIFICANT PROFESSIONAL RESULTS	144
TABLE 4.36	KMO AND BARTLETT'S TEST RESULTS (FINAL SOLUTION)	155
TABLE 4.37	TOTAL VARIANCE EXPLAINED RESULTS (FINAL SOLUTION)	156
TABLE 4.38	CRONBACH'S ALPHA SCORES BY FACTOR (FINAL SOLUTION)	156
TABLE 4.39	SERVICE DELIVERY THEMES IN ANIMAL HEALTH	157
TABLE 4.40	MEAN FACTOR SCORES FOR STAKEHOLDER GROUPS	158
TABLE 4.41	FREQUENCIES OF FACTOR VARIABLES FOR FACTOR ONE <i>EMPATHY</i>	159
TABLE 4.42	FREQUENCIES OF FACTOR VARIABLES FOR FACTOR TWO <i>PROFESSIONAL CREDIBILITY</i>	160

TABLE 4.43	FREQUENCIES OF FACTOR VARIABLES FOR FACTOR THREE <i>INTEGRITY</i>	161
TABLE 4.44	FREQUENCIES OF FACTOR VARIABLES FOR FACTOR FOUR <i>CONFIDENT RELATIONSHIPS</i>	162
TABLE 4.45	FREQUENCIES OF FACTOR VARIABLES FOR FACTOR FIVE <i>TRUSTY WORTHY SERVICE</i>	163
TABLE 4.46	SERVICE DELIVERY THEMES IN ANIMAL HEALTH BY STAKEHOLDER GROUP (CLIENT AND PROFESSIONAL)	165
TABLE 4.47	SERVICE DELIVERY THEMES IN ANIMAL HEALTH BY PROFESSIONAL STAKEHOLDER GROUP	167
TABLE 4.48	SERVICE DELIVERY THEMES IN ANIMAL HEALTH BY CLIENT GROUP	169
TABLE 4.49	DIMENSIONS OF SERVICE QUALITY FROM QUALITATIVE AND QUANTITATIVE INVESTIGATION	170
TABLE 4.50	SIX DIMENSIONS OF SERVICE QUALITY FOR ANIMAL HEALTH	172
TABLE 4.51	COMPARISON OF ANIMAL HEALTH DIMENSIONS AND SERVQUAL RATER DIMENSIONS	173
TABLE 5.1	RESEARCH OBJECTIVES SUMMARY	176
TABLE 5.2	INVOLVEMENT FRAMEWORK FOR ANIMAL HEALTH SERVICE	192
TABLE 5.3	COMPARABLE SERVQUAL RATER DIMENSIONS AND ANIMAL HEALTH SECTOR SERVICE QUALITY DIMENSIONS	196

Table of Figures

FIGURE 2.1	PRODUCT MARKETING MIX	16
FIGURE 2.2	EVOLVING MARKETING PHILOSOPHY FROM THE 1950'S TO THE MODERN DAY	17
FIGURE 2.3	MODEL OF EXPECTATION-DISCONFIRMATION APPROACH TO SATISFACTION	18
FIGURE 2.4	MODEL OF CUSTOMER PERCEIVED SERVICE QUALITY	20
FIGURE 2.5	THE CUSTOMER GAP	24
FIGURE 2.6	PILLARS OF VALUE CO-CREATION	40
FIGURE 2.7	CHALLENGES ASSOCIATED WITH THE PROVISION OF FAMILY CENTRED CARE	49
FIGURE 2.8	MODEL OF SERVICE QUALITY CONCEPTUALISED FOR ANIMAL HEALTH	50
FIGURE 3.1	PROCESS OF DEVELOPING A RESEARCH STUDY	55
FIGURE 3.2	RESEARCH PROCESS UNDERTAKEN	68
FIGURE 3.3	THEMATIC CODING PROCESS	72
FIGURE 4.1	INTERACTIONS BETWEEN COMPANION ANIMAL CLIENTS AND HEALTH PROFESSIONALS	104
FIGURE 4.2	INTERACTIONS BETWEEN EQUINE CLIENTS AND HEALTH PROFESSIONALS	104
FIGURE 4.3	INTERACTIONS BETWEEN DAIRY CLIENTS AND HEALTH PROFESSIONALS	105
FIGURE 4.4	COMPANION ANIMAL CLIENTS RESPONSE TO QUESTION 15: PRICE REFLECTS SERVICE GIVEN	131
FIGURE 4.5	COMPANION ANIMAL CLIENTS RESPONSE TO QUESTION 16: THERE ARE NO UNEXPECTED COSTS	132
FIGURE 4.6	EQUINE CLIENTS REPOSE TO QUESTION 11: THE PARAPROFESSIONAL OR VET IS ABLE TO TREAT CLIENTS WITH THE COMPASSION NEEDED	133
FIGURE 4.7	EQUINE CLIENTS REPOSE TO QUESTION 12: THE PARAPROFESSIONAL OR VET TALKS TO ME ON MY LEVEL	133
FIGURE 4.8	EQUINE CLIENTS REPOSE TO QUESTION 14: MY RELATIONSHIP WITH THE PARAPROFESSIONAL OR VET IS GOOD	134
FIGURE 4.9	EQUINE CLIENTS RESPONSE TO QUESTION 15: PRICE REFLECTS SERVICE GIVEN	135
FIGURE 4.10	EQUINE CLIENTS RESPONSE TO QUESTION 16: THERE ARE NO UNEXPECTED COSTS	135
FIGURE 4.11	FARM ANIMAL CLIENTS RESPONSE TO QUESTION 15: PRICE REFLECTS SERVICE GIVEN	136
FIGURE 4.12	FARM ANIMAL CLIENTS RESPONSE TO QUESTION 16: THERE ARE NO UNEXPECTED COSTS	137
FIGURE 4.13	ALL CLIENTS RESPONSE TO QUESTION 25: HOW SATISFIED WERE YOU WITH THE SERVICE PROVIDED BY THE PARAPROFESSIONAL?	138
FIGURE 4.14	ALL CLIENTS RESPONSE TO QUESTION 26: HOW LIKELY WOULD YOU BE TO RECOMMEND THIS PARAPROFESSIONAL TO OTHERS?	139
FIGURE 4.15	ALL CLIENTS RESPONSE TO QUESTION 25: HOW SATISFIED WERE YOU WITH THE SERVICE PROVIDED BY THE VETERINARIAN?	140
FIGURE 4.16	ALL CLIENTS RESPONSE TO QUESTION 26: HOW LIKELY WOULD YOU BE TO RECOMMEND THIS VETERINARIAN TO OTHERS?	141
FIGURE 4.17	ALL PROFESSIONAL RESPONSE TO QUESTION 2: CLIENTS EXPECT ME TO DEMONSTRATE EXCELLENT ANIMAL HANDLING SKILLS	145
FIGURE 4.18	EQUINE CLIENTS RESPONSE TO QUESTION 2: MY HORSE IS ALWAYS WELL HANDLED BY THE VET OR PARAPROFESSIONAL	145
FIGURE 4.19	ALL PROFESSIONAL RESPONSE TO QUESTION 3: I AM ALWAYS ABLE TO PROVIDE CONTINUITY OF CARE OR TREATMENT	146
FIGURE 4.20	EQUINE CLIENTS RESPONSE TO QUESTION 3: THERE IS CONTINUITY OF CARE OR TREATMENT	146
FIGURE 4.21	ALL PROFESSIONAL RESPONSE TO QUESTION 10: THE ANIMALS' WELFARE IS ALWAYS THE MAIN PRIORITY	148
FIGURE 4.22	EQUINE CLIENTS RESPONSE TO QUESTION 10: THE ANIMALS' WELFARE IS ALWAYS THE MAIN PRIORITY	148
FIGURE 4.23	ALL PROFESSIONALS RESPONSE TO QUESTION 11: I HAVE TIME TO TREAT CLIENTS WITH THE COMPASSION THEY NEED	149

FIGURE 4.24	ALL PROFESSIONALS RESPONSE TO QUESTION 13: CLIENTS ARE ABLE TO UNDERSTAND WHAT I AM TELLING THEM	150
FIGURE 4.25	EQUINE CLIENTS RESPONSE TO QUESTION 13: I UNDERSTAND WHAT THE VET/ PARAPROFESSIONAL IS TELLING ME	150
FIGURE 4.26	ALL PROFESSIONALS RESPONSE TO QUESTION 14: MY RELATIONSHIP WITH CLIENTS IS GOOD	151
FIGURE 4.27	ALL PROFESSIONALS RESPONSE TO QUESTION 15: PRICE REFLECTS SERVICE GIVEN	152
FIGURE 4.28	ALL PROFESSIONALS RESPONSE TO QUESTION 16: CLIENTS ARE NOT FACED WITH UNEXPECTED COSTS	153
FIGURE 4.29	ALL PROFESSIONALS RESPONSE TO QUESTION 25: OVERALL, HOW WOULD YOU RATE YOUR PROVISION OF SERVICE?	154
FIGURE 4.30	SUMMARY OF RESULTS FROM ALL THREE PHASES	174
FIGURE 5.1	CLIENT PERCEPTIONS OF PARAPROFESSIONAL AND VETERINARY SERVICE	180
FIGURE 5.2	STAKEHOLDER PERCEPTION OF SERVICE	181
FIGURE 5.3	COMPARATIVE DIMENSIONALITY FOR SECTOR STAKEHOLDERS	182
FIGURE 5.4	CREATION OF A COMPETITIVE SPACE	189
FIGURE 5.5	PORTFOLIO OF INFLUENCING FACTORS ON ANIMAL HEALTH CHOICES	190
FIGURE 5.6	CONCEPTUAL FRAMEWORK FOR ANIMAL HEALTH SERVICE PROVISION	194
FIGURE 6.1	INTEGRATED CONCEPTUALISATION OF SERVICE QUALITY FOR THE ANIMAL HEALTH SECTOR	199

Terminology

Veterinary Surgeon, veterinarian and *vet* are used interchangeably within the UK and therefore will be used in the same manner within this thesis. These terms mean that the professional is a member of the Royal College of Veterinary Surgeons.

The term *paraprofessional* has been adopted to encompass all UK based animal healthcare professionals who are not veterinary qualified.

The word *client* is used to encompass all animal owners or keepers caring for companion animals, horses or livestock.

All acronyms are presented in full within the glossary

Glossary

ACPAT Association of Chartered Physiotherapists in Animal Therapy

AHDA The Animal Health Distributors Association

AHDB Agriculture and Horticulture Development Board

AHVLA Animal Health Veterinary Laboratories Agency

ANA Animal Nursing Assistant

AMTRA Animals Medicines Training Regulatory Authority

APHA Animal and Plant Health Agency

BCOM British College of Osteopathic Medicine

BETA British Equestrian Trade Association

BHA British Horseracing Authority

BPS Basic Payment Scheme

BVA British Veterinary Association

BSAVA British Small Animal Veterinary Association

BVNA British Veterinary Nursing Association

CAP Common Agricultural Policy

CEPT Canine and Equine Physiotherapy

CIT Critical Incident Technique

CSP Chartered Society of Physiotherapy

DEFRA Department for Environment, Food and Rural Affairs

EEA European Economic Area

EFA Exploratory Factor Analysis

EO Exemption Order

FCC Family Centred Care

FERA Food and Environment Research Agency

FRC Farriers Registration Council

GCC General Chiropractic Council

GDB Guide Dogs for the Blind

GA Grounded Analysis

GT Grounded Theory
GOC General Osteopathic Council
HCPC Health and Care Professionals Council
IRVAP Institute of Registered Veterinary & Animal Physiotherapists
MDT Multidisciplinary Teams
MAA McTimoney Animal Association
NAVPA National Association of Veterinary Physiotherapists
NHS National Health Service
NOAH National Office of Animal Health
NSO National Sheep Organisation
ODLQC Open and Distance Learning Quality Council
PFMA Pet Food Manufacturing Association
PWOM Positive Word of Mouth
RCVS Royal College of Veterinary Surgeons
RMPP Review of Minor Procedures Regime (project)
RPS Royal Pharmaceutical Society
RUMA Responsible Use of Medicines in Agriculture Alliance
RVN Registered Veterinary Nurse
SOAP Society of Osteopaths in Animal Practice
SPS Single Payment Scheme
UCAS Universities and Colleges Admissions Service
VCA Veterinary Care Assistant
VDC Veterinary Development Council
VMD Veterinary Medicines Directorate
VPG Veterinary Pharmacist Group
VPF Veterinary Pharmacist Forum
WCF Worshipful Company of Farriers

Chapter 1: Introduction

Animals have an important role in modern society and the UK has long been recognised as a nation of animal lovers, with individuals prepared to invest considerable amounts of money and emotion into the animals which are kept. Pets are now frequently considered to be a family member and the diverse range of health benefits derived from keeping animals via the Human- Animal- Bond are well researched, understood and applied in developed countries (Timmins, 2008; Friedman and Son, 2009). The humanisation of household companion animals has given rise to tremendous business developments, including the expansion of supermarket sized pet stores which are now a common feature in many out of town retail outlets (Pets At Home, 2016). Animals such as racing dogs and horses are kept for popular and financially lucrative sporting disciplines; often rendering the net worth of successful and high genetic merit stock into millions of pounds (Tattersalls, 2016). In addition, there are substantial markets for food producing animals, vital to the population both in terms of production for home markets but also for sustainable export markets (DEFRA, 2016). The societal and monetary value of animals cannot be undervalued. However, the sectors providing essential animal health services in the UK remain unreflective, under-researched and neglecting to understand contextualised client service quality (Lowe, 2009) evident though the distinct lack of research in this area. This is in stark contrast with the evidence base for veterinary treatment and other modes of animal health treatments which are focused, expansive and thorough.

Models of service quality have been widely applied to service industries including the human health sector (Carman, 1990; Newsome and Wright, 1999; Wisniewski and Wisniewski, 2005; McClland and Vogus, 2016). Enterprise and organisations appreciate that high standards of service quality and a customer centric ethos will enable the retention of clients, attract new clients and subsequently enhance business profitability. Provision of service quality is accepted as a fundamental driver for business sustainability and success, which engenders client satisfaction and therefore loyalty. In the contemporary animal health industry, client loyalty can no longer be easily guaranteed and customers will change service providers repeatedly in the pursuit of higher service quality and better value. Changing demographics, including increased corporatisation, greater choice and access to information via social media, and the ease of client movement from one practitioner to another creates an uncertain business environment for the animal health sector. In many cases, the animal health sector has struggled to maintain pace with these developing client behaviours and is perceived to have an over-reliance on historically successful models of customer loyalty, which were practitioner rather than client-centric (Lee, 2006; Vet Futures, 2016). This is reflected in a lack of applied service quality research in the sector in comparison with analogous human health

sectors and equivalent animal health industries in North America which have already taken steps to identify the role of the client in service provision (Shaw *et al.*, 2004; Coe *et al.*, 2008; Shaw *et al.*, 2008; Coe *et al.*, 2010; Shaw *et al.*, 2012).

This chapter is structured to describe the socio-economic importance and contribution of the domesticated animal to UK society, including companion animals, horses and farm animals; to define the parameters of the study in relation to the research objective and to outline the structure and content of forthcoming chapters.

1.1 Study Context

As an established service sector, the animal health industries have yet to acknowledge the true importance of service quality to business sustainability and success. Comparable human health sectors have long recognised the significance of service quality to their patients and the field has been subject to considerable inquiry (Prahalad and Ramaswamy, 2004; Vogus and McClland, 2016). The failure of the animal health sector to identify with models of service provision is liable to affect advancement of the industry and resultant business viability. Research is needed to generate proactive strategies for service quality provision through the identification and confirmation of pertinent service quality dimensions and subsequently the development of sector specific modelling for veterinary groups and allied animal health professionals. The combined study outputs of this study, will seek to alleviate current challenges faced by the animal health sector such as demographic changes, economic forces, increased market competitiveness and client behaviour. These will provide professions with proactive responses to meet client expectations and needs and ultimately enable the provision of a higher quality service. Consideration of service in the animal health sector is particularly worthy of inquiry for three reasons;

- 1) The challenge of service evaluation due the inherent intangibility of service quality;
- 2) The complexities arising from the diverse range of animals requiring health service and the variability and unpredictability of client needs and timing for such needs;
- 3) The challenges associated with the delivery of services with the clients of this sector.

Service provision within the animal health sector will be evaluated from the perspective of the client, the veterinarian and other animal health professionals (hereafter referred to as paraprofessionals) using techniques and conceptual frameworks used in comparable human health service quality investigation and other service sectors. Data representative of the three defined stakeholder groups (client, veterinarian and paraprofessional) will be collected to enable a balanced and unbiased assessment of client service provision in the sector.

1.2 Animal Health and Veterinary Service

The UK animal health sector has a diverse range of practitioners, working alongside or in addition to the veterinarians, who are also able to provide health expertise. These practitioners are collectively referred to as 'paraveterinary professionals' or 'paraprofessionals'. At the time of writing, the term 'paraprofessional' is most widely used within the industry and will, therefore, be utilised throughout this thesis. Naming of this group appears to have been generated from within the veterinary sector and has been anecdotally adopted. Examples of paraprofessionals include;

- animal musculoskeletal workers (physiotherapists, chiropractors and osteopaths)
- veterinary nurses
- animal nutritionists
- veterinary pharmacists
- farriers
- foot trimmers

In many respects, paraprofessionals fulfil roles similar to their equivalent human practitioner counterparts but are not governed by specific councils, do not have protected titles and often do not have to conform to set training processes and continued professional development standards. Human medical professionals other than qualified doctors, surgeons, dentists and consultants such as, physiotherapists, dieticians, nutritionists, and podiatrists, often have an autonomous role in the assessment and treatment of human patients in areas of their own expertise. This is aided through governing councils such as the General Chiropractic Council (GCC) and the Health and Care Professionals Council (HCPC), (GCC, 2013; HCPC, 2013). Autonomy of practice and the ability of health professionals to register with standard councils is thought to enable patients to make informed choices and to facilitate health care professionals' effective working within interdisciplinary or multidisciplinary teams (MDT). Conversely, within the animal health service, the use of all categories of paraprofessionals within a veterinary led team is not widely accepted nor utilized (Lowe, 2009). It is speculated that the lack of parity in training standards, adherence to unified professional standards and resultant legal protection of professional titles creates reluctance by the veterinary sector to provide fully integrated care through the utilization of paraprofessionals (Lowe, 2010). These represent factors which could ultimately impact on client satisfaction and perception of service quality. Veterinary and animal health provision in the UK is considered to be exemplary but service quality and client focus has been overlooked and under-researched, evidenced by the lack of literature in this area, positioning the industry a distance behind equivalent human health provision.

Legislation regarding acts of veterinary surgery necessitates that paraprofessionals do not have an autonomous role analogous to human professional counter-parts (VDC, 2012).

Under the Veterinary Surgeons Act (VSA) 1966, only veterinary surgeons can carry out acts of veterinary surgery, encompassing a diverse range of animal health practices. However, exemptions exist for lay persons, animal keepers/owners, farmers, technicians and other professionals where an Exemption Order (EO) is in place (RCVS, 2015). Unfortunately, these exemptions do have inconsistencies as do the requirements for veterinary direction and/or supervision and training (VDC, 2012). The inevitable result is that many animal health services in the UK can only be provided for by veterinarians, either directly or indirectly following veterinary referral or under veterinary supervision, manifesting in legislative grey areas which make for a confusing market-environment for animal health clients.

Current limitations of the UK animal health industry have been identified and discussed within professional sector reports including the Lowe Report (2009), the Veterinary Development Council Report (VDC) (2012) and the British Veterinary Association (BVA) Vet Futures Strategy (2015). The Lowe Report (2009) was commissioned following Governmental concern regarding the availability of farm animal vets during the 2001 Foot and Mouth outbreak. However, the report made inadvertent discoveries regarding the veterinary sector as whole, including an appraisal of limitations of the UK veterinary system, barriers to using paraprofessionals, and potential for enhanced use of paraprofessionals within the sector. The primary VDC Report (2012) was a direct consequence of the decisive Lowe Report. Identified within the terms of reference, the VDC appointed working group sought to investigate the appropriateness of increased utilization of paraprofessionals within veterinary led teams and hence the provision of interdisciplinary care in the context of service provision. These subsequent publications have since been complemented by Vet Futures (2015); an industry project board initiative of the BVA which makes observations reading the client and client service and will be discussed further within the review of literature.

1.2.1 Multidisciplinary Teams

The multidisciplinary healthcare team (MDT) has been defined as a team of healthcare professionals including representatives of different disciplines who co-ordinate the contribution of each profession which are not considered to overlap in order to improve care (Borrill and West, 2002). The purpose of MDTs should be to ever-improve health standards, to allow for complementary models of patient care and to enable successful collaborations within healthcare (Hillegass *et al.*, 2002; Atwal and Caldwell, 2005). MDT working systems in the National Health Service (NHS) were developed through the 1970s and 1980s as the benefits of a holistic approach to patient care were acknowledged (Atwal and Caldwell, 2005). The benefits of MDT working include; improved planning, more clinically effective services, more responsive and patient focused service and avoidance of duplication and fragmentation (Atwal and Caldwell, 2005). Additional cited

advantages include enhanced cross-fertilization of ideas, sharing of knowledge and good practice, support within team members and easier continuity of care whilst maintaining a client-focused service (Carter *et al.*, 2003). The conceptual recognition that no one individual health care professional can hold the key to all the health needs of a patient is transparent and widely accepted within interdisciplinary care (Borrill *et al.*, 1999). Health professionals identify and appreciate the benefits of team working to client service provision but putting the ideal into practice is not without practical and inter-professional challenges and barriers. Variability of teams within hospitals in terms of leadership culture and professional status (Atwal and Caldwell, 2005), and gender and hierarchical issues (Borrill *et al.*, 1999) create inevitable challenges to effective teamwork. Work completed by Dalley and Sim (2001) examined the barriers to effective working between nurses and physiotherapists due to inter-professional perceptions of roles and responsibilities. Barriers to effective MDT working does represents a significant area of interest for the veterinary sector and one which has not yet been comprehensively investigated. Animal health professional, Sharp (2008) advocates use of MDT working for effective post-surgery or post-injury rehabilitation for companion animals, affirming that the team should be provided by way of a collaborative approach including, in this instance, the veterinarian, veterinary nurse and physiotherapist. However, a veterinary lack of knowledge about how physiotherapy may benefit an animal and subsequent reluctance to refer is evident within all animal sectors (Doyle and Horgan, 2006; Sharp, 2008) and provides an example of one challenge to interdisciplinary care. Use of inter-professional team working for companion animals and equines can be for health and welfare purposes but increasingly for rehabilitation or improved athletic performance of working dogs or sports horses (Sharp, 2008).

Interdisciplinary team working carries a different emphasis when food producing animals are considered, but similar challenges to the role of the paraprofessional are cited to be apparent (Lowe, 2009; VDC, 2012). There is some evidence for effective interdisciplinary team working within the livestock sector (Mulligan *et al.*, 2006) suggesting that disease prevention is no longer the sole responsibility of the veterinarian (Mulligan and Doherty, 2008). Equally, there are strong advocates for best practice work using the MDT approach in combination with better dissemination of knowledge to improve animal health, welfare and productivity (Mulligan and Doherty, 2008; Reader, 2012). Providing communication lines are clearly defined and maintained, established MDTs within the sector appreciate the benefits gained, find increased strength of provision and subsequently better client service provision when paraprofessionals are incorporated into the team (Reader, 2012). This represents a finding similar to the use of MDTs within human medicine (Carter *et al.*, 2003).

Current trends in the animal health sector indicate paraprofessionals could be more widely utilised to enhance service provision (Lowe, 2009; Lowe 2010; VDC, 2012). Changing demographics are indicative of a steady growth in the numbers of veterinarians working within companion animal practice at the expense of the livestock sector (VDC, 2012; RVCS Facts, 2015). The vast majority of veterinarians now work in practices that do no farm animal health work at all (Lowe, 2009; RCVS, 2010) and allied to this is the reducing involvement of veterinarians in veterinary public health. Both of these factors come at a time when consumer interest in food safety and animal health and welfare is at its peak and veterinary public health and animal disease surveillance are of paramount importance. These concerns, in combination with the veterinary sector trends of increasing feminisation of the profession, a shift towards companion animal practice and a decline of GP veterinarians (RCVS, 2010), suggest that the use of paraprofessionals may provide a potential solution to some of the current challenges faced by the sector (Mulligan and Doherty, 2008; Lowe, 2009; Lowe, 2010; Reader, 2012). Thereby providing greater quality service to the client (Reader, 2012). These changes are also indicative of a rapidly evolving market place for animal health service provision.

1.2.2 Service Provision

The failure of veterinary and paraprofessional practitioners to widely adopt a client centered strategy underpinned by quality service provision has been reported (Lee, 2009; Lowe, 2009; Lowe, 2010) and the veterinary profession has recently identified with this limitation (Williams and Jordan, 2015). The absence of focused research is a notable indicator of the shortcomings in the understanding of client service quality tailored to the sector.

Limitations in the provision of service in the animal health sector are described and considered within this study as follows:

- Veterinary and paraprofessionals are failing to adopt a client centered strategy underpinned by quality service provision which is responsive to client wants and needs (Lee, 2009; Williams and Jordan, 2015).
- Unlike many other established service sectors including human health, service quality in the animal health industry is largely un-researched. A conceptual framework for animal health provision does not exist and communication between industry stakeholders may be the weak-link in the provision of joined up animal health care.
- The wide range of veterinary and paraprofessionals are not currently utilising a cohesive, holistic and mutually beneficial strategy for working despite acknowledgment of the benefits gained through inter-professional structures and the current challenges to effective working (Lowe, 2009; Lowe 2010; VDC, 2012).

Statham and Green (2015) propose that traditional working models in the animal health industry may well be outdated, unable to match client needs and therefore need to be re-thought. Modes of interdisciplinary care are currently subject to investigation (Kinnison *et al.*, 2014) and active debate (Statham and Green, 2015) as are changing client behaviors (Williams and Jordan, 2015), thus confirming the timeliness and relevance of this study to the industry.

1.3 Social and Economic Importance of Domesticated Animals

To fully appreciate the importance of the health service within the defined animal sectors, it is essential to consider the roles of domesticated animals as companion animals, animals within sport and food producing animals and, therefore, the over-arching economic significance and contribution of animals to society. Each sector contributes in a unique but meaningful way to modern societal norms. To maintain consistency throughout this study, the domesticated animal sector is grouped into three categories; Companion animals, horses and food producing animals (farm animals). This typology is the most representative and is adopted to ensure consistency and clarity.

1.3.1 Companion Animals

‘Pet’ is the commonly used term to define “a domestic or tamed animal or bird kept for companionship or pleasure and treated with care and affection” (English Oxford Dictionary, 2017). However, this description does not truly account for the categories of animals used for professional or working activities or more exotic animals which are now popular to keep. It is for this reason that the term ‘companion animals’ will be used within this study when referring to the wide range of animals kept within the UK household. Accurate figures for the number of animals kept in UK households is difficult to come by due to the lack of unifying registration or licencing requirements but it is estimated that up to 45 million UK households keep companion animals (Table 1.1). The Pet Food Manufacturing Association (PFMA) is often cited and estimates that 45% of households have companion animals; a figure which has declined over recent years dropping from 47% in 2010, but nonetheless representing a substantial figure.

Table 1.1 Estimated companion animal numbers (UK)

Species	Numbers in 2010 (millions)	Number in 2013 (millions)
Dog	10.5	8.5
Cat	10.3	8.5
Ornamental fish (tanks)	No data	20-25
Ornamental fish (ponds)	No data	20-25
Rabbits	No data	1
Caged birds	No data	1
Guinea pigs	No data	0.5
Hamsters	No data	0.5

(Source: Adapted from Murray *et al.*, 2010; PFMA, 2013)

A question for consideration is why do so many people in the UK choose to share their existence with a dog, cat, goldfish or another creature? The reasons seem to be far reaching and diverse, ranging from a desire for companionship and for ornamental purposes to the functional provision of a service within the family, household or a combination of factors (Timmins, 2008). There is some overlap within the roles of working companion animals as these animals may fulfil an active role as a working gun dog or medical support dog, whilst also being a valued member of the family. Several reasons why companion animals are kept are suggested below, but this is by no means an exhaustive list:

- Companionship and company
- Protection and security
- Ornamental purposes (fish, birds or even pedigree dogs and cats)
- Working dogs- gun/detection dogs
- Athletic and racing dogs (greyhounds, agility and obedience)
- Guide dogs and medical assistance dogs
- Companion animals kept for breeding and showing

Organisations such as Guide Dogs for the Blind (GDB) state that the benefits enabled by the service of the guide dog(s) as the provision of mobility and freedom to blind and partially sighted people. In 2013, GDB provided approximately 780 new guide dog partnerships positively impacting a substantial number of peoples' lives (GDB, 2013).

Companion animals are utilised within a wide range of animal assisted therapies (Fine, 2010) as these have been shown to successfully improve the quality of life for all persons (Timmins, 2008). Animal therapy is cited to be valuable for persons with neurological, social and development disorders (O'Haire, 2010) encouraging social integration, promotion of responsibilities and empathy with others, independence and self-confidence (Timmins, 2008; O'Haire, 2010). Investigation into the relationship between human and animal, a phenomenon known as the Human-Animal Bond (HAB) has demonstrated the human health and emotional benefits associated with animal ('pet') ownership (Friedmann and Son, 2009). Companion animal ownership is known to provide positive health benefits for cardiovascular health and functional status in coronary disease patients (Friedmann and Son, 2009). Timmins (2008) extends this concept indicating a link between the strength of HAB and the desired level of veterinary care provided for the animal, suggesting an important correlation between HAB and primary care veterinary practice. The wide-ranging reasons why companion animals are kept, combined with the number of animals within homes give an indication of the importance of these animals to society.

1.3.2 Horses

Keeping of horses has long been a favoured pastime for people. Horses have and

continue to be used for military purposes, for agricultural purposes, and for racing and other sporting disciplines, all of which are steeped in history and tradition. Successes of the GB equestrian athletes at the London Olympic Games 2012 in the disciplines of dressage, eventing and show jumping has further increased public interest in horses and riding as a sporting pursuit (TeamGB, 2013a; TeamGB, 2013b; TeamGB, 2013c). The most current UK horse industry surveys estimate that there are 3.5 million riders in the UK and that horseracing is Britain's second most popular spectator sport (BETA, 2013), proving the sport to be more popular than rugby or cricket.

People keeping horses in the UK broadly fall into three categories:

- Those who keep horses for leisure or pleasure;
- Competitors active in affiliated sporting disciplines such as eventing, dressage or jumping;
- The Racing Industry.

The scope and breadth of the UK horse industry is both diverse and expansive. Current estimates of the numbers of horses and ponies within the UK suggest approximately 900,000 to 1 million horses being kept by 451,000 owners or carers (BETA, 2013). More up to date information is difficult to obtain as the National Equine Survey is only completed by the British Equine Trade Association (BETA) on a four-year cycle and the recent demise of the National Equine Database, responsible for the issue of equine passports makes tracking via passports impossible (BETA, 2013). Figures for 2017 show that there are approximately 14,000 racehorses in training, (National hunt and flat racehorses), in 825 racing yards and 4,635 Thoroughbred foals have been produced this year (BHA, 2017). The gross economic output of the equestrian sector was last valued at £3.8bn/year (BETA, 2013) with a further contribution of the racing sector at £3.4bn/year (Deloitte, 2013) giving a total estimated industry contribution of £7.2bn/year.

In terms of the wider importance of equestrianism to the UK, lottery funded horse riding initiatives have been devised. The British Equestrian Federation (BEF), as the national governing body for horse sport in the UK (BEF, 2015), launched a health and fitness campaign entitled "Trot to be Trim". This initiative is a part of the wider "Hoof" legacy of the 2012 Olympic Games, devised to facilitate pathways into equestrianism and riding (BEF, 2013) and further promoted by the national sporting campaign of "This Girl Can" (Sport England, 2015). These campaigns confirm the sporting and activity based importance of the horse to society.

Appraisal of the equine health sector supports the financial contribution of the sector as health care is estimated at £344 million per annum, of which £254 million covers fees for veterinary medicine and treatment (BETA, 2013). Health in the horse not only requires diligent attention to husbandry and routine prophylactic veterinary treatments, e.g. vaccinations, but also contributions from paraprofessionals such as farriers, equine dental

technicians and nutritionists. There are comparable contributions for companion animals and the livestock sectors.

There can be confusion with regards to the legal classification of the species equidae in the UK as under EU law all ponies, horses and donkeys are classed as food producing animals despite generally not being used for this purpose in the UK (VMD, 2014a). The British horse is not produced for food but is largely considered as a companion animal or an animal to be used for sporting disciplines. Thus, for clarity, the horse will be classed in a category separate to both companion and food producing animals.

1.3.3 Food Producing Animals

The main food producing animals in the UK are;

- dairy cattle (providing liquid milk and products for manufacturing such as cheese and yoghurt)
- beef cattle (meat)
- sheep (meat, milk and wool)
- pigs (meat)
- poultry (meat and egg)

Changing demographics and increased multiculturalism within the UK has introduced new markets within the livestock sector such as the production of goat meat (McVeigh, 2015). The focus of this research will remain on the established markets of dairy, beef and sheep sectors. The pig and poultry sectors make important contributions to the livestock sector but are excluded from this research due to the closed nature of the enterprises (BPEX, 2015; The Poultry Site, 2016).

Livestock production is for both home markets and for export (NFU, 2016). Data for each sector have been taken from the levy boards which are part of the Agriculture and Horticulture Development Board (AHDB), a non-departmental public body working closely with the Department for Environment Food and Rural Affairs (DEFRA). Levy is taken from producers within each sector to enable the maintenance of accurate industry statistics and provide research and educational publications for each sector. For clarity, as the levy boards have been renamed these organisations are:

- AHDB Dairy (formerly DairyCo) for dairy production in the UK
- AHDB Beef and Lamb (formerly EBLEX) for beef and lamb production in the UK
- AHDB Pork (formerly BPEX) for pig production in the UK.

1.3.3.1 Dairy Production

Despite an overall decline in the number of dairy farms within the UK during the period from 2005-2013, the number of dairy cows increased by 59,000 in 2014 giving a total figure of 1.81 million (DairyCo, 2015a; DairyCo, 2015b). Regardless of the declining trend of dairy farming, the total UK dairy herd size has remained stable as herd size on farm has generally increased (DairyCo, 2015c), as has milk yield per cow (DairyCo, 2015e).

Intensively kept, large herds of genetically high yielding dairy cows confer the benefit of increased milk production in a more cows per stockman system. Correspondingly production related disease will also increase unless the farming management systems access new technologies, give detailed attention to quality nutrition and husbandry and utilise skilled health professionals. Many examples of production diseases of the dairy cow could be discussed to indicate the importance of animal health care and economic significance but this is outside the scope of the study. Mastitis is therefore presented as a single example. As an inflammatory disorder of the udder, mastitis renders the milk produced unusable and is a common occurrence in the UK dairy herd (Breen *et al.*, 2009). The economic impact of the condition is well recognised (Halasa *et al.*, 2007) and the financial implications may be threefold:

- Economic losses from milk buyers as milk quality bonuses are not paid;
- The actual veterinary costs incurred which range from £65 for a mild case but on average are estimated at £250-300 (DairyCo, 2015f);
- Financial costs considerably increase if the cow becomes chronically infected and is culled from the herd as a replacement cow must be purchased (DairyCo, 2015f).

The condition represents only one health challenge for the dairy cow. Other commonly occurring production related disorders such as lameness and infertility can have profound effects on animal health and welfare and the economic costs of production (Archer *et al.*, 2010). Promoting animal health and minimising the effects of these conditions requires strategic and holistic health management to be implemented which is enabled through effective and quality health service.

1.3.3.2 Beef and Lamb Production

Often beef and sheep will be farmed on the same enterprise due to similarities in production systems used and for this reason they are considered together within this section. Production in the UK beef industry has remained relatively consistent in the period from 1990 to 2013 (EBLEX, 2015b). Despite a decline in the number of holding sizes, it is estimated that there are 1.6 million beef suckler cows and 0.4 million beef heifers (EBLEX, 2015a) enabling the production of 847,000 tonnes of beef and veal and representing 77% of the overall UK beef consumption (EBLEX, 2015a). Production systems for beef can be extensive, semi-intensive or intensive which is influenced by breed of animal and this determines management, husbandry and nutritional system and can affect the types of diseases and disorders. Cost of production for the beef stock can be variable due to the range in production systems and are, therefore, more difficult to gauge as compared to the dairy sector.

The UK is a valuable contributor to the global sheep market (Eurostat, 2015). Although the total number of sheep in the UK showed a decline of 29% in the period of 1990-2005, it has since plateaued and remained consistent (NSO, 2015). The contraction of numbers

has not affected sheep meat exports, as in 2012, the UK became a net exporter for the first time since 1990. The export market is incredibly important to the sector but much of UK lamb is consumed in the home market (NSO, 2015). Commercial UK sheep production systems follow a unique stratified or three-tiered structure which enables producers to utilise the diverse range of breeds and to maximise output from different grazing systems (NSO, 2015). However, the apparent buoyancy of the market does conceal pressures on the market from exports of New Zealand produced lamb which must not be underestimated (FWI, 2015; NSO, 2015) and producers need to pay diligent attention to management, veterinary and husbandry to maximise returns, increase profitability and enhance business competitiveness (EBLEX, 2015c).

1.4 Chapter Summary

This chapter has provided an outline of the study's purpose and rationale, summarising the similarities between models of human health and animal health care exist, whilst identifying the incongruities in the latter. The domesticated animal sectors, of companion animal, equine and livestock are reviewed to demonstrate the complexity of the animal health industry and the challenge of defining service quality within a diverse, expansive and important sector.

1.5 Thesis Outline

The thesis is presented as a record of the research process used to develop a model of service quality within the animal health sector. Chapter one has described the context of the study, the current research gaps and presents the societal value of domesticated animals in the UK. Chapter two will consider the extant service quality literature to enable orientation of the study, provide the background and theoretical perspectives necessary to inform and shape the research. Current deficiencies in service provision in the animal health sector will be explored through the framework of the study, enabling the establishment of the research parameters. Chapter three will present the selected methodologies and methods to enable investigation of the study research aim and objectives. Chapter four will present the findings from the data analysis in methodological sequence, (mapping, qualitative interviews and quantitative surveying). Chapter five will discuss the findings of the study in the context and sequence of the research aim and objectives. Chapter six concludes the thesis, summarising the contribution of the study to the animal health sector and to marketing theory and presents recommendations for future research in this area.

2.0 Literature Review

This chapter examines the development of marketing theory relating to service quality; from goods-dominant logic to service-dominant logic and the provision of value in-service. The UK animal health sector provides private service to clients and so it is distinctly a service industry, but it lacks finesse in the day-to-day application of current marketing concepts. Much of the animal health literature discussed herein originates from overseas and is supplemented with human health service literature. It should be noted that a significant proportion of the animal health literature is veterinarian focused, which is not an oversight of the study but is indicative of the emergent nature of the paraprofessional, the limited appreciation of service quality in animal health provision and a corresponding lack of research in the area.

The review of literature will address questions regarding expectations of service quality within the animal health sector as determined by the clients and industry professionals and if these expectations are currently being met by the industry. Contributions to conceptualisation of S-D logic to the sector will be considered and pragmatic industry focused recommendations proposed through the development of a conceptual framework. The study investigates the utilisation of S-D logic and the adoption of notions of value co-creation in the rapidly developing animal health market.

Professional services such as those provided by health professionals are unlike other types of service such as hospitality or transportation. Health care clients' expectation of service quality is multifaceted and complicated due to the complex and individualised nature of ill-health and the response to treatment (Vogus and McClland, 2016). Multidimensional constructs of quality and satisfaction are challenging to identify and measure within health (Bendall-Lyon and Powers, 2004) but this review will contribute toward the identification of dimensions of service quality specific to animal health, through the novel application of service quality models to the sector.

2.1 Focus and Purpose

The literature has been reviewed for the following purposes:

- 1) To identify established models of service quality constructs to locate and inform the study;
- 2) To establish the salient background information on the animal health sector service necessary to understand the research gaps;
- 3) To provide insight into the complexities associated with the delivery of service quality in professional animal health sectors.

A conceptual model of service quality in the animal health sector is developed following a review of the relevant service quality and industry specific literature. The framework will

enable development of service quality constructs pertinent to the sector, identification of anticipated relationships between constructs and determination of construct measurement techniques, all of which inform the study process.

2.2 Nature of Service

Marketing and service are complicated, multidimensional phenomena (Gummesson, 2008a; Walter *et al.*, 2010), which are challenging to define (Grönroos, 2007) and correspondingly have been subject to much discussion and dispute within marketing science and between scholars (Gummesson, 2007). As an inherently vague and highly situational specific term (O' Shaughnessy and O' Shaughnessy, 2011), services have been defined by Vargo and Lusch (2008) and Zeithaml (2009) as actions, procedures and performances provided by one person for use by another. Broad categorisation by Vargo and Lusch (2004) divides service into service industries, product services, customer services and derived services.

In service industries, such as hospitality, health or the financial sector, the core product is service, but it is now widely accepted that firms providing physical goods also provide an inherent service (Cova and Salle, 2008). This is achieved through the customer services associated with the purchase of a product and additionally the derived service which is defined as the value obtained directly from the purchased physical goods (Vargo and Lusch, 2004; Zeithaml, 2009). Regardless of the categorisation, the key characteristic of service is its intangibility (Grönroos, 2007; Lusch *et al.*, 2007), also each service experience is a unique and individual event determined by a wide array of variables including, for example, price, timeliness, accessibility and personality traits of service provider and client (Lisch, 2014). Grönroos (1978; 2006; 2007) described the three basic characteristics of service as:

- 1) Physically intangible but exchangeable;
- 2) It is an activity and a process;
- 3) Production and consumption of the service will almost always occur simultaneously.

In the formation of an opinion on service provision, the client will process a significant volume of information (Grönroos, 2007), making service quality a complex and intricate phenomenon. Daily changes in individual clients' expectations and experience of the service render service provision a highly perishable encounter which cannot be exchanged or returned, yet the effects on business success and competitiveness can be both influential and abiding (Lusch *et al.*, 2007; Lisch, 2014).

2.2.1 Service Quality

Retention of clients and the attraction of new clients within any business providing service are driven by client experience and service quality (Walter *et al.*, 2010). The modern market is comprised of more informed, discerning and sophisticated clients, who are open

to testing a range of goods and services, consistently seeking greater value, demonstrating less loyalty and more flexibility in their decision-making when choosing a service provider (Walter *et al.*, 2010). These traits are also apparent in veterinary sector clients (Vet Futures, 2016). For business success, the service provider needs to be able to understand the uniqueness of each client and the factors which may influence the clients' decision making process when selecting a service (Wisniewski, 2001).

Service quality is difficult and complex to define but is often considered in the context of disconfirmation theory; described as the extent to which the service provider meets or exceeds the client expectation (Ojasalo, 1992; Parasuraman *et al.*, 1993; Wisniewski, 2001). Failure to meet expectations is considered less than satisfactory, service quality is lower and the client is left feeling dissatisfied (Parasuraman *et al.*, 1993; Wisniewski, 2001). Detailed examinations of service quality have been undertaken in many sectors of service provision (Wisniewski and Wisniewski, 2005), such as retailing (Carman, 1990), financial services (Abdullah *et al.*, 2011), Telecoms (Ahmed *et al.*, 2011) and human health (Newsome and Wright, 1999; Newsome and Wright, 2000; McClland and Vogus, 2016). However, service quality concepts and measurement techniques have not yet been applied to animal health enterprises in the UK.

2.2.2 Evolving Service-Dominant Logic

“Service is defined as the application of specialised competences (operant resources, knowledge and skills), through deeds, processes and performances for the benefit of another entity or the entity itself.” (Vargo and Lusch, 2008 p. 26).

Before the 1950s, marketing theory was orientated around the exchange of tangible goods (Grönroos, 1978; Vargo and Lusch, 2004) and the physical dispersal of products rather than the provision of service (Lusch and Vargo, 2014). Marketing as a discipline embraced the concept of Goods-Dominant (G-D) logic with units of production output being the central components of exchange within the market (Lusch *et al.*, 2007). The ensuing economic thought put value onto goods to develop pricing structures, therefore developing philosophy that focused on the inherent value of goods. G-D logic derived much of its theory, concepts and models from other disciplines (Vargo and Lusch, 2008) and constrained the later understanding of service (Lusch and Vargo, 2006).

Marketing's focus on consumers developed during the late 1960s and 1970's as the role of the customer within service was established. Kotler (1997) has defined marketing in terms of customer satisfaction assessed by profitability and through the optimisation of the Marketing Mix or Four Ps (Price, Product, Promotion and Place), demonstrating the limited importance of the service provision at that time. It later became evident that service-based marketing concepts could also be relevant to manufacturing enterprises (Cova and Salle, 2008). In the decade that followed, service businesses became widespread and marketing philosophy advanced from goods-orientated processes to a

customer service focus, yet the consumer remained exogenous to value creation within service (Grönroos, 2007). Competitive advantage in business was seen to be attained through the successful deployment of the Four Ps; a concept which assumes a passive client Development to the Seven Ps introduced People, Process and Physical evidence (Figure 2.1) incorporated the customer into the model (Booms and Bitner, 1981). This development progressed the concept of service and competitive advantage to the forefront of marketing thinking but for some, the theory served only as a tool for maximisation of product value rather than client focused service (Lusch *et al.*, 2007).

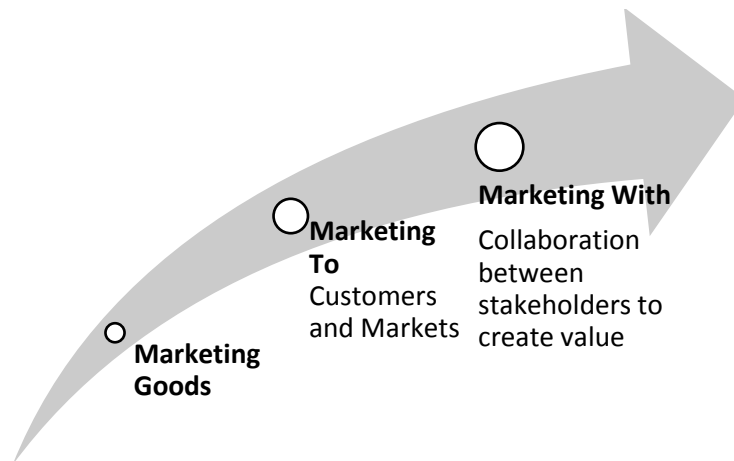


(Source: Adapted from Booms and Bitner, 1981)

Figure 2.1 Product marketing mix

Changing business models rendered the goods-logic and goods-centric nature of commercial language, including use of words such as product, production and supplier, as problematic with respect to client-centric service provision (Vargo and Lusch, 2008). From the existing fragmented marketing logic came the development of service-dominant logic (S-D logic) as an opposing paradigmatic viewpoint to G-D logic. Integration of G-D logic marketing theory to service provision was particularly problematic as clients evaluate the receipt of goods differently to the receipt of services (Parasuraman *et al.*, 1988; Vargo and Lusch, 2004). S-D logic promoted a shift from the exchange of tangible products (G-D logic) to the exchange of intangibles (Grönroos, 1978) including skills and knowledge (Vargo and Lusch, 2008) and arguably produced a more relevant and inclusive logic (Vargo and Lusch, 2007). In 2000, discussion around the relative merits of using theories of S-D logic in goods based enterprise was well underway (Vargo and Lusch, 2004). The shortfall between the known competitive advantage of service quality and available techniques to measure and improve service prompted work by Vargo and Lusch (2004). Marketing science had previously focused on the exchange of tangible goods, which had

diminishing relevance to the modern market place (Vargo and Lusch, 2008). The validity of the Marketing Mix was questioned and for some, it became a handy framework rather than a measure of the service encounter (Vargo and Lusch, 2004).



(Source: Adapted from Lusch *et al.*, 2007)

Figure 2.2 Evolving marketing philosophy from the 1950's to the modern day

In early marketing theory, the customer was viewed as an operand resource; a resource to be acted upon (marketed to), targeted, segmented and promoted to as the underlying notion was value distribution (Webster, 1992; Lusch *et al.*, 2007). In contrast, S-D logic views the consumer as an operant resource (marketing with); one with an active role in value co-creation and co-production (Figure 2.2) Operant resources are intangibles such as skills or knowledge which represent the core competences of the business. S-D logic puts operant resources as the primary producers of effect and are, therefore, considered to be vital to business success (Lusch *et al.*, 2007; Vargo and Lusch, 2007). Goods are considered only as aids to the process of service provision (Vargo and Lusch 2008) as G-D logic emphasises the role of operand resources within the service process, referring to resources which are affected or changed in some manner to produce an effect (Table 2.1).

Table 2.1 Underlying conceptual transition from G-D to S-D logic

G-D logic concepts	Transitional concepts	S-D logic concepts
Goods	Services	Service
Product	Offerings	Experiences
Feature/ attribute	Benefits	Solution
Value-added	Co-production	Co-creation of value
Value-in-exchange	Value-in-use	Value-in-context
Profit maximisation	Financial engineering	Financial feedback/ learning
Price	Value delivery	Value proposition
Equilibrium systems	Dynamic systems	Complex adaptive systems

(Source: Adapted from: Lusch and Vargo (2006), "Service Dominant Logic: Reactions, Reflections, Refinements" *Marketing Theory* 6(3) pp. 281-288).

Operant resources form the basis of the S-D logic service definition and business competitiveness is a direct function of the respective comparative competence of enterprise stakeholders (Lusch *et al.*, 2007). S-D logic maintains that all economies should be considered as service economies, all businesses as service businesses (Vargo and Lusch, 2008) and that the customer is always central to the service encounter (Grönroos, 1984). Table 2.2 summarises the accepted key resource characteristics of operand and operant services respectively, emphasising the dynamic nature of S-D logic and its centrality to service provision.

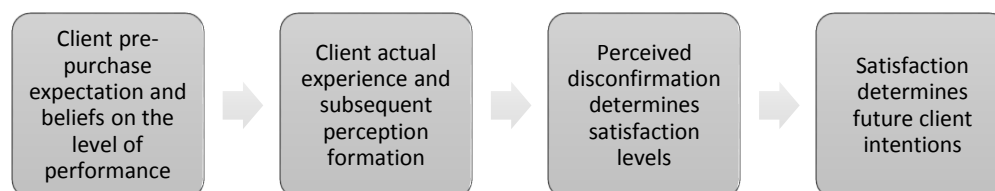
Table 2.2 Key features of operand and operant resources

OPERAND RESOURCES Central to G-D logic	OPERANT RESOURCES Central to S-D logic
Static	Dynamic
Depletable	Capable of rejuvenation and newly created
Resources which are acted on	Resources which produce an effect
	Core competences

(Source: Adapted from Constantin and Lusch, 1994; Lusch *et al.*, 2007; Vargo and Lusch, 2004; Lusch and Vargo, 2006)

2.2.3 Measuring Service Quality

There is no conclusive and unanimously agreed technique to directly measure service quality as it is essentially a theoretical construct made up of multiple factors which are difficult to directly observe (Lisch, 2014). Researchers have devised various techniques to attempt to measure the complex construct of service quality with influential theories provided by Grönroos and Gummesson of the Nordic school (Gummesson, 1985), work from Vargo and Lusch (2004) in the form of foundation premises and through the SERVQUAL model developed by Parasuraman, Zeithaml and Berry (1988). Cronin and Taylor (1994) subsequently developed the SERVPERF model which is a performance based conceptualisation of the SERVQUAL model. Formation of customer perceived service quality and resultant satisfaction has been explained in various service marketing models using disconfirmation theory (Ojasalo, 1992). The preliminary work on conceptual models of the expectation-disconfirmation approach to consumer satisfaction followed a four-step process (Oliver, 1980) based on pre-purchase expectations and subsequent experience and perception formation as shown in Figure 2.3.



(Source: Adapted from Oliver, 1980; Swan and Trawick, 1981)

Figure 2.3 Model of expectation-disconfirmation approach to satisfaction

Disconfirmation philosophy describes how expectations are positively disconfirmed (performance surpasses expectations), confirmed (performance equals expectations), or negatively disconfirmed (performance falls short of expectation). The disconfirmation model predicts that disconfirmation determines satisfaction which in turn determines client intention (Swan and Trawick, 1981) and, therefore, the capacity to influence the future intention of clients. The addition of expectation to disconfirmation is proposed as a useful predictor of client satisfaction since expectation suggests the anticipated level of performance (Parasuraman *et al.*, 1988).

2.2.3.1 Why Measure Service Quality

Provision of high quality service is well recognised as an essential component of success and profitability for any business (Buttle, 1994; Vargo and Lusch, 2004; Zeithaml, 2009), but is not easily achieved due to intricacies within each service encounter (Lusch *et al.*, 2007). Businesses can always serve customers better, making service-centred marketing a reflexive and continuously cyclical process to match the ever-changing experiences and expectations of every client (Vargo and Lusch, 2004; Lusch, 2014). Improved service quality is needed to stand out from the crowd in a competitive marketplace. Failure to fully describe and understand the concept of service and to appreciate its true role in achieving competitive advantage generates the challenge of service quality (Lusch *et al.*, 2007). Models of service quality are presented to aid enterprise as researchers and businesses understand the value of service quality to profitability, customer satisfaction, repeat business and word-of-mouth recommendation. Service quality results from clients' evaluation of service (Grönroos, 1978; Parasuraman *et al.*, 1985; Cronin and Taylor, 1992), thus confirming the importance of client engagement in the service process.

2.3 Models of Service Quality

Business environments have evolved to position service at the heart of marketing theory, resulting in the development of service quality models. This S-D logic developed almost simultaneously by two groups of academic thought which may be termed as the Nordic (European) School (Grönroos, 1982) and the American School (Parasuraman *et al.*, 1985). Interpretation of S-D logic differs for the schools but both propose service to be the foundation of all economic exchange (Grönroos, 2007; Vargo and Lusch, 2008).

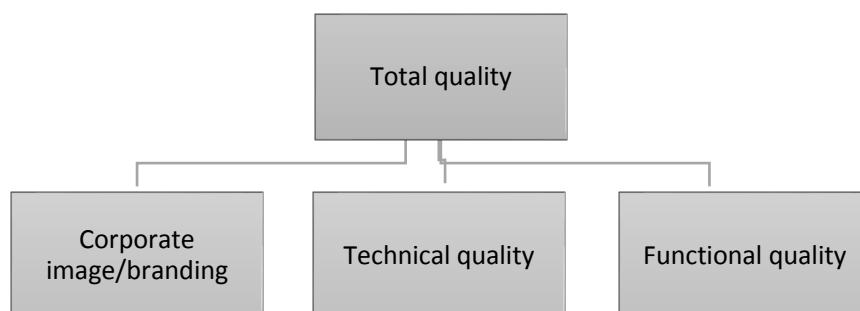
2.3.1 Nordic School of Service Marketing

The Nordic School of Service Marketing, as branded by originators Grönroos and Gummesson, formulated conceptual models for service marketing based upon theories of disconfirmation (Gummesson, 1985). Although influenced by the literature of both the USA and UK, the Nordic School followed its own route (Gummesson, 1998) and implicit in the proposed framework was the notion that all services are inherently relationship processes and that relationships are always present within service provision (Grönroos,

2007). At inception, the mainstream approach to services analysis was the extrapolation of goods-based marketing theory to service marketing. The Nordic School proposed an early conceptual framework (Perceived Service Quality Model) which did not attempt to directly measure quality but emphasised the role of the customer within the provision of service quality and as the co-creator of value in the service relationship (Gummesson, 1979).

2.3.2 Perceived Service Quality Model

The Perceived Service Quality (PSQ) Model was presented as a basic model of the perception of total service quality, describing how customers may perceive features of a service (Grönroos, 1984). As a disconfirmation construct, the PSQ model sought to explain how well the service experience, (including outcome and process), met the consumer's expectations. PSQ is based on the results of customer behaviour research and the impact of expectation and it is maintained that the model provides a foundation for all future research into service quality. Defined by three dimensions, the PSQ framework (Figure 2.4) contends that the quality of a service is determined by the customer perception (Grönroos, 1984) and the quality of a service is whatever the client perceives it to be (Grönroos, 2007). The model differentiates but includes the delivery process (Vargo and Lusch, 2008), defining service to include technical and functional quality (Grönroos, 2012). The technical (outcome) dimension determines what the consumer receives in the service interaction and the functional (process-related) dimension explains how the service is received (Grönroos, 2012). Within the model, a possible image-related filter is defined, describing how the image of an organisation may improve favourability and reputational quality with customers (Grönroos, 1984). The reputational dimension reflects the service organisation's image and is also defined as the corporate image or branding, which is now considered to be vital to service organisations (Grönroos, 2007). The technical and functional dimensions may be most relevant to service industries. However, there are suggestions that health patients may not be able to accurately assess technical quality of health service (Babakus and Mangold, 1992); a point that may have relevance to interpretation and perception of animal health service by the animal owner or keeper.



(Source: Adapted from Grönroos, 2007)

Figure 2.4 Model of customer perceived service quality

Work by Bitner (1992) further developed the PSQ model to include the concept of Servicescape, thus incorporating the role of the physical service environment more fully. The Servicescape framework suggests that the physical service surroundings impact on the consumer and employee on a cognitive and emotional level and, therefore, may also influence behaviours (Bitner 1992). The physical environment gives cues to the qualities and capabilities of the organisation which can be influential in communicating an image and is particularly important to service businesses (Bitner *et al.*, 1990). The ability of the enterprise to create the desired image may directly affect levels of consumer satisfaction through the image portrayed but also indirectly as the Servicescape is proposed to influence the nature and quality of social interaction between client and employee (Bitner, 1995). An apparent limitation of the Servicescape framework is its failure to include social interactions between clients which may also affect their experience (Walter *et al.*, 2010). With the advent of social media and on-line based feedback, this may now have significantly increased importance.

The PSQ model itself does have limitations as it does not consider customer emotion or mood and is presented as a static model rather than a dynamic measuring technique (Grönroos, 2000). Increased interest from researchers in the concept of relationship marketing and the potential influence on service quality in combination with the recognised need for a dynamic model led to further interpretations of the basic PSQ model. The first extension of the PSQ model was the SERVQUAL measurement instrument and the gaps model (Parasuraman *et al.*, 1985; Parasuraman *et al.*, 1988) which was subsequently extended to SERVPERF by Cronin and Taylor (1992).

2.3.3 SERVQUAL

Seminal research in the field of service quality by study innovators, Parasuraman, Zeithaml and Berry, resulted in the development of the SERVQUAL model (Parasuraman *et al.*, 1988; Wisniewski, 2001). SERVQUAL was established following a detailed series of qualitative (focus groups) and quantitative (customer service surveys) service quality investigations (Parasuraman *et al.*, 1988). The studies were undertaken as a response to the lack of empirical service quality research despite a tremendous shift away from production employment to services industries (Zeithaml *et al.*, 1990). As the recognised American model of service quality, SERVQUAL is differentiated from the Nordic School of thought and is critiqued as widely as it is replicated and applied (Buttle, 1994; Cronin and Taylor, 1994) as will be later discussed.

The changing nature of industry, commerce and the intangibility of services render accurate measurement of service quality both complex and challenging. Tangible goods can easily be assessed by the client in an objective manner which is not as clear-cut in service quality analysis (Parasuraman *et al.*, 1988). Prior to the development of the SERVQUAL model, product-orientated marketing theory was extrapolated to service

quality (Lusch *et al.*, 2007; Vargo and Lusch, 2008). Now, however, the application of G-D logic to S-D logic paradigms is restrictive and unrepresentative of the service provision. This is because service quality is more difficult for clients to evaluate than tangible goods; it is more difficult for marketers to comprehend the criteria used by clients in the evaluation of intangible service quality; the client assessment of service quality is not solely outcome driven; on occasions the process is of an equal or greater importance in comparison with the ultimate service outcome; and it is only the client who defines the assessment of service quality (Zeithaml *et al.*, 1990). Despite comprehensive service quality research by a diverse range of academics, these challenges remained valid until the inception of SERVQUAL. SERVQUAL has since provided a technique to both measure service quality and to enable businesses to successfully manage service quality through increased company awareness of service quality as perceived by the client (Buttle, 1996; Parasuraman *et al.*, 1998; Walter *et al.*, 2010). As a model of service recipient satisfaction, SERVQUAL is informed by disconfirmation philosophy, based on a comparison of the perception of service received and a standard measure of consumer expectations (Parasuraman *et al.*, 1988).

The SERVQUAL model extends the disconfirmation-expectation model, defining high quality service as the achievement of balance between client expectations and client perceptions and, where there is a gap between the two, to provide the necessary information to enable closure of this gap (Parasuraman *et al.*, 1988; Zeithaml *et al.*, 1990). Initial qualitative studies undertaken by Parasuraman, Zeithaml and Berry (1988) in the form of wide-scale focus groups conceptualised service quality and, in conjunction with the results of the quantitative studies, enabled the production of an initial 22-item instrument of SERVQUAL (Parasuraman *et al.*, 1988; Zeithaml *et al.*, 1990). Customer focus group studies using SERVQUAL revealed that the essential component in determining service quality is to meet or exceed the clients' expectation, that the client perceives actual service performance in the context of expectation and that expectation is influenced by a range of factors. Parasuraman *et al.*, (1988) concluded that client expectation is determined by recommendation from others (word-of-mouth expectation), individual needs and wants, experience and external communication from the service provider about what to expect. The service provider has varying control over these complex differing factors of expectation. Focus group results showed there to be emerging consistent criteria via which clients were basing service quality judgements. Client judgements then enabled the formation of ten key dimensions of service quality containing factors which do not necessarily function independently of one another (see Table 2.3).

Table 2.3 Ten SERVQUAL dimensions of service quality

Tangibles
Reliability
Responsiveness
Competence
Courtesy
Credibility
Security
Access
Communication
Understanding the customer

(Source: Adapted from Parasuraman *et al.*, 1988)

Aspects of the ten SERVQUAL dimensions are considered to have resonance with the PSQ concept. Competence is proposed to be similar to the technical aspect of perceived quality, credibility is related to the perceived image of the organisation and the remaining determinants are related to the process dimension of the PSQ model (Grönroos, 1984). Later systematic analysis of the customer ratings within the focus group study enabled consolidation of the initial ten dimensions into the now established five RATER SERVQUAL dimensions (Parasuraman *et al.*, 1988; Zeithaml *et al.*, 1990; Buttle 1996) (Table 2.4). Reliability, tangibles and responsiveness all remained as distinct dimensions, while the seven remaining criteria of the original model were collapsed into two dimensions of assurance and empathy (Newsome and Wright, 1999; Buttle, 1996; Newsome and Wright, 2000). In the application of SERVQUAL, the 22-item instrument is administered twice to explore expectations (E) and perceptions (P) for each of the five RATER dimensions (Parasuraman *et al.*, 1988; Zeithaml *et al.*, 1990; Buttle, 1996) (Table 2.4).

Table 2.4 Definitions of the five SERVQUAL (RATER) dimensions

Tangibles	Physical facilities, equipment, and appearance of personnel
Reliability	Ability to perform the promised service dependably and accurately
Responsiveness	Willingness to help customers and provide prompt service
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence
Empathy	Caring, individualised attention the firm provides its customers

(Source: Adapted from Parasuraman *et al.*, 1988)

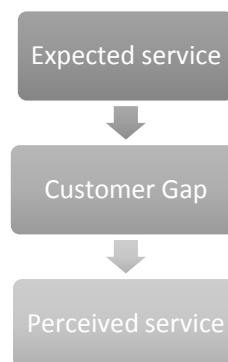
Measurement is made on a seven-point Likert scale, adopted to enhance granularity, rating the dimensions of service quality from *strongly disagree* to *strongly agree*. The resultant SERVQUAL analysis provides a measure of expectations and perceptions against each of the RATER dimensions and additionally using gap identification, provides insight into where improvement can be made.

Discrepancy between the 22-items as determined for both expectation and experience enables an overall score to be established, with perceptions below expectations indicative of lower perceived quality (Zeithaml *et al.*, 1990).

Later reflective work by Parasuraman (1991a) further refined the RATER model to capture customers' expectation response to 'excellent' service rather than the normative expectations of the 1988 model (Parasuraman *et al.*, 1988).

2.3.4 Gaps Model of Service Quality

SERVQUAL can also provide a measure of the service quality shortfall within the service provider via the gaps model (Parasuraman *et al.*, 1988). This model allows business to firstly identify gaps between client expectations and perceptions and then, determined by the magnitude of these gaps, to develop strategies to effectively narrow the gap (Figure 2.5).



(Source: Adapted from Zeithaml *et al.*, 2009)

Figure 2.5 The customer gap

The gap shortfall as perceived by the client is described as gap five and the shortfalls within the service provider are described as gaps one through to four. It is proposed that the SERVQUAL model can enable the determination of where the service gaps are and the size of the gaps (Zeithaml *et al.*, 1990).

Potential causes of service-quality shortfalls contextualised for the animal health sector are described below:

Provider Gap One: Customers Expectation – Management Perception Gap, “The Listening Gap”, refers to the failure of service provider leaders to know which service features are critical to fulfil client expectations. This can lead to ill-informed decision making and inappropriate allocation of resources and/or training. Three factors contribute to gap one, including lack of market research, inadequate upward communication and/or too many levels of management which also adversely impacts upward communication (Parasuraman *et al.*, 1988; Zeithaml *et al.*, 2009). Clear lines of two-way communication with clients is an important factor within the provision of animal health services (Lowe, 2009; Williams and Jordan, 2015), which suggests that the “Listening Gap” to be highly relevant.

Provider Gap Two: Management Perception –Service Quality Specifications Gap represents the failure of the service provider to translate an understanding of client expectations into actual performance. This can be due to assumptions made by business leaders who may consider service standards to be impossible to achieve, represent unreasonable client expectations, too far reaching a service or impossible to predict (Zeithaml *et al.*, 1990). Parasuraman *et al.*, (1988) suggests that gap two deficiency arises because of inadequate commitment to service quality, lack of perception of feasibility to meet client expectation, inadequate task standardisation and an absence of goal setting. Of these, the perception of infeasibility raises interesting questions for the veterinary sector with the reluctance of some veterinary professionals to accept the paraprofessional within the veterinary led team (Lowe, 2009; Lowe 2010; VDC, 2012). Closure of gap two requires openness to service innovation, as well as the need to acknowledge value co-creation (Zeithaml *et al.*, 2009).

Provider Gap Three: Service Quality Specification- Service Delivery Gap, “The Service Performance Gap”. Discrepancy in gap two and the actual service provided is indicative of gap three, which may be due to poorly trained staff, inadequate systems or inadequate resources. Occasions when work load increases and resource allocation is deficient can also depress service quality in gap three and the link between gap three and five forms the service delivery shortfall. Zeithaml *et al.*, (2009) suggest gap three may arise because of, role ambiguity, poor employee job fit, inconsistent employee expectations, poor technology job fit, inappropriate supervision, lack of perceived control and / or lack of teamwork. These factors may influence the service received by animal health clients but the value of teamwork may be significantly underestimated (Mulligan and Doherty, 2008; Reader, 2012). Effective teamwork is important in many circumstances related to animal health provision and should involve all contributors to deliver high standards of service quality (Zeithaml *et al.*, 1990).

Provider Gap Four: Service Delivery- External Communications Gap, “The Communications Gap”. A key determinant of client expectation is the service providers’ external communication to prospective clients. A failure to achieve an adequate horizontal communication between external marketing and operational capability may result in unachievable client promises being made. A propensity to over-promise services can result in a discrepancy between actual and promised service, therefore, causing gap four and negatively affecting service quality (Zeithaml *et al.*, 2009). In an attempt to attract new clients, animal health professionals may offer services which are subsequently unachievable without the use of an effective strategy.

Provider Gap Five: The Customer Gap is represented by differences between client expectations and perceptions (Zeithaml *et al.*, 2009) and the closure of this gap is vital to achieving service quality.

Client expectations are the key standards or beliefs brought to an experience by the individual and are influenced by uncontrollable sources such as word-of-mouth discussions, client prior experience and controllable sources such as advertising and price factors. Price is an important indicator of service quality as it strongly contributes to expectations of service quality, especially in the absence of other physical environmental clues. Accordingly, price needs to be set to convey signals of service quality and is highly important to the veterinary sector (Lowe, 2009) and in determining the perceived value of professional services (Vet Futures, 2016).

From the marketers’ perspective, there are key challenges to the achievement of expectation and perception of service gap closure. Client perception of service quality is a subjective assessment of the actual service received and can be influenced by a wide range of exogenous factors such as the competitive environment and price. Furthermore, each provision of service is a unique and, to a certain extent, personal experience which is dynamic in nature (Wisniewski, 2001; Lisch, 2014). Coupled with the individual variation of each service experience is the limited availability of service quality focused services marketing literature. It is still a relatively new science and almost entirely new for the animal health sector.

2.3.5 SERVQUAL Application

The SERVQUAL model is one of the most widely used service quality frameworks but has been subject to theoretical and operational criticism with suggestions that it is flawed, over-simplified and not universally accepted (Smith, 1995; O’Shaughnessy and O’Shaughnessy, 2009). Failure of Parasuraman *et al.*, (1988) to draw on previous social science research including established theory in economics, statistics and psychology, and large volumes of literature based on perception, represent significant omissions according to Buttle (1994). Others propose that the SERVQUAL premise is paradigmatically flawed as it is based on disconfirmation paradigms rather than attitudinal

(Cronin and Taylor, 1994). The disconfirmation model assumes that consumers compare products or service against a pre-purchase standard of expectation. Expectancy-disconfirmation was originally developed as a technique to explain judgements of consumer satisfaction (Oliver, 1980), but is used in the SERVQUAL model as a measure of service quality perceptions (Parasuraman, 1988). The gaps model of service quality has been considered to be over-simplified as there is no absolute quality, since each service encounter is determined by individual service expectation and experience (Lisch, 2014) and there is limited evidence to support the assumption that consumers make assessment using the P-E gaps (Buttle, 1994). Indeed, gap scores may be heavily influenced by response bias and a generalised tendency to rate expectations high rather than identifying the service shortfall (Babakus and Inhofe, 1991). Also, the SERVQUAL model uses the seven point Likert Scale, which some consider to be at the upper limits of reliability (Lisch, 2014), which is why the more user friendly five-point scale is more commonly used (Monette *et al.*, 2011).

As consumers respond to each service experience, expectations will be ever-changing and expectation must therefore be recognised as a dynamic phenomenon, a factor which is not effectively considered in the SERVQUAL model (Grönroos, 2007). This is particularly relevant to this study as in some cases expectations may fall over time, a phenomenon which has been observed and reported in health care settings (Buttle, 1994). SERVQUAL's process orientation has also been subject to criticism (Babakus and Mangold, 1992; Cronin and Taylor, 1992) as the model focuses on the process of service delivery rather than the outcomes of the service encounter (Buttle, 1994). The failure to measure outcome quality is considered a notable and significant omission by some (Cronin and Taylor, 1992; Grönroos, 2007).

Issues of dimensionality, described as a high level of inter-correlation between five RATER dimensions, is evident; as is the dimension universality (Carman, 1990; Cronin and Taylor, 1994) and lack of dimension discrimination (Buttle, 1994; Nantel, 2000). The five SERVQUAL dimensions are also put forward to be generic across all service contexts (Parasuraman *et al.*, 1991b). However, employment of the modified SERVQUAL instrument in a range of contexts and cultures has produced varying numbers of dimension solutions, suggesting that the number and attributes of SQ will be specific to the service provided (Carman, 1990; Sureshschandar *et al.*, 2003; Harrison-Walker, 2008; Ladhari, 2008). In the human health service context, Wisniewski and Wisniewski (2005) failed to replicate the RATER dimensional structure, which suggests that the same may be found if applied to animal health. Further applications of SERVQUAL found discrepancies in item loading when the model was used for differing types of

organisations, suggesting direct use of the technique without prior validity checks may produce misleading responses (Carman, 1990; Grönroos, 2008). Parasuraman *et al.*, (1991b) responses to the criticism and subsequent later investigation into the SERVQUAL theory led to division of the tangibles construct into two distinct dimensions described as equipment and physical facilities and employees and physical facilities. However, problems associated with the validity of measuring expectation fundamental to the SERVQUAL model are insurmountable for some researchers, notably from the Nordic school (Grönroos, 2000). The order with which both expectation and experience are measured presents a problem. Measuring expectations after experience creates bias as it is experience which is measured. Measuring expectation first does not appear to solve this problem as customers have no experience on which to base expectations. Overall, the flaw is inherent in the model as perceptions of an experience are prior expectations and so whichever is measured first or second effectively expectations are measured twice (Grönroos, 1996).

2.3.6 SERVPERF

SERVQUAL and SERVPERF are the most prominent scales for the measurement of overall service quality (Carrillat *et al.*, 2007). Conceptually both SERVQUAL and SERVPERF propose that service quality is the client attitude towards the service offering based on a comparison of expectation with performance. SERVPERF measures performance only and, therefore service, quality is operationalised as clients evaluate the service encounter.

Significant criticism of SERVQUAL emanated from Cronin and Taylor (1992) through the development of the SERVPERF model, designed to challenge the SERVQUAL conceptualisation (Carrillat *et al.*, 2007) and to test a performance-based alternative to the Gaps model. SERVPERF was developed on the 22-performance items in the SERVQUAL scale, excluding consideration of expectation and providing a performance based measure of service quality measured in four service industries (fast food, pest control, dry cleaning and banking). Cronin and Taylor (1994) concluded that SERVQUAL generalises the satisfaction paradigm to encompass wider service quality evaluation and demonstrated limited differentiation between service quality and satisfaction.

Measurements of service quality require an understanding of consumer attitude over time, whereas satisfaction is a transitory judgement based on the service encounter and is experiential and cognitive in nature. SERVPERF was therefore proposed as an enhanced technique to provide organisations with a score of overall service quality (OSQ); without the operational, conceptual and application limitations of the perceived performance and expectation based technique of SERVQUAL (Cronin and Taylor, 1992; 1994).

Unsurprisingly, under empirical testing, Cronin and Taylor (1992) found SERVPERF to provide superior measures of service quality. Others support this notion within specific

sectors such as higher education (Abdullah, 2006), retail (Mehta *et al.*, 2000) and banking (Adil *et al.*, 2013). Further support for SERVPERF comes from the fact that it halves the number of items to be measured (Babakus and Boller, 1992; Adil *et al.*, 2013), thus improving efficiency and ease of application. There have been comments on the validity and reliability of the SERVQUAL and SERVPERF techniques (Rodrigues *et al.*, 2011) and discussion regarding which model is the best predictor of service quality continues (Carrillat *et al.*, 2007). Empirical research by Rodrigues *et al.*, (2011) found that when SERVQUAL and SERVPERF were applied in the same context, significant differences in the measured outcomes were to be seen and the authors suggested that a hybrid instrument could be a useful means of achieving better service quality measurement. However, there appears to have been little uptake of the SERVPERF model. SERVQUAL has been applied to human health services with varying effectiveness (Babakus and Mangold, 1992). However, due to the questions regarding dimension stability (Carman, 1990; Cronin and Taylor, 1994) and the lack of animal health service literature available, the model has not been directly applied in this study.

2.3.7 Foundational Premises of S-D logic: Vargo and Lusch

Development of the foundation premises of S-D logic by Vargo and Lusch (2004) gave definition to S-D logic and proposed that service should be interpreted as a perspective on value creation. As a customer-centric notion, S-D logic explains the dynamic and collaborative role of the client in the creation of service quality. Individuals and enterprises are amalgamated into networks to exchange competences (Lusch *et al.*, 2007). The philosophy is grounded in collaboration between all stakeholders (employer, employee and client) engaged in reciprocal service provision, co-creating value in-service (Lusch *et al.*, 2007). All participants in value co-creation are empowered operant resources and interaction between employers and employees must be based on the principals of trust, open-communication and cohesion (Lusch *et al.*, 2007). The S-D logic outlook suggested by Vargo and Lusch (2004) initially described six attributes and eight foundation premises (FPs) of service based on the four axioms of service quality as discussed in Section 2.3.8 Service Dominant Axioms (Lusch and Vargo, 2014). In response to comment and critique from other researchers, Vargo and Lusch (2008) clarified the attributes and foundation premises; modifying FP₁ through to FP₈ and making additions (Vargo and Lusch, 2008). These clarifications are summarised in Table 2.5.

The initial eight foundation premises devised by Vargo and Lusch are provided in summary and, where appropriate, contextualised for the animal health sector below (Vargo and Lusch 2004):

FP₁. *The application of specialised skills and knowledge is the fundamental unit of exchange:* The two key operant resources or attributes of humans are physical and mental skills; both of which are present in varying degrees within individuals. The

maximisation of societal gains through history has relied upon the transfer of skills between individuals. This reciprocal exchange, therefore, allows for specialisation at an individual level, therefore achieving greater gains. The exchange of operant resources is central to S-D logic (Lusch *et al.*, 2007).

FP₂- *Indirect exchange masks the fundamental unit of exchange*: All types of business organisation, regardless of type, are providing an exchange of skills as described in FP₁. Money or goods which are involved in this process are the transport mechanism for the exchange but the service for service exchange remains key.

FP₃- *Goods are distribution mechanisms for service provision*: Operant resources of knowledge and skills may be transferred directly via training or indirectly embedded within tangible products. The latter replaces a direct service but contained within are the operant resources of knowledge and skill, enabling goods to provide benefits or services.

FP₄- *Knowledge is the fundamental source of competitive advantage*: Skill and competence as facets of knowledge are now well recognised to be able to provide business with competitive advantage.

FP₅- *All economies are services economies*: Services represented in operant resources are fundamentally important to economic activity. In addition, the service provision (through application of mental and physical skills) is becoming increasingly specialised (Vargo and Lusch, 2004), which is taking place within the veterinary sector as veterinary knowledge and technology progresses (Lowe, 2009; Vet Futures, 2016).

FP₆- *The customer is always a co-producer of value*: Service marketing is a continuous process which is customer centric, as the customer acts as a co-producer (as operant resource) as opposed to the marketing target (operand target).

FP₇- *The enterprise can only make value propositions*: Goods-dominant logic embeds the value added within the tangible product itself; a mechanism which does not work for S-D logic. The value must be within the customers' use of the product; a product remaining unsold on a shop shelf therefore has no value. Value creation can only exist when the tangible good or the service is utilised by the consumer. The consumer, therefore, determines the value and becomes integral to the process of coproduction (FP₆).

FP₈- *A service-centred view is customer oriented and relational*: The service centred view is dynamic and requires humans to be central and active participants in the process. Humans as co-producers do not require tangible goods but require skills acquisition or sharing; or to have goods to assist this process, namely services (Vargo and Lusch, 2004).

Table 2.5 Service dominant logic foundation premise modifications in response to comment and scrutiny

FPs	Original foundational premise (2004)	Modified premise (2008)	Comment and explanation	Update (2015)
FP1	The application of specialised skills and knowledge is the fundamental unit of exchange	<u>Service</u> is the fundamental <u>basis</u> of exchange	Application of operant resources e.g. knowledge and skill is the basis for all exchange	No change AXIOM STATUS
FP2	Indirect exchange masks the fundamental unit of exchange	Indirect exchange masks the fundamental <u>basis</u> of exchange	Service is provided via complex combinations of goods, money and therefore the service basis is not always obvious	No change
FP3	Goods are a distribution mechanism for service provision	No change	In S-D Logic, goods derive value through use	No change
FP4	Knowledge is the fundamental source of competitive advantage	Operant resources are the fundamental source of competitive advantage	Comparative ability to provide operant resources promotes competition	Operant resources are the fundamental source of strategic benefit
FP5	All economies are services economies	No change	Service more apparent with increased business specialisation	No change
FP6	The customer is always the co-producer	The customer is always a <u>co-creator</u> of value	Value creation is interactional	Value is co-created by multiple actors, always including the beneficiary AXIOM STATUS
FP7	The enterprise can only make value propositions	The enterprise <u>cannot deliver value but</u> can only offer value propositions	Enterprises can offer resources for value creation	Actors cannot deliver value but can participate in the creation and offering of value propositions
FP8	A service-centred view is customer oriented and relational	A service centred view is <u>inherently</u> customer oriented and relational	Service is determined in terms of customer-benefit	A service-centred view is inherently beneficiary oriented and relational
FP9	Organisations exist to integrate and transform micro-specialised competences into complex services that are demanded in the marketplace	All social and economic actors are resource integrators	Value creation requires resource integrators	No change AXIOM STATUS
FP10	Not defined	Value is always uniquely and phenomenologically determined by the beneficiary	Value is idiosyncratic and experiential	No change AXIOM STATUS
FP11	Not defined	Not defined	Not defined	New Value co-creation is coordinated through actor-generated institutions and institutional arrangements AXIOM STATUS

(Source: Adapted from Vargo and Lusch, 2004; Vargo and Lusch, 2008; Lusch and Vargo, 2014; Vargo and Lusch, 2015).

The concept of S-D Logic was proposed by Vargo and Lusch (2004) as a lens through which social and economic exchange of service may be viewed but not as a theory to be abided by. Regardless of the proposition nature, the FPs model is still not without its critics, some of whom hail from the Nordic school (Grönroos, 2011) and others from within the USA and UK (O' Shaughnessy and O'Shaughnessy, 2009; 2011). Comments and criticisms were responded to by Vargo and Lusch (2016), the result of which was the first re-wording and updating of the FP to better reflect the evolving nature of S-D Logic and to elaborate and modify and re-emphasise where necessary (Vargo and Lusch, 2008).

These modifications are summarised in Table 2.5.

Despite the attempts to further clarify the FPs, criticism from branches of the Nordic School remain. Grönroos (2011) re-formulated seven statements included within six of the foundation premises to better incorporate concepts of value creation and co-creation as shown in Table 2.5 (Vargo and Lusch, 2008; Grönroos, 2011). This is typified in FP six "*The customer is always a **co-creator** of value*", which is considered by Grönroos (2011) to be correct but too simplistic an observation to allow for any meaningful practical application. The failure of S-D logic to differentiate between value creation and value co-creation is demonstrative of insufficiency within the theory and thus, it is misleading. Criticised by Grönroos (2011) because the statement fails to consider the role of an enterprise in value creation, let alone that a firm can directly interact with customers to jointly co-create value. The Nordic school promotes a shift from an exchange paradigm to a relational or interactional paradigm, reflecting transactional orientation of exchange. Vargo and Lusch (2008) dispute this criticism of over-simplification, arguing that reciprocity is inherent within exchange as it is relational in nature.

Grönroos (2011) suggests that the term S-D logic is misleading as it is a logic of service rather than a logic which is dominated by service. Conclusions of the Nordic School do acknowledge similarities to the propositions of Vargo and Lusch (2004) but refer to the service perspective on business and marketing as service logic (Grönroos, 2006). Other notable and harsh disparagement has come from O' Shaughnessy and O'Shaughnessy (2009) in a rejoinder to Vargo and Lusch (2011). In the initial critique, these authors find the Foundation Premises to be "*neither logically sound nor a perspective to displace others in marketing.*" (O' Shaughnessy and O'Shaughnessy, 2009 p.784). There is agreement that the hallmarks of service are interactivity and co-production with the customer, but then they reject the practical or theoretical usefulness of a broad S-D logic theory as proposed by Vargo and Lusch (2004) (O' Shaughnessy and O'Shaughnessy, 2009; 2011). In contrast, they suggested that S-D logic may be viewed as an opportunity for marketers and academics to re-consider marketing with potential for the reorientation of the discipline. Also, they support the adoption of a holistic research agenda proposed by Gummesson (2000b), including many-to-many marketing (Gummesson, 2007;

Gummesson, 2008b) and value co-creation (Grönroos, 2011). Many-to-many marketing conceptualises service provision as being created through the activities of a network of stakeholders and not solely created by the service provider and client (Gummesson, 2008a).

In models of S-D logic, value is co-created between all exchange participants, but value in itself is a subjective phenomenon which can only be determined by the beneficiary who is also a co-creator in the service process (Grönroos and Voima, 2013). The intricate role of the client in the transaction is therefore emphasised (Lusch *et al.*, 2007), raising questions on the application of S-D logic to the animal health care client and the potential usefulness. Value co-creation is further discussed in section 2.6.

2.3.8 Service-Dominant Axioms

Axioms are meant to be self-evident truths (O' Shaughnessy and O'Shaughnessy, 2011). The four axioms considered to capture the essence of S-D logic and form the basis of S-D foundation premises were proposed by Lusch and Vargo (2014). Continual work in the field of S-D logic by a wide range of marketing scholars, encouraged Vargo and Lusch (2014) to further consolidate the foundation premises into the more parsimonious four axioms (shown in Table 2.6) and which are summarised as follows:

Axiom 1: Service is the fundamental basis of exchange based on the application of operant resources (knowledge and skill) as service is exchanged for service.

Axiom 2: The customer is always co-creator of value- this view contradicts G-D logic, which views the business as the creator of value in the production of good. This enables the development of the viewpoint that service is inherently relational. Value arises in the offering.

Axiom 3: All economic and social actors are resource integrators. Resources come from a variety of sources including private (self, family, friends), market sources (other actors or economic exchange) or public sources (e.g. government or communal sources). The resource integration occurs both directly and indirectly.

Axiom 4: Value is always uniquely and phenomenological determined by the beneficiary. This reinforces the experiential nature of value and all market offerings are perceived and integrated differently by the consumer on each occasion.

Refinement of the S-D lexicon has resulted in the modification of four FPs (Vargo and Lusch 2008; Lusch and Vargo 2014; Vargo and Lusch, 2015) and the introduction of an eleventh FP (Vargo and Lusch, 2015). To encompass notions of networked co-creation through institutions, the fifth axiom of "*Value co-creation is coordinated through actor-generated institutions and institutional arrangements*" was defined (Vargo and Lusch, 2015). This development reflects the extension of value co-creation to a wider and more comprehensive perspective.

Table 2.6 Four Axioms of S-D logic

Axioms	Definition
A1	Service is the fundamental basis of exchange
A2	The customer is always a co-creator of value
A3	All economic and social actors are resources integrators
A4	Value is always uniquely and phenomenologically determined by the beneficiary

(Source: Adapted from Lusch and Vargo, 2014)

2.3.9. Nordic School Service Logic

The perspective of the Nordic school on service logic is differentiated from S-D logic through the notion of simultaneous production and consumption of services (Grönroos, 1984; Grönroos, 2006). Characteristics of process and simultaneous production and consumption have delineated these pivotal, theoretical models of service marketing from the outset (Grönroos, 2006) and have led to the development of distinct frameworks of relationship quality in service logic (Grönroos, 2007).

Interactivity with the consumer and notions of consumption within service provision have enabled the development of concepts such as value-in use (Grönroos, 2012) and value co-creation (Grönroos, 2006). Within the value-in use theory, the customer creates value from goods simply to contribute to the service. Goods, therefore, are viewed as one type of resource which are able to convey service to the client. Other resources involved may include other people, such as employees and other customers; systems information and business infrastructure (Grönroos, 2006; Cova and Salle, 2008; Grönroos, 2011). Service logic supports the client process during service to enable value co-creation. It follows that organisations need to facilitate value co-creation through the provision of resources and accordingly, value fulfilment becomes an integral part of service marketing (Grönroos, 2006; Cova and Salle, 2008). Grönroos (2012) proposes that value formation is a three-stage process with distinct sub-processes. In stage one, the business acts alone thereby facilitating the customers' creation of value-in-use. In stage two, the customer acts alone integrating the resources provided by the business and in stage three the business and customer act together in a co-ordinated and interactive process. Stage three creates value for both the customer and the business.

2.4 Business Competitiveness and Service Quality

Service quality provides a critical advantage to business performance and has a positive effect on the longevity of a business enterprise (Carrillat *et al.*, 2007). Lusch *et al.*, (2007) reason that to effectively compete through service, enterprises should approach the market using S-D logic. The FP's were developed to form nine derivative propositions to enable business competitiveness through S-D logic. Those considered in this study to

have relevance to business enterprise within the animal health sector are discussed and contextualised below:

Proposition 1: Competitive advantage is a function of how one firm applies its operant resources to meet the needs of the customer. Competitive advantage is gained through superior competence in the form of knowledge. Knowledge is the operant resource which enables the service. Superiority in knowledge enables an enterprise to absorb and comprehend information from both the business environment and consumers and to, therefore, respond to a dynamic environment. The offered services or value propositions will correspondingly be shifting not static (Lusch *et al.*, 2007).

Proposition 3: The continued ascendance of information technology with associated decrease in communication and computation costs provides firms opportunities for increased competitive advantage through innovation collaboration. S-D logic always puts the customer as a collaborator. The idea of co-creation of value is related to the concept of perceived value (Parasuraman and Grewal, 2000). Additionally, the customer is focal to co-production. Co-creation of value and co-production consider the customer as endogenous; as such the focus is on relationship formation (Lusch *et al.*, 2007).

Proposition 4: Firms gain competitive advantage by engaging customers and value network partners in co-creation and co-production activities. S-D logic puts great emphasis on long term understanding of the customer experience and relationship. As such, businesses may seek greater competitiveness through innovative ways of co-creating value. Changing patterns of client behaviour due to the accessibility of information on the internet and via social media (Williams and Jordan, 2015) is a significant consideration for animal health professionals. Coe *et al.*, (2008) suggest that the animal health client actively seeks to be educated within the service process, thus proposing the usefulness of proposition one, three and four to business competitive advantage.

Proposition 5: Understanding how the customer uniquely integrates and experiences service-related resources is a source of competitive advantage through innovation (Lusch *et al.*, 2007). Earlier work by Lusch *et al.*, (1992) put forward six key factors which may contribute to level of customer participation in the co-production of service. Of these, the two propositions which are proposed to be relevant to the animal health sector are expertise and factors of control.

Proposition 6: Providing service co-production opportunities and resources consistent with the customer's desired level of involvement leads to improved competitive advantage through enhanced customer experience. It is logically correct that consumers will pay a higher price for better service, but this does not necessarily inform the link between superior service and achievement of better financial returns. A

value proposition is the promise made by the enterprise that the value –in- exchange will be linked to the value in-use. Therefore, the value- in- exchange or price is tied to the value realised by the consumer (gain sharing). For businesses to be successful, both consumer and provider need to co-create the value proposition (Lusch *et al.*, 2007).

Proposition 7: Businesses can compete more effectively through the adoption of collaboratively developed, risk-based pricing value propositions. Collaboration and co-ordination are central features to S-D logic and these features are essential to both innovation and competition. Successful collaborative work requires central co-ordination by a prime integrator and decisions on who would be best placed to adopt this position must be made (Lusch *et al.*, 2007). The animal health client has access to an increasing number of market-place choices and they could seek to use organisations who are able provide a wide range of services. This is currently seen in the success of large out –of- town pet supermarkets which provide a wide range of health and veterinary services in addition to retail opportunities, and in the rapid corporatisation of veterinary practices (Lowe, 2009; Vet Futures, 2015).

2.5 Service and Relationship Quality

In the provision of service, respective clients enter the production process of a service organisation and on doing so, client behaviour has an active and dynamic influence on the organisation and other clients engaged with the company (Gummesson, 1998; Grönroos, 2007). This conceptualisation then permits valuable insight into the service encounter.

2.5.1. Moments of Truth and the Part-Time Marketer

The moment of truth notion refers to moments of opportunity for the service provider to demonstrate high quality service within the service encounter (Kotler, 1994; Bitner, 1995; Grönroos, 1996). Thus, the employee with whom the customer engages becomes responsible for a successful service interaction and is so defined as the part-time marketer (Normann, 1983; Normann, 1991). Inherent within the work of the Nordic School are notions of full-time marketers (FTM) and part-time marketers (PTM). FTMs are identified as those who fulfil specific roles within the marketing and sales tasks or the organisation and all other staff in contact with clients are categorised as PTM (Gummesson, 1998). The role of the PTM is, therefore, integral to value creation within service delivery and marketing as a separate function is no longer required (Grönroos, 2006). Together, the FTM and PTM create the marketing function (Grönroos and Voima, 2013) and are central to service provision.

Work by Bitner (1990; 1992) with the Servicescape model further demonstrated the potential impact of the employee on the service experience. Within theories of relationship marketing, the moment of truth forms one unit of service analysis encountered by the customer during the provision of service. This encounter can be extremely important to

professional services, forming the basis for client allegiance and loyalty which is essential to secure repeat business (Grönroos, 2008).

2.5.2 Dynamic Continuum of Relationships

According to Grönroos (2000), service relationships are a continuous series of acts, episodes and sequences which form the basis to the association between service provider and service recipient. Interrelated acts form the service encounter (or episode) which in turn forms sequences and ultimately the relationship (Grönroos, 2000). These interactions can relate to any aspect of the service encounter including, for example, social contact, service process or outcome. In a dynamic model of service quality, every level of interaction can be perceived by the customer and contribute to overall satisfaction and therefore impact on client loyalty (Grönroos, 2006; Grönroos 2007). The dynamic and interactive aspect of service marketing can be portrayed in a three-stage model as shown in Table 2.7.

Table 2.7 Dynamic service marketing

Stage	Definition	Marketing Strategy
Initial Stage	Creation of interest	Traditional marketing <i>(advertising, media, direct mail)</i> Interactive marketing <i>(simultaneous production and consumption during service)</i>
Second Stage	Purchasing process – general interest turned into business	Traditional marketing Interactive marketing
Third Stage	Consumption Process- maintain clients (repeat sales/ visits)	Interactive marketing

(Source: Adapted from Grönroos, 2006; Grönroos 2007)

2.5.3 Bonds

Customer satisfaction with the service provider will influence future behaviour of the client. Equally, the role of bond formation between the service provider and client can strongly influence client loyalty. Lilijander and Strandvik (1995) determined ten bonds within service relationships in the Lilijander-Strandvik Relationship Quality Model. Bonds are proposed to influence relationship formation between the client and service provider. These have been illustrated for animal health service provision and are presented in Table 2.8.

Table 2.8 Lilijander-Strandvik Relationship Quality Model conceptualised to animal health service

Type of Bond	Animal Health Service Sector Examples
Legal	Contractual arrangement between client and service provider. Within the provision of animal health, a level of care is anticipated and expected.
Economic	Service provider is selected according to clients' budget and level of insurance cover (if held).
Technological	Not applicable to all animal health professionals but valid for diagnostic and treatment equipment used by veterinarians and musculoskeletal practitioners.
Geographical	There may be a limited choice of service providers due to location or lack of client transport.
Time	Accessible business hours for example, out of hours' service maybe outsourced by a veterinary practice due to financial constraints. Other paraprofessional groups may not offer an out of hours' service.
Knowledge	Service provider may have detailed knowledge of the medical history of the animal which facilitates later treatment and promotes loyalty.
Social	Social bonds formed between the client and the service provider making contact easy and developing mutual trust.
Cultural	Differentiated beliefs and values may exist according to the type of animal and role the animal fulfils (e.g. income generating animal or high status human animal bond).
Ideological	Client may prefer some service providers because of shared personal values associated with ethical treatment of animal and considerations of animal welfare.
Psychological	This may be associated with brand image but the client is convinced of the superiority of the service provider.

(Source: Adapted from Lilijander and Strandvik, 1995)

2.5.4. Dynamics of Client Expectations

To understand how clients' perceive quality in a continuing service relationship, it is necessary to understand how expectations are established and developed over time (Grönroos, 2008). This was conceptualised by Ojasalo (1992) following investigation based upon the quality of professional services (management consultancy professionals) over a period. The developing client expectations were ordered into three categories described as: *fuzzy*, *explicit* and *implicit* expectations and reflect the failure of the client to always have a clear idea of what is wanted from the professional service. In situations of *fuzzy expectations*, the client expects the service provider to be able to solve the problem

but does not have clear understanding how this could be done or what should be done. With vague expectations, it is difficult for the client to know if their service expectations have been met and so the service provided may be deemed unsatisfactory. If the client has very clear expectations regarding what the service provider should do, these are defined as *explicit expectations*. The client may have either realistic or unrealistic expectations of the service and, therefore, the expectations can have a positive or negative effect on service quality. When the outcomes of the service are so clear to the client that it is taken for granted that these expectations will be met, these are referred to as *implicit expectations*. In these cases, the client may not express their expectations and therefore the service provider may not be able to fulfil the requirements of the client. An additional layer of complexity is suggested by Ojasalo (1992) as it is proposed that the clients' expectations may be a composite of all described expectations. Ojasalo suggests a framework for managing expectations to account for *fuzzy, explicit and implicit* expectations and moving clients to precise and realistic expectations which are achievable by the service provider (Ojasalo, 1992) to provide workable business solutions.

2.5.5 Latent Variables of Service Quality

Theoretical variables of service quality are often latent and, therefore, not obvious to business providers. Furthermore, consideration of service as something which is provided to a client by a firm or a business neglects the hidden elements within service despite the importance of these elements to the client. The billable service represents only a small portion of what is offered to the client but the non-billable aspects often add considerable value and competitive advantage. The challenges associated with measuring hidden services often render their role in service quality as unacknowledged (Grönroos, 2000).

2.6 Co-creation of Value and Co-Production

S-D logic emphasises the interactions between the service provider and clients and proposes that all services are inherently relational in nature (Lusch and Vargo, 2011), as already discussed. Client interaction with the service provider and the formation of cohesive relationship bonds ultimately leads to co-operation between client and provider. Co-production implementation is performed by the client (Gummesson, 1998) and the value created is achieved through the formation of relationships and associated interactions between the client and service provider (Grönroos, 2000). In the formation of value co-creation, the client is endogenous to, and actively participates in the service provided (Lusch and Vargo, 2006; Vargo and Lusch, 2008).

There has been considerable academic interest in S-D logic and value co-creation and their role in service provision (Bharti *et al.*, 2015). This has resulted in the existence of a substantial range of definitions of co-creation and considerable ambiguity, which is not surprising given the complexity of human interaction seen in the service encounter. Lusch

and Vargo (2006) define two components of value co-creation as co-creation of value and co-production, both of which make the consumer central to the service process. Co-production is the active participation in the creation of the core offering (Lusch and Vargo, 2006) and value co-creation may be defined through the concept of service- for -service (Vargo and Lusch, 2008).

Value co-creation is proposed as means to maintain long term relationships (Lusch and Vargo, 2006) and to build client loyalty (Leppiman and Same, 2011). However, value is difficult to define and is often poorly explained (Carù and Cova, 2003) making definitive agreement on the concept of value co-creation elusive. Grönroos and Voima, (2013 p. 1) defined value co-creation as “*the customers’ creation of value in-use; co-creation is a function of interaction*”. Complexity is compounded as the resultant value in-use is created within the temporal dimension since clients accumulate value through service usage over time (Grönroos, 2008; Grönroos, 2011). Furthermore, value-in-use can equally be a positive value (as the client feels better off) or negative (as the experiences leave the client with the feeling of being worse off) (Grönroos and Voima, 2012). To achieve clarity on the concept of value co-creation, Bharti *et al.*, (2015) undertook a systematic literature review enabling the production of a conceptual model of value co-creation. The model defines five interlocking pillars demonstrating the elements of a value co-creation process.

Pillars of Value Co-creation				
Interactive environment	Resources	Co-production	Perceived benefits	Management structure
Interaction	Relationship	Customer	Experiences	Top management
Relational norms	Capabilities	participation	Customer	approach
Exchange	Technology	Customer	learning	Corporate values
Information sharing	Network	involvement	Value	Leadership
Communication & dialogue	Customer communities	Partnership & engagement	Expected benefits	Organisational agility
Encounter	Trust	Mutuality	Problem solving	
prototyping				
Customer role clarity				

(Source: Adapted from Bharti *et al.*, 2015)

Figure 2.6 Five pillars of value co-creation

The extant literature categorises value co-creation into five broad constructs as shown in Figure 2.6 (Bharti *et al.*, 2015). Several pillars resonate with constructs that appear in the animal health care literature (Coe *et al.*, 2008; Shaw *et al.*, 2008; Shaw *et al.*, 2012; Grand *et al.*, 2013;), and include resource categorisation which encompasses the concepts of relationship and trust. Trust is cited as an important element for effective co-creation of value (Bharti *et al.*, 2015) since bond development between service participants, with mutual commitment to the process is an essential constituent of trust and relationship building. Again, these factors are emulated within the limited but existing animal health

literature (Coe *et al.*, 2008; Shaw *et al.*, 2008; Shaw *et al.*, 2012; Grand *et al.*, 2013) and give support to the potential relevance of value co-creation to the sector.

2.6.1 Applied Value Co-creation and Involvement

There are many similarities between the provision of animal and human health services and it is, therefore, appropriate to draw on the more extensive human health literature to inform this study. Historically, human health care has been provided in a doctor-centric manner which was not dissimilar to the company centric nature of commerce (Prahalad and Ramaswamy, 2004) and the typical relationship between client and veterinarian (Williams and Jordan, 2015). This mode of provision is reinforced through the concept of the *consult* phase of medical intervention, which implies the transfer of information from physician to patient. Human health sector changes and patient expectations now require the adoption of a collaborative approach to health service provision and accordingly, patient co-creation is commonplace (Elg *et al.*, 2012). The informed patient will now be armed with questions for the health practitioner and the responses given will be judged on the perceived quality and depth of knowledge displayed.

The human health sector is required to engage in the co-creation of value as health clients expect to be actively involved in a holistic approach to medical treatment. At NHS policy level service-user collaboration is an accepted requirement (Martin and Finn, 2011) and the patient should be considered as an active member of the MDT. This is not without its challenges, which according to Martin and Finn (2011), are related to issues such as external performance pressures, professional norms and values and culture. These factors may function as a barrier to the inclusion of the patient within the team and make client inclusion a complex offering. However, the acceptance of the client as a service collaborator raises interesting questions for the provision of co-creation of value and client involvement within animal health service. Questions such as what will the animal health client service expectations be and how achievable are these expectations, are becoming increasingly pertinent.

Active participation by the client has been described as, how clients share information, make suggestions and engage in shared decision making (Chan *et al.*, 2010). This definition is supported by animal health service investigations in North America which demonstrated that clients wish to be educated and actively involved in the decision-making process for the treatment of their animal (Coe *et al.*, 2008). Comparable human medicine research has demonstrated that encouraging active client participation in a clinical encounter is a key mechanism for improving client compliance during treatment (Bertakis *et al.*, 1991). Co-creation of value has a positive impact on patient adherence to treatment thus improving the clinical outcome and the lowering cost of service (Martin *et al.*, 2005). At the present time, the concept of active participation in the provision of animal health is suggested in only a few studies and the work is restricted to veterinary care only

(Grand *et al.*, 2013) and does not consider other animal health professionals. In human health service continuity of care and the development of strong relationships between the patient and medical practitioner are known to improve treatment compliance and outcomes (Safran *et al.*, 2001; Cabana and Jee, 2004). This remains a relatively under-researched area in animal health but is anecdotally evident and accepted (AAHA, 2009). Wide-scale surveying of veterinarians in North America (Brown and Silverman, 1999) demonstrated the complexity of service provision in this area. In this research, pet owners were asked to rank the top criteria for choosing a veterinarian and the results revealed that the first five ranked criteria were dimensions of animal health service quality. The criteria are shown in Table 2.9.

Table 2.9 Ranked criteria for choosing a veterinarian

1. Veterinarian is kind and gentle
2. Veterinarian is respectful and informative
3. Reputation of veterinarian for high quality care
4. Past experience with veterinarian
5. Range of services
6. Location
7. Convenient hours
8. Recommendation from friend or neighbour
9. Price

(Source: Adapted from Brown and Silverman, 1999)

Within the animal health sector, there is existing but limited evidence to support a link between the strength of the Human Animal Bond (HAB) and the veterinary care provided to the animal. People who consider the pet to be part of the family are more likely to take more trips to the vet and pay for proper veterinary care (Lue, 2008; Timmins, 2008). It seems that the depth of involvement or relationship between the client and animal may influence the decision-making process in health and the level of risk which clients are prepared to accept.

2.6.2 Trust and Loyalty in Health Services

Trust is identified as one of the most fundamental qualities of human interaction and relationships (Grand *et al.*, 2013). Correspondingly trust is recognised as an essential component in the creation and maintenance of the client-medical practitioner relationship in health service (Trachtenberg *et al.*, 2005). A similar tendency is proposed within the animal health service as client perception of service quality and so likelihood of future visits (loyalty) can be strongly associated with developing positive interaction and relationships.

Trust is essential for collaborative working and co-creation of value. The foundation of trust is in the expectation that one party will behave in a predictable and reliable manner (Tomlinson, 2005). Trust may take a number of forms. Newell and Swan (2000) determined three types of trust which are relevant to collaborative working and therefore are applicable to co-creation of value within health. These are defined as *companion trust*, *competence trust* and *commitment trust*. Companion trust is based on the reciprocal exchange of goodwill and friendship. Competence trust is established through perceptions of others ability to perform the required tasks. This may also be formed via the reputation of the associated organisation to which the individual belongs. Commitment trust is associated with contractual arrangements or expectations between the clients and practitioner. Trust in the medical setting is conceptually difficult to define and there is no commonly shared understanding of what it means, what factors affect trust and how it relates to other factors within health provision (Hall *et al.*, 2001). Regardless of the lack of clarity the importance of trust within the provision of human health services is well documented (Pearson *et al.*, 2000; Pilgrim *et al.*, 2011).

In animal health provisions, improvements in the maintenance of medical recording techniques and accessibility of practices with corporatisation appears to facilitate client movement from one health provider to another which ultimately leads to diminishing practice loyalty (Lee, 2006). Clients are now familiar with switching allegiance in other areas of service provision which, combined with an overall increase in public awareness of veterinary medicine due to a plethora of veterinary television programmes and ease of online searches, diminishes client practice loyalty. This concept may even be actively but inadvertently promoted within the large veterinary practices where clients do not have the opportunity to form the all-important bond with a specific veterinarian (Lee, 2006) and ease of rapport building is compromised. Transparent relationship building strategies adopted by an enterprise are important to relationship development between client and practitioner; but trust is shaped by communication quality and the level of active interaction. Within the animal health sector, it has been demonstrated that clients wish to be able to voice questions and concerns but be confident in the practitioners' professionalism and trust the overall decision making capabilities (Grand *et al.*, 2013). Research completed in the US found that over three quarters of pet owners surveyed consider pets to be members of the family (Brown and Silverman, 1999) and clients demonstrating this strong HAB required higher levels of trust in the treating practitioner (Grand *et al.*, 2013).

2.6.3 Communication

Communication and dialogue are cited as essential pre-requisites to value co-creation (Koelling *et al.*, 2010) and are considered by Grönroos (2008) and Grönroos and Voima (2012) to be integral to value co-creation and value-in-use. Communication in human

health service is recognised as an essential constituent of quality patient care (Silverman *et al.*, 2005) and it appears to fulfil the same role within veterinary care (Coe *et al.*, 2008). However, there are barriers and challenges to effective communication between the veterinarian and the client (Case, 1988; Brown and Silverman, 1999) and there is an increasing awareness that failures in communication are becoming a major source of client dissatisfaction (Shaw *et al.*, 2008; Lowe, 2009). Veterinary practice research has identified two-way communication and the importance of respectful interaction as being key themes; with the professional having sufficient time to discuss all options of patient care with the client (Coe *et al.*, 2008). There appears to be an important omission in the allocation of time for the consultation, which is not surprising considering the number of patients a veterinarian will often be required to see within a surgery. However, there is some evidence to support the role of effective communication in the veterinary consultation and which promotes the use of open rather than closed questioning techniques (Shaw *et al.*, 2008; Shaw *et al.*, 2012). Exploratory in nature, open questioning gives rise to collaboration between conversing participants (Shaw *et al.*, 2008), promoting the clients' involvement in the decision-making process and endorsing the paradigmatic shift in client- vet relationships from custodian to partnership.

Word-of-mouth messages can have tremendous impact as they give customers clues about the organisation, credibility and trustworthiness. For the potential client, word-of-mouth recommendation from another client provides the most objective source of information, albeit it perceived objectivity. If negative word-of-mouth (NWOM) messages are excessive this can result in client resistance to active marketing communication which can prove costly whereas positive word-of-mouth (PWOM) recommendation can reduce the financial investment into marketing media (Williams and Buttle, 2014). Development of on-line communities through social media is now a major contributor to interaction between clients (Brown *et al.*, 2007) and this influence should not be overlooked.

Effective communication between business and clients requires the development of an interactive dialogue. Connection between the service provider and the client is needed to develop trust and an effective co-operative dialogue requires the active participation of both parties. The process can become value-oriented rather than price- related, but requires a long-term relationship perspective to be taken (Grönroos, 2011).

2.6.4 Empathy

Empathy is defined as "*the ability to understand and share the feelings of another*" (Oxford Dictionary, 2017). In the health context, clinical empathy is more complex and problematic to describe, as protective mechanisms need to be in place to safeguard the medical practitioner from repeated exposure to often upsetting scenarios. Conflict is apparent as patients' desire true empathy whilst practitioners seek to maintain clinical detachment (Halpern, 2003). Given similarities in the roles performed, it is fair to assume that the

same tension is experienced by the veterinarian or paraprofessional as the human health practitioner. Veterinarians' ability to demonstrate empathy has been identified as a measure of interactional competence (Shaw *et al.*, 2012) and is, therefore, a highly desirable trait within the profession. Demonstration of empathetic concern particularly in problem visits (defined as complex, poor outcome or bad news consultations) appears to aid client satisfaction and the client-practitioner relationship (Shaw *et al.*, 2012). Models of empathetic communication in human medicine have demonstrated the role of empathy in successful clinical outcomes (Neumann *et al.*, 2009), confirming the impact of strong relationships, effective communication and rapport in the health process and service quality.

2.7 Service Quality for the Animal Health Sector

Except for direct advertising or publicity, veterinary services appear to have given limited attention to marketing matters (Lee, 2006) and few studies have attempted to examine client expectations and specific needs in the context of animal health provision (Coe *et al.*, 2008). Veterinary services marketing has previously been considered utilising the Marketing Mix, attributing the "Four P's" to the sector provision (Lee, 2006); but not considering service quality. Conversely, marketing of human health service considers measures of consumer satisfaction to be of paramount importance to ensure that practice meets client needs (Newsome and Wright, 1999). Extensive work completed for the Lowe Report (2009) found a considerable discrepancy between the available information on the supply side of the veterinary sector with copious data on veterinary numbers and trends but sparse detail on the client demand aspect of the profession. Information on client numbers, locations and demand for veterinary services was found to be severely lacking. Lowe suggests the lack of information on client requirements to be "*symptomatic of a wider problem of the lack of customer focus*" (Lowe, 2009 p.18). A resulting key recommendation of the Lowe Report was to "*clearly understand and articulate customer requirements for veterinary services and to effectively market value-added services to both the private and the public sectors*" (Lowe, 2009 p. 50). Effective marketing strategies for veterinary services has also been clearly identified as a weakness of the sector (Lee, 2006) and one which should be subject to further investigation (Lowe, 2009; Lowe, 2010, VDC, 2012). More recent work for the Vet Futures Strategy (Jordan and Williams, 2015; Vet Futures, 2016) concurs with these earlier findings from Lowe (2009) and the Veterinary Development Council (VDC) (2012).

Knowing what clients expect and managing expectations are prerequisites for service fulfilment (Lisch, 2014) but the lack of empirical service quality research in the animal health sector presents a distinct problem when attempting to address these matters. The Vet Futures Project (2016) completed for the BVA has outlined six objectives in a fifteen-

year plan. One of the objectives is entitled “Thinking innovative, user- focused business” which suggests some industry recognition of the role of the client in the animal healthcare service encounter. Completion of pet owner focus groups and wider surveying of the general animal-owning public has given voice to the client and highlighted the need for clientele focused service (Vet Futures, 2016). But it has served to underline a delay in addressing factors of client satisfaction in comparison with other service industry sectors (Carman 1990; Carman, 2000; Wisniewski, 2001). Neglecting to adopt a fully integrated marketing programme, including focused attention to client service provision, may ultimately result in an incoherent strategy, which at best fails to add value and at worse is harmful to business and service provided. Research into human medicine has demonstrated that unmet client expectation contributes to factors of patient dissatisfaction, poor treatment compliance and increased risk of malpractice litigation (Bell *et al.*, 2002) suggesting a comparable risk for veterinary medicine and associated animal health practice.

2.7.1 Paradigm Shift in Animal Health Service

Up to the present time of the Vet Futures Project the UK animal health sector has paid little or no attention to the provision of service quality to the client (Lee, 2006; Loomans *et al.*, 2008; Loomans *et al.*, 2009; Lowe, 2009) and as such there is a paucity of relevant literature. A framework for the provision of health in equine veterinary practice in the Netherlands was proposed in 2008 (Loomans *et al.*, 2008) in direct response to a series of lawsuits brought against equine veterinary practitioners. This model is based upon the framework for human health designed by Campbell *et al.*, (2000). The framework adheres to three differentiated areas of consideration, which are defined as structure (of the care system), process (actual care provided) and outcome (on the care recipient or patient) (Loomans *et al.*, 2008). The framework is proposed as a pragmatic and realistic technique to assess service provision within the area of specialist equine veterinary care.

Unfortunately, the model appears to have been adapted minimally to veterinary practice and subsequently appears to have received limited attention from within the sector.

Literature to support the role and value of other professionals involved in the provision of animal health is widespread (Mulligan and Doherty, 2008; Sharp, 2008; Lowe, 2009; Lowe 2010; Reader, 2012; Statham *et al.*, 2015) but appears disjointed in the approach. A useful example is the current opinion held by the veterinary industry as it perceives threats of encroachment from pharmacies selling of veterinary medicines (Vet Futures, 2016).

The veterinary pharmacist can potentially provide a one-stop shop for customers seeking the convenience of collecting both human and animal prescriptions at the same time (Morris, 2013), thus offering a valuable client service. Equally, the veterinary pharmacist can support the veterinarian in the provision of veterinary medicinal products. However, the veterinary viewpoint on the role of the veterinary pharmacist is a curious one. The

veterinary profession actively supports models of multi-disciplinary team working, recognising the role and value of all professionals within the animal health care sector (Lowe, 2009) yet regards the role of the veterinary pharmacist as a business threat (Williams and Jordan, 2015).

Commentary on the veterinary sector has identified the provision of service quality to be an area requiring improvement to reduce the risk of litigation (Loomans *et al.*, 2008), a client expectation and a business opportunity (Lowe, 2009; Williams and Jordan, 2015; Vet Futures, 2015). The UK sector appears to be detached from the current situation in North America, where the importance of client in service provision is broadly accepted (Coe *et al.*, 2008; Shaw *et al.*, 2008). The Vet Futures project seems to be the first time that the sector in the UK has identified with the paradigm shift in veterinary service provision, recognising the move from service-led provision to user-focused approaches (Vet Futures, 2016). Interestingly, this also appears to be the first time that the sector as a whole has identified with the sophistication of the modern client, despite the initial incidental but profound findings from the Lowe Report (2009).

2.7.2 Service Quality Experiences in Human Health Provision

Health organisations face extreme challenges due to the inherent complexity of disease and illness, which manifests in different ways within each unique patient (Vogus and McClland, 2016). Decisions regarding treatment may vary from patient to patient even when working to cure the same disease. Health service is, therefore, highly complex, intangible and intrinsically based on co-production. In the absence of germane literature on service quality in animal health and the obvious parallels between animal health and human provision, consideration of the extant human health literature is valuable.

Research in human health services are most commonly focused on the recovery of wellness and the alleviation of suffering; essential processes which have explicit outcomes and the results achieved are tangible. Intangible aspects of health service such as care giving are fundamentally important to the patient and the patient experience but are highly complex to achieve due to the uniqueness of each relationship and pressures of time and finance. There must also be an understanding that the care-giver may be affected by the process of giving care, a reflection on the co-production elements of this interaction (McClland and Vogus, 2014). To achieve high quality patient care, the service must be highly customised as each patient perceives and receives care in an individualised manner. Successful organisations have reflected on this developing co-production systems of care which are “patient-centric” (Rathert *et al.*, 2013), recognising that improved patient experience within areas of communication (Bendall-Lyon and Powers, 2004), empathy and perceived courtesy (Thiedke, 2007) result in greater levels of patient satisfaction. Patients seek holistic whole person care, which includes emotional support, and want the courtesy of being treated as an individual.

It is apparent that value co-creation and co-production are essential constructs of service provision within human health service and this field is currently under active research. Lacking is pragmatic research into how to implement co-production within the health provision from a management perspective. The delivery of health service has historically been provider-centred rather than patient-centred (McCelland and Vogus, 2016), a situation which is also apparent within animal health services (Vet Futures, 2016). Provision of patient-centred care, therefore, requires a complete re-think of existing practice and some initial suggestions from the literature are presented below:

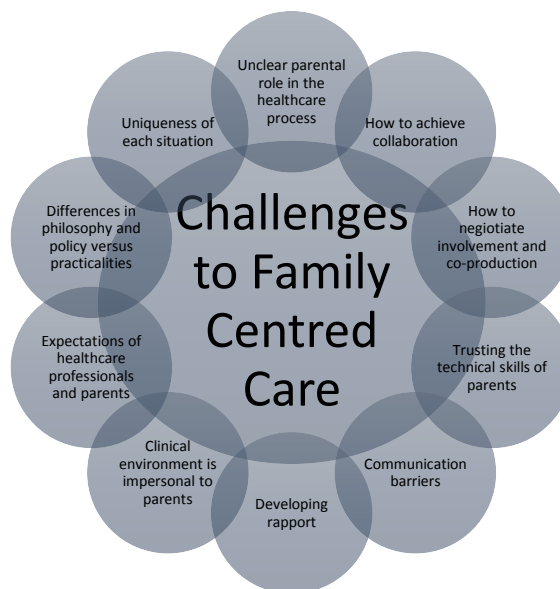
- Involvement of patients in decision making processes (Rathert *et al.*, 2013)
- Patient-centred tailored care with a move away from standardised protocols (Rathert *et al.*, 2013)
- Healthcare providers to have a personalised knowledge of the patient
- Use of open communication techniques and positive body language (Bendall-Lyon and Powers, 2004).
- Treating patients with courtesy (Thiedke, 2007)
- Shift in power-dynamics, patient centric care puts the patient in control of the healthcare delivery.

These concepts could be relevant and valuable for animal health services.

2.7.3 Distinguishing Features of the Animal Health Client

Service quality for a broad range of sectors has been subject to considerable academic scrutiny, resulting in the development of service quality models, as discussed within this chapter. The animal health client, however, is unlike clients of many other service sectors, due to the presence of the *silent client*, the animal itself, within the service process. The interests of the animal within health care provision has long been subject to discussion within the field of veterinary practice and ethics. Additionally, there has been longstanding and significant divergence between veterinarians when defining and determining the ethics of animal health provision (Tannenbaum, 1995). It is broadly accepted that animals are the property of their owners and so the animal health client not only consumes the service, but also entrusts their property to the practitioner. Furthermore, the service dynamic is made more complex and potentially contentious as the veterinarian has a simultaneous ethical obligation to both the patient and client (Tannenbaum, 1995). This mode of service provision is distinctive to the animal health sector.

There are identifiable parallels between animal health care and divisions of the human health sector, such as the provision of care to paediatric or vulnerable persons. Family centred care (FCC) is advocated internationally by the human health sector (Corlett and Twycross, 2006; Coyne, 2013) and is set out in NHS and NICE policy for paediatric care (Department of Health, 2004). Co-production is considered to be intrinsic to effective FCC (Coyne, 2013) but whilst FCC is endorsed at a philosophical level; the day-to-day integration into health services is challenging for professionals and parents alike (Espezel and Canam, 2003). A summary of the reported challenges to FCC are presented in Figure 2.7 and are described to be focused around issues of expectation, trust, relationship, respect and clarity of roles from the perspective of both parent and healthcare professional alike.



(Source: Adapted from Kirk, 2001; Espezel and Canam, 2003; Corlett and Twycross, 2006; Coyne, 2013)

Figure 2.7 Challenges association with the provision of family centre care

The complexities associated with the provision of animal health care appear to be most closely aligned with paediatric care as compared to other service provision, as decisions are made on behalf of the animal or child. The sectors are not directly comparable and but are worthy of consideration when attempting to understand service quality in animal health.

2.8 Conceptual Model of Service Quality for the Animal Health Sector

To date, there is framework for service quality specific to the UK animal health sector at either the conceptual level or the operational business level. This results in the adoption of

marketing practices with poorly defined client focus. Drawing on the wider service quality literature (Grönroos, 1984; Parasuraman *et al.*, 1988; Vargo and Lusch, 2004), comparable human health care research (Bendall-Lyon and Powers, 2004; Thiedke, 2007; Rathert *et al.*, 2013) and the limited marketing literature that does apply to service provision in the animal health sector (Coe *et al.*, 2008; Shaw *et al.*, 2008; Lowe, 2009; Coe *et al.*, 2010; Vet Futures, 2016), a conceptual model of service quality for the animal health sector has been developed (Figure 2.8).

The conceptual framework connects client perceptions of service quality to business service offerings, client expectations and experiences as well as to factors of value co-creation and value in-use. The model is to some extent based on the static PSQ model (Grönroos, 1984) as it includes constructs of technical and functional quality which are interconnected with notions of co-creation of value. As clients will respond to each service encounter in a unique manner, expectation and experience will be ever-changing and the framework is proposed as a dynamic model. Additionally, a dynamic model is proposed as the service relationship develops over time, influencing expectations as it matures. Each individual and unique service experience moulds client expectations and the relationship continues.

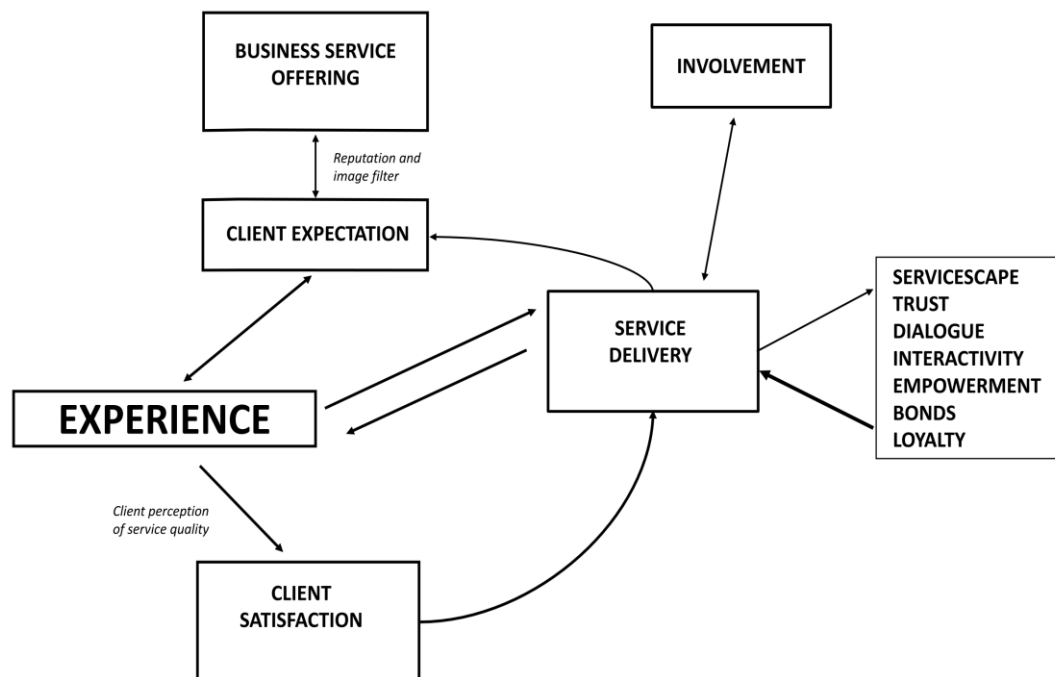


Figure 2.8 Model of service quality conceptualised for animal health

The business offering is filtered by the image or corporate brand as recognised in the Customer Perceived Service Quality Model (2007). The term used in this framework is the reputation and image filter, as this better reflects sector characteristics and will be more

readily understood by industry stakeholders. The image portrayed by the business can improve the favourability with which the client views the business/organisation, thus having a positive or negative impact on perceived service quality.

Quality service is achieved when both quality in experience meets or exceeds expectation. Both experiences and expectations are connected by components of collaboration between all stakeholders (employer, employee and client). Effective cooperation between all service participants in the service encounter is essential to the creation of value in service (Lusch *et al.*, 2007). Expected quality and experience quality are both a function of contributing factors including; Servicescape, emotion and trust, dialogue, interactivity, empowerment, bonds and loyalty, accessibility, outcome and function. These factors have emerged from the industry specific literature review as important facets of animal health service provision and, therefore, their contribution to service quality is worthy of further investigation within this thesis. Dialogue and communication refers to the required two-way interaction between the client and the business, as well as the interaction between clients including PWOM (Williams and Buttle, 2014) and it is considered that this will be of significance to the sector. Trust and emotion in service provision have been emergent within the animal health service sector (Grand *et al.*, 2013) as well as being apparent in the comparable human health literature (Trachtenberg *et al.*, 2005). These factors have been demonstrated to influence treatment compliance and practitioner loyalty in humans (Safran *et al.*, 2001; Cabana and Jee, 2004) but have yet to be considered for professional services within animal health. Themes of value co-creation and value- in use are reflective and flow through the model, to support the active and operant role of the client in service provision (Grönroos, 2012). Integration of client involvement within the conceptual framework is proposed as animal value is suggested as an influencing factor in co-creation and ultimately client satisfaction. Clients seeking greater involvement in the service provision will place a higher value on the animals that are within their ownership or care.

2.9 Research Aim and Objectives

The review of the available service quality literature has enabled the identification of number of research gaps and the development of the study research aim and objectives.

The research aim is defined as follows:

To propose a framework to understand service quality in the animal health sector.

Five research objectives are described in Table 2.10. Each objective will address the research gaps identified through the review of the literature and will be responded to through this study.

Table 2.10 Research gaps and objectives

Research objectives	Gaps evident in the animal health service provision literature
1. Map the stakeholder structure of the animal health sector through the identification of professional groups in the companion animal, equine and livestock sectors.	A comprehensive mapping of sector service providers drawing all sectors together is not currently available.
2. Explore and compare stakeholder perceptions of service delivery, expectations and fulfilment	Clients, veterinarians and paraprofessionals may have differing perceptions of service quality but this has not been investigated.
3. Assess the value of a multidisciplinary team approach in the animal health sector from the perspective of all industry stakeholders.	Limited value appraisal of multi-disciplinary team working within the animal health sector.
4. Conceptualisation of value co-creation and co-production within the animal health sector through the analysis of sector stakeholder service expectations and experience.	Notions of value co-creation and co-production have been investigated in analogous human health sectors but have not been considered for the animal health industry.
5. Identify, develop and define the dimensions of service quality in the UK animal health sector.	Constructs of service quality for the animal health sector are not described or defined.

Table 2.10 defines the research objectives and identifies gaps in the animal health service literature but also, the objectives were devised from other sources including experiential, professional, anecdotal, legislative and industry-based practise. How these objectives were identified, established and defined is described below.

1. Map the stakeholder structure of the animal health sector through the identification of professional groups in the companion animal, equine and livestock sectors.

Mapping of the sector was an important phase to determine the structural context for professional animal health stakeholders. Experiential and observed stakeholder practice within the sector, from the perspective of both the professional and the client, provided the basis to this objective. Additional refinement of this objective was facilitated through the review of the legislative literature, professional discussion with industry representatives and prior sector experience.

2. Explore and compare stakeholder perceptions of service delivery, expectations and fulfilment

The review of the extant service quality literature revealed the limitations in the animal health service literature. Despite the seminal work completed by Lowe (2009) identifying the lack of client-centred service, others have neglected to further define service delivery, expectations and fulfilment pertinent and specific to the sector. Hence, objective two was fundamental to understanding service provision within animal health care. The Gaps analysis literature allowed for the potential causes of service quality shortfalls in the animal health sector to be recognised. This model enabled the further enhancement and development of the objective, the elements of which were subsequently tested through the selected methodology.

3. Assess the value of a multidisciplinary team approach in the animal health sector from the perspective of all industry stakeholders.

Objective three was initially identified through industry and professional experience, and informal discussions with a range of professional stakeholders, including veterinarians and representatives from all of the paraprofessional groups researched within this study. The review of comparable human health care literature outlined the usage of MDTs and the benefits conferred through interdisciplinary modes of working; therefore, providing insight into the potential value to the animal health sector. As a rapidly evolving profession, the veterinary sector may need to look to interdisciplinary models to fulfil client needs, and expectations and consideration of this objective is fundamental to understanding the sector.

4. Conceptualisation of value co-creation and co-production within the animal health sector through the analysis of sector stakeholder service expectations and experience.

Recognition of the potential significance of value co-creation and co-production was emergent though the review of the service quality literature and through observed parallels with human health care literature. This objective was a fascinating, worthy but entirely unexpected development. The relevance and apparent usefulness of value co-

creation to the sector was an exciting proposition and therefore further investigation was considered to form an essential component of the study agenda.

5. Identify, develop and define the dimensions of service quality in the UK animal health sector.

The review of the existing literature and a broad understanding of the sector from a professional, industry and client perspective clearly indicated animal health services to form a unique and distinctive service sector. The nearest comparable service sector is paediatric or vulnerable persons' health care provision, but they are not the same. Within provision of animal health care lies complex ethical considerations for the practitioner, regardless of the categorisation of professional stakeholder, since the animal is under ownership of the client. Thus, fulfilling the needs of the animal health client service needs is complicated and multi-layered. To fully represent the intricacy and distinctive nature of the sector, dimensions of service quality need to be based on fitting empirical research, hence the development of objective 5.

All research objectives were devised to, in combination, contribute to the overarching study aim, defined as: *Development of a framework to understand service quality in the animal health sector.*

2.10 Conclusion

Chapter two has provided a consideration of the relevant service quality models pertinent to this study and has contextualised the extant service quality literature relevant to animal health service. This review of the literature has enabled the preliminary development of a conceptual framework of service quality for the UK animal health sector, which was presented and explained in section 2.8, and in Figure 2.7 and concludes the findings from the literature review.

This study will explore the role of value co-creation and the potential use of established service quality models to the animal health sector, as the concepts have relevance and possible significance. Whilst the model of SERVQUAL will inform the research, the RATER framework will not be directly applied to the sector, but emergent dimensions of service quality unique to this sector will be investigated. The chapter that follows will outline the methodology and methods used in this study to address the research aim and objectives.

Chapter 3 Methodology & Methods

3.0 Introduction

This chapter will outline the methodology and methods adopted to develop and investigate the research aim and objectives. Three distinct strategies are utilised within the research process, which include an initial industry mapping exercise to scope the sector position followed by a mixed methods approach to data collection involving depth interviews to inform a quantitative survey. Background information to the chosen research techniques will be presented to explain the decision-making process behind the study methodology. Due to the lack of evidence based research in the field of animal health service provision, comparable human health service literature is used for guide and valid during the research design.

3.1 Research Aim and Objectives

The research aim is *to propose a framework to understand service quality in the animal health sector* and the research objectives are as described in section 2.9.

3.2 Methodology

3.2.1 Research Philosophy

Ontology is described by Crotty (1998) as the study of being, shaped by questions of the nature of reality and existence and the determination of what is real (Creswell and Plano-Clark, 2011). In the construction of meaning, ontological investigation is aligned with epistemological issues. Epistemology or what it means to know, is driven by ontology and examines the relationship between knowledge and the researcher. The question of truth (ontology) and gaining knowledge of what we know (epistemology) (Creswell and Plano-Clark, 2011) often converge and indeed merge together (Crotty 1998). Research is thus paradigm guided. The concept of a worldview or paradigm in research philosophy was described by Kuhn (1970) as a set of generalisation, beliefs and values which would guide research inquiry. The use of Crotty's (1998) conceptual model provides a valuable representation of the mixed methods philosophy, the level model is shown in Figure 3.1.



(Source: Adapted from Crotty, 1998)

Figure 3.1 Process of developing a research study

In the epistemological process the mode of analysis is embedded within the methodological approach. Methodological decisions must be made regarding the methods to be adopted, how to define the research context to enable valid results to be obtained, and selection of the parameters for statistical analysis and the choice of appropriate data collection techniques. All of which must be practicable.

3.2.2. Postpositivism

Postpositivism, as an attenuated form of positivism, (Crotty, 1998) represents later philosophical thinking of the 20th Century and challenges the objective notion of absolute truth as presented by the positivistic paradigm. Positivist methods assume an unbiased and passive investigation which separates fact from value and accumulates knowledge (Charmaz, 2014). Postpositivist philosophy adheres to probability as opposed to absolute certainty (Creswell, 2014), recognising that the study of human behaviour or actions cannot be positivist. Ontological perspectives of postpositivism are based on hypotheses which are either accepted or rejected (Creswell and Plano-Clark, 2011); and in epistemological terms the data is collected objectively with impartiality and at a distance (Creswell and Plano-Clark, 2011).

3.2.3. Constructivism

Constructivism developed in the late 1960s and draws themes and theory from the study participants (Creswell, 2014). The belief that there are multiple realities and therefore that the research inquiry is actively searching for perspectives from the study participants, is central to constructivism (Creswell and Plano-Clark, 2011). In constructivism, meaning is constructed not discovered, differentiating constructivist from postpositivist research (Crotty, 1998; Creswell and Plano-Clark, 2011). Meaning is constructed through engagement with the study area and participants and therefore proximity to the data collection process is maintained throughout (Crotty, 1998; Creswell and Plano-Clark, 2011; Creswell 2014).

3.2.4. Measuring Service Performance

Measuring service quality is a highly complex procedure due to the inherent intangibility of service performance and the interdependence of contributing elements (Grönroos, 2007). The uniqueness of each service experience compounds the challenge as standardisation of each service encounter is unachievable. Practical problems have been encountered when attempting to measure service quality such as non-response bias, outlier effects, reactivity and missing data (Lisch, 2014). However, the methodological approach for adopted for this project will attempt to mitigate these difficulties.

3.2.5 Qualitative Research in Human Health Service

The use of qualitative exploration to gain insight into human health service provision is a valued and well-established research technique (Pope *et al.*, 2000). The complexities of

health and health-provision are such that an understanding of patient interpretations, expectations and actions is now recognised to form an essential part of medical research (Ononeze *et al.*, 2009; Higginbottom *et al.*, 2014). Grounded theory and grounded analysis techniques, mixed methods research and action research are all commonly used in modern human health research (Lingard *et al.*, 2008).

3.2.6 Grounded Theory and Grounded Analysis

“A grounded theory is one that is inductively derived from the study of the phenomenon it represents. That is, it is discovered, developed and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon. Therefore, data collection, analysis and theory stand in reciprocal relationship to one another.”

(Strauss and Corbin, 1990 p.23).

Grounded Theory or “ground-up” theory (GT) was first described by Glaser and Strauss (1967) following a period of unrest between qualitative and quantitative research in the field of sociology. Glaser and Strauss (1967) proposed that qualitative analysis completed with a systematic approach had its own logic and could therefore generate theory. The need for preconceived ideas or hypotheses to prove or disprove the essential factors for quantitative research was not required (Marshall-Egan, 2002). The grounded analysis (GA) techniques within GT provide systematic and flexible guidelines for the collection and analysis of qualitative data and enables construction of theory from the data. The technique is a valuable methodology to practise when seeking to develop theories around social phenomena (Charmaz, 2014). Formulaic data collection is not required but instead a non-linear, iterative strategy (Marshall-Egan, 2002) allowing for the identification of emergent themes is utilised (Bryant and Charmaz, 2007). Constant comparison techniques in GA (Higginbottom *et al.*, 2014) enable transformation of data into theory. In its purest form, GT assumes there to be no pre-conceived notions prior to and during the theory building and data should be examined to gain initial impressions, conceptualised and analysed using a constant comparison methodology. A key element to the analytical techniques within GA and GT is the interactivity with the data, as opposed to positivism quantitative methods which assume an unbiased, passive collector of facts lacking active or central participation in the research. Whilst using GA an unbiased approach to the process should be maintained despite accepting an integral place in the process (Charmaz, 2014).

Original GT as devised by Glaser and Strauss has undergone significant development and extension over time (Higginbottom *et al.*, 2014). Divergent ontology and epistemology persisted Glaser’s post-positivist objective theory and Strauss, in combination with Corbin, sought to align more closely with a pragmatist and constructivist framework (Higginbottom *et al.*, 2014). Further emphasis on the constructivist element was developed in the

reflective work of Charmaz and the development of Constructive Grounded Theory (CGT) (Charmaz, 1990; Charmaz, 2014).

Following early data collection, GA uses qualitative coding techniques to organise, define, group and label emergent theories, thus allowing for the identification of themes within theoretical data segments. Recent developments in IT software packages such as NVivo© have facilitated the process and enhanced acceptance of qualitative research techniques (Bazeley and Jackson, 2013).

The defining characteristics of GA techniques may be summarised as follows:

- Simultaneous involvement in data collection and analysis;
- A process of constant comparison is used at all stages of data analysis;
- Memo writing, a major component of effective thematic coding, is used to define and specific categories and segments;
- Theoretical sampling techniques are used rather than the selection of representative populations.

(Charmaz, 2014)

Within GA data selection is a flexible and dialectic process, allowing for continued decisions regarding the path of data collection in response to emerging themes within the data itself and for GT emergent theories (Charmaz, 1990; Charmaz, 2014). These techniques are a widely recognised approach to qualitative research and there is extensive use within human health research (Marshall-Egan, 2002; Lingard *et al.*, 2008; Ononeze *et al.*, 2009; Higginbottom *et al.*, 2014). The use of an iterative logic and emergent approach provides the framework for qualitative inquiry (Lingard *et al.*, 2008) as well as a means to take the qualitative inquiry beyond a descriptive investigation to a meaningful development of theory. GA in animal health service research is relatively uncharted territory, predominantly due to a lack of social science investigation in the field of veterinary medicine and animal health (Christley and Perkins, 2010). However, recognition of the value of the technique within a comparable subject area and the flexibility of the guidelines support its usefulness to this study. It is necessary to present emerging theories in a form which veterinary and paraprofessional practitioners can relate to (Ononeze *et al.*, 2009) as otherwise the development of the conceptual framework will be meaningless. Additionally, extrapolation of advances in evidence based human health to the animal health industries is already accepted through the concept of One Health (CDC, 2016) which describes the interconnection of human and animal health.

3.2.7. Critical Incident Technique

Service encounters involve 'critical incidents' or 'moments of truth', which are significant in determining client service satisfaction or dissatisfaction. The critical incident technique (CIT) is a recognised qualitative research method used to identify these events (Bitner *et al.*, 1990; Mudie and Cottam, 1993; Palmer, 1998). Used during interviews, CIT enables

examination of memorable and, therefore, significant encounters (Bitner *et al.*, 1990), often due the natural tendency of participants to remember such incident and recount them (Fitzgerald *et al.*, 2008). The reliability and validity of the technique is supported through the research of Andersson and Nilsson (1964), Ronan and Lathan (1974) and equally White and Locke (1981). It is a relatively old technique which has undergone limited change since initial inception. In the absence of new innovations in the field of service quality research (Lisch, 2014), CIT remains well used as a measure of service performance as the technique encourages thinking and activates memory during participant interviews, bringing data rich content and reflecting real-life experiences (Gremier, 2004; Hughes *et al.*, 2007). CIT is a well-established research tool frequently used in human health sciences (Fitzgerald *et al.*, 2008) including dentistry (Victoroff, 2006), medicine and nursing (Keating, 2004). Selection of the technique for human medicine research is accepted since it uses observation and analysis of human behaviour to solve practical problems (Flanagan, 1954).

Decisions were made on the usefulness of the technique to this study through comparison with analogous human health science research; the desire to evaluate a novel approach in animal health research and the potential for the collation of rich data. Both the GA and CIT techniques, were adopted in the interview phase of the study to facilitate discussion of service quality within given situations of animal health service provision and to provide data for thematic analysis in NVivo®. Pure GT is not a tool to test hypotheses (Charmaz, 2014) and whilst no direct theory currently exists for service quality in the animal health sector, there are comparable service quality models to inform the study process. GT was, therefore, not an appropriate study methodology but many of the analytical techniques within GA were vital to gain rich qualitative data.

3.2.8 Transcript analysis: QDA and Coding

The development of Qualitative Data Analysis (QDA) software has helped to legitimise qualitative research in disciplines which historically only researched using quantitative techniques (Johnson, 2006). Software packages such as NVivo®, Atlas.ti® and MAXQDA® are now widely available (Lewis-Beck *et al.*, 2014). NVivo® was selected for use in this study because of its compatibility with available resources.

QDA packages do have short comings, with the suggestion that software enables the investigation to move more quickly, adopting a functional approach to the analysis which potentially causes the analysis to miss essential connections and conceptualisation (Johnson, 2006). However, there can be no doubt of the benefits conferred using QDA software in terms of data handling capacity, speed of retrieval; rigour and consistency (Spencer *et al.*, 2014) and transparency of analysis (Bazeley and Johnson 2013).

The use of memo-writing is an essential component to the coding strategy capturing the thinking/interpretation of developing themes through the analytical process. NVivo®

enables the importation, creation and editing of a wide range of data; organisation and classification of data; use of coding and capturing of thought processes; making sense of information; and the linkage of themes and visual patterns and connections. In this study NVivo© was selected to enable comprehensive analysis of the interview data, facilitating ease of data management and, therefore, improving vigour and reliability of scrutiny. The use of NVivo© also provides an audit of the data analysis process which was often considered to be absent from paper-based qualitative coding system and so a deficiency (Welsh, 2002).

Coding describes the process used to sort information according to themes, categories or content. The code or node as it is termed in NVivo© is an abstract representation of the phenomenon or the identification of a theme within the data set (Corbin and Strauss 2008). Nodes can be analytical or descriptive in nature. Each node should contain only one category or concept but each node may be divisible into subcategories termed “child nodes” under the corresponding “parent” node (QRS NVivo©, 2014). Through analysis, nodes are organised into a hierarchical framework which also forms a point of connection within a branching network of concepts or dimensions (Johnson, 2006). The structured coding system within NVivo© confers benefits to a mixed methods study: the provision of a logical organisation system, conceptual clarity, detailed coding and the identification of patterns within the data or recognition of emerging themes. The code and retrieve function of QDA also supports the use of grounded analysis within the study (Coffey and Atkinson, 1996).

3.3 Interview Sampling Technique

Sampling techniques can be categorised as being either probability or non-probability techniques. Non-probability sampling techniques are most often used to select the sample in large scale social research (Babbie, 2014; Ritchie *et al.*, 2014a) as samples are deliberately selected to reflect the overall population. The samples are not intended to be statistically representative as precision and rigour is defined by the ability to successfully represent the study population (Ritchie *et al.*, 2014a). To ensure strength and validity of qualitative research it is crucial to apply criteria appropriate to the research paradigm. Qualitative sampling techniques are categorised into: available subject technique (convenience) sampling; purposive or judgemental sampling; snowball sampling and quota sampling (Babbie, 2014). Reliance on available subject techniques (Ritchie *et al.*, 2014a) also referred to as haphazard sampling, (Babbie, 2014) is a technique which makes use of any available subjects. Despite being a relatively easy method to use it is a risky method for social research as there is no control on how representative the results obtained are. Snowball sampling is a form of accumulation sampling that requires initial identification of population representative contacts, which will lead to further contacts

(Babbie, 2014). Quota sampling requires the compilation of a table describing population characteristics to enable meaningful representation.

Purposive or judgemental sampling requires the selection of a sample based upon knowledge of the population and judgement about which respondents will be most useful or representative (Babbie, 2014; Creswell, 2014). Selection is criterion based as respondents are chosen with a distinct purpose in mind. Effective purposive sampling should fulfil two key aims; all relevant constituents of the research topic must be covered and within the set criteria there must be sufficient diversity to ensure full exploration of the research question (Ritchie *et al.*, 2014a). There are different approaches to purposive sampling techniques and the approach selected must fulfil the study aims to yield the required sample composition. Homogenous purposive sampling was selected for the identification of representative interviewees for the qualitative data collection to enable the study of a smaller sub-set of the larger population. It was time and cost prohibitive to survey the entire populations for each of the identified groups within this study.

3.3.1 Qualitative Research: Reliability and Validity

Interviews are widely accepted as a form of obtaining empirical data (Fowler, 2014) but there can be associated reliability and validity challenges (Lisch, 2014) as the interviewer can have a strong impact on the quality of data obtained (Fowler, 2014). Interviews are categorised as: Oral versus written; standardised versus non-standardised; individual versus group with the interview process adopted influencing the answers given and so the data collected. Standardised interviews go some way to improving issues of reliability and validity and are easy to code but can result in less rich data (Brace, 2013) and so a semi-structured approach was adopted. Cognitive interviews are now commonly used in the process of questionnaire development (Blair *et al.*, 2014) and for this study, representative views from each defined sub-sample of stakeholder group were sought for the qualitative interviews for both analysis and to inform the survey.

The interview process cannot be freed from the potential effects of reactivity, as each interviewee will undoubtedly respond to the unique situation and interviewer. The main cause of reactivity is thought to be social desirability as respondents seek to adhere to socially accepted norms. Even in the absence of an interviewer (through the completion of a self-administered questionnaire) the respondent will attempt to interpret the project and adapt accordingly (Brace, 2013). Questionnaire technique can help to ameliorate possible reactivity induced bias but with the interview, thought must also be given to the choice of location, the wording of the project information, the questions asked and the interviewers demeanour throughout the process to minimise any potential for bias (Fowler, 2014).

3.3.2 Mixed Methods Approach

The core characteristics of a mixed methods approach are the collection and analysis of both quantitative and qualitative data, the integration or connection of the obtained data,

prioritisation of data sets, and the selection of philosophical worldviews and theoretical lens to frame the procedure (Tashakkori and Teddlie, 2010). Qualitative research is typified by the inductive- subjective- contextual approach and quantitative follows a deductive, objective and generalising strategy drawing on pre-conceived ideas or theories based upon literature review or prior studies (Morgan, 2014). The use of qualitative investigation in human health care has arisen with the developing understanding of the role of psychosocial determinants in medicine (Martikainen *et al.*, 2002). Veterinary medicine is some way behind human health in both comprehension and research in the field of service but often follows the lead of the analogous human equivalent (Lingard *et al.*, 2008) and was therefore selected a mixed methods approach.

3.3.3 Sequential Exploratory Design

The limited existing literature in animal health provision had a strong influence on the research methodology selected and it was considered essential to carry out preliminary sector mapping and qualitative research. Results obtained from these stages then enabled the identification of pertinent service quality dimensions for later quantitative surveying.

After selecting the mixed methods approach and reflecting on the philosophical and underpinning theoretical foundations further decisions on the research design were reached. When defining the mixed methods research design certain choices must be made and these are related to the two data strands (quantitative and qualitative). Key decisions which are essential for transparency and clarity included: the level of interaction between the strands, the relative priority of the strands and the timing and mixing of the strands (Lingard *et al.*, 2008). Adherence to a recognised mixed methods typology can be advantageous when investigating a novel topic (Creswell and Plano Clark, 2011), therefore, an existing framework considered to best fit the research problem was selected to develop a high quality and rigorous study. Exploratory sequential design was selected as construct understanding was absent due to the limited availability of animal health service literature. The mixed methods exploratory sequential design, consisting of distinct phases of research (Brace, 2013) was selected to be most appropriate. In the adopted design, sector mapping provides essential underpinning data and information, the qualitative data analysis based on representative individuals informed the quantitative phase.

Christley and Perkins (2010) acknowledge the value of qualitative research in veterinary health provision to gain understanding of clients, because the technique is well suited to poorly understood topics, is a forerunner to quantitative study and it helps to expose issues of treatment compliance. These factors are relevant to this study. Additionally, it was thought that the quantitative component of the study would be more acceptable to the study target audience who are more familiar with the quantifiable research of natural

science. Quantitative research is often more appealing as the search for reality appears more straightforward but its relevance in the socially constructed world of service provision, remains a point of discussion.

3.3.4 Philosophy of Mixed Methods

As worldviews relate to research types it is recognised that a shift in research methodology will lead to a corresponding shift in worldview (Morgan, 2014). Therefore, the paradigm foundation adopted for the sequential exploratory research design has been constructivist in the qualitative stage (Phase two) and moving towards a postpositivist approach in the quantitative stage (Phase three).

3.4 Attitudinal Rating Scales

Measurement of feelings, opinions, and attitudes represent the subjective states of individuals and the answers given cannot be validated in an objective way (Fowler, 2014). The validity can, therefore, only be assessed through correlation with other measured factors and so informed decisions on what kind of measurement is desired must be made. Itemised rating sales are widely used as a measure of attitude as the techniques provide a straightforward way to gain appropriate information which can be analysed and may provide comparability over time. Dimensions are developed for investigation and respondents are asked to indicate their position on each interval scale (Brace, 2013). Three of the most commonly used attitudinal rating scales are: Likert, Semantic and the Staple scale. The Semantic differential scale and the Staple scale were considered inappropriate for use in this study. Semantic scales use a bipolar rating with opposite statements of dimensions placed at the two ends of the scale (Brace, 2013). The technique is often best suited to descriptive dimensions as opposed to attitudinal as respondents may find it difficult to express themselves with the required conciseness. The Staple scale technique is more complex and with a ten-point scale does can provide greater discrimination (Feinberg *et al.*, 2013) but implementation is time consuming. Likert scales provide a one-dimensional scaling method (Lisch, 2014) allowing the respondent sufficient discriminatory choice in a time-effective manner. Likert scales or items are rated by respondents according to the level of agreement or disagreement. The technique is validated for broader service quality (Parasuraman *et al.*, 1988) and in health care (Sim and Wright, 2000) research. However, the items used must be based on a clearly defined research question, which in this case was supported through the findings of the initial exploratory mapping exercise and the interview analysis.

3.4.1 Pre-tests and Piloting

The pre-test is one of the most important stages in the development of an effective survey (Blair *et al.*, 2014) and was used in this study as an initial check for errors, comprehension, reliability and validity. Respondent feedback to the pre-test should

include areas such as: Were the questions easy to understand? Does the questionnaire hold your attention? Were there any omissions or questions covering the same topic? Do the questions sound right? Validity was initially checked via discussions around the respondents' ability to answer the questions and, later, validity was also assessed using pilot questionnaire data.

The time taken to complete the questionnaire is an important factor (Puleston, 2014) and a concise survey should be used wherever possible (see Section 3.4.3). Equally important is the appearance of a self-completion survey. A visually unattractive questionnaire may be difficult to follow, reduce the overall response rate, increase occurrence of missing values and suggest to the respondent that the topic is not important (Brace, 2013).

Printing and paper should be of high quality (Webb, 2002) and in this study, different pastel colours were used to aid discrimination between the different sub-populations and variations of the questionnaire. A survey title and study contact details should be provided as respondents may wish for further information. The use of headed paper is known to help legitimise surveys (Blair *et al.*, 2014). To reduce the risk of missing data, questions should be clearly laid out and sub-headings used where necessary to help focus respondents' attention. A vertical listing of questions is preferable to horizontal as it is considered easier to follow a more open appearance and spacing between categories is important, though visually isolated categories may bias respondent responses (Brace, 2013).

3.4.2 Quantitative Research: Validity and Bias

Natural science inquiry is often achieved using a contrived situation created specifically for the research project, which of course generates objectivity. Conversely, social science requires the interpretation of human behaviour and individual response to a situation but can introduce bias (Lewis-Beck *et al.*, 2004). The use of pre-testing and piloting of a questionnaire can help to limit the effects of respondent reactivity and therefore reduce bias in data collection. To enhance validity and reliability of results through bias limitation, various techniques can be used in the development of the questionnaire research instrument. The level of accuracy in respondents' answers is determined by what is being asked and how it is being asked (Fowler, 2014). Errors in responses are often due to the following four reasons: respondents do not understand the question; respondents do not know the answer, the answer cannot be recalled; or there is question refusal (Fowler, 2014). Attentive use of the pre-test and piloting stage of the inquiry aims to limit the occurrence of these problems.

3.4.3 Questions

Questionnaire data reliability and accuracy can be influenced by both the sequence of topics and individual questions (Creswell, 2014). To combat potential respondent reporting inaccuracies the following known effects were taken into account. The Halo

effect may be observed as the sequence of questions within a questionnaire and can have an impact on answers given as preceding topics have a radiating influence on subsequent questions (Lisch, 2014). When rating scales are used, there is a risk of respondents adopting a patterned response which may result from respondent boredom or survey fatigue (Brace, 2013). To negate the risk of patterned response, it is essential to keep the survey interesting for the respondent ensuring that questions are written using clear language and to minimise the time taken for completion.

The average survey takes approximately twenty minutes to complete but with the now widespread use of smart phones and tablet devices, it is suggested that the optimum time for completion should be ten minutes (Puleston, 2014). A compact survey is essential to accommodate completion within a reasonable timeframe and the use of an iterative-survey design plan using the pilot stage to cull repetitive and/or irrelevant questions is also recommended (Puleston, 2014). A condensed version should also help to reduce the incidence of missing data towards the end of the questionnaire as the respondents' attention wanes. Acquiescence is a known limitation of Likert scales and a concise questionnaire will limit this effect (Brace, 2013).

Survey refusal is an important consideration and data analysis will need to consider if there is a pattern to missing data or if it is a random effect (Creswell, 2014; Lewis-Beck *et al.*, 2004). Other concerns are associated with false answers, which may be due to a failure to understand the question or to correctly recall the answer (Brace, 2013; Fowler, 2014). Adoption of a face-to-face implementation using compact questionnaire in phase three of this study considerably minimised these issues.

3.5 Quantitative Data Analysis Techniques

Chi-squared testing is a useful, commonly used significance test for social science research involving categorised data (David and Sutton, 2004) as it enables the assessment of no association between characteristics and that the factors under consideration may be determined to be independent of each other (David and Sutton, 2004; Field, 2013). The survey data collected in Phase three of this study was subject to chi-square analysis to enable determination of significance in responses between groups and sub-groups and to validate the data for exploratory factor analysis (EFA).

Confirmatory factor analysis (CFA) was used for data analysis in the development of the SERVQUAL model (Parasuraman *et al.*, 1988) and later in the re-examination of SERVQUAL dimensions and development of SERVPERF by Cronin and Taylor (1992). Nantel (2000) uses factor analysis to develop service quality dimensions in the banking sector and Babakus and Mangold (1992) for in human health services research. EFA was selected for this study, as the aim of this technique is to uncover the latent structure and to account for shared variance and common features (Fabrigar and

Wegener, 2012; Hooper, 2012). The technique is also widely used and applied in social science research (Osborne and Costello, 2009).

EFA provides a suitable technique for the analysis of questionnaire items for areas which have been subject to limited investigation (Yong and Pearce, 2013); allowing for meaningful categorisation of variables, reducing groups of variables into factors to facilitate interpretation. As a data reduction technique, some question its veracity (Osborne and Costello, 2005) due to issues with accurately naming factors or dimensions, as the selected term may not truly display all variables within the factor; split loading of variables which can be difficult to interpret and the study must be conducted using a large sample at a specific juncture to ensure reliability of factors and the technique is weak technique for longitudinal studies (Yong and Pearce, 2013). However, when there are no pre-determined expectations regarding the number of common factors and about which variable will be influenced by the shared factors, as was the case for this study, EFA is fitting (Fabrigar and Wegener, 2012).

3.6 Summary

The use of a mixed methods approach requires there to be careful consideration of the data analysis techniques to ensure meaningful triangulation of all results. Interviews and transcript analysis are acknowledged techniques to collect rich data (Fowler, 2014), develop questionnaires (Blair *et al.*, 2014) and to identify emergent themes within the data via constant comparison and coding methods (Walter *et al.*, 2010). Techniques of CIT are used in dental health (Fitzgerald *et al.*, 2008), grounded analysis techniques in GT and mixed methods approaches to human health investigation are supported by Lingard *et al.*, (2008). There has been limited thematic analysis of interview data within the animal health sector to date but qualitative techniques have been used in perception based studies (Coe *et al.*, 2007), for measures of farm animal health care (Lastein *et al.*, 2009) and acceptance of their worth is on an upward trend (Gunn *et al.*, 2008; Christley and Perkins 2010; Higgins *et al.*, 2013). The application of EFA is a novel technique within animal health service inquiry but CFA and EFA are supported as valid methods within human health (Babakus and Mangold, 1992) and broader service investigation (Parasuraman *et al.*, 1988; Nantel, 2000).

3.7 Methods

3.7.1 Defining the Problem

The review of the literature, completed alongside the initial exploratory sector mapping exercise, facilitated the establishment of research parameters and assisted the development of the research aim and five objectives. The selected methods have been adapted to address the overall study aim and each of the five research objectives, these are described in Table 3.1

Table 3.1 Research objectives and analysis technique

Research Aim	Research Approach
To propose a framework to understand service quality in the animal health sector	All below described techniques
Research Objectives	
1. Map the stakeholder structure of the animal health sector through the identification of professional groups in the companion animal, equine and livestock sectors	Exploratory mapping using secondary data sources for a wide range of animal health sectors, professional and legislative bodies Development of novel sector database (Objective 1: Phase 1)
2. Explore and compare stakeholder perceptions of service delivery, expectations and fulfilment	Qualitative semi-structured interviews analysed in NVivo© using GA and thematic analysis Quantitative surveying of stakeholders Chi-squared relationship testing (Objective 2: Phase 2 & 3)
3. Assess the value of a multidisciplinary team approach in the animal health sector from the perspective of all industry stakeholders	Semi-structured interviews analysed in NVivo© using GA and thematic analysis Quantitative surveying of stakeholders Chi-squared relationship testing (Objective 3: Phase 2 & 3)
4. Conceptualisation of value co-creation and co-production within the animal health sector through the analysis of sector stakeholder service expectations and experience	Qualitative semi-structured interviews analysed in NVivo© using GA and thematic analysis Quantitative surveying of stakeholders Exploratory factor analysis (SPSS) (Objective 4: Phase 2 & 3)
5. Identify, develop and define the dimensions of service quality in the UK animal health sector	Qualitative semi-structured interviews analysed in NVivo© using GA and thematic analysis Quantitative surveying of stakeholders Exploratory factor analysis (SPSS) (Objective 5: Phase 2 & 3)

3.7.2 Research Process

The decision to adopt a mixed methods approach to the study led to the development of three research phases.

The design procedure followed a three-step process as shown below and in Figure 3.2.

- Phase one: Industry exploratory mapping exercise
- Phase two: Collection and analysis of qualitative interview data to explore the phenomenon
- Phase three: Development of the quantitative research instrument based on emergent theory Phase Two and informed by marketing theory. Implementation of survey with sector stakeholders (clients, paraprofessionals and veterinarians).

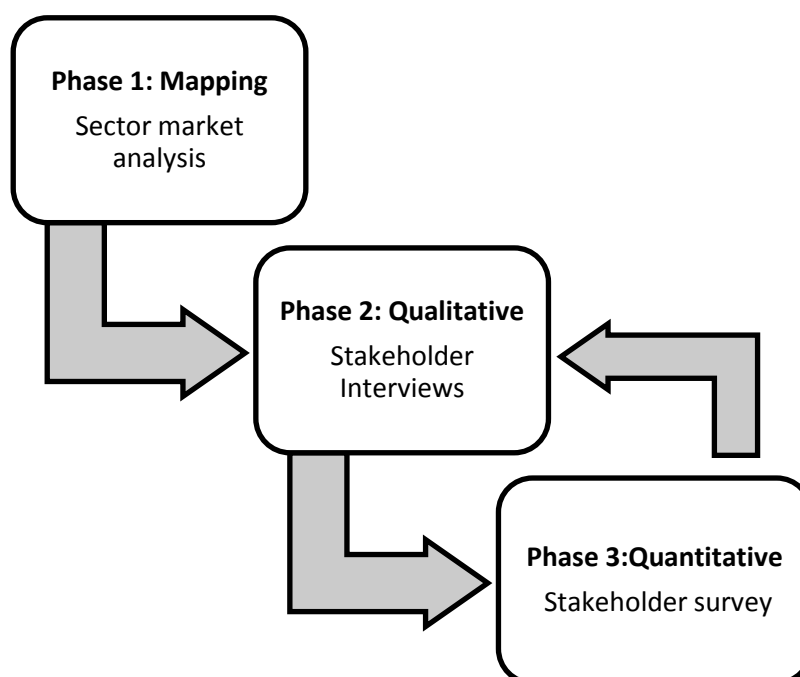


Figure 3.2 Research process undertaken

Phase one of the study involved the establishment of the research agenda through sector market analysis, investigating the key stakeholder organisations and legal policy makers. The production of a physical representation of the sector structure enabled the study's terms of reference to be finalised, informed the design of the research instrument and enabled the completion of a detailed mapping exercise of the current paraprofessional groups.

Phase two of the study utilised qualitative methodologies and involved the completion of depth, face to-face, semi-structured interviews of the defined stakeholder groups; service recipients (clients defined as animal owners/keepers and farmers), paraprofessionals and vets (two distinct groups of service providers). Interview findings then informed the development of the survey instrument. Phase three involved quantitative surveying of the three stakeholder groups (client, paraprofessionals and vets). The project was conducted

with approval from Harper Adams University's Ethics Committee. Prior written permission was obtained from all event organisers for surveying implementation.

3.8 Phase One: Sector Mapping

The detailed sector structure mapping exercise was completed to scope the sector, inform the study and to later explain the qualitative interview (Phase two) and quantitative survey (Phase three) data. Limited availability of pertinent sector literature and a lack of uniformity and detail in animal health professional data made this study phase essential to complete. At the current time, there is no single source where all animal health professional data, such as numbers of practitioners, training, education, professional registers, location, and legal frameworks can be found. Phase one was completed to draw together the available information into one location to appreciate the sector structure more fully. This was a challenging exercise which took considerable time due to the wide range of information sources which needed to be accessed to create the extensive database of industry stakeholders as well as to understand the structures within and between professional groups.

Extensive secondary data from a wide range of sources (Appendix 2) for all stakeholder groups was utilised to enable mapping, modelling and database creation. Within this process the following representative stakeholders were engaged with; musculoskeletal practitioners; the veterinary pharmacy and pharmacy sectors; veterinary nurses; veterinarians; DEFRA; LANTRA; the wider equestrian and livestock sectors; nutritionists; reproductive technology companies. International meetings were also held to gain insight into the role of both paraprofessionals and veterinarians in developing countries.

Data was obtained through attendance at stakeholder professional meetings; examination of meeting minutes; professional discussion with industry representatives; liaison with professional organisations; accessing resources from professional websites and stakeholder conferences. Furthermore, data from professional registers, legal framework, professional and industry reports and educational institutions were all utilised. Full details of industry contacts are presented in Appendix 2.

Data obtained from the multiple sources were collated, managed, analysed, triangulated and re-organised to enhance understanding and to enable inter-group comparisons to be made. Results from Phase one enabled the production of a paraprofessional database detailing education, professional training, registration, the legal infrastructure and numbers of practitioners and a resultant diagrammatical representation of certain professional groupings (section 4.15).

3.9 Phase Two: Interviews

The purpose of the interview phase of the study was to gain insightful and meaningful data, identify and code emergent themes; to inform the quantitative surveys and to enhance overall understanding of the results obtained. This phase of the study was conducted using GA and CIT, with post-interview thematic analysis being completed in NVivo®. A series of open ended questions were devised following reflection on the exploratory mapping and scoping exercise of Phase one. The interview questions were piloted, questions modified accordingly and subsequent interviews amended following coding analysis conducted in accordance with GA techniques.

3.9.1 Approach to Interviews

Between March 2014 and December 2014 individual face-to-face, depth interviews ($n=13$) were conducted with the identified study participants. For respondent convenience, seven interviews were completed at the participant's place of work or at home and six were completed in meeting rooms at Harper Adams University. All interviews were audio recorded using a SONY IC Recorder and stored as digital audio files (MP3) in accordance with data protection regulations. Supplementary hand-written notes were taken during each interview to inform the research process. Interviewees were asked to share their experiences, beliefs and opinions around a range of topics on animal health service provision. CIT was used to encourage respondents to draw on past personal experiences and to aid recollection. At the culmination of each interview all participants were given the opportunity to clarify any comments or to make further comment.

3.9.2 Data Collection and Identification of Interviewees

Locating and enlisting appropriate respondents and gaining cooperation can be problematic for survey interviewing techniques of data collection (Fowler, 2014). Interview participants were identified through both personal and colleague contacts, and industry based associates. Participation in the interviews was voluntary and the option to withdraw from the study at any time was provided. Potential participants were initially contacted by telephone when the research purpose was explained. Once confirmed as study participants, interviewees were contacted by email to agree a date and location and provided with a concise project information sheet (Appendix 3). Prior to the start of each interview, this summary information was provided to remind interviewees of the study focus and aims. In agreement with GA techniques recruitment of new participants was ceased when data saturation was reached and no new theory was forthcoming; this occurred at interview number 13.

3.9.3 Sampling Techniques for Interviews

Homogenous purposive sampling was selected for the identification of representative interviewees for the qualitative data collection as investigation of a small sub-set of this larger population was required. The homogenous sample is defined as one containing

individuals belonging to the same sub-culture (Ritchie *et al.*, 2014a) or in this study the same professional group or animal owning/keeper group. Key interview groups were identified as shown in Table 3.2. These groups were defined using the results from Phase one sector mapping (section 4.1) and ensured that the desired breadth and scope of response was met.

Table 3.2 Sub-groups selected for interview analysis

Paraprofessionals	Veterinary professionals	Clients
Musculoskeletal practitioner	Farm animal vets	Companion animal owners
Veterinary Nurses	Companion animal specialists	Horse owners representing the professional and leisure sectors
Veterinary Pharmacists and SQPs	Mixed practice vets	Livestock farmers representing extensive and intensive systems of production
Nutritionists	Equine vets	

Using the grounded analysis techniques of GT in the study allowed for ongoing sampling adjustments to be made in response to data collection. Insight gained through the process of interviewing, data collection and data analysis enabled judgements to be made on which individuals would help to understand developing themes with greater clarity. Continuous decisions on the direction of data collection were made following a systematic analysis of the data enabling different questions to be asked as and when required.

3.9.4 Implementation and Management of the Interview Process

A semi-structured methodology was adopted but it was essential to standardise the interview process as this can be beneficial to the process and validity of the results (Fowler, 2014). Standardisation was achieved through consistent introduction to the study by the project information sheet (Appendix 3), careful wording of questions; using open ended-questions to probe superficial or apparently incomplete answers given by interviewees; through the development and maintenance of rapport with each interviewee regardless of comments made; and a consistent approach to interview recording and transcription. A topic list with questions was used to ensure coverage of subjects identified as relevant and important through the review of literature and sector mapping exercise.

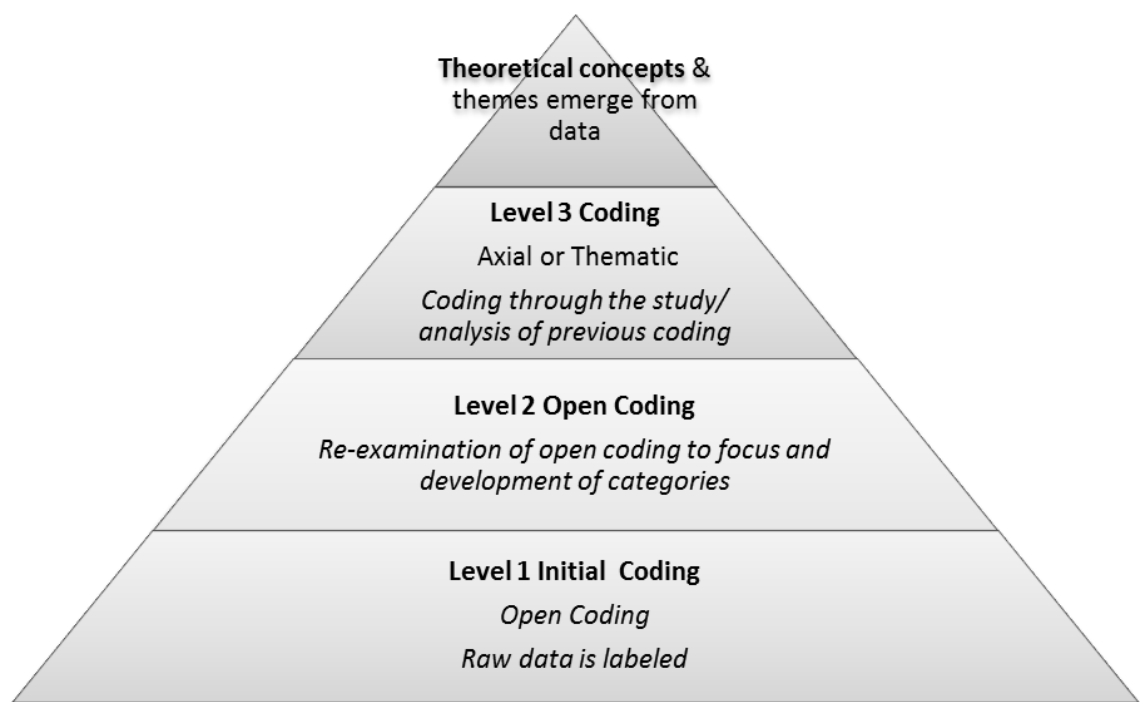
3.9.5 Interview Data

To ensure consistency, the same professional transcription service (*UK Transcriptions*) was used to transcribe all the audio files and transcripts were reviewed and edited where necessary, checking carefully for any re-orders, mis-typed or omitted words. Transcripts were checked for nuances within the spoken word, which could provide additional valuable data and these were mapped against the notes made during the interview

process. Amendments to the transcripts were made in MS word prior to uploading into NVivo©. Transcripts were read and re-read repeatedly to enable familiarisation with the content prior to commencement of coding. This process was important to complete soon after each interview to preserve accuracy. Following each interview, study participants were identified using a unique alphanumeric code; vets were allocated V, paraprofessionals P and clients, C with sequential numbers given to each interview to facilitate analysis in NVivo©. Interviews took between 36 minutes 55 seconds to 67 minutes 10 seconds with an average time of 51minutes 54 seconds.

3.9.6 Thematic Analysis

Transcript data were subject to continued thematic analysis using NVivo© software. The below described structure was followed to ensure effective coding and is also represented in Figure 3.3.



(Source: Adapted from Bazeley and Johnson, 2013)

Figure 3.3 Thematic coding process

Thematic analysis of the data commenced with “open coding” whereby categories, properties and dimensions are all identified within the interview data. As theory emerged “axial” coding enabled further investigation into conditions, strategies and consequences within the data (Marshall-Egan, 2002). The process of generating conceptual codes within NVivo© is termed encoding or “seeing as” which enables linkage between emergent and established patterns within the data (QRS NVivo©, 2014). A recognised strategy for analysis using NVivo© was adopted (Bazeley and Johnson, 2013) and is described as follows.

1. Identification of what is interesting within the data

2. Question why it is interesting, writing memos to support thoughts and ideas
3. Question why it is of interest, which leads to the development of conceptual thought and analysis

It was beneficial to maintain a research journal within NVivo© to track the analysis, which itself could be coded and analysed. Thematic coding of the interviews using NVivo© software enabled identification of nine emergent dimensions of service quality in the animal health sector (discussed in section 4.21). The dimensions were defined and described and used to develop questionnaire items for Phase three.

3.10 Phase Three: Stakeholder Surveying

The review of literature, findings from Phase one (sector mapping) and Phase two (thematic analysis of qualitative data) were used to develop valid questionnaire items for testing within the described sub-populations groups (Table 3.2). This section explains the research process undertaken to ensure consistency, validity and reliability of survey data collection and analysis (Phase three).

3.10.1 Survey Approach

Development of the questionnaire required decisions to be made regarding the mode of administration, question type, content and order. Questions were asked on the identified elements of service satisfaction and expectation determined, by earlier work, to be pertinent to the sector. Verification of the questionnaire for validity and robustness was sought via a pre-test and piloting of the study.

3.10.2 Instrument Development

Questionnaire items were devised from the nine emergent dimensions arising from Phase two of the study. Dimensions were described as: *trustworthiness, communication, value for money, empathy, bespoke, integrated care, tangibles, accessibility and outcome driven service*. Each were defined by a statement to clarify individual meaning. Two or three questionnaire items were mapped to the dimensions resulting in twenty-five rating items which were included in the pre-test questionnaire. Asking more than one question to measure the same subjective state is a known technique to improve the validity of attitudinal questions (Fowler, 2014). To enhance reliability one rating item, on overall service quality, was included for all three stakeholder groups and additionally one client-specific question based upon personal recommendation of the paraprofessional or veterinarian was included for the client sub-groups only. These were included to enable assessment between rating scale results, overall perceptions of service quality and the potential association with personal recommendation. Categorical questions were included at the end of the questionnaire (Appendix 4) as these questions require limited thought for completion and were best positioned when the respondent may be experiencing questionnaire boredom or fatigue (Blair *et al.*, 2014).

The questionnaire pre-test was run prior to the pilot data collection and was completed with ten respondents representing the sub-population of the wider client group” farm animal clients”. The pre-test was completed on 9th July 2015 at the Livestock Event, NEC Birmingham. The questionnaire was introduced verbally to willing respondents, the research objectives were explained as was the value of the pre-test phase prior to wider dissemination via the pilot study. Respondents were asked to annotate questions which they thought were unclear, considered repetitious or to add in additional questions which were thought to be omitted and important. Respondent failure to understand the meaning of a question is known to affect accuracy of answers given and can be a source of error (Fowler, 2014). It is, therefore, important to ensure that questions are consistently understood by study participants and this was achieved through the pre-testing and piloting of the questionnaire development process.

The pilot study ($n=271$) was completed with response data from professional stakeholders and the results are reported in section 4.3.1. The pilot was used to assess if the response codes provided sufficient discrimination (Brace, 2013) and error testing enabled mistakes in the questionnaire to be detected.

3.10.3 Sampling Categories

Those working in the service quality field are often required to deal with statistical populations which are so large that it would be cost and time prohibitive to survey all required elements. To address this issue, it was essential to generalise the findings and observations from the designated sample to the total population. To achieve this with robustness and validity the sampling procedure must be relevant to the research question and the defined statistical population to be based on identified sub-populations (Fowler, 2014; Lisch, 2014). In this study, a range of events, venues and situations were attended to fulfil the sampling requirements, and the sub-populations and examples of data collection locations and events are provided in Table 3.3.

Table 3.3 Sub-groups for questionnaire data analysis and data collection venues

Group	Sub-population	Examples of data collection venues
Veterinarian	Farm Animal Companion Animal Equine Mixed practice	The London Vet Show Veterinary Practices
Paraprofessional	Musculoskeletal practitioners Pharmacists and SQPs Veterinary Nurses	NAVPA Annual Convention Veterinary Pharmacy Forum BSVNA congress
Clients	Companion animal Equine leisure Equine professional Farm intensive Farm animal extensive	Competitions and shows Competitions and shows Dog training classes Livestock Markets and The Livestock Event

Eight variations of the questionnaire were developed as follows: paraprofessional, veterinarian, companion animal client with paraprofessional focus, companion animal with vet focus, equine client with paraprofessional focus, equine client with vet focus, farm animal client with vet focus and farm animal client with paraprofessional focus (Appendix 4). Vets were differentiated by specialisms as determined by the RCVS, according to the percentage of time spent in practice within each area, which although not precise, gave consistency and industry validation. Three key groups of paraprofessionals including veterinary nurses, musculoskeletal practitioners and veterinary pharmacists and SQPs (the latter two were considered together) were surveyed.

3.10.4 Sampling Technique

Survey sampling considerations were determined by the requirements for the data analysis techniques to be used included: Exploratory Factor Analysis (EFA) and chi-squared relationship testing. Meaningful EFA requires there to be univariate and multivariate normality within the data and a larger sample size will diminish the risk of error and improve effectiveness (Yong and Pearce, 2013). The larger study sample size achieved in this study facilitated chi-squared testing.

Lack of agreement within the literature regarding accepted EFA sample size can make it difficult to decide on a sample size prior to conducting the analysis and it was necessary to run data collection and analysis concurrently. Tabachnik and Fidell (2000), state the minimum sample requirement to be 150 or variables subject to factor analysis to each have five to ten observations (Comrey and Lee, 1992), whereas some state the minimum sample size to be 300 (Yong and Pearce, 2013). Comrey and Lee, (1992) propose the rule of thumb: 50 cases to be very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1000 or more is excellent. Fabrigar and Wegener (2012) recommend that under optimal conditions (defined as communalities of 0.70 or higher) and with each factor over-determined (three to five measured variables with substantial loading on each factor) a sample of 100 will be sufficient for EFA. Under moderately good conditions (communalities of 0.40-0.70 and at least three measured variables loading on each factor) a sample of 200 will be adequate. Additionally, accepted sample size maybe a ratio of respondents to variable of at least 5:1 and factors considered to be stable and cross validate at a ratio of 30:1 (Fabrigar and Wegener, 2012).

To counter-act the variability in sampling recommendations within the literature, a holistic approach to the sample size was adopted as consideration also needed to be given to factors of available budget and time. Final decisions on sample size were made following the piloting of the questionnaire and the supporting EFA literature. The sample size was determined by 24 items per questionnaire at a 5:1 ratio (supported by Fabrigar and Wegener, 2012) giving a target of 120 respondents per grouped sub-population. Data

collection over a period of one year enabled constant review of the sample. The target and actual sample size achieved in the study is shown in Table 3.4.

Table 3.4 Target sample size for EFA

Group	Target respondents	Actual
Veterinarians	120	104
Paraprofessionals	120	189
Client: Companion Animal	120	138
Client: Equine	120	141
Client: Livestock	120	91
Total	600	663

The sample itself needs to be representative of the population to be investigated (Fabrigar and Wegener, 2012) and accordingly a purposive sampling strategy was adopted rather than a convenience sampling technique.

3.10.5 Implementation of the Survey

Face- to- face administration of a questionnaire can be costly in terms of both time and money (Blair *et al.*, 2014) but the main advantages are higher response rates and lower response bias, since co-operation is improved. The face-to-face technique was adopted for this study. To ensure consistency, clients were asked to base their responses on a single encounter with one named professional in mind, this was to ensure that responses were not confused with an amalgamation from multiple experiences. Professionals were asked to base responses on their own performance and experience.

The implementation at events used for this study could introduce bias to the results as all respondents were self-selected through attendance at a specified event. However, the advantages conferred by response rates and gaining respondent co-operation were considered to outweigh the disadvantages. A wide range of events, training days, seminars and conferences, covering an equally divergent range of topics and species focus were selected to minimise risk and improve population representation.

3.10.6 Management of Survey Data

Questionnaires were customised for three stakeholder groups. Questionnaire items for all eight questionnaires were comparable to facilitate statistical analysis but the language and terminology was amended to suit the differing respondent categories (Appendix 4).

Feedback from the early client interviewees during Phase two indicated confusion regarding the term paraprofessional and precisely which practitioners should be incorporated within this category. It was, therefore, considered necessary to provide a defining list of paraprofessionals to all participants prior to the interview and for clarity and consistency this was continued to the questionnaire data collection technique.

Pre-test findings demonstrated that mixing negative and positive worded survey items generated confusion and extended completion time. Although it is theoretically

advantageous to have a combination of statements (Churchill, 1979), in this study any advantage gained would be negated by the effect on response accuracy and response rate. The decision not to use mixed worded items has support from the literature and all items were positively worded, which is also advantageous for EFA (Hooper, 2012). The final questionnaire administered comprised a list of 24 positive statements and one service quality question (a total of 25) for all groups. An additional question in service recommendation was added for the client groups only (making a total of 26). A five-point answer scale was used, ranging from *strongly agree* to *strongly disagree* with the inclusion of a middle category of *neither agree or disagree* and a *not applicable* option. The five point Likert scale was adopted to decrease the time taken to completion thus reducing respondent frustration and increasing response rates (Babakus and Mangold, 1992). This differentiates the study from the original SERVQUAL model which uses a seven-point rating scale (Parasuraman *et al.*, 1988).

3.10.7 Analysis of Survey Data

All questionnaire response data were examined and areas which appeared interesting and/or aligned with the research objectives were subject to greater scrutiny. Chi-squared analysis does not provide much information about the strength of the relationship or its significance within the population but enables determination of statistical confidence that there is a relationship between the two analysed variables (David and Sutton, 2004). The use of chi-squared testing assisted in the understanding of the data and further validated EFA as an analysis technique, as differences between sub-group and group data were evident in the results obtained. Chi-squared testing significance was reported at 5% ($p < 0.05$). Additionally, all results from question 25 (all groups) based on overall service quality and question 26 (clients group only) based on service recommendation were significance tested.

EFA was used to analyse the questionnaire data to uncover complex patterns within the dataset, to test predictions as described within the qualitative data, to discover factors potentially influencing variables, and to determine which variables go together. Reducing dimensionality through EFA condenses both measurable and observable variables to a few latent variables sharing a collective variance. The common variance is unobservable and is not directly measured but as a hypothetical construct it can be used to represent variables within the data. SPSS software (*version 24*) was used to create a factor score for each respondent on each of the dimensions of service quality. Identification of attitudinal statements with related response patterns was tested for all questionnaire items. To facilitate effective EFA questionnaire items were coded (Appendix 5) and the raw data was maintained in Microsoft excel files to be transferred into SPSS for analysis. Missing items and not applicable answers were coded separately. Listwise deletion was selected for missing values and cases lacking a valid score on all measures were

excluded thus ensuring that all EFA computations were based on the same sample size and preventing misleading results (Gerber and Finn, 2005). Not applicable responses were left in to enable further analysis of responses from different categories where necessary.

EFA allows determination of inter-relationships between the study variable. Determination of the questionnaire research instruments' internal consistency and assessment of the reliability of scales required the completion of Cronbach's Alpha as suggested by Parasuraman (1988) in the SERVQUAL model. Cronbach's Alpha is the most commonly used measure of internal consistency and scale reliability for EFA (Field, 2013). Data sets with more than one latent factor, such as this one, require Cronbach's Alpha to be applied separately to items relating to different factors (Cronbach, 1951) as the formula does not measure uni-dimensionality.

Bartlett's Test of Sphericity was used to indicate if the correlation matrix was significantly different from the identity matrix and if significant ($p < 0.05$) then the overall correlation between variables will be significantly different from zero. *Bartlett's Test of Sphericity* was supportive of the data being appropriate for EFA. However, further measures of validity were required to ensure questionnaire consistency for EFA and the critical assumptions underlying factor analysis were tested using the *Kaiser-Meyer-Olkin (KMO) Measure of Sampling* adequacy for the number of variables. The KMO measure should exceed the recommended value of 0.6 (Kaiser, 1960) to, therefore, determine the reliability of the scale. Values close to one indicate patterns of correlations which are relatively compact, indicating distinct and reliable factors and demonstrating the adequacy of sample size for the number of variables entered and to be analysed.

Variables were subjected to EFA using Principal Component Analysis (PCA) as the extraction method and Varimax rotation with Kaiser normalization. Varimax was chosen to enable better interpretation, to determine an optimal simple solution and to help to describe patterns observed within the data. Varimax is used to maximise the orthogonality and minimise the number of high loading variables on each factor thus working to make loadings as small as possible. Factor loadings were evaluated on two criteria: the significance of the loadings and the simplicity of the factor structure. Items were excluded from factors according to guidelines developed by Churchill (1979) and Kim and Mueller (1978), namely loadings of less than 0.5, or cross-loadings greater than 0.35 on two or more factors. Item communalities are deemed to be high if the values are greater than 0.8, but as this occurrence is rare in social science research a range of 0.4 to 0.7 is considered acceptable (Osborne and Costello, 2005). Factors with 5 or more items which are strongly loaded (0.5 or over) give a solid result and factors with less than three items are weaker and represent a poor explanation of the data (Osborne and Costello, 2005).

A widely-used procedure for determining the number of factors is the eigenvalue-greater than one rule (Kaiser Criterion). The number of eigenvalues that exceed 1 is used as the number of common factors (or principal components) in the adopted model. In this study, all factors with eigenvalues greater than 1.0 were extracted. This technique is not without flaws, as there can be arbitrary decisions if eigenvalue is 0.99 it would not be judged to be meaningful whereas as a factor with an eigenvalue of 1.01 would (Fabrigar and Wegener, 2012).

The Scree Test is also a widely-used method to determine number of factors, and enables visualisation of factor loading structure (Field, 2013), especially to confirm a factor structure. Eigenvalues maybe plotted on a graph in descending order to determine the eigenvalues preceding the last major drop. This technique can be comparatively subjective but when strong common factors are present the procedure can work well (Fabrigar and Wegener, 2012). Scree testing was used as part of the EFA strategy in this study, but presentation of the results is not considered to add value to the study.

3.11 Summary

This chapter has presented the methodology and methods adopted for this study. The underpinning methodological literature defines the rationale for the methods selected and justifies the selected strategy. The chapter has described the methods implemented for the three phases of this mixed methods study. Phase one, an exploratory mapping exercise, was achieved using a diverse range of secondary data sources and was used to enable the development of a new sector database, to inform the study and to aid understanding of the final results. Phase two, was completed using a series of qualitative semi-structured interviews which were analysed using the QDS software package NVivo© and GA, CIT and thematic analysis methods. Phase three stakeholder surveying, was informed by the initial scoping investigation of Phase one and the interview analysis, Phase two. The resultant data was analysed in SPSS, using chi-squared testing to determine relationships in the data and EFA to determine significance and a factor solution for service quality in animal health.

Chapter 4 Results

This chapter presents the results of the three research phases comprised of the initial exploratory mapping exercise (Phase one), thematic analysis of interview transcripts (Phase two) and analysis of the questionnaire data (Phase three). The results are presented to address the research objectives as outlined in (Table 4.1).

Table 4.1 Defining the analysis technique for the research objectives

Analysis technique used	Research objectives addressed	Section location
<p><u>Phase One: Sector mapping</u> Exploratory mapping using secondary data sources for a wide range of animal health sectors, professional and legislative bodies</p>	1. Map the stakeholder structure of the animal health sector through the identification of professional groups in the companion animal, equine and livestock sectors	4.1.1 to 4.1.6
<p><u>Phase Two: Qualitative</u> Qualitative semi-structured interviews analysed using NVivo using GA, CIT and thematic analysis</p>	2. Explore and compare stakeholder perceptions of service delivery, expectations and fulfilment 3. Assess the value of a multidisciplinary team approach in the animal health sector from the perspective of all industry stakeholders. 4. Conceptualisation of value co-creation and co-production within the animal health sector through the analysis of sector stakeholder service expectations and experience. 5. Identify, develop and define the dimensions of service quality in the UK animal health sector.	4.2.1 4.2.1 4.2.2 4.2.1
<p><u>Phase Three: Quantitative Survey</u> Quantitative surveying of stakeholders Analysis of data through Chi- squared relationship testing & EFA (SPSS)</p>	2. Explore and compare stakeholder perceptions of service delivery, expectations and fulfilment 3. Assess the value of a multidisciplinary team approach in the animal health sector from the perspective of all industry stakeholders.	4.3.2. 4.2.1 4.3.3 4.3.2.12
<p><u>Phase Three: Quantitative Survey</u> Analysis of data through EFA (SPSS)</p>	4. Conceptualisation of value co-creation and co-production within the animal health sector through the analysis of sector stakeholder service expectations and experience. 5. Identify, develop and define the dimensions of service quality in the UK animal health sector.	4.3.3 4.3.4 4.3.5 4.3.3 4.3.4 4.3.5

4.1 Phase One Results: Animal Health Sector Mapping

Findings from Phase one, sector mapping, enabled the collation of considerable and detailed industry-centred material. This included pertinent background information on education and training; professional recognition and registration and legislative organisation. These areas provide structural context to the sector and the stakeholder professional groups working within it.

4.1.1 Paraprofessionals

The UK animal health sector has a wide range of paraprofessionals serving diverse groups of clients; clients who may have differing wants and needs. Diversity of service recipients is mirrored by a multiplicity of paraprofessionals, as the allied animal sector rapidly evolves and develops. There are increasing numbers of paraprofessional groups offering services to animal health clients, as these professionals often undertake roles previously fulfilled by the veterinarian. The challenges encountered due to the developing market within the animal health sector are discussed within the findings of Phase one of the study.

For clarity and explanation, paraprofessionals considered herewith do not represent the entire allied animal health professional sector, but are demonstrative of the most frequently utilised paraprofessionals in the UK. In this section, the veterinary professionals (including paraprofessionals) have been categorised for ease of evaluation as: Musculoskeletal practitioners; Farriers and foot trimmers; Pharmacists and Suitably Qualified Persons (SQPs); Nutritionists; Equine dental technicians (EDT); Veterinary nurses (VN) and Reproductive technologists.

4.1.1.1 Musculoskeletal Practitioners

Within the musculoskeletal sub-group there are many differing paraprofessionals with a broad range of skills, expertise and background training. For this reason, the key groups of physiotherapists, chiropractors and osteopaths have been discussed in detail, whilst accepting the potential of overlap between these three groups' day-to-day working practice.

Physiotherapists

Physiotherapy combines a science based profession with a holistic approach to health and well-being (Chartered Society of Physiotherapy, 2014). For human practitioners, "Physiotherapist" is a legally protected title which aims to guarantee standards of training, practice and maintenance of professional registration (HCPC, 2014). Conversely, the animal physiotherapist title is not protected (ACPAT, 2013) and as such all animal practitioners must adhere to the Veterinary Surgeons Act 1966, Section 19 Treatment of Animals by Unqualified Persons (RCVS, 2015); seeking veterinary diagnosis and referral prior to treatment of the animal. The Veterinary Surgery (Exemptions) Order allows for the

treatment of animals by physiotherapy, followed by veterinary diagnosis and interprets physiotherapy to include a range of manipulative therapies including osteopathy and chiropractic treatment (RCVS, 2015b). This adds further complexity to the scope and role of the animal physiotherapist. Exemption Orders and the VSA are discussed later in this chapter.

Currently, the terms “veterinary physiotherapy” and “animal physiotherapy” are used interchangeably within industry and, therefore, within this study too. There are a number of training routes available for this profession, but no single over-arching recommendation for courses or training standards, professional registration or continued professional development. Furthermore, there is no single mode by which vets may refer clients or via which a client may locate a suitable physiotherapist. Training routes can be via an undergraduate or postgraduate programme of study or through short diploma courses. Postgraduate routes into veterinary physiotherapy are roughly divisible into two groupings, the chartered physiotherapy human route (ACPAT, 2013) providing an upgrade for a qualified chartered human physiotherapists to incorporate treatment of animals, or non-human route (HAU, 2014b). Animal physiotherapy training routes and courses currently offered are summarised in Table 4.2 .

Table 4.2 Veterinary physiotherapy training courses

Course Title	Course details	Provider/ Accreditation	Entry Requirement (s)
BSc (Hons) Veterinary Physiotherapy	4 year undergraduate full time	Harper Adams University (HAU)	126-128 UCAS points
PgD/MSc Veterinary Physiotherapy	2-3 years part time Non-human trained	HAU Writtle UC	BSc Animal. Science Animal handling experience
PgD/MSc Veterinary Physiotherapy	2-3 years part time human trained route	Hartpury College (Gloucestershire) Liverpool University	Chartered Physiotherapy
PgC Small Animal Rehabilitation Therapist	Postgraduate Distance learning with practical workshops 1-2 years duration	Nottingham University	Veterinary Science/ Vet Nurse / Physiotherapy Bachelor degree
Diploma in Animal Physiotherapy	Diploma Distance learning with practical workshops Approx. 1 year duration	College of Animal Physiotherapy ODLQC accredited *	BSc Equine/Animal Science Vet Nursing qualification High level of demonstrable knowledge & experience
Veterinary Nurse Rehabilitation Therapist (VNRT)	Certificate 5 years duration	CPD Solutions	Qualified veterinary nurse working in small animal practice
CEPT Advanced Certificate in Veterinary Physiotherapy	Postgraduate 2 years part time Allows progression onto MSc Professional Practice	CEPT & Middlesex University	BSc in relevant area No requirement to for Veterinary Science , Vet Nurse or Physiotherapy first degree

(Source: Adapted from ACPAT, 2015; CEPT, 2014; HAU, 2014; ODLQC, 2014; TCAP, 2014)

* Open and Distance Learning Quality Council

The following organisations maintain a professional register for animal physiotherapists: Association of Chartered Physiotherapists in Animal Therapy (ACPAT), National Association of Veterinary Physiotherapists (NAVVP) and Institute of Registered Veterinary & Animal Physiotherapists (IRVAP), (ACPAT, 2013; NAVVP, 2013; IRVAP, 2014a). NAVVP and ACPAT require members to be active students or qualified practitioners whereas IRVAP does not specify that associate members hold a professional qualification (IRVAP, 2014b). It is possible for a vet or client to locate a practitioner via the professional registers held on the ACPAT, NAVVP and IRVAP websites. There is considerable variation in the training and pre-requisite entry requirements, professional organisations and professional membership for veterinary or animal physiotherapists, all of these areas are currently under DEFRA review (discussed in 4.1.3).

Animal Chiropractors

Veterinary legislation categorises animal chiropractors with both physiotherapists and osteopaths and treatment of animals is only permissible following veterinary diagnosis and referral (RCVS, 2015). The title of chiropractor is protected and only practitioners who are human chiropractors registered with the General Chiropractic Council (GCC) may legally use the title chiropractor, including animal chiropractors (GCC, 2013; MAA, 2014).

The McTimoney Chiropractic organisation provides training (Table 4.3), but does not provide an accessible professional register for animal chiropractors.

The professional association for animal chiropractors is McTimoney Animals Association (MAA) and to register practitioners must have trained in McTimoney techniques and hold a PgD or MSc in Animal Manipulation (MAA, 2014). This organisation also holds a professional register for veterinarians or clients to access (MAA, 2014).

The Association of McTimoney-Corley Spinal Therapists provides a professional organisation for a specialist sub-group of chiropractors incorporating the equine specific ICAT McTimoney-Corley Equine Manipulation practitioners (Animal Mechanics, 2014; McTimoney-Corley, 2014) but neither holds a professional register nor forms a point of reference for vets seeking referral information or clients to locate a practitioner.

Table 4.3 summarises the training routes and shows linkage to human chiropractic organisations.

Table 4.3 Animal chiropractic training courses

Course Title	Course details	Provider/ Accreditation	Entry Requirement (s)
MSc Animal Manipulation	Postgraduate Distance learning with practical workshops 1-2 years duration Academic and technical based learning and assessment	McTimoney Chiropractic	Professional qualification in osteopathy, chiropractic or physiotherapy that enables GOC* registration OR, BSc Animal Science plus completion of zero year study
ICAT McTimoney-Corley Equine Manipulation practitioners	Equine specific 1 year duration	Association of McTimoney-Corley Spinal Therapists	Relevant graduate qualification or substantive industry experience

(Source: Adapted from MAA, 2014; McTimoney, 2014a; McTimoney- Corely, 2014)

*GOC General Osteopathic Council

Osteopaths

The title of osteopath is also subject to legal protection and may only be used by registered osteopaths, whether linked to the word “Animal “or not (GOC, 2014). The GOC upholds the Statutory Register of Human Osteopaths and practitioners must be registered in order to practice (GOC, 2014). There are two training providers and courses which are summarised in Table 4.4.

Table 4.4 Animal osteopath training courses

Course Title	Course details	Provider/ Accreditation	Entry Requirement (s)
BPP University MSc Animal Manipulation	Postgraduate Distance learning with practical workshops Part time 2 years duration	University of Wales	Osteopathy professionals registered with the GOC and ability to demonstrate an aptitude for working with animals
Postgraduate Certificate in Animal Osteopathy	Postgraduate 60 credit level seven Part time Advanced studies in osteopathic and clinical subjects	*BCOM	Students must be graduates and have membership of a relevant professional body

(Source: Adapted from: BCOM, 2014; BPP, 2014)

*British College of Osteopathic Medicine BCOM

A professional register for qualified osteopaths practising animal osteopathy is maintained by the UK Society of Osteopaths in Animal Practice (SOAP). This voluntary organisation aims to support osteopaths working in the animal field, encouraging best practice and helps clients and referral vets locate a practitioner (SOAP, 2014).

4.1.1.2 Farriers and foot trimmers

Bovine Foot Trimmers

Bovine foot trimmers have an important role helping to prevent and manage cow lameness. Lameness is a significant issue within the dairy industry, since it has a profound effect on cow health, welfare and productivity (Dairy Co, 2015a). Regardless of the value of foot trimmers to the sector, training is indiscriminate, unregulated and a relevant Exemption Order does not exist (RCVS, 2015). Bovine foot trimmers may be self-taught, trained in recognised techniques or indeed veterinary trained.

The self-proclaimed UK representative body for professional hoof trimmers is the National Association of Cattle Foot Trimmers (NACFT), (NACFT, 2014a). NACFT provides three categories of membership; full, provisional licence and members. Practitioner information is located on the NACFT websites should farmers wish to find a paraprofessional in their area, but differences between membership criteria are not easy to understand. Full members are required to have undertaken a recognised training course for foot trimmers (Dutch course trained), to have passed a diploma examination or National Proficiency Test Council (NPTC) equivalent and to have attended biennial continuing assessment. Veterinarians are included within this list but this status cannot be determined from the register alone. Foot trimmers with a provisional licence are Dutch course trained but have either not passed the diploma examination or NPTC equivalent, or not attended biennial continuing assessment. The member category includes self-taught foot trimmers or persons interested in bovine foot trimming (NACFT, 2014b) suggesting considerable discrepancy in training status.

Farriers

Farriery involves the skilled trimming and balancing of the horses' hooves before the fitting of metal shoes. The farriery profession is governed by the Farriers Registration Act 1975 but is not exempt from the Veterinary Surgeons Act 1966 restrictions (RCVS, 2015) and the farriery process may involve or legally require the intervention of the veterinarian. The farrier cannot diagnose a condition, prescribe veterinary medicines or penetrate the sensitive structures within the horses' hoof. If the animal requires specialist shoeing for performance or has lameness problems the best results are often obtained through effective communication and working between farrier and veterinarian. The Farriers Registration Act prevents anyone untrained, including veterinarians, from performing the act of farriery (FRC, 2014). Demarcation between the professional responsibilities of both vet and farrier in this instance is blurred and requires a high standard of professional courtesy and consultation which is professionally (RCVS, 2015) and anecdotally acknowledged.

The Farriers Registration Council (FRC) is bound by the legislation of the Farriers Registration Act (1975) and has the following statutory responsibility to: provide the necessary regulation for farrier training, maintain the register of farriers and to maintain standards (FRC, 2014). The professional register is easily accessible to clients on a geographical search basis (FRC, 2014). To gain access to this professional register, farriers must have met the mandatory levels of qualification which can only be achieved through successful completion of an Advanced Apprenticeship in farriery course offered by only three colleges. All farrier training is examined through the Worshipful Company of Farriers (WCF) which provides three levels of qualification; the Diploma (DipWCF), Associateship (AWCF) and Fellowship (FWCF). The DipWCF examination is taken at the end of the apprenticeship programme and is required for admission to the Register of Farriers. AWCF recognises additional skill and technical competence and FWCF represents the highest-level farrier skill underpinned with extensive theoretical understanding assessed by thesis (WCF, 2013). However, responsibility for examinations is in the process of being transferred to the farrier training colleges (WCF, 2013)

The Farriery Registration Act has a positive influence upon the health and welfare of horses but is also thought to need re-appraisal to ensure currency and continued effectiveness (DEFRA, 2010a). The FRC and DEFRA are currently undertaking review and consultation on the Farriery Registration Act and its implications (DEFRA, 2010a).

4.1.1.3 Pharmacists and Suitably Qualified Persons (SQPs)

Pharmacists and Suitably Qualified Persons (SQPs) are discussed together as both paraprofessional groups are both able to be involved in the supply of certain veterinary medicinal products (VMPs).

Veterinary Pharmacists

Royal Pharmaceutical Society (RPS) registered pharmacists are legally entitled to prescribe and dispense veterinary medicines within the category POM-VPS (Prescription Only Medicine- Veterinarian, Pharmacist, Suitably Qualified Persons) and to dispense POM-V (Prescription Only Medicine- Veterinarian) on receipt of a veterinary prescription (RPS, 2015). This does not require the pharmacist to undertake any further academic or technical training in veterinary or animal science and they are termed a Registered Qualified Person (RQP). However, more recently pharmacy degree courses have become able only to include very limited veterinary pharmacy training if any at all. This appears to be due to a lack of space within the curriculum (Veterinary Pharmacy Forum, professional discussion, 2015). Unsurprisingly, the lack of training does make veterinary pharmacy a niche market within pharmacy but opportunities for veterinary pharmacists are on the rise (Morris, 2013). Development of the new professional discipline of veterinary pharmacy is manifesting in an increasing number of community pharmacists stocking veterinary

medicines; veterinary pharmacist professionals are now working within veterinary hospitals and referral practice and an increase in the numbers of businesses selling veterinary medicines such as agricultural merchants and internet sales (Kayne, 2015. Pers. Comm. Dr S. B. Kayne is the Course Director of the organisation Veterinary Pharmacy Education Programme). The exact numbers of pharmacists involved in the supply of veterinary medicines is unknown due to the lack of a professional register or requirement to register within a sub-group of the RPS, but industry specialists estimate that there are 50-60 practising veterinary pharmacists within the UK (Kayne, 2015 Pers. Comm.).

The RPS maintains different specialist and business interest groups for pharmacists (RPS, 2013). Historically veterinary pharmacists were served in this respect by the Veterinary Pharmacist Group (VPG) which is open to all pharmacists interested in or already involved in the supply of veterinary medicines. However, the VPG has now been superseded by the Veterinary Pharmacy Forum (VPF) (RPS, 2015) with the aims of: *To advise and represent the Society (RPS) on professional interests of pharmacists involved in the supply of veterinary medicines*

- to act as a source of information and education (including CPD and Veterinary Pharmacy Conference)
- to represent the profession with external stakeholders including Veterinary Medicines Directorate (VMD), British Veterinary Association (BVA), Royal College of Veterinary Surgeons (RCVS), National Office of Animal Health (NOAH), AMTRA Animals Medicines Training Regulatory Authority (AMTRA), The Animal Health Distributors Association (AHDA) and Responsible Use of Medicines in Agriculture Alliance (RUMA) (RPS, 2015).

Pharmacists interested in specialising in veterinary pharmacy are not legally required to complete additional training but it is ethically advisable. A wide range of informal continued professional development (CPD) is available via the VPF recognised consultancy group Veterinary Pharmacy Education Programme (VPEP) (VPEP, 2015). An undergraduate diploma and range of postgraduate courses in veterinary pharmacy are available for study at Harper Adams University in collaboration with VPEP (HAU, 2015) and at the time of writing these are the only university veterinary pharmacy qualifications available.

Suitably Qualified Persons (SQPs)

SQP is the legal term used to define animal health advisors who form a category of professionally qualified people entitled to prescribe and/or supply POM-VPS veterinary medicines in the UK under the Veterinary Medicines Regulations (AMTRA, 2015). All SQPs are required to have undertaken training courses at approved centres, to have successfully passed examinations and to maintain knowledge and skills through annual CPD requirements. SQPs are required to register with the Animal Medicines Training Regulatory Authority (AMTRA), an independent regulatory body, whose task it is to ensure that the prescription and supply of POM-VPS animal medicines in the UK is undertaken in a responsible manner by qualified persons (AMTRA, 2013). AMTRA is appointed by the Secretary of State to work within the Veterinary Medicines Regulations and to maintain an accurate and current list of SQPs (AMTRA, 2013; AMTRA, 2015). There are over 6000 registered SQPs working in a range of specialisms, employed within veterinary practice, registered pet and tack shops, agricultural merchants, and country stores (AMTRA, 2015).

4.1.1.4 Equine Dental Technicians

Veterinarians may undertake further training to enable specialisation in equine dentistry and additionally non-veterinary trained practitioners may complete training and assessment to register as an Equine Dental technician (EDT). Both may register with the professions' organisational body the British Association of Equine Dental Technicians (BAEDT) (BAEDT, 2015b) and the list of qualified EDTs is also held by the British Equine Veterinary Association (BEVA) (BEVA, 2015).

EOs do not exist for equine dentistry and, unlike farriery, equine dentistry does not have its own legislative act (RCVS, 2015). Only veterinarians are legally permitted to diagnose and treat conditions within the horses' mouth (BEVA, 2014). Dental techniques are categorised accordingly to the level of physical invasion and novelty of procedure (Table 4.5). A category one dental procedure may be carried out by anyone irrespective of training or expertise, but category two and three are governed by the VSA (RCVS, 2015). In 2009, agreement was reached between the BEVA, the British Veterinary Dental Association (BVDA) (sub-groups within the RCVS) and BAEDT permitting non- veterinary trained EDTs to perform a wide range of techniques without veterinary involvement. This is permissible despite the restrictions laid down by the VSA (RCVS, 2015) but does require the EDT to successfully complete BEVA accredited examinations (BEVA, 2015). This enables category two procedures to be legally performed by qualified and registered EDTs (BEVA, 2015). However, there is no legal or RCVS supported protection in place for lay persons performing category one or two procedures, making interpretation of the working constraints challenging. The complexities of the VSA and categorisation of dental

procedures has led to confusion within the paraprofessional group, the clients (horse owners) and even practising equine veterinarians (BEVA, 2015b).

Table 4.5 Summary of equine dental procedure categorisation

Category 1	Category 2	Category 3
Legally performed by		
EDT /Vet	EDT/ Vet	Vet only
Definition of procedures		
Examination of teeth	Examination, evaluation and recording of dental abnormalities;	All other procedures and any new procedures, which arise because of scientific and technical development
Removal of sharp enamel points using manual rasps only	Removal of loose teeth or dental fragments Removal of erupted, non-displaced wolf teeth under direct and continuous veterinary supervision;	
Rostral profiling	Palliative rasping of fractured and adjacent teeth; and Use of motorised dental instruments where these are used to reduce overgrowths and remove sharp enamel points only.	
Removal deciduous caps		
Removal of calculus	Horses should be sedated unless it is deemed safe to undertake any proposed procedure without sedation, with full informed consent of the owner.	

(Source: Adapted from BAEDT, 2015b; BEVA 2015b)

The sector has attempted to formalise the accepted structure of categorisation through the introduction of National Operating Standards (NOPs) for EDTs. These were produced by Lantra in 2013 (as a part of the wider RMPR project) but these cannot be formalised in law by the RCVS without the inclusion of an appropriate EO for category two procedures (RCVS, 2013a) so serve merely as a framework.

4.1.1.5 Reproductive Technologists

Assisted Reproductive Technologies (ARTs) such as Artificial Insemination (AI) are used extensively within the dairy, porcine and non-Thoroughbred equine sectors (Whittemore and Kyriazakis, 2006; Davies Morel, 2008; Peters and Ball, 2008). Other techniques such as Embryo Transfer (ET) are extensively used within the equine sports industries (Davies Morel, 2008) and for dairy cattle (Peters and Ball, 2008). More advanced technologies such as the use of sexed semen which is used to pre-determine off-spring gender are also well utilised within the dairy sector (Cogent, 2015) where the female progeny are essential as herd replacers and bull calves can be considered to be a by-product of milk production. Cost and management practicalities inhibit the use of these techniques in extensive farmed animals such as beef and lamb whereas the intensive housed systems of production for the porcine sector is ideally suited to effective AI technology (Whittemore and Kyriazakis, 2006).

Equine Assisted Reproductive Technologists

In accordance with internationally accepted racing regulations, Thoroughbred racehorses may only be bred by natural service and the use of any ARTs is strictly forbidden (Davies Morel, 2008). In direct contrast, the use of AI and ET has become the norm in sports horse breeding (Rosssdales, 2015) as the techniques facilitate ease of genetic bloodline sharing across continents, as both semen and embryos can be frozen and shipped internationally (Stallions AI, 2015) and that competing sports horses may be bred from whilst maintaining a competitive schedule of events (Davies Morel, 2008). The use of AI in mares became popular in the 1980s and whilst there is no specific UK legislation regarding the breeding of horses, responsibility for the control of ARTs usage lies with both the RCVS (RCVS, 2015b) and recognised breed societies (BEVA, 2012). Under the Veterinary Surgery (Artificial Insemination of Mares) Order 2004 (amended 2010 and which came into force 14th September 2010) (DEFRA, 2010b) non- veterinary qualified persons who are properly trained as AI technicians can inseminate mares by the transcervical route; other techniques are non-permissible and legally must only be performed by a vet (DEFRA, 2010b). The aim of the Order was to comply with the required governmental deregulation whilst maintaining appropriate standards of animal health and welfare (BEVA, 2012; Twemlows, 2015).

AI technician training must be completed at a recognised course within the EU and candidates must achieve a Certificate of Competence to practise within the EO. In the UK, these courses are DEFRA and RCVS approved (Twemlows, 2015). However, regardless of these training requirements a professional register for AI technicians is not held by any governing organisation; though BEVA maintains a list of veterinary practices and veterinarians experienced in AI and compliant with BEVA standards (BEVA, 2015d). However, this register does not include qualified AI technicians and is, therefore, incomplete and unrepresentative of the sector.

Livestock Assisted Reproductive Technologists

The most up to date statistics suggest that around half of the dairy herd in England and Wales is bred using AI (Peters and Ball, 2008). However, following the closure of the Milk Marketing Board in January 2002 due to consistency irregularities with EU legislation, no national statistics on AI usage have been held (Peters and Ball, 2008). The 2001 outbreak of Foot and Mouth Disease (FMD) and resultant movement restrictions led to a surge in usage of DIY AI on farm and consequently an increase in the number of persons taking AI technician courses (Peters and Ball, 2008). Several commercial organisations now offer reproductive technology services and DIY AI training courses (Cogent, 2015; Genus, 2015; Semex, 2015). Exemption Order amendments in 2010 (DEFRA, 2010c; DEFRA 2010d) to further comply with EU legislation removed previous requirements for the issue

of exemption certificates to persons having successfully completed a training course. This was for rectal ultrasound in cattle as exemption certificates were not needed for bovine AI and this served to remove a tracking system for non-veterinary trained AI technicians. Details on available bovine reproductive technology training courses may be found on the Lantra website (Lantra, 2015) but a professional register, list or means of verifying successful training for client to access does not exist.

4.1.1.6 Veterinary Nurses

The earliest reference to veterinary nurses appears in the literature around 1905, but it was not until the 1960's that a recognised training and examination programme was established and formalised in consultation with the British Small Animal Veterinary Association (BSAVA) and RCVS. Formation of the British Veterinary Nursing Association occurred in 1965 and now this organisation is the sole representative for veterinary nurses and veterinary support staff in the UK (BVNA, 2015a). Early vet nurses were called Registered Animal Nursing Auxiliary (RANA) as the title 'Nurse' was a protected title in human medicine. In 1984 the legal definition of nurse was up for consultation and enabled the title of RANA to be changed to Veterinary Nurse (BVNA, 2015b).

ANAs or VCAs should work under the direction of the veterinary nurse (or vet) as the qualifications do not carry the same legal entitlements as veterinary nurse training.

Unfortunately, some consider these training routes to have aspects which encroach into the role of the veterinary nurse and are thought by some to provide a cheaper alternative to the VN. The RCVS is currently the regulatory body and holds the professional register for veterinary nurses and therefore sets professional standards, monitors training and education and determines the minimum requirements (referred to as day one competences for veterinary nurses) for entry onto the professional register (RCVS, 2014b).

Until 2015, veterinary nurses were either, listed with the RCVS to enable them to carry out schedule 3 procedures or, registered with the RCVS (formerly on a voluntary basis).

Collaborative work between the RCVS, BVA and BVNA saw the Privy Council approve a new Royal Charter on 5th November 2014 (RCVS, 2014b), coming into effect on 17th February 2015 (RCVS, 2015e). The Charter recognises veterinary nursing as a profession, confirms the RCVS as the veterinary nursing regulator and enables RVNs to become associates of the RCVS (RCVS, 2014b). It does not protect the title of veterinary nurse. Veterinary nurses currently on the List are required to become RVNs and to agree to abide by the Professional Code of Conduct for veterinary nurses. VNs failing to register will forego rights to perform Schedule 3 procedures, as described below (RCVS, 2014b). The RCVS Code of Professional Conduct for veterinary nurses requires the completion of

a minimum of 45 CPD hours in any three-year period with an average of 15 hours per year (BVNA, 2015c).

Veterinary nurse CPD, practise and conduct are also monitored by the RCVS and disciplinary systems are maintained (RCVS, 2014e). Training routes are summarised in Table 4.6.

Table 4.6 Registered Veterinary Nurse (RVN) training routes

Course Title	Course details	Professional Accreditation	Entry Requirement (s)
Animal Nursing Assistants (ANAs) or Veterinary Care Assistants (VCAs) Diploma (level three)	NQF Level two training courses	RCVS	Some GCSEs (not specified) 600 hours of work in practice
	Vocational route with in work training and assessment	RCVS	5 GCSEs at grade C or above or equivalent
Foundation degree (FdSc)	University course 3 years' duration incorporate time in practice at a RCVS Approved Training Practice	RCVS 15 providers UK wide	Enable entrance onto the RCVS Register of Veterinary Nurses
BSc (hons)	University 4 years' duration incorporate time in practice at a RCVS Approved Training Practice	RCVS 15 providers UK wide	Enable entrance onto the RCVS Register of Veterinary Nurses
Diploma in Advanced Veterinary Nursing (Dip AVN)	Post-qualification	RCVS	Must be a Registered Vet Nurse (RVN) in practice
PgC, PgD, MSc VN specialisms	Postgraduate courses	RCVS	Relevant undergraduate qualification

(Source: Adapted from: BVNA, 2015; BVNA, 2015c; RCVS, 2015c; RCVS, 2015d)

The Veterinary Surgeons Act 1966 (Schedule 3 Amendment) Order 2002 legally entitles the Registered or Listed Veterinary Nurse to perform a range of health care tasks under the direction of the veterinarian. These include: Perform Schedule 3 surgical procedures; Perform diagnostic tests/monitor patients; administer medicines and treatments (RCVS, 2015e). VNs can make a *nursing diagnosis* regarding the ability of the patient to maintain normal bodily functions and subsequently provide nursing interventions to assist.

Provision of advice to animal owners is often considered to be an important component of the veterinary nurses' role. Advice may be provided after patients have undergone surgical procedures, after diagnosis of a medical condition which can include advice on medication, husbandry and exercise. The VN may provide advice on parasite control including advice on medication, animal behaviour and training advice, preventative health

care advice such as prophylactic vaccinations and nutritional advice. The VN cannot perform major surgery (with entrance to a body cavity defining this), make a medical diagnosis or prescribe medications, unless R-SQP qualified (RCVS, 2015).

The development of further postgraduate opportunities does enhance career prospects for the oft inadequately remunerated professional veterinary nurse; the average VN salary is approximately £18,000 per annum (BVNA, 2015b). The consequence of postgraduate training, however, appears to be that the higher salaried roles take the VN out of the profession into alternative posts such as the pharmaceutical industry or higher education (Williams and Robinson, 2014) and consequently, does not provide a direct benefit to the animal health client.

4.1.2 Veterinarians

Historically, vets have played a prominent role in the promotion and maintenance of animal health and welfare and have safeguarded public health from the risk of zoonotic disease. Four historic Government reports (1938, 1944, 1964 and 1975) identified the evolving role of the veterinarian within society with shifts in societal values towards companion animals recognised as well as the downward trend in the numbers of farm animal veterinary specialists (Woods, 2011). However, it was not until the FMD outbreak of 2001, the loss of 6.5 million farm animals (BBC, 2011), the profound impact on farming and associated concerns relating to public health that contemporary Government was triggered into action. This was through the Lowe Report (2009). This inquiry sought to determine the level of veterinary support to the livestock sector and assess its adequacy; but also, the report yielded other unintentional conclusions and revealed the veterinary profession to be a state of flux. Serious questions were raised regarding the veterinary profession, including its size and structure, demographics and ethos, all in the context of suitability for purpose (Woods, 2011). The focus of the Lowe Report (2009) was the provision of veterinary care to food producing animals and securing public health but the investigations uncovered the extent of the changing demographics and related impact on rapidly changing business models. Questions of service provision and client satisfaction were formally raised by the UK sector, apparently for the first time. Conclusions made through this work have led to professional reflection most recently culminating in the wider BVA Vet Futures campaign (2015).

The primary Vet Futures report identified six forces considered likely to strongly impact the future of the UK veterinary sector and professionals. These forces are identified as, demographic changes; economic forces; increased market competitiveness; client behaviour; global food supply; and veterinary professionals' mental wellbeing (Williams and Jordan, 2014). Additional influencing factors include educational changes and the ongoing attention to legislative matters as discussed in sections 4.1.3 and 4.1.3.3.

4.1.2.1 Veterinary Education

Veterinary medicine degrees are now provided at eight different universities in England and Scotland (RCVS, 2014c). The opening of the new vet school at the University of Surrey in 2012 raised concerns amongst some in the profession regarding the increasing number of veterinary graduates, facing higher levels of debt and pursuing a finite number of jobs in general or specialist practice (Vet Record, 2014b). In 1997, 451 newly qualified vets were registered with the RCVS (Lowe, 2009) but by 2014 this figure had risen to 813 (RCVS, 2014c). In professions where supply outstrips demand salary is often unavoidably affected and a downward trend for job remuneration in the veterinary profession is apparent (Table 4.7).

Table 4.7 Average annual salary by qualification year for full-time veterinary surgeons

Qualification year	Mean salary (£)	Median salary (£)
Before 1964	55,895	50,000
1965-1974	69,392	60,000
1975-1984	66,077	60,000
1985-1994	63,613	53,000
1995-2004	43,125	40,000
2005-2010	29,622	28,000

(Source: Adapted from RCVS, 2010)

The discrepancy between numbers of graduates and veterinary positions available may lead to qualified vets seeking employment outside of practice. Some accept that the veterinary qualification may need to be considered as a broader degree rather than the practical and vocational training of the past (Vet Record, 2014b). Whilst others express concerns of these changes, referring to veterinarians working outside of practice will be “lost to the profession” (RVCS, 2010).

4.1.2.2 Demographical Changes in the Veterinary Sector

In a historically male dominated profession (Henry *et al.*, undated) the RCVS Manpower Survey (2002) acknowledged the speed with which the sector was becoming dominated by female professionals (RCVS, 2002). By 2006, 49% of working veterinarians were female (RCVS, 2006) and the most recent industry figures demonstrate that 57% of UK practising vets are women and 43% men (RCVS, 2014c). Feminisation continues to be a developing trend (RCVS, 2014c) as in 2014 there were 190 male and 623 female veterinary graduates (RCVS, 2014c). Questions regarding the reasons behind the gender shift within the profession remain. Some suggest that it is due to the accessible media portrayal of the caring vet (Lofstedt, 2003), whilst others consider the removal of discriminatory practice on admissions to be an influential factor (Henry *et al.*, undated). Concerns regarding the impact of sector feminisation are evident. Female vets are suggested to be more likely to work part-time to facilitate family commitments and career breaks for child care may be taken (Shilcock and Stutchfield, 2008). There may be a

weaker desire to commit to a veterinary partnership, the traditional business model for veterinary practice, and this trend may cause a reduction in the number of practice partners changing business structures and opening the market up to larger corporatised practices (Williams and Jordan, 2014). Finally, it is suggested that female vets are less likely to work in farm animal practice, favouring small animal or equine work (Kinnison *et al.*, 2013). The steady growth in the numbers of female veterinarians predominantly working within small animal practice (Lowe, 2009) is thought to be an influential factor in the apparent continual shift away from farm animal practice. The resultant effect is that livestock practice is on the decline despite a considerable increase in the number of newly qualified vets each year (Lowe, 2009; Lowe, 2010; RCVS, 2010).

4.1.3 Legal Infrastructure for Animal Health Services

4.1.3.1 Veterinary Profession

The RCVS is the statutory regulator responsible under the VSA (1966) for safeguarding the interests of the public and animals. Statutory duties of the RCVS include: maintenance of the register of veterinary surgeons practising in the UK; setting of standards for veterinary education and regulation of professional conduct (RCVS, 2015e). Established in 1884 by Royal Charter, the RCVS also provides advice, has roles in knowledge transfer and education, regulates practice standards schemes and has awarding powers for fellowships, diplomas and certificates to both veterinary surgeons and veterinary nurses (RCVS, 2015e). The VSA (1966) both protects the title veterinary surgeon and ensures that only veterinary surgeons registered with the RCVS are legally able to practise veterinary surgery within the UK (RCVS, 2015). The only exceptions to this legislation are created by the Exemption Orders (DEFRA, 2011b, RCVS, 2015b) which allow for non-veterinarian practise in the following situations:

- practice by veterinary students under supervision;
- procedures authorised under the Animals (Scientific Procedures) Act 1986;
- certain categories of operations performed by medical or dental practitioners;
- certain activities specified in Schedule 3 covering medical treatment provided by farmers or farm workers to livestock;
- certain activities specified in Schedule 3 covering medical treatment and/or minor surgery performed by veterinary nurses (DEFRA, 2011b; RCVS, 2015b).

The EO is a Statutory Instrument made jointly by Ministers of DEFRA, The Welsh Government and the Department of Agriculture and Rural Development for Northern Ireland (DEFRA, 2012a); as such EOs are subject to negative resolution and once presented to Parliament become immediately operational unless objections are made (DEFRA, 2011b). Exemption Orders are in place to help promote animal health and welfare, whilst keeping financial costs for the animal owner down and therefore fulfil a

particularly important role within the livestock sector (DEFRA, 2011b). Maintenance of high health status within food producing animals is also of fundamental importance to wider public health issues. The current exemption orders are categorised into three main groups (summarised in Table 4.8). Category A procedures are considered (except for physiotherapy) to be minor procedures and are, therefore, permitted without any specified conditions. Category B enables a range of procedures to be performed by persons deemed competent by the authorised Veterinarian. Category C requires some training to be completed by lay practitioners before the completion of the procedure or sampling (DEFRA 2011b).

Table 4.8 Summary of Exemption Order provisions (UK) relevant to paraprofessionals

Subject	What may be performed	Who may complete procedure	Any specified conditions	Paraprofessional
Category A: procedures for which training is not required (total 6 EO)				
Physiotherapy (SI 1962/2557)	Any treatment by physiotherapy	Any adult acting under direction of veterinary surgeon who has examined animal and prescribed treatment by physiotherapy	None	Musculoskeletal practitioners
Category B: procedures for requiring veterinary surgeon to be satisfied of operator competence (total 3 EO)				
FMD vaccination (SI 2004/2780)	Vaccination of animals against foot-and-mouth disease	Adult holding certificate of competence from vet	Vet direction	Vet technicians
Bovine Doppler ultrasound scanning (SI 2010/2056)	Rectal ultrasound scanning	Adult who is either animal owner / employed by owner with letter from vet or holder of recognised EU veterinary degree	None	Reproductive technologists
Category C: procedures for which approved training must be completed				
TB testing (SI 2005/ 2015)	TB testing of bovine animals	Adult who is officer of the Secretary of State or DARDNI and is a) trainee on approved course or b) has completed approved course and is registered	a) under direct & continuous supervision of authorised veterinary surgeon; b) under direction of authorised veterinary surgeon	Vet technicians
Bovine ultrasound scanning (not Doppler) (SI 2010/2056)	Rectal ultrasound scanning for pregnancy testing	Adult a) carrying our scan as part of approved course b) after successful completion of course	under direct & continuous personal vet supervision; must keep records; must do one scan every two years or certified competent by vet	Reproductive technologists
Artificial Insemination of cows (SI 2010/2059)	Artificial Insemination of a cow	Person aged 16 or over who a) carries out AI on an approved course: b) has successfully completed an approved course c) was qualified operator under 2007 order: d) is authorised by competent authority of relevant European State to carry out bovine AI	Must never have been convicted of animal welfare offence	Reproductive technologists
Artificial Insemination of mares (SI 2010/2059)	Artificial Insemination of a mare	Adult a) carries out AI on an approved course: b) has successfully completed an approved course	a) under direct & continuous supervision of vet; b) must have carried out five inseminations in two years since completing course or declared competent by vet	Reproductive technologists
Epidural anaesthetic (SI 2010/2058)	Epidural anaesthetic for bovine embryo collection or transfer	Adult a) under approved course of instruction or b) person who has completed approved course	a) under direct & continuous personal vet supervision; b) as a member of embryo collection or transfer team	Reproductive technologists

(Source: Adapted from RCVS, 2015b)

4.1.3.2 Changes to Exemption Orders

In 2010 the UK was required to amend certain existing exemption orders to comply with EU requirements under the Services Directive (Directive 2006/123/EC of 12 December 2006) on internal market services. EOs classified as *commercial* were amended to remove technical barriers to free trade between EU Member States (DEFRA, 2010a). DEFRA was required to move quickly on these orders and consultation was short (DEFRA, 2010b), as legally, the EOs were in breach of European Law. Three EOs were amended: Veterinary Surgery (Artificial Insemination) Order 2010; Veterinary Surgery (Rectal Ultrasound Scanning of Bovines) Order 2010; Veterinary Surgery (Epidural Anaesthesia of Bovines) Order 2010 (DEFRA, 2010b). Key changes to EOs included the introduction of automatic recognition of technician training carried out in European Economic Area (EAA) countries and the removal of the need for exemption certificates previously issued by the Secretary of State (DEFRA, 2011a). These revisions raised industry concerns for animal health and welfare (DEFRA, 2011b) and forced implementation promoted debate as to the currency of all existing and longstanding EOs (DEFRA, 2010c).

The deregulatory shift was in keeping with the coalition Government's Big Society vision, aiming to ensure that non-regulatory solutions are identified and considered whenever possible (DEFRA, 2010b). Principles of the deregulatory shift in the animal health sector were primarily identifiable within the 2004 Animal Health and Welfare Strategy for Great Britain (DEFRA, 2004) as animal owner/ keeper responsibility is set against the responsibility of the taxpayer. The Government no longer considers it appropriate for DEFRA to define the standards for EOs but it is the role of the veterinarian, technician and clients of the received veterinary services to define competence of paraprofessionals working within a veterinary led-team (DEFRA, 2011a). In addition, financial constraints following the Spending Review have influenced a proportionate attitude to regulation and industry should aim to self-regulate whenever reasonably possible (DEFRA, 2010c). DEFRA's budget was cut by £500 million in the period 2010-2013, a trend which is set to continue (Vet Record, 2010). Thus, the current RMPR project seeks to examine the role of all paraprofessionals except for those involved in disease control such as, bovine TB testing (DEFRA, 2011a), or those with already established legal frameworks such as the equine farrier (Farriery Registration Council, 2014).

4.1.3.3 Review of Minor Procedures Regime

To fulfil the de-regulatory shift and to allay fears of comprised animal health and welfare and public health DEFRA embarked on the RMPR project on 1st October 2012 (DEFRA, 2012).

Recommendations for better use of the technician within a veterinary led team were made in the VDC Report;

“Consider the best course of action to establish an acceptable process of training for, and regulation of, technicians who undertake activities under existing or new Exemptions Orders.

Government should consider the appropriate mechanisms that would allow suitable trained lay persons to carry out minor acts of veterinary surgery.” (VDC, 2012 p.3).

Despite an initial consultation by the RCVS (RCVS, 2009) there is no agenda to review or wider reform of the Veterinary Surgeons Act (DEFRA, 2012). However, a number of EOs are under direct review through the RMPR project and others are under review by industry stakeholder working groups. The RMPR project scope covers EOs considered to be commercial, i.e. that do not exist for disease control. The main activities for review are; artificial insemination (AI) of mares and cows; rectal ultrasound scanning of cows for pregnancy detection; epidural anaesthetic and embryo collection and transfer in cows; equine dentistry; musculoskeletal therapies and barefoot trimming (equine, bovine and ovine) (Defra, 2010a). The RMPR project does not include the review of lay bovine TB testing- which is under review by the APHA; procedures relating to laboratory animals; activities not considered to be an act of veterinary surgery (VSA, 1966); equine farriery (FRC, 2014) and lastly other complementary therapies such as homeopathy, behavioural therapies and acupuncture (DEFRA, 2010a).

To fulfil the aims of the RMPR project; three industry specialists were appointed as work package leaders for the three broad areas of i) artificial breeding programmes, ii) barefoot trimming, musculoskeletal therapies and equine dental care and iii) strategic appraisal of procedures, exemptions and the veterinary team. The RMPR project terms of reference are: To agree and publish a more strategic, consistent and risk based approach to the development of EO; to review the strengths and weakness of the existing EOs; to identify the options for regulatory or de-regulatory solutions; to consider how interested parties can play a more direct role in the development and implementation of EOs; to engage and monitor stakeholder-led work streams (DEFRA, 2010c). The timeline for the review of veterinary services and EOs is summarised in Table 4.9.

Table 4.9 Timeline of Veterinary Services and EO Review

Date	Veterinary Service /EO reviewed	Comment and outcome (where present)
1962	The Veterinary Surgery (Exemptions) Order 1962	Allows non-vets to perform minor procedures under the direction of a vet
1973	The Veterinary Surgery (Exemptions) Order 1973	Allows vaccination of poultry by non- veterinarians Allows non- vets to perform minor procedures that have an EO in place
1981	Animal Health Act	
1996	Veterinary Surgeons Act 1966	Review of Act
2002	RCVS Survey	Employment in the UK Veterinary Profession in 2002
Oct 2003	The House of Common Environment, Food and Rural Affairs (EFRA) Committee	Report on Vets and Veterinary Services
Jan 2004	Defra commissioned Westley Consulting	Large Animal Vets: Report to DEFRA
March 2004	Westley Consulting Large Animal Vets: Report to Defra	Defra commissioned report to investigate factors underlying the supply of large animal vets to inform governments response to EFRA select committee report on vets and veterinary services
July 2004	11 th Special Report	Select Committee on Environment, Food & Rural Affairs Government Response to fundamental issues of large animal practice Report contributes to AH& WS
2005	Lay TB testing on bovines	Allows non- vets to perform minor procedures that have an EO in place
2006	Amendments to EU Services Directive (Directive 2006/123/EC)	
2010	The Veterinary Surgery (vaccination of badgers against TB) 2010	Allows non- vets to perform minor procedures that have an EO in place
Sept 2010	Amendment of EO (*) "Commercial exemption orders"	To reflect and implement requirements of the EU Services Directive- achieved (Directive 2006/123/EC of 12 th December 2006 on services in the internal market)
2010	The 2010 AI of mares and cows Order *	Order came into force in compliance with Services Directive Removed barriers that would prohibit EU technicians from trading in the UK
2010	Ultrasound Scanning of Bovines (2010) Order *	Original order came into force 2002
2010	Epidural Anaesthesia (2010)	Original order came into force 1992
Sept 2010	Guiding principles set to inform the future development of EO	

Date	Veterinary Service /EO reviewed	Comment and outcome (where present)
30 March 2011	Meeting RCVS, BVA, BEVA & DEFRA	Veterinary professional bodies to prepare and submit views and position on current EO regime – achieved
Aug 2011	Draft Paper to review EO	Maintenance & development of EO made under VSA 1966 Defra’s objectives for review
28 May 2012	VSA Exemption Orders Preliminary Meeting	
Oct 2012	Start of RMPR project (estimated end date: Oct 2014)	Make decisions regarding a more effective proportionate and risk-based way of controlling the activities of non-vets in the context of reduced government resources and the requirements of the Services Directive to consider and implement non-regulatory solutions wherever possible
17 April 2013	Meeting of RMPR Project	Establishment of work package leaders (achieved) and Exploration of communication channels for interested parties (intended)

(Source: Adapted from Brown, 2004, BEVA, 2013; BEVA, 2015c; DEFRA, 2012a; DEFRA, 2012b; DEFRA, 2013; RCVS, 2002; RCVS, 2013b; 2015f; RCVS, 2015: Select Committee, 2004: All RMPR citations from Pers. Comm. DEFRA Project Initiation Document (PID); VSA EO preliminary meeting 28.03.12 DEFRA)

* 3 EOs allow technicians to perform commercially based veterinary procedures and are those which do not exist for the purposes of disease control.

4.1.3.4 Changing Business Models for Veterinary Practice

The traditional business model of veterinary practice in the UK is one of a small private mixed practice, owned and run by practice partners working as a GP vet (Henry *et al.*, undated). Changing sector demographics appears to be influencing the business model and there is a clear and consistent decline in the number of practices established by independent vets (Nicol, 2012). Corporations and charities currently comprise approximately one quarter of the total number of practices but estimates predicting that this will peak at half of the market share are considered to be realistic (Vet Record, 2014c). Consolidation of practice through corporatisation alleviates some of the daily administrative burden on veterinarians but can lead to vets feeling disenfranchised and distant from practice decisions (Nicol, 2012). Changes in equine practice are also apparent, with an increase in practice specialisation (Henry *et al.*, undated). An area of concern with the changing business model is farm animal practice as this area appears to have become less appealing.

As private practice, veterinarians must run a viable business and whilst the companion animal owner may be prepared to pay for all necessary prophylactic procedures and any necessary treatments which may well be covered by the pets' insurance, the farmer has to make sound economic decisions and therefore may not prove to be the most lucrative client. Moreover, the Government's role in livestock health is also declining, with numbers of government employed vets reducing from 11% in 1966 to 4% in 2006 (Lowe, 2010). This reflects the Government's realignment of animal health and welfare responsibility to animal owners and farmers, a stance made clear in the Animal Health and Welfare Strategy for Great Britain (DEFRA, 2004). Declining farm animal practice in combination with reduced Governmental involvement, raises grave concerns for the provision of farm animal health and welfare and veterinary public health. The environment within which veterinary practice operates has changed dramatically (Vet Future, 2016) with both internal and external factors driving the transformation. Others consider a lack of business acumen and weak inter-client communication skills in veterinarians to be molding the shape of clinical practice rather than conscious decision making processes on behalf of the wider profession (Lowe, 2009; Vet Futures, 2015).

4.1.3.5 RCVS Strategic Plan

The RCVS Council approved the three-year Strategic Plan (2014-2015) in November 2013. The strategic focus of the plan is broadly divisible into five key areas of:

- Identity
- Advancing Standards
- Improving Core Function
- Strengthening Foundations

- Service- which is defined as “*Ambition: the RCVS will be known for its excellent staff who will go the extra mile to meet the needs of the public and the profession, constantly seeking to reduce anxiety through clearer information and advice, and relentless in their delivery of robust, prompt and, above all, fair and transparent processes*“(RCVS, 2013b).

Areas for consideration under the *Service* area for both the public and profession, which are pertinent to this study are as follows: the development of a service charter; establishment of baseline targets for satisfaction; developing communication; and improved resolution strategies to deal with complaints (RCVS, 2013b).

4.1.5 Sector Mapping

Sector mapping and exploration enabled the creation of an extensive database of stakeholders and a diagrammatical representation of sector groupings for the companion animal sector (Figure 4.1), the equine sector (Figure 4.2) and an exemplar for the intensive livestock sector, the livestock client (Figure 4.3). These figures demonstrate the complexity and interaction between animal health providers within the sector.

Secondary data investigation permitted the production of a paraprofessional database (Table 4.10) outlining professional training, registration and numbers of practitioners. Production of this detailed documentation helped to identify the pertinent sub-groups and inform the interview process. Database content included the following information (where available and in existence) for relevant animal health professionals: Entry level qualification; recognised professional qualification; professional association, professional registration; number of professionals and link legal parameters of treatment, including links to EOs, veterinary referral and legal inconsistencies. Findings from the market analysis indicated complexity of interaction between groups of animal health professionals. Also evident was the clear disparity between different paraprofessional groups’ education area training requirements and the recognition of grey areas within the legal framework. The results of this initial analysis were suggestive of a confusing market environment for the animal owner client and additionally confusion within the studied professional groups.

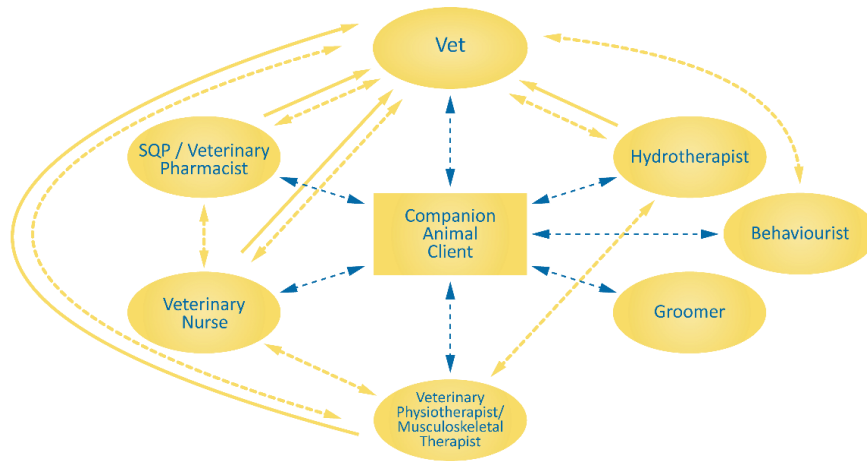


Figure 4.1 Interactions between companion animal client and health professionals

- Legal relationship
- - - Non-legal relationship
- · · Client-professional relationship

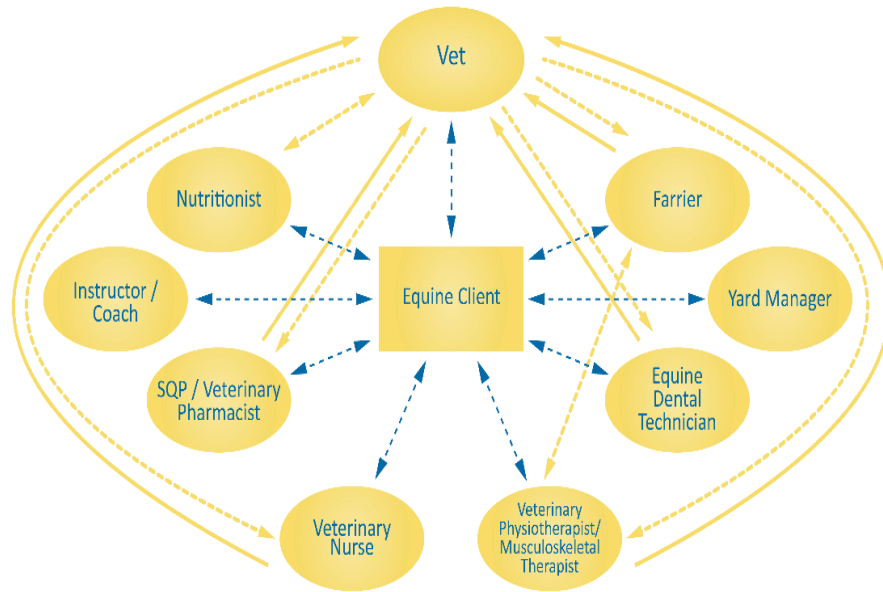


Figure 4.2 Interactions between the equine client and health professionals

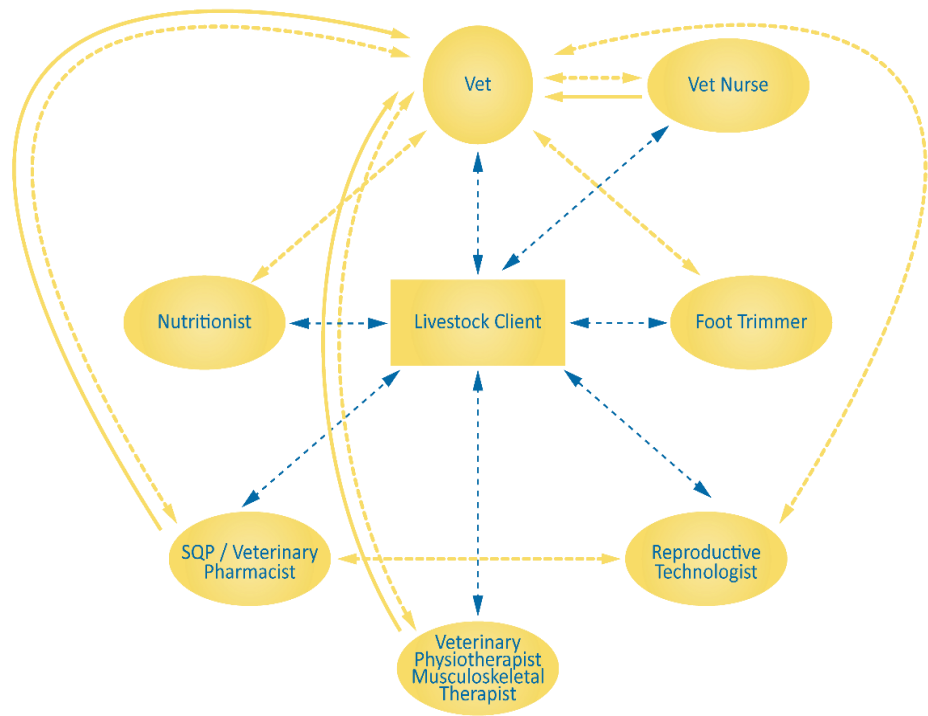


Figure 4.3 Interactions between the dairy client and health professionals

- Legal relationship
- - - Non-legal relationship
- - - Client-professional relationship

Table 4.10 Professional Stakeholders Training, registration, active registrations and legal frameworks

Paraprofessional	Sub-group	Entry Level Qualification	Professional Association(s)/ Groups	Registration With Professional Association	Active Registrations	Total for Group	Vet Referral Required Prior to Treatment	
<i>Musculoskeletal Practitioners</i>	Physiotherapists	Variable Human route available Non-human route available Short course to PgDip/MSc	National Association of Veterinary Physiotherapists (NAVVP) Association of Chartered Physiotherapists in Animal Therapy (ACPAT) The College of Animal Physiotherapists (TCAP) Institute of Registered Veterinary & Animal Physiotherapists (IRVAP)	NAVVP ACPAT IRVAP	61 288 unknown 56	508	YES Exemption Order (EO) Section 19 VSA	
	Osteopaths	Human route (open to human qualified osteopaths) PgC MSc	UK Society of Osteopaths in Animal Practice (SOAP)	SOAP	39			
	Chiropractors	Human route available Non-human route available 1 year short course to MSc	McTimoney Animal Association(MAA) Assoc. of McTimoney-Corley Spinal Therapists	MAA	9 55			
<i>Farriers & Foot trimmers</i>	Farriers	Advanced Apprenticeship (AA) in Farriery Minimum age 16 Dip WCF AWCF FWCF	Farrier Registration Council (FRC)	FRC (f)	2800	2970	No EO but governed by Farriers Registration Act 1975	
	Equine Podiatrists	none	Equine Podiatry Association UK (EPA)	EPA	18 (estimate)			No EO in place
	Bovine Foot Trimmers	none	National Association of Cattle Foot Trimmers (NACFT)	NACFT	152 (estimate)			No EO in place
<i>Pharmacists and SQPs</i>	Veterinary Pharmacists	M-Pharm/ BSc Animal Science or equivalent PgC/PgD/MSc University Diploma (level 5)	Royal Pharmaceutical Society (RPS) sub-group Veterinary Pharmacy Forum	RPS VPF	No figure available	50-60 estimate	Subject to VSA regarding prescription and dispensing of VMP	
	SQPs	None	AMTRA	AMTRA	6310			

Paraprofessional	Sub-group	Entry Level Qualification	Professional Association(s)/ Groups	Registration With Professional Association	Active Registrations	Total for Group	Vet Referral Required Prior to Treatment
<i>Nutritionists</i>	NA	Range of animal nutrition postgraduate course available differing specialisms	Ruminant Nutrition Specialists Equine Nutrition Specialists Association for Nutrition	Not required for animal nutritionists	No industry figure available	221 estimate	No EO in place
<i>Dentistry</i>	Equine Dental Technicians EDT		British Association of Equine Dental Technicians (BAEDT)	BAEDT	114 (inc. 16 vets)	114	No EO in place (g)
<i>Vet Nurses</i>	None	Diploma vocational route FdSc – 3-year University course BSc (Hons) 4-year course All require 60 week practical placement in an approved training practice	Royal College of Veterinary Surgeons (RCVS)	RCVS (f)	11,661	11661	VSA 1966 (schedule 3 Amendment order 2002) determines procedures which can be done by RVN
<i>Reproductive Techs</i>	Equine & Bovine	Equine/Bovine AI technician training (short course)	None (d)	None	No data	No data	YES Exemption Order (EO) Section 19 VSA
Veterinarians			Professional Association	Registration With Professional Association	Active Registrations	Total for Group	Vet Referral Required Prior to Treatment
<i>Veterinarians</i>			Royal College of Veterinary Surgeons (RCVS)	RCVS	19,682	1,968 (equine) 13,777 (companion) 1,968 (farm) (e)	NA

(Source: Adapted from: ACPAT, 2015; AMTRA, 2015; Association of McTimoney-Corley Spinal Therapists, 2014; BAEDT, 2015a; BEVA, 2013; EPA, 2015; FRC, 2014; HAU, 2015; Kayne Pers. Comm., 2014; Lowe, 2009; IRVAP, 2015; NACFT, 2014b; NAVP, 2015, MAA, 2015; RCVS, 2015; SOAP, 2015; VMD, 2015).

- a) Figure taken from number of ruminant nutritionists holding the qualification of Diploma in Ruminant Nutrition from Harper Adams University (HAU) as at the time of writing there is no professional register
- b) Figure taken from Google search of independent equine nutritionists as at the time of writing there is no recognised qualification or professional register
- c) Figure taken from Google search of equine nutrition companies (feed only and not including supplements). There are approximately 12 key nutrition companies all of which employ approximately 10 specialist equine nutritionists. At the time of writing there is no recognised qualification or professional register.
- d) Non- Veterinarian qualified reproductive technologists are required to be complete training in accordance with The Veterinary Surgery (Artificial Insemination) order 2010 (Veterinary Surgery AI order, 2010) but are not required to registered with a professional organisation (DEFRA, 2010).
- e) Division of specialism based upon time spent by individual Veterinarians in each area defined in the categories of companion animal, equine and farm animal (including poultry, pigs, sheep and cattle) as 70% of time spent in companion animal practice, 10% equine, 10% farm animal (Lowe, 2009)
- f) Registration is compulsory
- g) EDT cannot perform invasive procedures. Lantra currently working with RVCS on (National Occupation Standards (NOS) including dentist

4.1.6 Summary of Phase One Results

This section of the results has provided an overview of current state and organisation of service provision within the animal health industry drawing parallels and comparisons with corresponding human health sectors where it is fitting. It provides consolidated and comparable information recording for a fragmented industry, which is not readily available elsewhere and makes an important contribution to the overall understanding of the animal health sector. Key findings are:

Education and training: Paraprofessionals such as farriers and veterinary nurses have clear, well-structured and organised educational pathways within their profession in much the same way as the veterinarian. However, other professional groups lack clarity and consistency in their approach to education and in some cases training for the same professional group can vary enormously. The lack of parity can create confusion for clients and uncertain referral practice for veterinarians.

Evolving environment: The animal health sector is rapidly evolving with increasing numbers of allied health practitioners entering the market. Parallel to sector developments in the allied health services are dramatic changes in veterinary business models, especially with demographical changes and a surge in corporatisation of practices.

Legal framework irregularity: Complexity and inconsistency in the EO of the VSA permits interpretation of the legislation, which has been found to cause confusion across the sector.

Professional registration: Inconsistencies in education, training and legal frameworks is linked to differences in professional registration for paraprofessionals. This is identifiable between groups of paraprofessionals and within groups of equivalent paraprofessionals. It can be challenging for clients to identify a correctly trained and registered paraprofessional and creates uncertainty around professional standards for areas such as, codes of ethics, and practice, adherence to CPD regulations and disciplinary processes.

The developing business models and legal intricacies associated with the training and education of animal health professionals provides an insight into the complexities of the industry. This is important background information as the sector is complex in both structure and nature, with multiple sub-sectors and contributors and often is lacking in conformity and consistency. These factors are instrumental in the delivery of service quality. But, as the service recipient, the client is unlikely to give much thought to the underlying complexities or legal and historical perspectives of the service they seek and will be primarily interested in the health service which they receive for their animal. Their emphasis will be on the practitioner and the service which is provided. Completion of the exploratory mapping has enabled the formation of an overall picture of the sector to be

determined, it signposts to areas requiring further deliberation and investigation, and it provides the context for interpreting the results from Phases two and three of the project.

4.2 Phase Two Results: Exploring the Dimensions of Service Quality

The results from the one-to-one interviews completed with clients, paraprofessionals and vets (Phase two) are presented here. Interview data were transcribed and subject to thematic analysis in using NVivo© software. Emergent premises enabled the development, definition and description of service quality dimensions relevant to the animal health sector.

A range of representative interviewees were selected and recruited to the study. Table 4.11 illustrates the participants in the interview process and provides relevant additional information. Each participant was allocated an alpha-numerical identifier to ease recognition through the analysis and ensure anonymity throughout.

Table 4.11 Interview participants

Code	Classification	Gender	Occupation	Additional information
01P	Paraprofessional	F	Musculoskeletal practitioner	Equine specialist
02C	Client	M	Farmer	Extensive livestock
03V	Vet	M	Farm and mixed practice vet	Industry knowledge transfer
04V	Vet	M	Farm vet	Partner large referral practice (mixed practice)
05P	Paraprofessional	F	Senior nutritionist	Equine specialist
06P	Paraprofessional	M	Veterinary pharmacist	Companion animal specialist
07C	Client	F	Medical writer	Dog and horse owner
08C	Client	F	Dog trainer and horse riding instructor	Dog and horse owner
09P	Paraprofessional	F	Veterinary nurse	Mixed practice
10P	Paraprofessional	M	Musculoskeletal practitioner	Equine specialist
11V	Vet	F	Companion animal vet	PDSA
12C	Client	F	Farmer	Intensive dairy
13C	Client	F	Administrator	Dog owner

All interviews were carried out on a one-to-one basis. Interview and analysis techniques are described in section 3.9. NVivo© screenshots to demonstrate thematic analysis are provided in (Appendix 5). Themes of service quality were emergent from the interview data and were not developed as an adaptation of the SERVQUAL model.

4.2.1 Defining Dimensions

This section defines the dimensions of service quality for the animal health sector as identified through thematic analysis of the interview data. Specific quotations are provided where deemed relevant and valuable, highlighting the nine determined dimensions (see Table 4.12 and 4.13), through examples from interview respondents. In addition to the

identified dimensions, distinctive themes of value co-creation were embedded within the interview data. These are incorporated within some of the named dimensions below and specific additional examples are provided (section 4.2.1.1 to 4.2.1.10).

4.2.1.1 Trust

Dimensions of trust were evident as a quality within all the participants' interviews. Integral to the theme were notions of morality, integrity and technical competence, as the animal owner (client) expects the animal health professional to have the skill and ability to give the correct treatment well. *"People aren't going to trust your decision-making if they don't think that you are a trustworthy person and that comes across in the way that you present yourself..."* **Vet (04V).**

Technical skills and animal handling capabilities were important to all clients and to those professionals with direct hands-on work as part of the day-to-day role. *"If there's a problem with a cow, and shall we say it's what I would class as an internal problem where I can't see any physical problems with the cow, obviously, I trust that the vet is able to make a good diagnosis."* **Extensive livestock farmer (02C).**

Reciprocal factors of trust between the client and professional were apparent when discussing the importance of relationship development between all stakeholders. *".....because you've got to trust them and they've got to trust, I suppose, a little bit in you as well. So it's nice to have that but they also know when to keep it professional, and when to keep it personal as well."* **Extensive livestock farmer (02C).**
"Well because one because you are paying for that professional service and their opinions and that I'm entrusting them with the care of my animals....." **Client (dog owner) discussing (13C) the professionalism and trust sought for vets and paraprofessionals.**

4.2.1.2 Communication

All the study participants in all categories discussed the importance of communication. Vets particularly identified with the need to make every effort to communicate with clients and the importance of communication within the service process. *"You have to actually communicate with the owner in every possible available way and develop that ability ..."* **Vet (04V).**

Clients sought open, respectful and intelligent communication with the vet and paraprofessional alike *"Will they communicate with me in a professional manner, but also not treating me like I don't know anything at all?"* **Client (horse owner) discussing the requirements of the vet (07C).**

Also, clients did not want their own personal experience to be discounted and wanted involvement within the service process. This involvement was not distinct to one group of clients but was apparent through the companion animal owners, horse owners and

livestock farmers. *“I don’t think a lot of vets value the opinion of the owner, despite the fact that some owners are very experienced with their own horse or with a number of horses.”*

Client (horse owner) further discussing the requirements of the vet (07C).

“Communication is one of the key things that they [clients] definitely expect and a follow-up as well. They are making sure that not only are they making that initial contact with the owner about something but the follow-up after that”.

Vet nurse discussing interactions between the client and the vet (09P).

“Because I think doctors are now taught to communicate. They do loads of role play, especially if they’re going to be a GP, and realise, “Actually, I can communicate with these people, and it should be a two-way street.” But I think people need to be taught to communicate. If you’re a four A student, who has studied really hard, you may not have the social skills, the interpersonal skills. You need to learn those if you don’t have them naturally, which some people do.”*

Client (horse owner) discussing communication with the vet (07C).

Professional interactivity demonstrating factors of co-creation within the service provision.

“I have to say we’re very lucky with the people that we work with. They do challenge you. We possibly hopefully challenge them a little bit. We bounce ideas off each other.”

Intensive livestock farmer on working with vets and paraprofessionals (12C).

All groups made references to the need for respectful interaction between themselves and the service provider, with some owners placing importance upon how they were addressed.

4.2.1.3 Value for Money

Value for money, with price paid reflecting the service received, was an enduring theme throughout the interviews. Interestingly the veterinarians took more time to discuss financial implications when compared to the paraprofessional interviewees and they appeared to have a greater awareness of the problems associated with a poor pricing strategy. *“At the moment veterinarians, haven’t been very good at charging for time, they’ve subsidised it by sales and medicine.... That’s tempered the whole best way forward. The best way forward in my view is for veterinarians to sell their time and not much else.”*

Vet (03V).

This was further emphasised when discussing farm animal practice and concepts of value related to price were introduced. *“The vast majority of farmers have a high level of expectation of the vets. They’ve an expectation of good service, expectation of reasonable prices, but they know that they’re always going to get a reasonable sized total bill at the end of the month. That’s what they expect from vets. But they expect the highest standards and that’s okay as long as they can see the value.”*

Vet (04V).

“Cost plays an element, but what we find is there are competitors in our area who would sell some wormers cheaper than us. But having spent an awful lot of time training people, our SQPs, and the relationship we’ve built with clients, it’s not always about the price any more. The quality of that advice can save clients’ money.” Vet (04V).

“So it’s a combination of price and service, and we find that if we’re there or thereabouts we can justify a slightly higher price in the marketplace to most clients because the quality of our advice and service is higher.” Vet (04V).

Clients also introduced the concept of involvement and preparedness to pay more money in situations which they perceived to have higher stakes, carry greater risk to the animal involved or require higher levels of skill or technical ability from the professional.” Yes, *I do, because I think I know what – I think generally I do. I think there are some aspects that I think, Hold on a minute. ... For example, paying a full call out for them to come and do vaccinations, which they can do standing on their head. It doesn’t really take a lot of ability.But I think largely, considering what they’re doing, which is highly technical, I do think it is good value for money, knowing what similar things cost in medicine.” Client (horse owner) (07C).*

The veterinary nurse interviewee raised the issue of client confusion within veterinary practice regarding price of treatment, as comments were made around the NHS being *free at the point of service* and a failure of clients to comprehend that veterinary practice is private practice. *“I think it is very hard. I have always said this when clients have general complaints about costings and bills. We are very lucky with the NHS, we will go to see the doctor and if we don’t have a prescription we don’t contribute. We don’t have to go and see the receptionist and then pay our consultation fee. I don’t know whether people don’t understand that actually the consultation has cost the NHS so much instead of their immediate pocket, they don’t see that relation [ship]. We have been lucky with the NHS therefore the perception of paying £28 for a consultation seems extortionate for the client. But actually when they go to the doctor it costs more.” Paraprofessional veterinary nurse (09P).*

4.2.1.4 Empathy

Dimensions of compassion, care and empathy were discussed with all groups of interviewees. There were some aspects of differentiation between livestock clients as compared to the companion animal clients but all clients had expectations of considerate handling and treatment of their animals by all health professionals. Vets were aware of the potential differences between different types of clients. *“Farmers differ in their attitude to their animals. Some are very production-focused and they may be welfare-focused. But they may not be emotionally tied to that animal, and they may be able to take quite a hard decision about that individual animal. Whereas your average pet owner, whether they’re*

cost-conscious or not, it is about how their animal is treated, spoken to, and how the client is dealt with in the surgery and made to feel valued, and that the bill is some sort of semblance of value.” Vet (04V).

“I think just that something that's very precious to me is in their care and their understanding that I was feeling, that you are feeling anxious and worried and you want to know that everything is okay.” Client (dog owner) discussing their expectations of care and compassion in the veterinary consultation (13C) and the importance of their dog.

“Hopefully we're moving more towards what they are doing, just purely out of an efficiency side of things. Unfortunately, this day and age, with milk price and things, you've got to be commercial. You can't be too sensitive about an animal. If she's not producing, well that's a cow space really that could be occupied by a higher performing animal. You've got to put that almost sensitive bit out of the window really. You've got to run it commercially. You've got to be hard.” Client intensive livestock farmer expressing a different viewpoint (12C).

Factors of compassion and empathy were more strongly expressed within the paraprofessional group as compared to the vet group. *“I think that you have got to have empathy and compassion with the animal.” Paraprofessional musculoskeletal practitioner (01P).*

“....they also want to make sure thattheir pet is being cared for in the right way and they have got the best quality of care that there is, no matter what time of day. They want to see that the vet is caring and has compassion in the situation.” Paraprofessional veterinary nurse (09P).

4.2.1.5 Bespoke

Several the themes, such as empathy and factors of communication were anticipated to emerge due to the inherent nature of health practice and were clear in the analogous health research as discussed within the literature review. The bespoke dimension, however, was not anticipated to emerge and emerged from discussions with the stakeholders. *“They want expertise I think initially. They want attention when they want it, ASAP of course, especially in a crisis. You can understand that. They want latest information. They want expertise and they want practicality, they want pragmatism and they want understanding of their situation. There is a bespoke element to it. Although they wouldn't voice it as that, there is that bespoke requirement – “I need this and I need that”. The demands are high because they perceive the veterinarian as expensive.” Vet (03V).*
“It's not unusual to spend twenty minutes, half an hour, talking to somebody. I actually quite enjoy it.” Paraprofessional nutritionist (05P).

From the client perspective, there is a clear expectation for bespoke service to be delivered.

[In discussions with the vet] “After we’ve had the weekly routine they’ll always come up to the house. We’ll sit down discuss things, if there’s an issue. They also run a cell check report. So it’s a monthly report so we know where the cows are up to with the mastitis. We can pick up if there’s a problem either in the fresh group, late group. If one group is presenting higher levels of somatic cell counts, then you can go and focus in onto that group.” **Client intensive livestock farmer (12C).**

4.2.1.6 Integrated Care

Dimensions of integrated care encompassed factors such as acceptance and desire to work with and alongside other animal health practitioners. The theme was suggestive of support for the widespread adoption of multi-disciplinary team working within the sector; a recommendation made by more recent reports into animal health care provision and discussed within the introduction and literature review. Positive acceptance of open-working came through most strongly from the paraprofessional groups who viewed readiness to work with others and facilitated team work as essential for provision of quality service within animal health. *“I think that you really need a good team that you can either just talk to or that you know understands what you are trying to achieve”.*

Paraprofessional musculoskeletal practitioner discussing working with other health professionals (01P).

Consensus from client interviewees was that team working would be beneficial and welcomed. *[on MDT] “Well I’ve never seen it directly, ... I think it sounds very good and as long as they can work together and see each other’s problems, and understand that everyone is perhaps doing something slightly different, then I think it would work well”.*

Client extensive livestock farmer on MDT working (02C).

Or, that they were already actively utilising MDT working *“As I say they’ll often have meetings with our nutritionist, with the vet, and they’ll all sit down every couple of months together.”* **Client (12C) intensive livestock farmer on how they use all professionals**

Other clients had experience of veterinary reluctance to work with professionals other than vets. *[MDT working within a veterinary practice] “This is the situation I’ve seen with this current practice, where they’re not keen on the paraprofessionals as much I would either talk to the vet, if I thought the vet was somebody who had that kind of more open-mindedness, because I think some of them are not keen to work with other people.”* **Client (horse owner (07C).**

Even the vets made comment regarding a lack of consensus on MDT working from the vets’ perspective. *“If it is animal health, then in my view the vet needs to be the leader and then it’s a veterinary led team and constituent members of the team. If it is nutrition the*

vet's not leading the team really in that area but may be involved in actually saying, "This is a nutritional problem, this is not disease." Vet on MDT working (03V).

"I think that the forward-thinking practices of a certain scale will offer some of those paraprofessional services themselves." Vet (04V).

The potential for tension within this area is evident as the vets interviewed viewed multi-disciplinary team working as beneficial but assumed that it would be a veterinary led team. Clients though, viewed the team to be best led by themselves or for them to be the focal point of the team.

4.2.1.7 Tangibles

With resonance to the SERVQUAL the Tangibles dimension imparted the importance of the physical resources to service quality. Although distinct the dimension was not given as much emphasis as expected and other dimensions were discussed more fully and had greater prominence. *"They want you to dress professionally and talk professionally. They obviously want to see a result from the treatment. They want to see the logic of what you are doing to start with, probably. They want to be empowered. They want to see the logic of what you are doing." Paraprofessional musculoskeletal practitioner (01P).*

"It's a joined-up service. The premises are reasonably nice, you know, they're not sparkling like some big shiny ones but they're good enough. Farmers can come in their wellies and feel comfortable." Vet (04V).

"I think along with everyone when you walk into a room you do think this is a nice clean environment. It looks quite modernised, if we have things out and about on display it is up to date posters that are on the walls. It hopefully shows the client we are keeping up to date. We have got a nice clean environment that is visible for the owners to see. Therefore hopefully a clean environment in the front, you would like to think it was exactly the same out the back." Paraprofessional veterinary nurses (09P).

4.2.1.8 Accessibility

Accessibility came across as a practical but important dimension which had relevance to all study participants especially those in the client category. *"It is problematic. Just the thought that you can't just get the vet when you want them is problematic to me, and booking so far in advance." Client extensive livestock farmer (02C).*

"It was two miles from where I lived, could always get an appointment straight away. I was always very pleased with the care that I got for all of my animals." Client (dog owner) (13C).

The concept of accessibility associated with the use of mobile phones and tablets was raised by one of the paraprofessionals during the discussion of social media trends.

"Enquiries on our advice line are actually dropping, and enquiries through social media

are going through the roof, so she gets enquiries. She'll get a tweet at ten o'clock at night, and answer it." **Paraprofessional nutritionist (05P).**

Out of hours' care and emergency care were crucial topics to the client group who keenly felt the importance of being able to contact the professional with ease and speed

4.2.1.9 Outcome Driven Service

The results dimension or outcome driven service was most important to the client group, who wanted dependable service which was quick, accurate, reliable and consistently competent. *"I expect the vet to come at the time prearranged unless there's an emergency they have to go to. As long as they come at about the right time, do the job in what I consider to be a reasonable length of time, and do a good job."* **Client extensive livestock farmer (02C).**

One of the companion animal clients seemed to seek someone who would take control of the situation. On discussing their own involvement within the treatment *"I think I just wanted somebody, so whoever was able to deal with it."* **Client (dog owner) (13C).**

And the idea that the vet would know exactly what to do *"I don't think I was ever kept waiting and just always just knew what course of treatment, course of action he needed to take."* **Client (dog owner) (13C).**

Equally the paraprofessional and veterinary participants were acutely aware of the intensity of clients' requirements. *"All of them want you to fix it for them. You need to take control of the situation, but to be very aware of how to handle the animal, because they are all different, and how to handle the owner because, again, they are all different and some can become quite emotional.....they are expecting you to come in, see what the problem is, and expecting you to mend it. That is about it, really."* **Paraprofessional musculoskeletal practitioner (01P).**

"The clients are so ranging in their level of expectation and their understanding of what a vet is, what a vet does and what a vet can do. It's a fix it. The vet is a fixer in many people's minds – fix it. If you don't fix it then you've failed basically." **Vet (03V).**

Results focused requirements of clients were further confirmed by the nutritionist paraprofessional. *"The top horse owner- the top horse rider; the rider, not necessarily the owner, they want results pure and simple."* **Paraprofessional nutritionists (05P).**

"I think there's an expectation from the client that not only is the outcome what they want and hopefully what the animal needs but there's a manner of which how it's gone about. In general terms it's the kindness with which the vet, the time allocated, the manner with which the veterinarian goes about the business, the listening skills and whether their vet has addressed every single one of the list of questions that come in off the internet these days. It's not only outcome driven, it's the manner of achieving that outcome." **Vet (03V).**

4.2.10 Nine Defined Dimensions

Table 4.12 presents a summary of the nine dimensions of service quality which were developed from emergent client service quality themes. Within the thematic analysis process, each dimension was named and defined.

Table 4.12 Nine dimensions of service quality in the animal health sectors (qualitative results)

Nine Dimensions of service quality in animal health services	
Dimension	Definition
1.Trust	Integrity (honesty and morality) and competence (training, skills and technical ability) of practitioner
2.Communication	Preparedness to communicate openly with client, respectfulness, rapport and professional interactivity
3. Value for money	Willingness to provide comprehensive service within a justifiable pricing strategy
4.Empathy	Caring and compassionate service with due regard for clients' needs and animal health and welfare
5.Bespoke	Custom tailored service providing detailed individualised attention
6.Integrated care	Ability and readiness to work with other health professionals in an open -minded manner
7.Tangibles	Physical resources, facilities, equipment and appearance of professionals
8.Accessibility	Geographical proximity of resources and service; accessibility of professionals and ease of contact
9.Outcome driven service	Dependable and accurate service which is a result focussed provision

Further clarification on the defining characteristics of each dimension was enabled with emergent data patterns within the data and conceptualisation of themes as described in Table 4.13.

Table 4.13 Defining characteristics of the emergent dimensions of service quality from interview data

Dimension	Defining Characteristics
Trustworthiness	<p>Honesty: professional transparency of technical skills and abilities.</p> <p>Morality: ethical considerations given to decisions on treatment options including insured animals.</p> <p>Training: practitioner has initially undertaken reputable training and then maintains up to date knowledge and expertise and is on a professional register</p> <p>Skills: able to perform necessary tasks without undue stress for the animal</p> <p>Technical ability: able to handle animals quietly and with assurance, complete the necessary investigations and treatments with skill and expertise, therefore instilling confidence in the client</p>
Communication	<p>Openness: clear open lines of communication maintained throughout the process.</p> <p>Respectfulness: professional talks to the client on the same level</p> <p>Rapport: the practitioner is professionally personable and able to relate to different clients</p> <p>Professional interactivity: verbal and non-verbal client communication always maintains professionalism.</p>
Value for money	<p>Cost of service: the price paid reflects the service received.</p> <p>Hidden costs: transparency in the cost of service provision, clients informed in advance of any additional costs incurred</p> <p>Level of risk and involvement</p>
Empathy	<p>Caring: thoughtful and considerate treatment of both client and animal</p> <p>Compassion: the practitioner consistently shows empathy in all situations</p> <p>Understanding of client needs: fully aware of differing client relationships with their animals and able to relate to different situations and experiences</p> <p>Awareness of animal welfare: well able to make tough decisions for the good of the animal</p>
Bespoke	<p>Tailored service: health plans are devised for each client and their animal</p> <p>Individualised attention: practitioner is providing individualised care for each animal, including pro-active follow up attention</p>
Integrated care	<p>Ability to work with others: professionals can work with others when required; sometimes a client driven phenomena</p> <p>Readiness to work with others: teamwork is facilitated by engagement of practitioners involved in animal health, client not necessarily involved in the process</p> <p>Pro-active open mindedness: professionals actively seek to utilise technical skills and knowledge of other specialist practitioners; clear comprehension of the other professionals' expertise.</p>
Tangibles	<p>Physical resources: practices are welcoming and hospitable setting clients at ease.</p> <p>Facilities: all facilities are clean, accessible and new.</p> <p>Equipment: all equipment used is well maintained, hygienic and the practitioner uses the most up to date technology</p> <p>Appearance and presentation: practitioners maintain a tidy and professional appearance. A uniform is worn.</p>
Accessibility	<p>Geographical location: the practice is within reasonable distance from the clients' home</p> <p>Accessibility of professionals: out of hours' care is as comprehensive as normal service</p> <p>Ease of contact: the practitioner is easy to get hold of both routinely and in emergencies. It is easy to make an appointment.</p>
Outcome driven service	<p>Dependable service: consistent professional and competent service, practitioner can take charge when required</p> <p>Accurate service: correct diagnosis made within a reasonable timeframe without the need for secondary intervention</p> <p>Results focussed: the problem is solved by the professional without undue concern.</p>

4.2.2 Value Co-creation

Notions of value co-creation were apparent within many aspects of the interview data and represent a novel and interesting finding. Specific examples of co-creation themes from the client and professionals' perspective are presented below:

“She looked at how it [horse] moved. She trotted it up, etc. She did a really in-depth assessment when she first met the horse, and then treated it very thoroughly, gave me exercises that I could do that would put me onto the next...

And she talked to me about the whole situation and what she thought.

[I was] very involved [in the process]. I always want to feel that I can do my bit as well, and I can't believe that somehow something just needs treating in three months, six months, twelve months. There's got to be some kind of self-care in the meantime.” **Client (horse owner) 07C.**

Comments from the professional interviewees were demonstrative of co-creation factors within the health process.

“We have to empower the owner. At the end of the day, it is their animal and they are the one with it all the time. A lot of your leisure owners love them..... we have to empower them [the owners]. At the end of the day, we are taking money off them and doing stuff to their animal. Why would we not want to empower them with the knowledge of what we are doing and involve them?” **Paraprofessional musculoskeletal practitioner 01P.**

“You have to actually communicate with the owner in every possible available way and develop that bespoke – it's your plan, it's your animals, you're different to anyone else in the world.” **Vet (03V).**

4.2.3 Phase Two Summary

Findings from the thematic analysis of the interview data for Phase two has shaped an understanding of what service quality for stakeholders within the animal health sector means. Recognition of differences and similarities in service perception between clients, paraprofessionals and vets represents a novel outcome and has allowed the development of the dimensionality structure for the sector. This structure is tested through the wider quantitative surveying of Phase three but equally has an important function in the overall understanding of service quality within this industry, which is a useful and valuable contribution.

Nine dimensions of service quality are evident and serve to cover all aspects of service provision within the sector; some of which were expected and others, such as *Bespoke* were unanticipated. A further significant finding and was the role of value co-creation which was inherent within many of the nine dimensions; presenting an interesting and novel interpretation of service quality for this section

4.3 Phase Three: Survey Results

This section presents the results from the quantitative survey data analysis; defining how questionnaire items were developed from the NVivo© analysis, explaining the pre-testing and piloting processes to enable development of the final questionnaire and questionnaire results.

4.3.1. Pilot Results

Emergent dimensions from the NVivo© thematic analysis in were used to develop items for Phase three. Questions were mapped to the resultant dimensions both before and after pre-testing as shown in Table 4.14.

Table 4.14 Dimension mapping to the questionnaire

Dimensions of service quality in animal health services mapped to the questionnaire		
	Before pre-testing	After pre-testing
Dimension	Item	Item
1.Trust	1, 2	1,2,23
2.Communication	12, 13, 14	12,13,14
3.Value for money	15, 16	15, 16
4.Emathy	10, 11	10, 11, 24
5.Bespoke	3, 17	3, 17
6.Integrated care	5, 18	5, 18
7.Tangibles	6, 7 ,19	6, 7 ,19
8.Accessibility	8, 9, 20	8, 9, 20, 22
9.Outcome driven service	4, 21	4,21

4.3.1.1 Questionnaire Pre-test Results

Verbal and written feedback from individual respondents was received following the pre-test questionnaire and led to the development of three new questions, questions 22, 23 and 24. Question 22 *“I [or the Vet or Paraprofessional] can easily be contacted by text and /or email if required”* was mapped to the dimension of *accessibility*. Pre-test respondents proposed a requirement to investigate other modes of communication as it was considered helpful to be able to make contact quickly and easily for certain animal health queries. Question 23 *“It is important to attend conferences and stay up to date with current research”* was mapped to the dimension *trustworthiness*. Pre-test respondents suggested factors of knowledge and an openness to new research as important areas for consideration. Question 24 *“Developing a rapport is important”* was mapped to the dimension of *empathy*. Pre-test respondents proposed this to be an important area for discussion. Pre-test data was not used in the pilot questionnaire or final questionnaire data analysis as it was too inconsistent, nonetheless the pre-test gave valuable feedback to enable a more informed pilot questionnaire.

4.3.1.2 Survey Piloting

Data from the final questionnaire was piloted with professional respondents ($n=271$) to ensure validity and reliability of the survey instrument for EFA. Correlation analysis enabled identification of the inter-relationship between variables and to, therefore, determine the main factors accounting for the observable relationships within the data. If the questions measure the same underlying dimensions, then it would be expected that these specific questions would have a high correlation, in practice addressing different elements of the same factor. Data collection and EFA analysis were completed concurrently to enhance understanding of the results and to provide additional insight. Pilot data questions 26, 30, 31 and 32 were not relevant to the professional sub-groups surveyed in the pilot, were not answered and were therefore removed from the data-set prior to analysis. Table 4.15 shows the frequency of data by sub-group for the professional stakeholders.

Table 4.15 Frequency data by professional sub-group

Sub- Group	Frequency	Percentage of sample
Paraprofessional		
Vet Pharmacist & SQP	35	12.9
Musculoskeletal worker	30	11.1
Veterinary Nurse	107	39.1
Veterinarian		
Mixed practice	18	6.6
Equine	21	7.7
Farm	2	0.4
Companion animal	59	21.8
Total	271	

Cronbach's Alpha measure of internal consistency and assessment of reliability of scales reported the pilot data as valid (Table 4.16). Six of the seven latent factors measured over the recommended α score of 0.7 to 0.8, confirming the consistency and reliability of the research instrument. The five components are named based on the weight of variables loaded on each one respectively and is presented in Table 4.19. Table 4.16 shows the dimension internal consistency.

Table 4.16 Cronbach's alpha scores by factor (pilot)

Factor	α score
1	0.843
2	0.749
3	0.750
4	0.708
5	0.721
6	0.726
7	0.678

Bartlett's Test of Sphericity indicates if the correlation matrix is significantly different from the identity matrix (χ^2 1259.787; df: 276; sig: .000, $p < .5$); if it is significant then the overall correlation between variables will be significantly different from zero. *Bartlett's Test of Sphericity* was supportive of the data being appropriate for EFA (Table 4.17). The critical assumptions underlying factor analysis were tested using the *Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy* for the number of variables. This was accepted as $KMO=0.813$ which exceeds the recommended value of 0.6 (Kaiser, 1960) and therefore determined the reliability of the scale (Table 4.17). Variables were subjected to EFA using Principal Component Analysis (PCA) as the extraction method and Varimax rotation with Kaiser normalization. All factors with eigenvalues greater than 1.0 were extracted. Factor loadings were evaluated on two criteria: the significance of the loadings and the simplicity of the factor structure.

Table 4.17 KMO and Bartlett's Test results (pilot)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.813
Bartlett's Test of Sphericity	Approx. Chi-Square	1259.787
	df	276
	Sig.	.000

Analysis of the pilot data (professional respondents) determined the number of factors explaining underlying similarities and dataset variables loaded satisfactorily on to seven latent factors, explaining 59.43 percent of the total variance as shown in Table 4.18.

Table 4.18 Total variance explained results (pilot)

Rotation Sums of Squared Loadings			
Component	Total	% of Variance	Cumulative %
1	2.804	11.685	11.685
2	2.539	10.579	22.264
3	2.203	9.178	31.443
4	1.932	8.050	39.493
5	1.877	7.819	47.313
6	1.627	6.779	54.091
7	1.283	5.345	59.437

Table 4.19 shows the construct strengths for the seven latent factors extracted from the 24 variables, and the loadings for the principal factor to which each variable contributes.

Table 4.19 EFA: Elements of animal health service reporting (pilot)

Factor	1	2	3	4	5	6	7
Factor 1							
Trust ($\alpha = 0.843$)							
Continuity of care	.530						
Equipment	.646						
Animal welfare	.428						
There is time for compassion	.538						
Price reflects service provided	.730						
Clients are not faced with unexpected costs	.705						
Factor 2							
Communication ($\alpha = 0.749$)							
There is time for compassion		.453					
It is easy to communicate		.859					
Clients understand		.805					
Relationship between clients & professionals is good		.625					
Factor 3							
Professional rapport ($\alpha = 0.750$)							
Professionals actively seek to work with others			.461				
Clients are made to feel welcome			.458				
It is important to stay up to date			.770				
Rapport development			.798				
Factor 4							
Responsiveness ($\alpha = 0.708$)							
Team working				.418			
Professional appearance				.678			
Prompt response to contact				.688			
Second opinion				.461			
Factor 5							
Animal focus ($\alpha = 0.721$)							
Expectations of excellent animal handling					.557		
Clients expect out of hours' care					.770		
Factor 6							
Credibility ($\alpha = 0.726$)							
Work within own specialism						.534	
Expectations of excellent animal handling						.430	
Clients expect the professional to take control						.650	
Health plans are provided						.580	
Factor 7							
Access ($\alpha = 0.678$)							
Location is important							.795
Clients can make contact by a range of means							-.481
% of variance explained	11.68	10.58	9.18	8.05	7.82	6.78	5.34
Cumulative % of variance explained	11.68	22.26	31.44	39.49	47.31	54.09	59.43
Sample: n = 271; vet and paraprofessional respondents							
α = Cronbach's alpha							

4.3.2 Final solution

4.3.2.1 Presentation of the Final Survey Results

The final results, based on 663 questionnaires, were subject to reliability and validity testing, correlation analysis and EFA. The final dataset included the pilot data and subsequent data from all six sub-groups including: veterinarians, paraprofessionals and all client groups (companion animal, equine, farm animal). The EFA process undertaken was in-line with the pilot stages of the analysis as described in section 4.3.1.

Data was screened for univariate outliers. Two out-of-range values were identified as administrative errors and were re-coded as missing data.

The final sample size for EFA was 647 (Listwise deletion) exceeding the sample target of 600 as defined in Chapter 4 Methods.

4.3.2.2 Sample Representation for the Groups

Group level data presented in Table 4.20 shows similar proportions of paraprofessionals (29%), clients vet focused response (29%), client paraprofessional focused response (27%) but overall there was a lower proportion of veterinary responses (16%).

Table 4.20 Frequency by group

Group	Frequency	Percentage of sample
Paraprofessionals	189	29
Veterinarians	104	16
Clients (vet focus response)	191	29
Clients (paraprofessional focus response)	179	27
Total	663	

Sub-group level frequency data is illustrated in Table 4.21 which shows the three groups; paraprofessionals, veterinarians and clients and the respective sub-groups.

Table 4.21 Frequency by sub-group: All stakeholders

Group Sub-group	Frequency	Percentage of sub-group sample	Percentage of total sample
Paraprofessional			
Vet Pharmacist & SQP	50	26.4	7.5
Musculoskeletal practitioner	32	16.9	4.8
Veterinary Nurse	107	56.6	16.0
Total	189		
Veterinarian			
Mixed practice	20	19.2	3.0
Equine	21	20.1	3.2
Farm	2	1.9	0.3
Companion animal	61	58.6	9.2
Total	104		
Client			
Companion animal client	138	37.2	20.8
Equine client (leisure)	82	22	12.4
Equine client (professional)	59	15.9	8.9
Farm animal client (extensive system)	71	19	10.7
Farm animal client (intensive system)	20	5.4	3.0
Total	370		
Total	663		

Three main paraprofessional sub-groups were surveyed. Veterinary nurses represented just over half of the total sample surveyed for the paraprofessional group. Veterinary Pharmacists and SQPs formed 26% of the sample population. Musculoskeletal workers, including veterinary physiotherapists, chiropractors and osteopaths comprise nearly 17% of the sub-group population. It is difficult to gauge how representative these figures are due to the lack of consistency in professional registration.

The data presented in Table 4.22 for the veterinarian group illustrates veterinary industry data and study data. The study data demonstrates similar trends to the industry data, for all groups apart from the equine cohort.

Table 4.22 Veterinary industry and sample data

Veterinary Sub-group	Industry data	Study data	Industry data	Study data
	Practitioner frequency		Practitioner %	
Mixed practice	3149	20	16	19
Equine	1180	21	6	20
Companion An.	10628	61	54	59
Farm	787	2	4	2

(Source: Adapted from IES, 2014)

Companion animal veterinarians formed the largest proportion of the sub-group sample at almost 60% of the overall sample compared with only 2% of respondents specialising in farm animal practice. The veterinary practitioner sample is reasonably well balanced relative to the available industry data. It is slightly unrepresentative of the farm, mixed practice and companion animal sub-groups, while it over-represents the equine vet. Current data for the type of organisation veterinarians are employed in 15.8% in mixed practice, 53.65% in small animal/exotic practice, 5.5% in equine practice and 3.7% in farm animal practice. Other classifications include, for example, commerce, UK and overseas government and education (IES, 2014).

Table 4.23 shows client frequency data for veterinary and paraprofessional focused questionnaires. Client groups for companion animal and equine were evenly surveyed with at 37% and 38% of the sub-group population represented. The farm animal client group had slightly lower contribution of 24%. Within this sub-group there was a greater contribution of extensive livestock farmers (19%) as compared to intensive farmers (5.4%).

Table 4.23 Client frequency by vet and paraprofessional focused response

Client Group Vet Focused Response	Frequency	Percentage of total sample
Companion animal	75	20.2
Equine	70	18.9
Farm animal	46	12.4
Total	191	
Client Group Paraprofessional Focused Response		
Companion animal	63	17.0
Equine	71	19.2
Farm animal	45	12.1
Total	179	
Total client group	370	

4.3.2.3 Gender Data

Table 4.24 shows respondent frequency by gender for all groups.

Table 4.24 Respondent frequency by gender

Sub- Group Paraprofessional	Male	Female
Vet Pharmacist & SQP	17	33
Musculoskeletal practitioner	1	31
Veterinary Nurse	0	107
Total	18	171
Total in sub-group 189		
Veterinarian (104)		
Mixed practice	1	19
Companion animal	15	46
Equine	4	17
Farm	0	2
Total	20	84
Total in sub-group 104		
Client		
Companion animal client	75	63
Equine client	31	110
Farm animal client	80	11
Total	186	184
Total in sub-group 370		
Total data	663	

Table 4.25 shows sample gender data correlated to industry data.

Table 4.25 Gender data vets and veterinary nurses

Sub- group & total frequency	Total sample frequency	Sample data				Industry data				Correlation	
		Male	%	Female	%	Male	%	Female	%	χ^2	df
VNs	107	0	0	107	100	236	2	11,425	98	2.21	1
Vets	104	20	19	84	81	8434	42	11248	57	23.59**	1

** Significance at $p < 0.05$

(Source: Adapted from RCVS, 2014c)

Data taken from the most current RCVS Facts publication (RCVS, 2014c) demonstrates that of the 19,682 practising vets in the UK 11,248 are female (57%) and 8,434 are male (42%). As can be seen there is a significant difference between the veterinarian study sample, with a higher proportion of female vets in comparison with industry data.

Figures for practising veterinary nurses demonstrates that of the 11,661 practising veterinary nurses 11,425 are female (98%) and 236 are male (2%). The veterinary nurse study sample is very similar to the industry population, as employees for this sector are predominantly female.

4.3.2.4 Age Data

Table 4.26 shows respondent frequency by age for the client group. Industry estimations are provided in Appendix 1.

Table 4.26 Respondent frequency by age: client group

Client sub-group	Age in years					
	18-24	25-34	35-44	45-54	55-64	65 & over
Companion animal	6.3	17.5	11.1	25.4	20.6	19.0
Equine	25.4	23.9	16.9	19.7	12.7	1.4
Farm animal	8.7	21.7	26.1	17.4	21.7	4.3

Age data is presented for the veterinarian and veterinary nurse groups in Table 4.27. Reliable data is not available for the other paraprofessional groups investigated due to a lack of consistency in professional registers.

Table 4.27 Respondent frequency by age: vet and veterinary nurse groups

Professional sub-group	Age in years					
	18-24	25-34	35-44	45-54	55-64	65 & over
Veterinarian	4.8	36.5	29.8	15.4	13.5	0
Vet Nurse	44.3	34.9	17.0	0	2.8	0.9

(Source: Adapted from RCVS, 2014c)

The age profile of the veterinarian and veterinary nurse groups are similar to the population data. Data taken from the most current RCVS Facts publication (RCVS, 2014c) for veterinarians demonstrates that the average age is 41 with the average age for male vets at 46 years: and for female vets 37 years. The average age for a UK Veterinary nurse is 34 years, average age for males 33 years and females 35 years.

4.3.2.5 Sample Bias

Data was collected using the face to face technique which provided the advantage of securing a high response rate, almost zero refusal rate (<5 respondents approached) and this considerably reduced the proportion of missing values within the completed questionnaires. This technique proved to be highly efficient, however, there is some element of self-selection as events were pre-selected and had to be compatible with other stages of the research and time restrictions. Within the farm client group there was a greater contribution from extensive livestock farmers (19%) as compared to intensive farmers (5.4%); as data were collected at livestock auctions in and around the Shropshire location, where beef and sheep extensive production is more commonplace than intensive farming systems such as dairy.

The timing of data collection was selected to incorporate high-profile events and conferences with a professional focus.

Some paraprofessional stakeholder groups were not considered because of limitations in the professional data available. Additionally, estimates of client numbers are difficult to achieve, but estimates of client numbers are provided in Appendix 1. Population estimates for professional can be found in Table 4.10 and where population data are available, these have been analysed for significance. The study sample of equine vets is higher than industry figures, but the industry figures available at the time of writing are from 2014 and are therefore slightly out of date. The sample data for mixed practice, farm animal and companion animal veterinarians is in-line with industry data, as shown in Table 4.22.

4.3.2.6 Client Responses

Client response data (mean, percentages and frequencies) were compared and those which emerged as relevant and noteworthy are discussed here. Chi-squared testing was used to determine if the questions were being answered in a similar way when clients were responding to both questionnaires (paraprofessional and veterinary focused versions of the questionnaire). Overall service satisfaction (question 25) and overall service recommendation (question 26) were reported for all client groups.

4.3.2.7 Companion Animal Clients Service Perceptions

Analysis of the companion animal client questionnaire data initially suggested that questions 5, 10, 15, 16 and 18 were worthy of further investigation because of differences between the response to the veterinary service and paraprofessional service. Table 4.28 shows that there was no significant difference between the responses focused on the paraprofessional or vet when questioned on factors of animal welfare. There was also no significant difference between the companion clients' perception of interdisciplinary care/multidisciplinary team working for both professional groups. Questions on price and

value for money were responded to differently and were further investigated as shown in Figure 4.4 and Figure 4.5.

Table 4.28 Companion animal client service perception

Question number	Question	χ^2	df
5	All animal health professionals work together as a team	0.66	3
10	My pets' welfare if the always the PP/vets top priority	0.00	2
15	Price always reflects service given	7.19 **	2
16	There are no unexpected costs	22.53**	3
18	The PP/vet I use actively seeks to work with others	2.20	3

** Significant at p<0.05

The following narrative explains how the companion animal clients responded to the questionnaire based on veterinary and paraprofessional service they have received.

Price and value for money

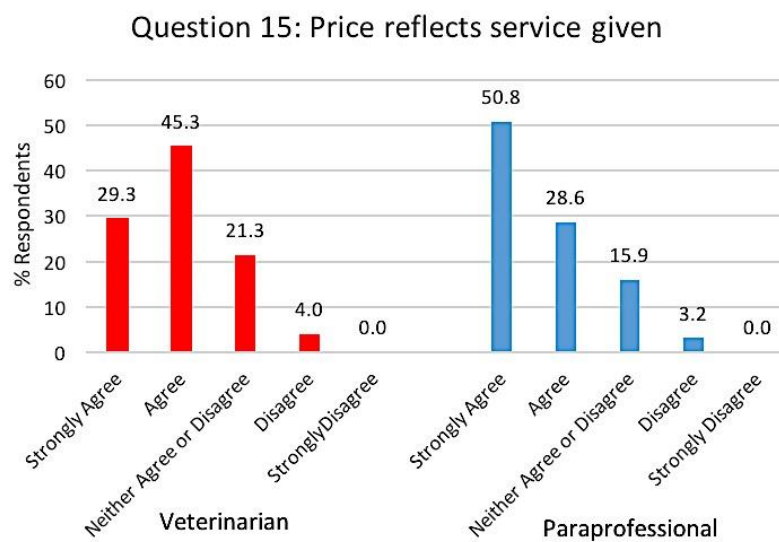


Figure 4.4 Companion animal clients' response to question 15: Price reflects service given

For question 15 *price reflects service given* over half (51%) of the companion animal clients surveyed strongly agreed that the price paid for paraprofessional service was a good indicator of the service received compared to 29% for veterinary service (Figure 4.4).

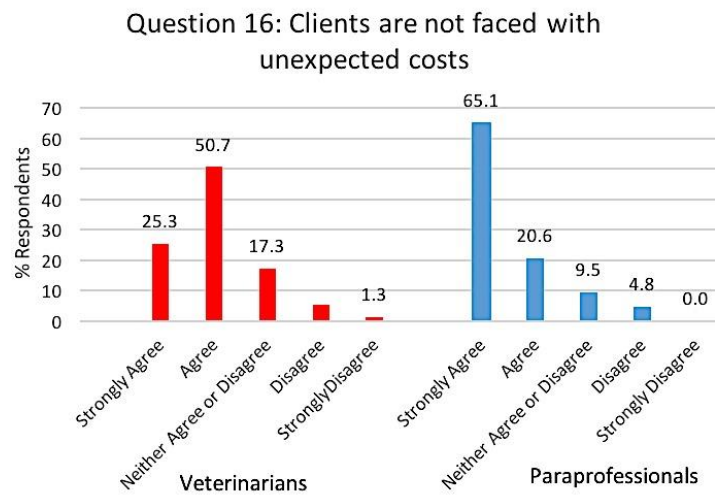


Figure 4.5 Companion animal clients' response to question 16: There are no unexpected costs. For question 16, *Clients are not faced with unexpected costs*, (Figure 4.5) clients responded in a manner like the responses given for question 15 *price reflects service given* as 65% of clients strongly agreed that there were no unexpected costs with paraprofessional service compared to 25% of clients strongly agreeing that there were no unexpected costs with veterinary service.

4.3.2.8 Equine Client Service Perceptions

Analysis of the equine client questionnaire data initially suggested that questions 1, 8, 11, 12, 14, 15 and 16 were worthy of further investigation. This is quite different to the other sub-groups, companion animal client and farm animal client. Furthermore, the equine client group responded differently to the paraprofessional focused questionnaire as compared to the vet focused questionnaire for factors of compassion (question 11), communication (question 12) and relationship (question 14) (Table 4.29). Question 1 was reported with a positive response for both professionals.

Table 4.29 Equine client service perception responses

Question Number	Question	χ^2	df
1	The PP/Vet I use is a specialist equine professional	3.78	1
8	Calls or emails are promptly responded to	3.99	3
11	The PP/vet is able to treat clients with the compassion needed	31.44 **	3
12	The PP/ vet talks to me on my level	23.75 **	3
14	My relationship with the PP/vet is good	12.51 **	2
15	Price reflects service given	56.43	3
16	There are no unexpected costs	62.71 **	3

** Significant at $p < 0.05$

The following narrative explains how the equine clients responded to the questionnaire based on veterinary and paraprofessional service they have received.

Compassion

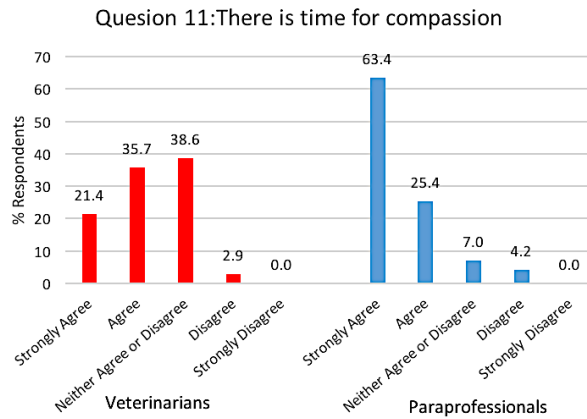


Figure 4.6 Equine clients' response to question 11: The paraprofessional or vet is able to treat clients with the compassion needed

In response to question 11, 63% of equine clients surveyed strongly agreed that the paraprofessional could show compassion compared to only 21% for veterinary service (Figure 4.6). A much greater proportion (38%) of equine clients neither agreed nor disagreed on this statement when considering veterinary service, compared to only 7% responding to service encounters with paraprofessionals.

Communication

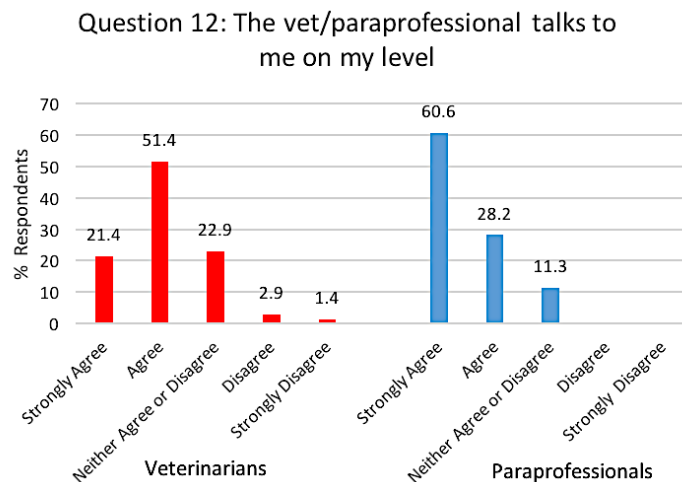


Figure 4.7 Equine clients' response to question 12: The paraprofessional or vet talks to me on my level

In response to question 12, on factors of communication *The paraprofessional or vet talks to me on my level*, only 21% of equine clients strongly agreed that communication with the vet was right for them as compared to over 60% of paraprofessional clients (Figure 4.7).

Relationships

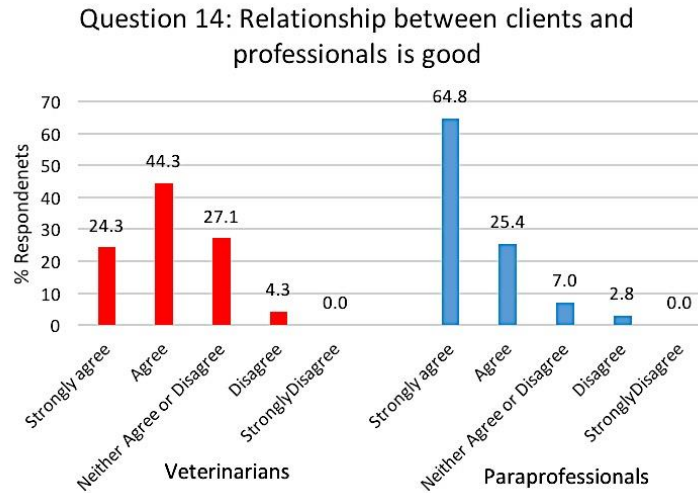


Figure 4.8 Equine clients' response to question 14: My relationship with the paraprofessional or vet is good

Relationship factors considered in question 14, *My relationship with the paraprofessional or vet is good* (Figure 4.8), presented similar results to those obtained for question 12 *The paraprofessional or vet talks to me on my level* (Figure 4.7). Almost 65% of paraprofessional equine clients strongly agreed that their relationship is good compared to 24% of veterinary clients describing their relationship with the vet.

Price and value for money

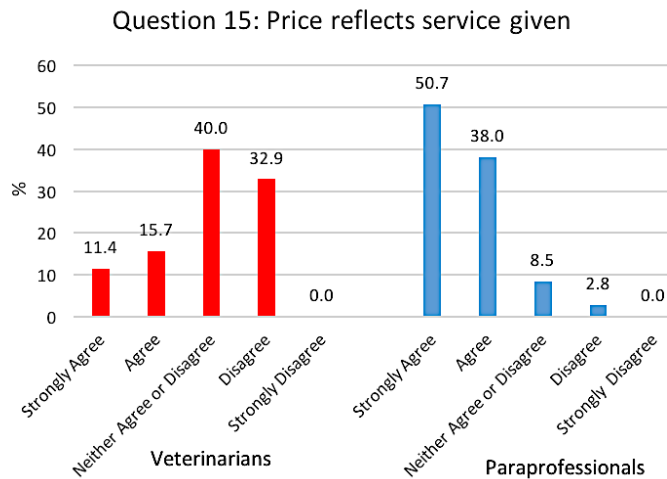


Figure 4.9 Equine clients' response to question 15: Price reflects service given

When considering factors of value-for-money the equine client had a more favourable disposition toward the paraprofessional than the vet (Figure 4.9) as 50% strongly agreed with this statement when discussing paraprofessional service, this figure is in-line with the experiences of the companion animal client. Only 11% of equine clients strongly agreed that price reflects service given when considering veterinary service.

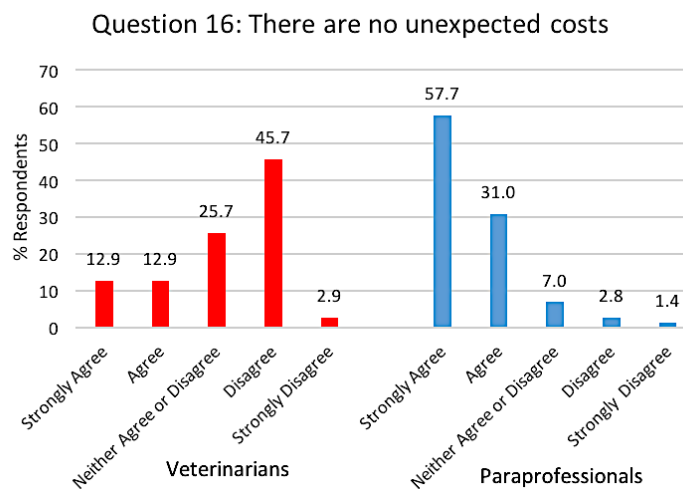


Figure 4.10 Equine clients' response to question 16: There are no unexpected costs

On factors of transparent costings, question 16 *There are no unexpected cost*, the equine client had more favourable experience with the paraprofessional than the vet (Figure 4.10).

4.3.2.9 Farm Animal Client Service Perceptions

Analysis of the farm animal client questionnaire data initially suggested that questions 5,10,15,16 and 18 were worthy of further investigation (Table 4.30). These are the same questions as the companion animal client which is an interesting point to note and was not expected. Questions of team working and interdisciplinary care (question 5 and question 18) were answered in a similar way for both professionals. The farm animal client group appeared to discriminate between the two professional groups on questions of cost including value for money (question 15) and unexpected costs (question 18).

Table 4.30 Farm animal client service perception responses

Question Number	Question	χ^2	df
5	All animal health professionals work together as a team	6.95	3
10	My farm animal's welfare is the always the PP/vets top priority	0.27	1
15	Price reflects service given	12.43 **	3
16	There are no unexpected costs	25.40 **	4
18	The PP/vet I use actively seeks to work with other	1.66	3

** Significant at p<0.05

The following narrative explains how the farm animal clients responded to the questionnaire based on veterinary and paraprofessional service they have received.

Price and value for money

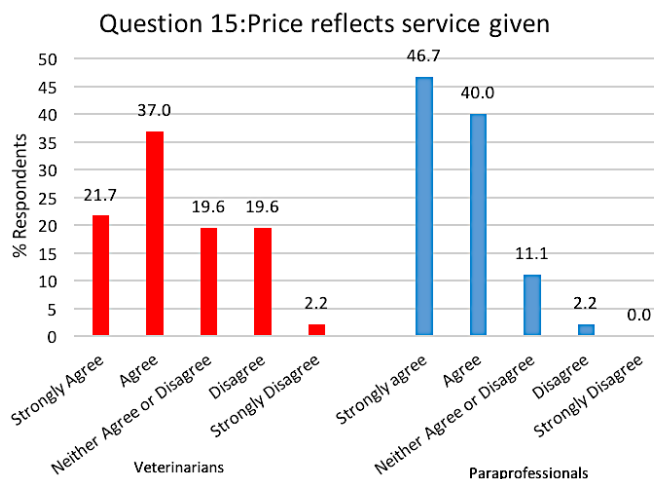


Figure 4.11 Farm animal clients' response to question 15: Price reflects service given

The farm animal clients viewed the paraprofessionals more favourably when answering question 15, *Price reflects service given* (Figure 4.11). Nearly 47% strongly agreed with this statement when referring to service received from the paraprofessional with almost

22% strongly agreeing when considering veterinary service. Equally this client group showed a 20% level of disagreement for veterinary service compared to 11% for paraprofessionals for this item.

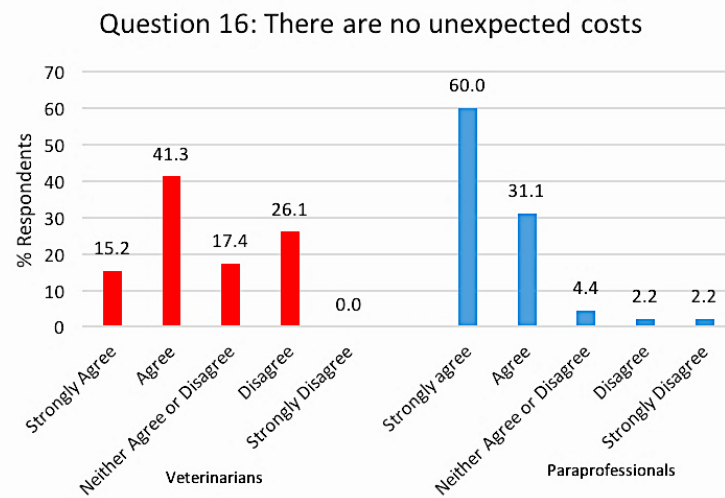


Figure 4.12 Farm animal clients' response to question 16: There are no unexpected costs

For question 16, *There are no unexpected costs*, the paraprofessional experience was more positive as compared to the veterinarians, as 60% of clients strongly agreed that there were no unexpected costs with paraprofessional service compared to 15% of clients strongly agreeing that there were no unexpected costs with veterinary service. Equally 26% of clients disagreed with the statement when commenting upon veterinary service as compared to 2.2% (Figure 4.12).

4.3.2.10 Client Perceptions of Overall Service Quality

Results from the client sub-groups demonstrated there to be between groups' differences in the responses given when answering questions on service quality and professional recommendation (Table 4.31). Analysis was completed for the paraprofessional and veterinarians on overall service satisfaction (question 25) and recommendation of the professional to others (question 26).

Client response to paraprofessional service

The client responses to paraprofessional service satisfaction and recommendation are presented in Table 4.31, Figure 4.13 and Figure 4.14.

Table 4.31 All client perceptions of paraprofessional service

Question Number	Question	χ^2	df
25	How satisfied were you with the service provided?	19.00 **	6
26	How likely would you be to recommend this professional to others	32.35 **	6

**Significance at $p < 0.05$

Service Quality

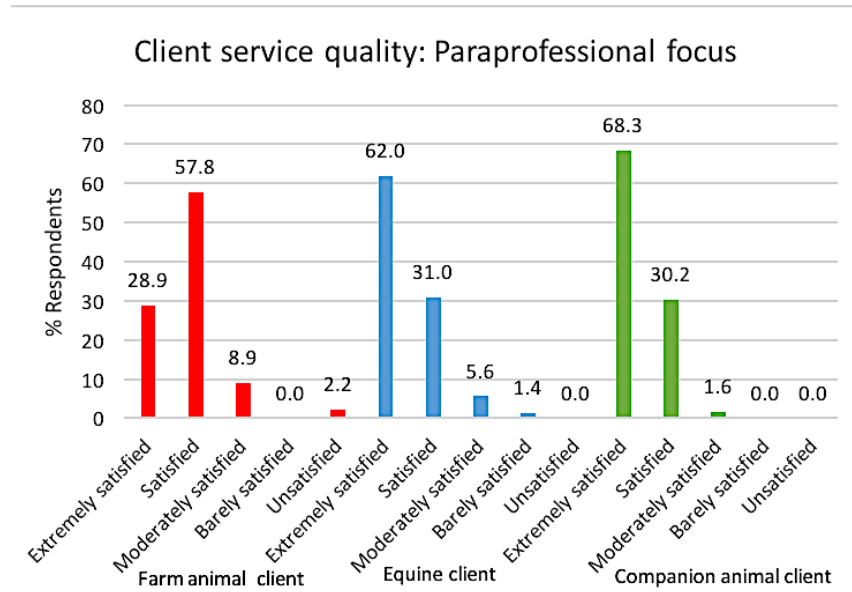


Figure 4.13 All clients' response to question 25: How satisfied were you with the service provided by the paraprofessional?

The client response to question 25, *How satisfied were you with service provided by the paraprofessional?* indicated a significant difference between the three client sub-groups (Figure 4.13). The companion animal clients were most satisfied, with 68% extremely satisfied and 30% satisfied. The equine clients' level of service satisfaction was slightly less than the companion animal clients with 62% feeling extremely satisfied and 31% satisfied. The farm animal clients were the least satisfied of the three sub-groups with only 29% stating to be extremely satisfied and 58% satisfied.

Overall, levels of dissatisfaction for all groups, however was low.

Recommendation

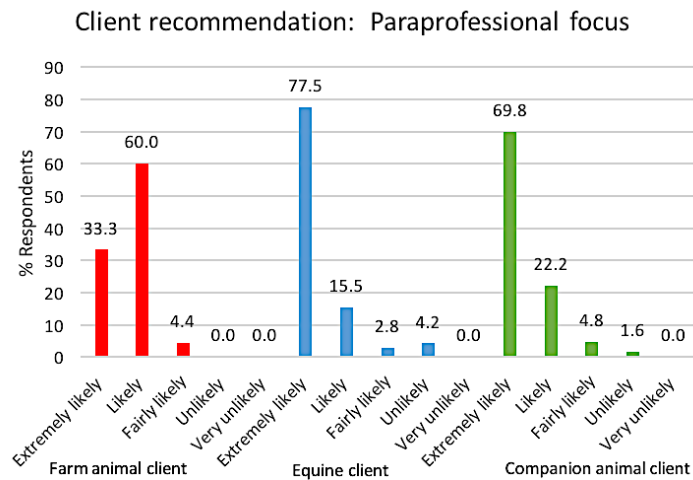


Figure 4.14 All clients' response to question 26: How likely would you be to recommend this paraprofessional to others?

Client responses to question 26, *How likely would you be to recommend this paraprofessional to others?* also indicated a significant difference between responses from the three sub-groups (Figure 4.14). The equine clients were most likely to recommend their paraprofessional to others, as 77% were extremely likely and 15% likely to give endorsement. Companion animal clients were slightly less likely to recommend the paraprofessional to others (70% extremely likely and 22% likely) as compared to the equine client group. The farm animal clients were the least likely to give a recommendation, with only 33% maintaining that they would be extremely likely to recommend and 60% likely. However, the farm animal client group were generally less negative in their response to this question and no participants stated that they would be unlikely to give recommendation.

Client response to veterinarian service

The same questions on overall service quality and recommendation are presented for veterinary service provision. Client responses to veterinary service are reported below (Table 4.32, Figure 4.15, Figure 4.16). Results demonstrated there to be between-group differences in the responses given in respect of the questions on service quality and professional recommendation.

Table 4.32 All client perceptions of veterinary service

Question Number	Question	χ^2	df
25	How satisfied were you with the service provided?	16.93 **	6
26	How likely would you be to recommend this professional to others	15.48 **	6

**Significance at $p < 0.05$

Service Quality

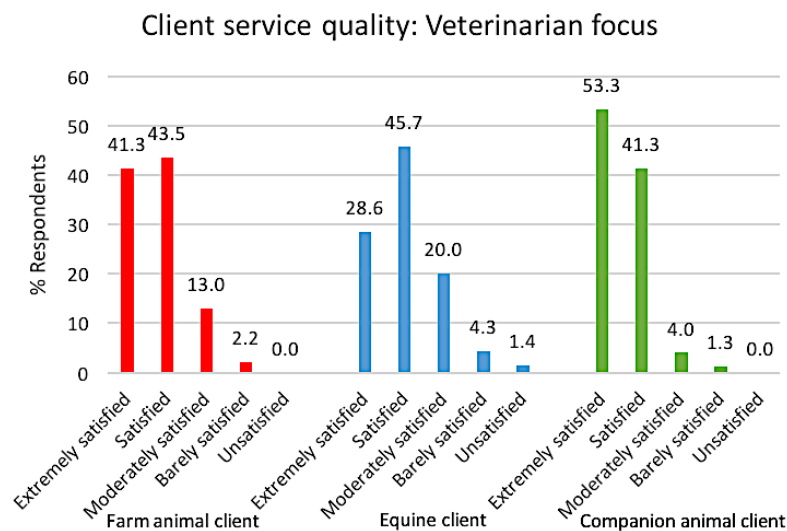


Figure 4.15 All clients' response to question 25: How satisfied were you with the service provided by the veterinarian?

Results from client responses to question 25, *How satisfied were you with the service provided by the veterinarian?* (Figure 4.15) indicated differences between the three client sub-groups. The companion animal clients were most satisfied, with 53% extremely satisfied and 41% satisfied. The farm animal clients' level of service satisfaction was less than the companion animal clients with 41% feeling extremely satisfied and 43% satisfied. The equine clients were the least satisfied with vet service provision of the three sub-groups with only 29% being extremely satisfied and 46% satisfied. Levels of dissatisfaction for all groups, however, was low.

Recommendation

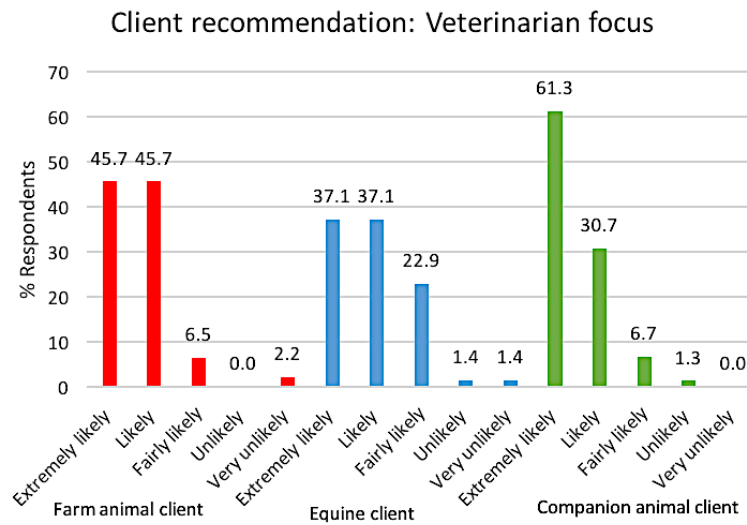


Figure 4.16 All clients' response to question 26: How likely would you be to recommend this veterinarian to others?

Client responses to question 26, *How likely would you be to recommend this veterinarian to others?* also indicated a difference between the sub-groups (Figure 4.16). The companion animal clients were most likely to recommend their vet to others, with 61% being extremely likely and 31% likely to give endorsement. Farm animal clients were less likely to recommend the vet to others as compared to the companion animal clients with 46% stating that they were extremely likely and another 46% stating that they would be likely to recommend. The equine clients were the least likely to give a recommendation, with 37% maintaining that they would be extremely likely to recommend and the same proportion (37%) likely. Overall, clients for all three sub-groups gave positive responses to this question.

4.3.2.11 Summary of Client Responses

Results for the service quality and recommendation questions revealed differences between all client groups, while the companion animal clients demonstrated greater overall service satisfaction.

Paraprofessional service: Client responses to question 25, *How satisfied were you with service provided by the paraprofessional?* indicated that the companion animal clients were most satisfied and that the equine clients were in the middle, the farm animal clients were least satisfied. Conversely, when asked to respond to question 26, *How likely would you be to recommend this paraprofessional to others?* the equine clients were most likely to recommend, followed by the companion animal clients and lastly the farm animal clients.

Veterinarian service: Client responses to question 25, *How satisfied were you with service provided by the veterinarian?* and question 26 *How likely would you be to recommend this veterinarian to others*, found the companion animal clients to be most satisfied and likely to recommend; in the middle were the farm animal clients for both levels of satisfaction and likelihood for recommendation and the equine clients were least satisfied and least likely to recommend.

Responses for all client groups based on individual questions which were shown to be significant and are summarised in Table 4.33. This data demonstrated that perceived factors of service quality are viewed more favourably regarding paraprofessional services as compared to the veterinarian.

Table 4.33 Outline of client responses

Client group	Question	Professional viewed most favorably
Equine	Qu.2 <i>My horse is always well handled by the vet/paraprofessional</i>	Paraprofessional
Equine	Qu.3 <i>There is continuity of care or treatment</i>	Paraprofessional
Equine	Qu. 10 <i>My horse's welfare if the always the vet/paraprofessionals' top priority</i>	Paraprofessional
Equine	Qu. 11 <i>The professional is able to treat clients with the compassion needed</i>	Paraprofessional
Equine	Qu 12. <i>The professional talks to me on my level</i>	Paraprofessional
Equine	Qu 13. <i>I understand what the vet/paraprofessional is telling me</i>	Paraprofessional
Equine	Qu 14. <i>My relationship with the professional is good</i>	Paraprofessional
All clients	Qu.15 <i>Price reflects service given</i>	Paraprofessional
All clients	Qu.16 <i>Clients are not faced with unexpected costs</i>	Paraprofessional

4.3.2.12 Client and Professionals' Perceptions of Team Working

Study objective three: *Evaluate the value of a multidisciplinary team approach in UK veterinary sector and paraprofessionals*, is based on elements of team working so it was important to consider the data which addresses this objective. Between group differences were generally not significant, apart from the equine clients' response to question 18, *I actively seek to work with others*, which reported a significant difference between vet and paraprofessional service (χ^2 11.84; 3df). Responses to question 5 and 18 presented low mean scores in comparison with other items which was interesting pattern but it was not a significant finding.

4.3.2.13 Professionals Perceptions of Service

The two professional groups, paraprofessionals and veterinarians were asked to respond to the same questionnaire, the results of which are presented in this section. A summary of the findings is presented in Table 4.34, including question 25, based on an overall rating of service provision. There were found to be significant differences in how the two professional groups responded to questions 1,2,3,4,6,8,9,10,11,13,14,15,16,17,20 and 25.

Table 4.34 Summary of professionals' responses

Question Number	Question	df	χ^2
1	<i>I work within my own area of specialism</i>	3	1.37 **
2	<i>Clients expect me to demonstrate excellent animal handling skills</i>	3	16.49 **
3	<i>I am always able to provide continuity of care or treatment</i>	3	11.78 **
4	<i>Clients wish to me to take control of the situation</i>	3	19.74 **
5	In my organisation/role all animal health professionals work together as a team	3	4.63
6	<i>Equipment I use is up to date, clean and works</i>	3	12.20 **
7	Clients expect me to maintain a tidy and professional appearance	2	7.74
8	<i>Calls or emails are promptly responded to</i>	3	13.03 **
9	<i>My location is important to clients</i>	3	16.61 **
10	<i>The animals' welfare is always the main priority</i>	3	4.61 **
11	<i>I have time to treat clients with the compassion they need</i>	3	6.36 **
12	It is easy to talk to clients at their level	3	6.86
13	<i>Clients are able to understand what I am telling them</i>	3	11.95 **
14	<i>My relationship with clients is good</i>	3	9.14 **
15	<i>Price always reflects service given</i>	4	6.27 **
16	<i>Clients are not faced with unexpected costs</i>	4	4.92 **
17	<i>I provide health plans for animals under my care</i>	2	8.16 **
18	I actively seek to work with others	3	5.07
19	Clients feel welcome at my practice/ place of work	3	4.03
20	<i>Clients require me to provide out of hours' care</i>	4	4.99 **
21	I am comfortable to tell clients if I need a 2nd opinion	2	0.09
22	Clients can easily contact me by text and/or email if required	4	3.00
23	<i>It is important to attend conferences and stay up to date</i>	Not reported	Not reported
24	<i>Developing a rapport with clients is important</i>	Not reported	Not reported
25	<i>Overall, how would you rate your provision of service</i>	2	8.09 **

**Significance at $p < 0.05$

These findings were cross referenced to the client data to identify the existence of patterns between professional and client reporting. Table 4.35 provides a summary of client responses to questions where a between-professional significance was found, with the intention of determining similarities or differences within all sector stakeholders.

Table 4.35 Client responses cross referenced to significant professional results

Question Number	Question Client sub-group	df	χ^2
2	My animal is always well handled by the vet/paraprofessional		
	Companion animal client	1	0.00
	<i>Equine client</i>	3	32.26 **
	Farm animal client	2	2.91
3	There is continuity of care or treatment		
	Companion animal client	2	0.56
	<i>Equine client</i>	2	10.76 **
	Farm animal client	2	2.02
10	The animals' welfare is always the main priority		
	Companion animal client	2	0.00
	<i>Equine client</i>	2	12.51 **
	Farm animal client	1	0.27
11	The vet /paraprofessionals treat clients with the compassion needed		
	Companion animal client	1	0.05
	<i>Equine client</i>	3	31.44 **
	Farm animal client	1	0.41
13	I understand what the vet/ paraprofessional is telling me		
	Companion animal client	1	0.18
	<i>Equine client</i>	2	26.13 **
	Farm animal client	1	1.44
14	My relationship with the vet/paraprofessional is good		
	Companion animal client	1	1.31
	<i>Equine client</i>	2	12.51 **
	Farm animal client	1	1.32
15	Price always reflects service given		
	<i>Companion animal client</i>	2	7.19 **
	<i>Equine client</i>	3	56.43 **
	<i>Farm animal client</i>	3	12.43 **
16	There are no unexpected costs		
	<i>Companion animal client</i>	3	22.53 **
	<i>Equine client</i>	3	62.71 **
	<i>Farm animal client</i>	4	25.40 **

Significance at $p < 0.05$

The significant and relevant findings are discussed below:

Animal handling

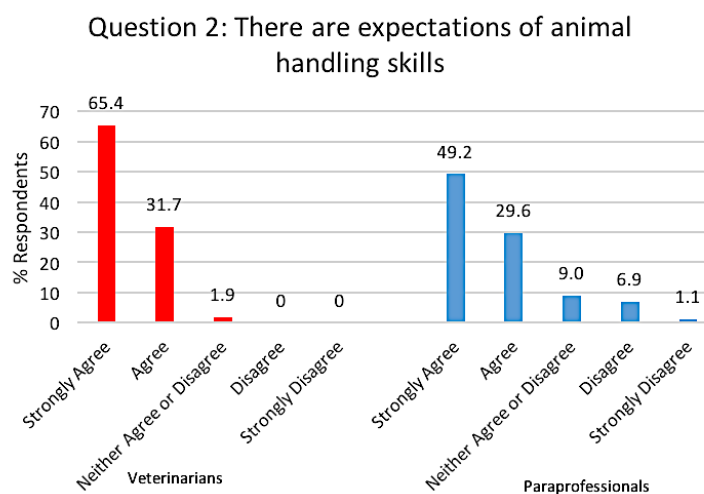


Figure 4.17 All professionals' response to question 2: Clients expect me to demonstrate excellent animal handling skills

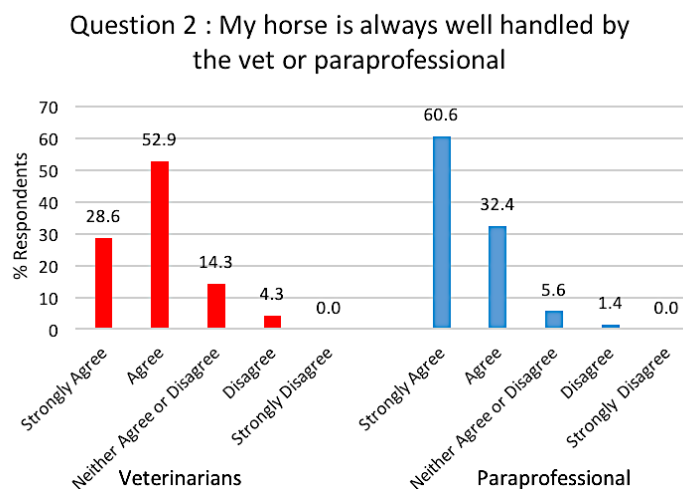


Figure 4.18 Equine clients' response to question 2: My horse is always well handled by the vet or paraprofessional

For question 2, *Clients expect me to demonstrate excellent animal handling skills*, responses from the two professional groups were different (Figure 4.17). Veterinarians' consider that the clients have higher expectations of their ability to handle animals (65%) as compared with paraprofessionals (49%). When the equivalent question was asked of the client groups there was no significant difference for the companion animal clients

(χ^2 0.00; 1df) and the response was extremely positive for both professional groups. Farm animal clients reported no significant difference (χ^2 , 2.91, 2df) when considering the vet and paraprofessionals. However, there was a significance difference in the responses of the equine clients (χ^2 , 32.26, 3df) (Table 4.35). Over 60% of equine clients strongly agreed with the statement of animal handling expertise for paraprofessionals and less than half of that figure when referring to the vet 29% (Figure 4.18).

Continuity of care

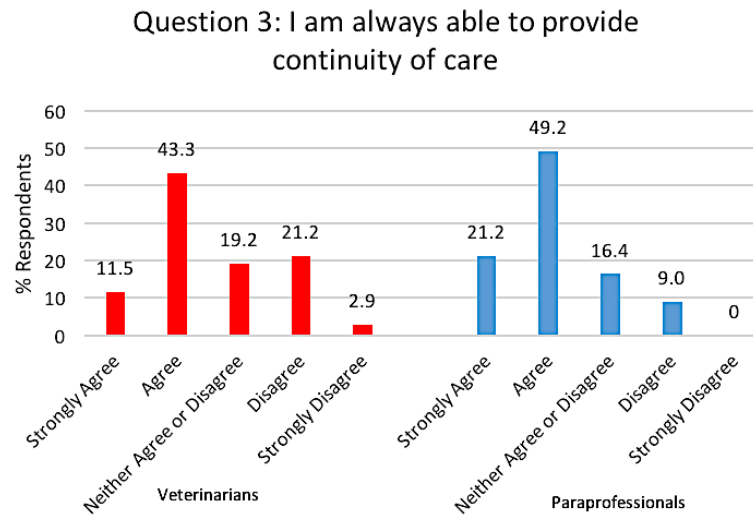


Figure 4.19 All professionals' response to question 3: I am always able to provide continuity of care or treatment

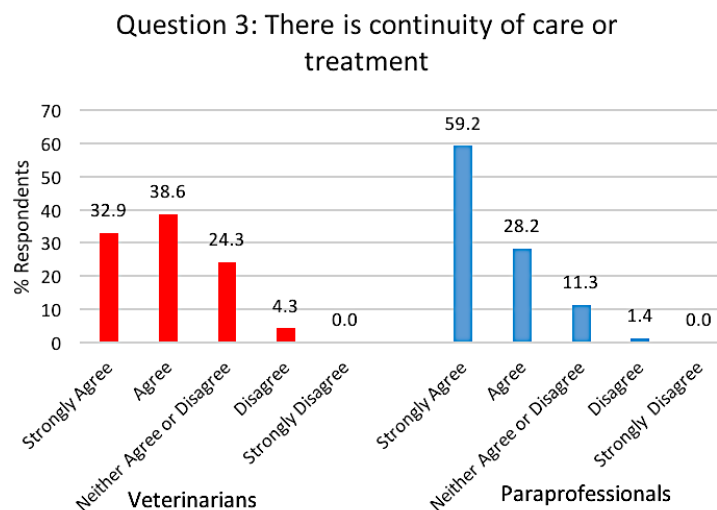


Figure 4.20 Equine clients' response to question 3: There is continuity of care or treatment

Responses to question 3, *There is continuity of care or treatment*, indicated that the paraprofessional is more able to provide continuity of care or treatment as compared to the vet (Figure 4.19). Of the paraprofessionals 21% strongly agreed with the statement and 49% agreed, compared to only 11% of vets who strongly agreed and 43% who

agreed that they could provide continuity of care. There was no significant difference for the companion animal clients (χ^2 0.56; 1 df) and farm animal clients (χ^2 2.02; 2df) when considering the vet and paraprofessionals. However, there was a significant difference in the responses of the equine clients (χ^2 , 10.76; 2df) (Table 4.35) and shown in Figure 4.20. This group reported that the paraprofessional was more able to provide continuity of care (59% strongly agreed) than the vet (33% strongly agreed). These findings were like those reported by the professionals themselves (Figure 4.19).

Animal welfare

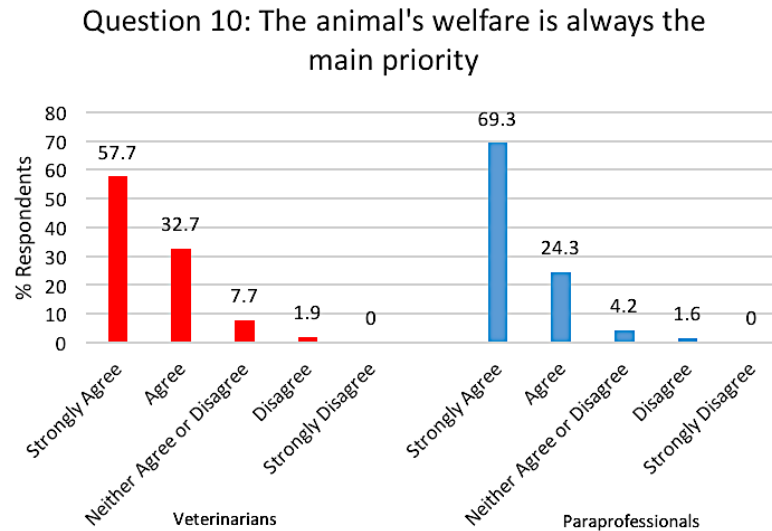


Figure 4.21: All professionals' response to question 10: The animals' welfare is always the main priority

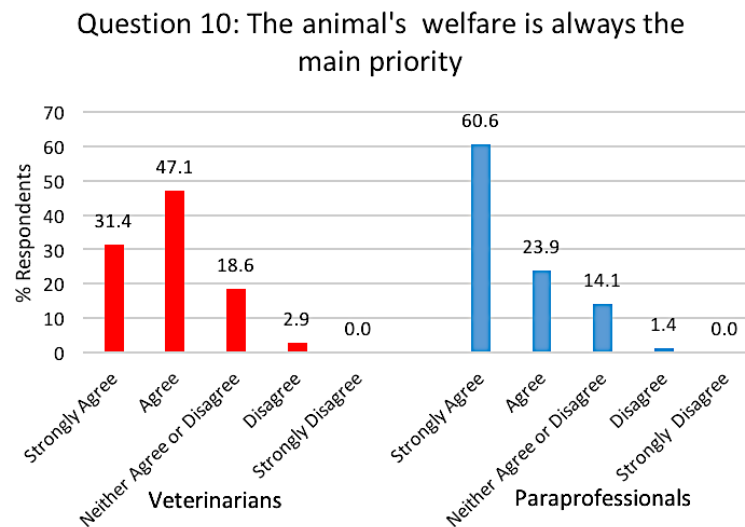


Figure 4.22 Equine clients' response to question 10: The animals' welfare is always the main priority

Results from question 10 revealed that paraprofessional groups were more positive as 69% strongly agreed with the statement as compared to the 57% of the vet group surveyed (Figure 4.21). There was no significant difference for the companion animal clients (χ^2 0.00; 1df) and farm animal clients (χ^2 0.27; 1df) when considering the vet and paraprofessionals. However, there was a significance difference in the responses of the equine clients (χ^2 , 12.51; 2df) (Table 4.35), of which 61% of respondents strongly agreed with the statement when referring to paraprofessional service as compared to 31% of related to veterinary services (Figure 4.22).

Compassion

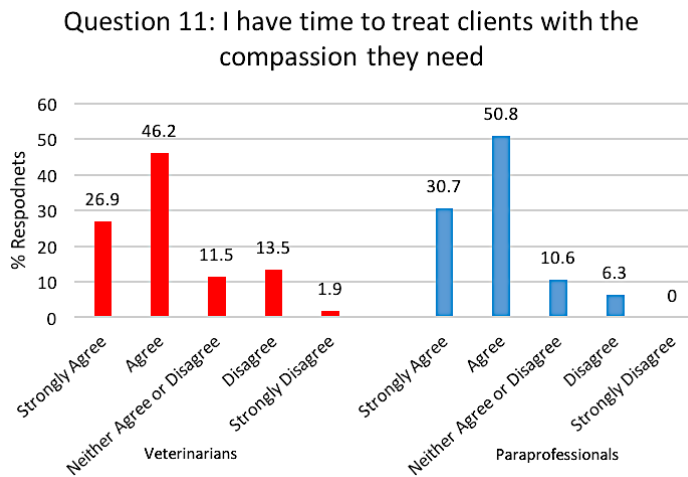


Figure 4.23 All professionals' response to question 11: I have time to treat clients with the compassion they need

Professional groups were less certain about the amount of time which they have available to treat clients with compassion needed (Figure 4.23). Almost 31% of paraprofessionals and just 27% of vets surveyed strongly agreed with question 11, while over half of the paraprofessionals (51%) could agree with this statement compared to 46% of vets. There was no significant difference for the companion animal clients (χ^2 0.05; 1df) and farm animal clients (χ^2 0.41; 1df). However, there was a significance difference in the responses of the equine clients (χ^2 , 31.44; 3df) (Table 4.35). Of the equine clients surveyed 63% strongly agreed that the paraprofessional could show compassion compared while only 21% for veterinary service (Figure 4.6).

Communication

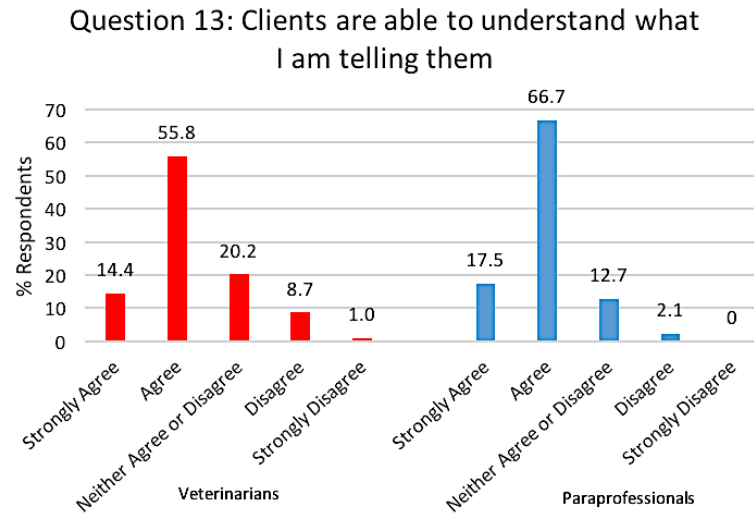


Figure 4.24 All professionals' response to question 13: Clients are able to understand what I am telling them.

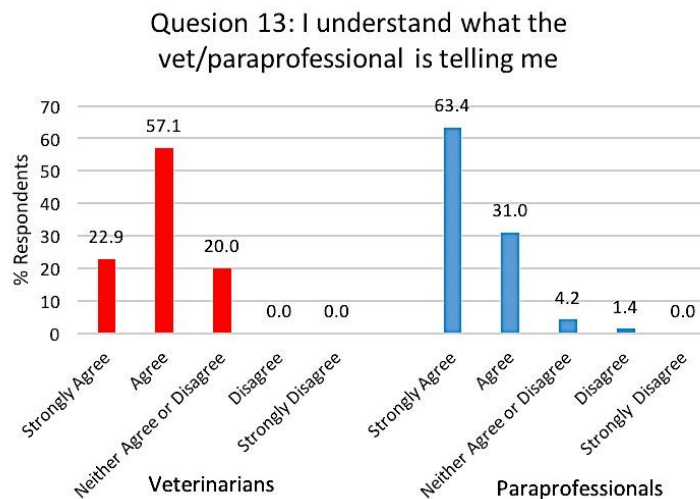


Figure 4.25 Equine clients' response to question 13: I understand what the vet/ paraprofessional is telling me

On communication, the paraprofessionals surveyed were more positive as compared to the veterinarians as 17.5% of paraprofessionals strongly agreed that, *Clients are able to understand what I am telling them*, compared to 14.4% of veterinarians (Figure 4.24). Additionally, 67% of paraprofessionals and 56% of veterinarians agreed with the statement There was no significant difference for the companion animal clients (χ^2 0.18; 1df) and farm animal clients (χ^2 1.44; 1df). However, there was a significance difference in the responses of the equine clients (χ^2 , 26.13; 2df), who viewed the paraprofessional group more favourably on factors of communication, with 63% in strong agreement that the paraprofessional can offer an understandable explanation as compared to 23% who strongly agree with the same statement for veterinarians (Figure 4.25).

Relationships

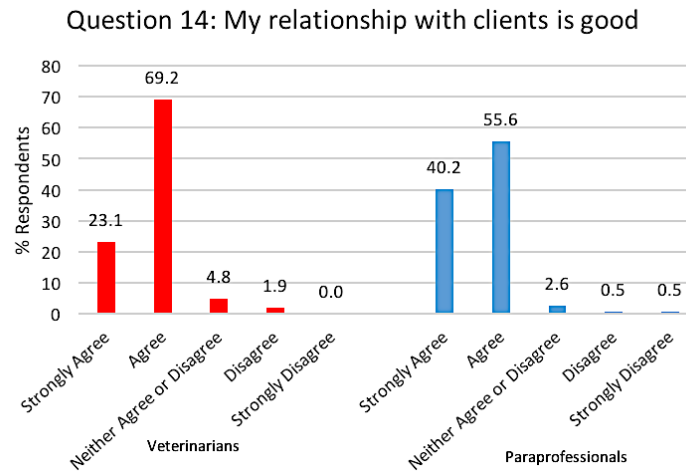


Figure 4.26 All professionals' response to question 14: My relationship with clients is good

Overall, professional responses to question 14, *My relationship with clients is good*, were positive. However, the paraprofessional group appeared to be more confident in their ability to form relationships with clients as 40% strongly agreed with this statement, in comparison to 23% of the veterinarians surveyed (Figure 4.26). There was no significant difference for the companion animal clients (χ^2 1.31; 1df) and farm animal clients (χ^2 1.32; 1df) when considering the vet and paraprofessionals. However, there was a significance difference in the responses of the equine clients (χ^2 , 12.51; 2df) (Table 4.35). Almost 65% of paraprofessional equine clients strongly agreed that their relationship is good compared to 24% of veterinary clients describing their relationship with the vet (Figure 4.8).

Price and value

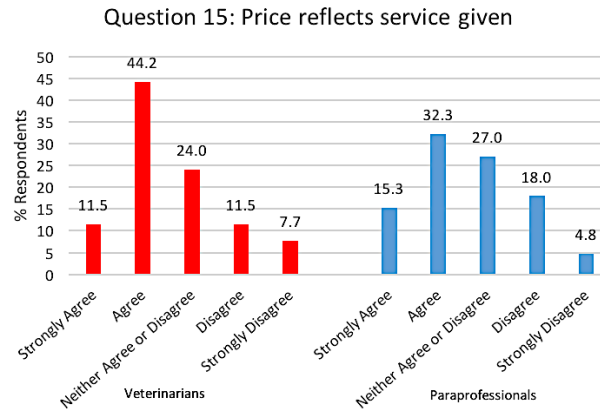


Figure 4.27 All professionals' response to question 15: Price always reflects service given

For question 15, *Price reflects service given*, there were significant differences in how the paraprofessionals and veterinarians answered this question (Figure 4.27). Overall, the veterinarians were generally more confident in the relationship between price and service, as 11% demonstrated strong agreement and 44% agreement with the statement. For the paraprofessional groups, 15% strongly agreed and 32% agreed that price always reflects service given.

Price was important to all client groups and there was a significant difference for all client groups when considering the vet and paraprofessional services on this element. However, all clients had a more favourable view on the price of paraprofessional service as shown in Figure 4.4 for companion animal clients (χ^2 7.19; 2df); Figure 4.9 for equine clients (χ^2 56.43; 3df) and Figure 4.11, for farm animal clients (χ^2 12.43; 3df). This is in contrast with the professional results obtained. Just over half of the companion animal clients surveyed strongly agreed that price reflects service given for paraprofessional service, but only 29% for veterinary service. Equine client results were similar as 50% strongly agreed that price reflects service given for paraprofessional service and 11.4% for veterinary service. The farm animal client group was less satisfied overall, as 47% strongly agreed that price reflects service given for paraprofessionals and 21% for veterinary service, furthermore a fifth of this group disagreed with this element.

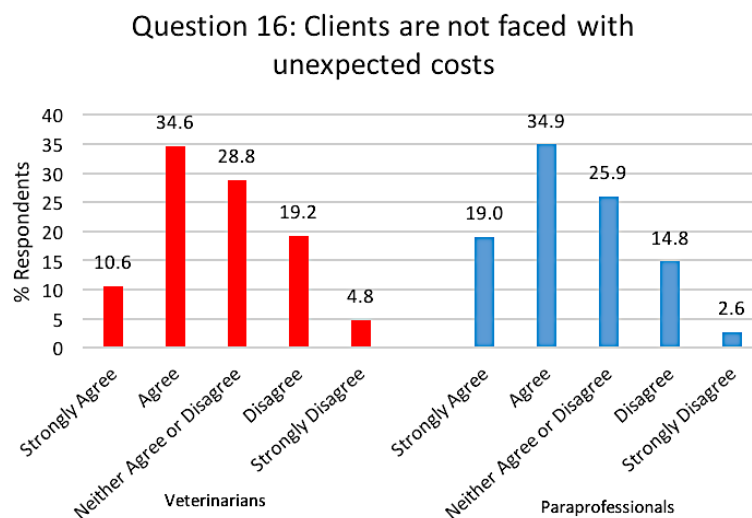


Figure 4.28 All professionals' response to question 16: Clients are not faced with unexpected costs

For question 16, *Clients are not faced with unexpected costs*, the paraprofessional groups were more confident in the consistency of pricing for services as 19% were in strong agreement and 35% in agreement with the statement (Figure 4.28). Almost 11% of veterinarians strongly agreed that clients do not face unexpected costs and a similar proportion of the paraprofessionals agreed (almost 35%). This question was important to both the companion animal and farm animal client groups.

Results from the professionals' surveys indicated the paraprofessionals to be marginally more likely to ensure that clients are not faced with unexpected costs; 19% in strong agreement with this statement as compared to 11% of vets. When this question was put to the client groups there was significant difference for the companion animal clients (χ^2 22.53; 3df), farm animal clients (χ^2 25.40; 4df) and equine clients (χ^2 62.71; 3df) while all clients' responses were positive to paraprofessionals (Table 4.35).

For the companion animal clients 65% strongly agreed that the paraprofessional does not present the client with unexpected costs, compared to 25% of veterinary service (Figure 4.5).

For the farm animal clients 60% strongly agreed that the paraprofessional does not present the client with unexpected costs, compared to 15% of veterinary service (Figure 4.12).

For the equine clients 58% strongly agreed that the paraprofessional does not present the client with unexpected costs, compared to 13% of veterinary service. Furthermore, this group 48% disagreed with the statement there are no unexpected costs when discussing veterinary service compared to 2.8% for paraprofessional service (Figure 4.10).

Training and Rapport

Question 23 *It is important to attend conferences and stay up to date* and question 24 *developing a rapport with clients is important* were not analysed as there was no significant difference shown. It was not considered to be beneficial to investigate these results further other than to report that both groups emphasised the importance of these factor to their provision of service as all respondents either strongly agreed or agreed with these elements.

Service Provision

Professional stakeholders were asked to rank their own service provision.

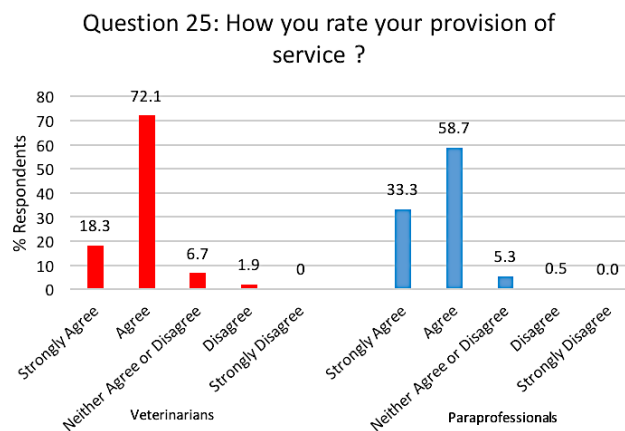


Figure 4.29 All professionals' response to question 25: Overall, how would you rate your provision of service?

Results from professional responses to question 25, *How would you rate your provision of service ?* indicated a difference between the two sub-groups (Figure 4.29). Overall, 33% of the paraprofessional groups were extremely satisfied with their provision of service and only 18% veterinarians were as satisfied. However, 72% of the veterinarians were more satisfied with their provision of service; while 59% of paraprofessionals were satisfied. Clients were posed an equivalent question and were asked to rank the provision of service received from veterinarians and paraprofessional. Clients rating their satisfaction for the professional groups the results were as follows:

For **paraprofessional service** 68% of the companion animal clients were extremely satisfied, 62% of the equine clients and 29% of the farm animal clients (4.13).

For **veterinary service** 53% of the companion animal clients were extremely satisfied, 29% of the equine clients and 41% of the farm animal clients (4.15).

4.3.3 Factor Solution

The factorability of the 24 questionnaire items was determined using the recognised criteria for reliable correlation of factor. Analysis of the EFA final data ($n=647$) was based on all group (client, paraprofessional and veterinarian) responses. All 24 items correlated at least 0.4 with three or more other items. Item communalities were all above 0.4 confirming common variance between items. The KMO was 0.890 (Table 4.36), above the recommended value of 0.6 (Kaiser, 1960). *Bartlett's Test of Sphericity* was significant (χ^2 5196.929, df 276: Sig: .000, $p < 0.05$).

Table 4.36 KMO and Bartlett's Test results (final solution)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.890
Bartlett's Test of Sphericity	Approx. Chi-Square	5196.929
	df	276
	Sig.	.000

The factors loaded favourably onto five latent factors but six of the variables were found to be cross loading at communalities of over 0.4. Items which cross load at 0.32 or higher should be given due consideration in the data analysis process. The cross loaded variables were identified as follows:

Question 6 *Equipment I (professionals) use is up to date, clean and works*

Question 10 *The animals' welfare is always the main priority*

Question 15 *Price always reflects service given*

Question 16 *Clients are not faced with unexpected costs*

Question 18 *I (professionals) actively seek to work with others*

Question 24 *I (professionals) can easily be contacted by text and/or email if required*

Each variable was removed in sequence and the EFA repeated with the omitted variable.

The factor solution achieved was not affected, except for the removal of question 16

Clients are not faced with unexpected costs which resulted in a poor four- factor

explanation. This question was important to the results as there was a lack of consistency in answers from the different groups. It was decided that five out of the six cross loading

questions should be retained due to the contribution to the analysis. However, question 6

Equipment I (professionals) use is up to date, clean and works was given considerable

contemplation as it was considered, with hindsight, to be a poorly constructed and

multifaceted question adding little to the overall understanding of the data. As the removal

of the question had limited effect on the factor solution and it was a valid result from the

qualitative phase (listed under the dimension of *tangibles* after thematic analysis), the

question was retained.

4.3.3.1 Explanation of Loaded Components

The variables loaded satisfactorily on to five latent factors, explaining 54.09 percent of the total variance. The five-factor structure, reliability of factors and percentage of total variance explained are shown in Table 4.37

Table 4.37 Total variance explained results (final solution)

Rotation Sums of Squared Loadings			
Component	Total	% of Variance	Cumulative %
1	3.501	14.589	14.589
2	3.134	13.058	27.647
3	2.386	9.941	37.588
4	2.320	9.666	47.253
5	1.642	6.842	54.096

Cronbach's Alpha reported that four of the five latent factors measured over the recommended α score of 0.7 to 0.8 and factor five measured at 0.677, confirming consistency and reliability of the research instrument used within the study. Table 4.38 shows the dimension internal consistency.

Table 4.38 Cronbach's Alpha scores by factor (final solution)

Factor	α score
1. Empathy	.845
2. Professional credibility	.781
3. Integrity	.708
4. Confident relationships	.738
5. Trustworthy service	.677

Table 4.39 shows dimension interpretation for the five-factor solution. The emergent results present five themes in the analysis of service quality in animal health care and were named: *empathy*, *professional credibility*, *integrity*, *confident relationships* and *trustworthy service*. The themes are representative of the views of all stakeholder groups: clients, veterinarians and paraprofessional.

Table 4.39 Service delivery themes in animal health

Factor	1	2	3	4	5
Factor 1					
Empathy ($\alpha = 0.845$)					
It is easy to communicate	.803				
Clients understand	.780				
Relationship between clients and professionals is good	.695				
There is time for compassion	.669				
Animal welfare	.474				
Clients are not faced with unexpected costs	.535				
Price reflects service provided	.429				
Factor 2					
Professional credibility ($\alpha = 0.781$)					
Expectations of excellent animal handling		.762			
Clients expect the professional to take control		.695			
Continuity of care		.642			
Health plans are provided		.619			
Work within own specialism		.564			
Equipment		.470			
Clients expect out of hours' care		.420			
Factor 3					
Integrity ($\alpha = 0.708$)					
Equipment			.446		
Clients are made to feel welcome			.699		
Team working			.672		
Location is important			.582		
Professional appearance			.479		
Professionals actively seek to work with others			.414		
Factor 4					
Confident relationships ($\alpha = 0.738$)					
It is important to stay up to date				.797	
Rapport development				.614	
Animal welfare				.480	
Second opinion				.478	
Professionals actively seek to work with others				.419	
Clients can make contact by a range of means				.415	
Factor 5					
Trustworthy service ($\alpha = 0.677$)					
Clients can make contact by a range of means					.657
Clients are not faced with unexpected costs					.627
Price reflects service given					.563
% of variance explained					
	14.59	13.05	9.94	9.66	6.82
Cumulative % of variance explained					
	14.59	27.64	37.58	47.25	54.09
Sample: n = 647; all respondents					

α = Cronbach's alpha

Compound variables were calculated means from the described variables and are displayed in Table 4.40. The mean scores provide an indication of importance and priority for the three groups. A factor is defined by the loading variable so the allocated label must describe and characterise the factor as clearly and closely as possible.

Table 4.40 Mean factor scores for stakeholder groups

Factor	Mean score		
	Clients	Veterinarians	Paraprofessionals
Empathy	4.27	3.81	3.99
Professional credibility	4.13	3.84	3.56
Integrity	3.97	3.98	4.02
Confident relationships	4.10	4.24	4.22
Trustworthy service	4.82	3.38	3.39

n=663 Likert scale: 5= Strongly agree 1=Strongly disagree

Factor One was labelled *empathy* and was represented by seven variables (Table 4.41). This factor comprises elements of relationships, compassion, care and thoughtfulness; which are related to interactions between the professional and the client, and between the professional and the animal. Integrated within this factor are aspects of financial confidence, which were identified as important characteristics at the group level analysis. This was a strong and clearly defined factor.

Table 4.41 Frequencies of factor variables for factor one *empathy*

Frequency distribution of rating variables in factor one <i>empathy</i>								
	<i>strongly agree</i>	<i>agree</i>	<i>neither agree or disagree</i>	<i>disagree</i>	<i>strongly disagree</i>	<i>n/a</i>	<i>mean</i>	<i>SD</i>
It is easy to communicate(Q12)								
n=663	n=268 40.4%	n=307 46.3%	n=64 9.7%	n=22 3.3%	n=2 0.3%	n=0 0%	4.23	0.779
Clients understand (Q13)								
n=662	n=249 37.6%	n=327 49.3%	n=69 10.4%	n=15 2.3%	n=1 0.2%	n=1 0.2%	4.22	0.750
Relationship between clients and professionals is good (Q14)								
n=663	n=312 47.1%	n=296 44.6%	n=43 6.5%	n=8 1.2%	n=2 0.3%	n=2 0.3%	4.36	0.728
There is time for compassion (Q11)								
n=661	n=276 41.6%	n=268 40.4%	n=79 11.9%	n=33 (5%)	n=2 0.3%	n=3 0.5%	4.17	0.899
Animal welfare (Q10)								
n=663	n=400 60.3%	n=198 29.9%	n=51 7.7%	n=13 2.0%	n=0 0%	n=1 0.2%	4.48	0.743
Clients are not faced with unexpected costs (Q16)								
n=662	n=191 28.8%	n=217 32.7%	n=131 19.8%	n=102 15.4%	n=15 2.3%	n=6 0.9%	3.68	1.162
Price reflects service provided (Q15)								
n=661	n=170 25.6%	n=232 35%	n=150 22.6%	n=85 12.8%	n=19 2.9%	n=5 0.8%	3.66	1.123
<i>n= 663 all respondents</i>								

Factor two was identified and defined by the label *professional credibility* (Table 4.42). It encompasses aspects and expectations of working practice and application of skill and expertise. Defining professionalism in this sector has proved to be complex but it is important to all stakeholders is evident within this factor. Contributing variables describing expectations of excellence (animal handling skills) and further expectations of out of hours' care are demonstrative of the importance of this element.

Table 4.42 Frequencies of factor variables for factor two *professional credibility*

Frequency distribution of rating variables in factor two <i>professional credibility</i>								
	<i>strongly agree</i>	<i>agree</i>	<i>neither agree or disagree</i>	<i>disagree</i>	<i>strongly disagree</i>	<i>n/a</i>	<i>mean</i>	<i>SD</i>
Expectations of excellent animal handling (Q2)								
n=663	n=358 54%	n=224 33.8%	n=47 7.1%	n=19 2.9%	n=2 0.3%	n=13 2%	4.32	0.981
Clients expect the professional to take control (Q4)								
n=662	n=210 31.7%	n=311 46.9%	n=116 17.5%	n=18 2.7%	n=0 0%	n=7 1.1%	4.05	0.877
Continuity of care (Q3)								
n=662	n=226 34.1%	n=267 40.3%	n=101 15.2%	n=53 8%	n=4 (0.6%)	n=11 1.7%	3.94	1.064
Health plans are provided (Q17)								
n=661	n=183 27.6%	n=220 33.2%	n=154 23.2%	n=59 8.9%	n=4 0.6%	n=41 6.2%	3.60	1.325
Work within own specialism (Q1)								
n=661	n=282 42.5%	n=277 41.8%	n=57 8.6%	n=26 3.9%	n=2 0.3%	n=17 2.6%	4.15	1.043
Equipment (Q6)								
n=663	n=240 36.2%	n=293 44.2%	n=78 11.8%	n=26 3.9%	n=2 0.3%	n=24 3.6%	4.01	1.116
Clients expect out of hours care (Q20)								
n=663	n=170 25.6%	n=240 36.2%	n=119 17.9%	n=50 7.5%	n=15 2.3%	n=69 10.4%	3.44	1.516
<i>n= 663 all respondents</i>								

Labelled as *integrity*, **factor three** incorporates elements of dependability, welcome and consistency of service (Table 4.43). Professionalism is a strong theme within this factor but a welcoming service often incorporates a broader range of employees additional to the practising animal health specialist. This finding provides an interesting reflection on the PTM concepts proposed by Gummesson (1998) as all employees within a business have a role within each individual service encounter.

Table 4.43 Frequencies of the factor variables for factor three *integrity*

Frequency distribution of rating variables in factor three <i>integrity</i>								
	<i>strongly agree</i>	<i>agree</i>	<i>neither agree or disagree</i>	<i>disagree</i>	<i>strongly disagree</i>	<i>n/a</i>	<i>mean</i>	<i>SD</i>
Equipment (Q6)								
n=663	n=240 36.2%	n=293 44.2%	n=78 11.8%	n=26 3.9%	n=2 0.3%	n=24 3.6%	4.01	1.116
Clients are made to feel welcome (Q19)								
n=663	n=254 38.3%	n=287 43.4%	n=85 12.8%	n=6 0.9%	n=1 0.2%	n=30 4.5%	4.05	1.133
Team working (Q5)								
n=663	n=184 27.8%	n=279 42.1%	n=117 17.6%	n=63 9.5%	n=8 1.2%	n=12 1.8%	3.80	1.093
Location is important (Q9)								
n=661	n=214 32.3%	n=268 40.4%	n=107 16.1%	n=52 7.8%	n=7 1.1%	n=13 2%	3.89	1.096
Professional appearance (Q7)								
n=662	n=304 45.9%	n=309 46.6%	n=35 5.3%	n=11 1.7%	n=0 0%	n=3 0.5%	4.35	0.725
Professionals actively seek to work with others (Q18)								
n=662	n=164 24.7%	n=280 42.2%	n=154 23.2%	n=37 5.6%	n=6 0.9%	n=21 3.2%	3.75	1.110
<i>n= 663 all respondents</i>								

Factor four was labelled *confident relationships* and describes the professionals' connection with the client; the connection with other professionals (when seeking a second opinion or when working as a part of a multi-disciplinary team); and the professionals' response to wider knowledge through the desire to stay up-to-date and to be able to provide the latest techniques in animal health (Table 4.44).

Table 4.44 Frequencies of the factor variable for factor four *confident relationships*

Frequency distribution of rating variables in factor four <i>confident relationships</i>								
	<i>strongly agree</i>	<i>agree</i>	<i>neither agree or disagree</i>	<i>disagree</i>	<i>strongly disagree</i>	<i>n/a</i>	<i>mean</i>	<i>SD</i>
It is important to stay up to date (Q23)								
n=663	n=333 50.2%	n=230 34.7%	n=70 10.6%	n=13 2%	n=4 0.6%	n=13 2%	4.26	0.994
Rapport development is important (Q24)								
n=663	n=450 67.9%	n=197 29.7%	n=9 1.4%	n=1 0.2%	n=0 (0%)	n=6 0.9%	4.63	0.672
Animal Welfare (Q10)								
n=663	n=400 60.3%	n=198 29.9%	n=51 7.7%	n=13 2.0%	n=0 0%	n=1 0.2%	4.48	0.743
Second opinion (Q21)								
n=662	n=304 45.9%	n=298 44.9%	n=34 5.1%	n=7 1.1%	n=0 0%	n=19 2.9%	4.27	0.969
Professionals actively seek to work together (Q18)								
n=662	n=164 24.7%	n=280 42.2%	n=154 23.2%	n=37 5.6%	n=6 0.9%	n=21 3.2%	3.75	1.110
Clients can make contact by a range of means (22)								
n= 663	n=190 28.7%	n=219 33%	n=119 17.9%	n=69 10.4%	n=20 3%	n=46 6.9%	3.53	1.431
<i>n= 663 all respondents</i>								

Factor five was labelled trustworthy service (Table 4.45). At face value this factor describes straightforward practical aspects of health provision to do with ease of contact and price of service. Underlying this simple explanation however, service access and client expectation that the price paid will reflect the service given which are strong indicators of the importance of dependable service to all involved.

Table 4.45 Frequencies of the factor variable for factor five *trustworthy service*

Frequency distribution of rating variables in factor five <i>trustworthy service</i>								
	<i>strongly agree</i>	<i>agree</i>	<i>neither agree or disagree</i>	<i>disagree</i>	<i>strongly disagree</i>	<i>n/a</i>	<i>mean</i>	<i>SD</i>
Clients can make contact by a range of means (Q22)								
n=663	n=190 28.7%	n=219 33%	n=119 17.9%	n=69 10.4%	n=20 3%	n=26 6.9%	3.53	1.431
Clients are not faced with unexpected costs (Q16)								
n=662	n=191 28.8%	n=217 32.7%	n=131 19.8%	n=102 (5.4%)	n=15 2.3%	n=6 0.9%	3.68	1.621
Price reflects service given (Q15)								
n=661	n=170 25.6%	n=232 35%	n=150 22.6%	n=85 12.8%	n=19 2.9%	n=5 0.8%	3.66	1.123
<i>n= 663 all respondents</i>								

4.3.4 Stakeholder Dimensionality

Determination of dimensionality differences between the stakeholder groups was investigated by way of a comparison between the two professional groups and between the professional and amalgamated client groups. The results of which are presented in this section.

4.3.4.1 Comparative Dimensionality: Clients versus Professionals

Client and combined professional stakeholders were analysed and the variables loaded satisfactorily on to seven latent factors for the professional group, explaining 60.43 percent of the total variance. The variables loaded satisfactorily on to five latent factors for the client group, explaining 58.88 percent of the total variance (Table 4.46). Forcing the data to a five and six factor solution, resulted in a less parsimonious explanation of the data. It was, therefore, determined that, due to the clear differences between the two groups the five and seven factor solutions should be retained to demonstrate and confirm the differences between these stakeholders.

The comparison factor structure, reliability of factors and percentage of total variance explained are shown in Table 4.46. Sub-division of the professional group and client group did result in a less clear solution as compared to the final solution, particularly for factor 5 (client and professional groups) and factors 5 and 6 (professional groups only). These factors loaded onto two variables, thereby, providing a less clear explanation. This is not unexpected, as already identified within the data are the distinct differences both within and between stakeholder groups.

Empathy is evidence again as factor 1 for the client group and the dimension defined as *practical care* is repeated and shows similarities to the qualitative dimension of *outcome driven service*. Client factor 5 and Professional factors 5 and 6 remain unnamed as they do not present meaningful explanation.

Table 4.46 Service delivery themes in animal health by stakeholder group (client and professional)

Exploratory Factor Analysis: Elements of Animal Health Service by Stakeholder Group	
Professionals	Client
Number FACTOR SOLUTION	Number FACTOR SOLUTION
FACTOR 1 Practical care (12.64 % of variance) 02 Expectation of excellent animal handling 04 Clients expect the professional to take control 17 Health plans are provided 03 Continuity of care 01 Work within own specialism 07 Professional appearance	FACTOR 1 Empathy (20.41 % of variance) 12 It is easy to communicate 14 Relationship between client & professional is good 13 Clients understand 11 There is time for compassion 16 Clients are not faced with unexpected costs 15 Price reflects service given 10 Animal welfare 03 Continuity of care 04 Clients expect the professional to take control
FACTOR 2 Communication (10.21% of variance) 12 It is easy to communicate 13 Clients understand 08 Prompt response to contact 11 <i>There is time for compassion</i> 14 <i>Relationship between client & professional is good</i>	FACTOR 2 Integrity (12.34% of variance) 19 Clients are made to feel welcome 07 Professional appearance 05 Team working 20 Clients expect out of hours' care 06 <i>Equipment</i> 09 Location is important 18 <i>Professionals actively seek to work with others</i>
FACTOR 3 Value for money (9.00 % of variance) 16 Clients are not faced with unexpected costs 15 Price reflects service given 11 <i>There is time for compassion</i> 06 Equipment	FACTOR 3 Responsiveness (9.73% of variance) 22 Clients can make contact by a range of means 18 <i>Professionals actively seek to work with others</i> 23 It is important to stay up to date 08 Prompt response to contact
FACTOR 4 Trust (8.55% of variance) 23 It is important to stay up to date 24 Rapport development is important 21 Clients expect out of hours' care 10 Animal welfare	FACTOR 4 Practical care (9.70% of variance) 06 <i>Equipment</i> 01 Work within own specialism 02 Expectation of excellent animal handling 03 Continuity of care 04 Clients expect the professional to take control
FACTOR 5 (8.31 % of variance) 05 Team working 19 Clients are made to feel welcome 09 <i>Location is important</i>	FACTOR 5 (6.69% of variance) 21 Clients expect out of hours' care 24 Rapport development is important
FACTOR 6 (6.17% of variance) 09 <i>Location is important</i> 14 <i>Relationship between client & professional is good</i> 18 Professionals actively seek to work with others	
FACTOR 7 Access (5.55% of variance) 20 Clients expect out of hours' care 22 Clients can make contact by a range of means	
n=277 KMO:0.769 Total variance explained: 60.43%	n=370 KMO: 0.915 Total variance explained: 58.88%

Italics denote cross-loading items

4.3.4.2 Comparative dimensionality: Vets versus Paraprofessional

Solution optimisation was achieved for the professionals through forced loading onto six latent factors (Table 4.47). This resulted in an improved explanation of the data allowing for effective comparison of these stakeholder groups. For the veterinary group, this solution explained 60.30 percent of the total variance, while for the paraprofessional group, this solution explained 59.30 percent of the total variance. Sub-division of the professional groups did result in a less clear solution as compared to the final solution results (Table 4.39), this may be due to the smaller sample size of veterinarians ($n= 103$) as compared to the paraprofessionals ($n= 174$) and the smaller sample population overall. Equally, the differences between paraprofessionals within the group could influence the solution. However, interesting emergent themes are evident both within this explanation and in comparison, with the overall final solution obtained.

The emergent results from the final solution including all stakeholders (Table 4.39) presented five themes in the analysis of service quality in animal health care and were named: *empathy*, *professional credibility*, *integrity*, *confident relationships* and *trustworthy service*. The themes are representative of the views of all stakeholder groups: clients, veterinarians and paraprofessionals. In the professional stakeholder comparative solution (Table 4.47), factor 1 of the veterinarian group, labelled as *empathy* displays distinct similarities with the factor 1 also defined as *empathy* from the overall solution. In comparison, factor 1 for the paraprofessionals only is defined by its practicability and is accordingly has been labelled '*practical care*'. Factor 4 for the vets and paraprofessional shares similarities with the overall solution factor 4 and is therefore labelled as *integrity*.

Table 4.47 Service delivery themes in animal health by professional stakeholder group

Exploratory Factor Analysis: Elements of Animal Health Service by Stakeholder Group	
Veterinarians	Paraprofessionals
Number FACTOR SOLUTION	Number FACTOR SOLUTION
FACTOR 1 Empathy (15.34% of variance) 12 It is easy to communicate 13 Clients understand 11 There is time for compassion 16 Clients are not faced with unexpected costs 15 Price reflects service provided 22 <i>Clients can make contact by a range of means</i> 10 Animal welfare	FACTOR 1 Practical care (15.12 %of variance) 02 Expectation of excellent animal handling 17 Health plans are provided 03 Continuity of care 04 Clients expect professional to take control 20 Clients expect out of hours care 01 Work within own specialism 07 <i>Professional appearance</i>
FACTOR 2 Responsiveness (11.86 % of variance) 22 <i>Clients can make contact by a range of means</i> 14 Relationship between client & professionals is good 24 Rapport development is important 09 Location is important 17 Health plans are provided 18 Professionals actively seek to with others 03 <i>Continuity of care</i>	FACTOR 2 Relationship (9.15% of variance) 14 Relationship between client & professionals is good 13 Clients understand 08 Prompt response to contact 12 <i>It is easy to communicate</i>
FACTOR 3 Practical care (9.68 % of variance) 04 Clients expect professional to take control 02 Expectation of excellent animal handling 01 Work within own specialism 03 <i>Continuity of care</i>	FACTOR 3 Trust (9.62 % of variance) 24 Rapport development is important 23 It is important to stay up to date 10 Animal welfare 21 Second opinion
FACTOR 4 Integrity (9.14 % of variance) 05 Team working 19 Clients are made to feel welcome 20 Clients expect out of hours care 06 <i>Equipment</i>	FACTOR 4 Integrity (9.44 % of variance) 05 Team working 09 Location is important 19 Clients are made to feel welcome 07 <i>Professional appearance</i>
FACTOR 5 Trust (7.43% of variance) 06 <i>Equipment</i> 23 It is important to stay up to date 21 Second opinion	FACTOR 5 Value for money (8.64 % of variance) 16 Clients are not faced with unexpected costs 15 Price reflects service provided 06 <i>Equipment</i>
FACTOR 6 Professionalism (6.84 % of variance) 08 Prompt response to contact 07 <i>Professional appearance</i>	FACTOR 6 Communication (6.52 % of variance) 12 <i>It is easy to communicate</i> 11 <i>There is time for compassion</i>
n=103 KMO 0.697 Total variance explained= 60.30	n=174 KMO 0.769 Total variance explained= 59.30

Italics denote cross-loading items

4.3.4.3 Comparative Dimensionality: Clients

Companion animal and equine client dimensionality was investigated as the equine clients presented as distinctly different to the other two client groups. The data obtained for these two groups enable a further comparison to be made and the results are presented in Table 4.48. The variables loaded satisfactorily to give a clear six- factor solution for the companion animal client group, explaining 61.28 percent of the total variance. Analysis of the equine client data produced a less clear five-factor structure, explaining 66.87 percent of the total variance. The observed strong emphasis of factor 1 for the equine client data demonstrates intrinsic differences between these groups and their perception and expectation of service provision. Factor naming for the explanation of this analysis was less meaningful but presentation of the results supports the existence of between group differences.

Table 4.48 Service delivery themes in animal health by client group

Exploratory Factor Analysis: Elements of Animal Health Service by Client	
Companion Animal Clients	Equine Client
Number FACTOR SOLUTION	Number FACTOR SOLUTION
<p>FACTOR 1 (16.82 % of variance)</p> <p>11 There is time for compassion 12 It is easy to communicate 14 Relationship between client & professional is good 02 Expectation of excellent animal handling <i>03 Continuity of care</i> 10 Animal welfare <i>13 Clients understand</i></p>	<p>FACTOR 1 (34.20 % of variance)</p> <p>16 Clients are not faced with unexpected costs 15 Price reflects service given 14 Relationship between client & professional is good 12 It is easy to communicate 13 Clients understand 11 There is time for compassion 17 Health plans are provided 03 Continuity of care <i>10 Animal welfare</i> 02 Expectation of excellent animal handling 04 Clients expect the professional to take control <i>23 It is important to stay up to date</i> 22 Clients can make contact by a range of means <i>18 Professionals actively seek to work with others</i> <i>01 Work within own specialism</i></p>
<p>FACTOR 2 (11.05% of variance)</p> <p><i>03 Continuity of care</i> 16 Clients are not faced with unexpected costs 15 Price reflects service given <i>17 Health plans are provided</i> 04 Clients expect the professional to take control</p>	<p>FACTOR 2 (13.40% of variance)</p> <p><i>10 Animal welfare</i> <i>23 It is important to stay up to date</i> 07 Professional appearance 08 Prompt response to contact 06 Equipment <i>05 Team working</i> <i>21 Clients expect out of hours' care</i> <i>24 Rapport development is important</i></p>
<p>FACTOR 3 (10.89 % of variance)</p> <p><i>17 Health plans are provided</i> 09 Location is important 06 Equipment 05 Team working 07 Professional appearance 20 Clients expect out of hours' care <i>18 Professionals actively seek to work with others</i></p>	<p>FACTOR 3 (7.72% of variance)</p> <p><i>05 Team working</i> 19 Clients are made to feel welcome 18 Professionals actively seek to work with others 21 Clients expect out of hours' care</p>
<p>FACTOR 4 (8.80% of variance)</p> <p>23 It is important to stay up to date 22 Clients can make contact by a range of means <i>18 Professionals actively seek to work with others</i></p>	<p>FACTOR 4 (6.19% of variance)</p> <p>21 Second opinion 01 Work within own specialism 24 Rapport development is important</p>
<p>FACTOR 5 (8.31 % of variance)</p> <p><i>13 Clients understand</i> 24 Rapport development is important 21 Second opinion</p>	<p>FACTOR 5 (4.92% of variance)</p> <p>09 Location is important</p>
<p>FACTOR 6 (5.37% of variance)</p> <p>21 Clients expect out of hours' care 01 Work within own specialism 19 Clients are made to feel welcome</p>	
<p>KMO: 0.854 Total variance explained: 61.28 n=138</p>	<p>KMO:0.907 Total variance explained: 66.87 n=141</p>

4.3.4.4 Defining Service Quality Dimensions

The mixed method approach of this study facilitates broad and rich inquiry into an under-researched topic. It is therefore, logical to integrate all the findings as meaning to the data is sought. From the qualitative semi-structured interviews and subsequent thematic analysis nine dimensions of service quality emerged, whereas exploratory factor analysis of the survey data constructed five dimensions. The thematic analysis in combination with exploration of the sector and literature enabled the development of the interview items, so it is interesting to consider where the similarities and differences in results lie. These differences are presented in Table 4.49.

Table 4.49 Dimensions of service quality from qualitative and quantitative investigation

NINE DIMENSIONS OF SERVICE QUALITY (QUALITATIVE RESULTS)		FIVE DIMENSIONS OF SERVICE QUALITY (QUANTITATIVE RESULTS)	
FACTOR 1 Trustworthiness	Integrity (honesty and morality) and competence (training, skills and technical ability) of practitioner	FACTOR 1 Empathy	Compassion, care and thoughtfulness; the aspects are directed to interactions between the professional and the client, and between the professional and the animal.
FACTOR 2 Communication	Preparedness to communicate openly with client, respectfulness, rapport and professional interactivity	FACTOR 2 Professional credibility	Expectation of high standards of working practice and the application of skill and expertise.
FACTOR 3 Value for money	Willingness to provide comprehensive service within a justifiable pricing strategy	FACTOR 3 Integrity	Elements of dependability, welcome and consistency of service. Strong themes of professionalism
FACTOR 4 Empathy	Caring and compassionate service with due regard for clients' needs and animal health and welfare	FACTOR 4 Confident relationships	Professionals' connection with the client; connection with other professionals and responsiveness to wider knowledge
FACTOR 5 Bespoke	Custom tailored service providing detailed individualised attention	FACTOR 5 Trustworthy service	Reliable and consistent service
FACTOR 6 Integrated care	Ability and readiness to work with other health professionals in an open -minded manner		
FACTOR 7 Tangibles	Physical resources, facilities, equipment and appearance of professionals		
FACTOR 8 Accessibility	Geographical proximity of resources and service; accessibility of professionals and ease of contact		
FACTOR 9 Outcome driven service	Dependable and accurate service which is a result focused provision		

The dimension of *empathy* is a common feature from the interview and survey results; this element was clear in all factor solutions and was represented throughout the thematic analysis. Factor 2 '*communication*' (qualitative) has similarities with Factor 4 '*confident relationships*' (quantitative results as the latter is a development of the communication dimension. *Professional credibility* (Factor 2 of quantitative results) has resonance with the qualities which comprise the qualitative and emergent dimension of *trustworthiness* (Factor 1). *Bespoke* was a strong factor within the semi-structured interviews but this dimension does not feature as overtly within the wider survey explicitly. It appears that, overall, the qualitative factors are more openly described, as interviewees have an opportunity to discuss topics which are important to them in greater depth and equally the interviewer can respond to answers given within the interview and reflect on the results in-between each interview.

4.3.5 Conclusion

4.3.5.1. Dimensions of Animal Health Service

The results from the qualitative and quantitative investigation, and the review of literature have been combined to enable the development of six dimension of service quality for the animal health sector. These dimensions are described as: *empathy, bespoke outcome, professional integrity, value for money, confident relationships and access* and are defined in Table 4.50.

All dimensions form important components of the conceptual framework for animal health service presented in Chapter 5 Discussion.

Table 4.50 Six dimensions of service quality for animal health

SIX DIMENSIONS OF SERVICE QUALITY FOR ANIMAL HEALTH	
1. Empathy	Compassion and thoughtfulness. Caring service with due regard for clients' needs and animal health and welfare. Preparedness to undertake two-way open communication with respect and rapport
2. Bespoke outcome	Custom tailored dependable service which is accurate and a results focused provision.
3. Professional integrity	Trust, honesty and morality of service delivery. Strong themes of professionalism throughout.
4. Value for money	Willingness to provide comprehensive service within a justifiable pricing strategy. Price paid reflects the service given.
5. Confident relationships	Professionals' connection with the client; connection with other professionals and pro-active responsiveness to the wider knowledge, skills and expertise of others.
6. Access	Geographical proximity of up to date resources and facilities; accessibility of professionals and ease of contact

4.3.5.2 Comparison of Animal Health Service Dimensions and the SERVQUAL RATER Model

The six dimensions of service quality for the animal health profession are further compared to the five RATER SERVQUAL dimensions presented in Table 4.51. Comparable items are placed next to one another, where similarities exist, the text is italicised.

Table 4.51 Comparison of animal health dimensions and SERVQUAL RATER dimensions

FIVE SERVQUAL RATER DIMENSIONS		SIX SERVICE QUALITY FOR ANIMAL HEALTH DIMENSIONS	
1. Empathy	<i>Caring, individualised attention the firm provides its customers</i>	1. Empathy	<i>Compassion and caring service, two-way open communication with respect and rapport</i>
2. Reliability	Ability to perform the promised service dependably and accurately	2. Bespoke outcome service	Custom tailored dependable. Accurate and results focused
3. Assurance	<i>Knowledge and courtesy of employees and their ability to inspire trust and confidence</i>	3. Professional Integrity	<i>Trust, honesty and morality of service. Professionalism</i>
4. Responsiveness	Willingness to help customers and provide prompt service	4. Value for money	Price paid reflects the service given
5. Tangibles	<i>Physical facilities, equipment, and appearance of personnel</i>	5. Confident relationships	Professionals' connection with the client; connection with other professionals
		6. Access	<i>Accessibility of professionals, facilities and resources</i>

4.3.6 Summary of Phase Three Results

This section of the results has presented the findings from relationship testing and EFA. Determination of levels of service satisfaction determined that the companion animal clients were most content with the service they receive and the equine clients least content. Interestingly similarities between companion animal and farm animal clients were apparent, which was not expected. Factors of value and price were shared features between client groups but there was clear differentiation between client group perception and experience of service was evident. Between client group comparisons on measures of service quality has not previously been reported in the literature.

Variation between the professional stakeholders' responses was a notable feature, signifying distinct differences between animal health practitioners and how they provide and perceive service.

Latent structures within the animal health sector were established through EFA of the survey data and features akin to findings from other research stages were seen. Strong emergent themes of value co-creation were patent as were differentiation and similarities between stakeholders' perception of service quality. Triangulation of the findings produced a non-standardised 6-factor explanation of service quality specific to the animal health sector, which constitutes a novel and original contribution to the extant literature.

4.3.7 Summary of All Results

The three phases of study generated a considerable quantity of results. These are summarised at the end of each study phase but they have been consolidated and are presented below in Figure 4.30.

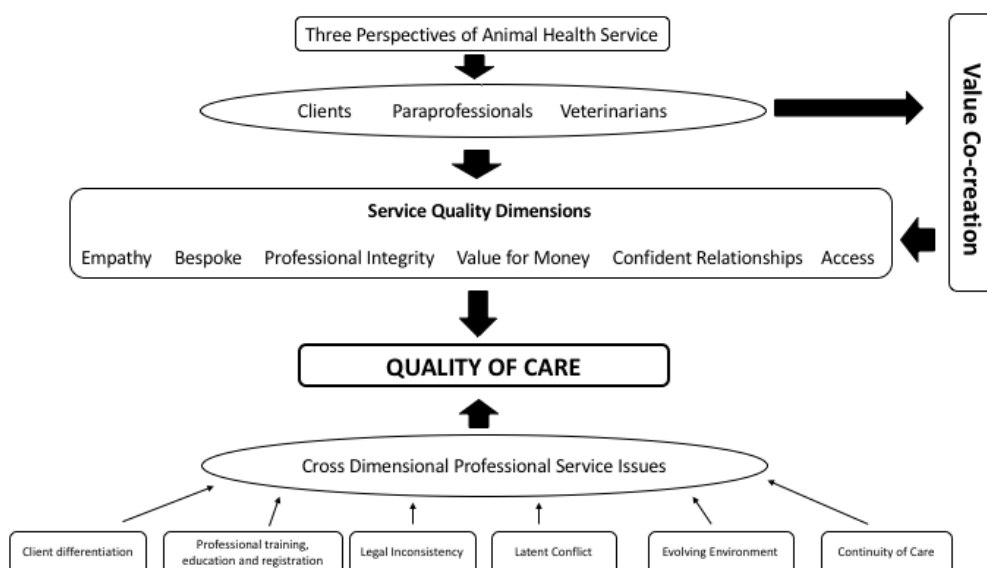


Figure 4.30 Summary of results from all three study phases

Within the study, sector stakeholder perspective was used to identify the six dimensions of service quality which are pertinent to animal health provision. The dimensions were emergent from the qualitative and quantitative phases of the study, both of which were informed by the initial exploratory mapping exercise completed in phase one. An understanding of the cross-dimensional professional service issues and their impact on the quality of care received was determined by all phases of the research, but particular insight was gained through the research processes undertaken in the sector mapping. The sector specific dimensions have some resonance with the extant service quality literature, but equally the dimensions are unique to animal health service provision. Similarities with human health service provision are apparent as the results demonstrate the importance of value co-creation to the sector. This finding mirrors human health care service (McClland and Vogus, 2016), and there are also connections between value co-creation and the six dimensions. Thus, the relational nature of service provision in the animal health sector is established, and therefore the active and endogenous role of the client within the service encounter is confirmed (Grönroos, 2008; Lusch and Vargo, 2011).

Chapter 5 Discussion

Determinants of service quality in the UK animal health sector have been presented, following a mixed methods investigation including grounded analysis qualitative inquiry, thematic analysis and exploratory factor analysis of survey data. In this chapter, each of the five study objectives are discussed in turn; key findings from the study are evaluated and contextualised and similarities with other health professions are established. The study findings confirm the need for service quality to be central to animal health provision and techniques for achievement are here presented. The dynamic framework, unique and distinct to the UK animal health is presented as a novel finding and therefore as a contribution to knowledge but equally as a workable model for the sector. Industry specific recommendations to engage animal health professions in service quality are defined. The discussion addresses the research objectives as outlined in Table 5.1 and all five objectives contribute to the wider research aim through development of the *Framework for Animal Health Service Provision* presented in Figure 5.6.

Table 5.1 Research objectives summary

Research Objectives	Analysis technique
1. Map the stakeholder structure of the animal health sector through the identification of professional groups in the companion animal, equine and livestock sectors	Exploratory mapping using secondary data sources for a wide range of animal health sectors, professional and legislative bodies Development of novel sector database
2. Explore and compare stakeholder perceptions of service delivery, expectations and fulfilment	Qualitative semi-structured interviews NVivo©/ GA and thematic analysis Quantitative surveying of stakeholders Chi-squared relationship testing
3. Assess the value of a multidisciplinary team approach in the animal health sector from the perspective of all industry stakeholders.	Semi-structured interviews NVivo©/ GA and thematic analysis Quantitative surveying of stakeholders Chi-squared relationship testing
4. Conceptualisation of value co-creation and co-production within the animal health sector through the analysis of sector stakeholder service expectations and experience.	Qualitative semi-structured interviews NVivo©/ GA and thematic analysis Quantitative surveying of stakeholders Exploratory factor analysis (SPSS)
5. Identify, develop and define the dimensions of service quality in the UK animal health sector.	Qualitative semi-structured interviews NVivo©/ GA and thematic analysis Quantitative surveying of stakeholders Exploratory factor analysis (SPSS)
Research Aim: To propose a framework to understand service quality in the animal health sector	

5.1 Industry mapping

This section will consider and discuss research objective one.

Map the stakeholder structure of the animal health sector through the identification of professional groups in the companion animal, equine and livestock sectors

Mapping of the UK animal health sector for each of the selected subdivisions (companion animal, equine and farm animal) was a considerable undertaking and highlighted five key problems:

1. Legal inconsistency for professional working in the sector.
2. Variable training paths within professional groups providing the same service.
3. Differences in the requirements for professional registers both within the same professional groups and across professional groups
4. Latent conflict between professionals, including naming and categorisation of paraprofessionals.
5. Lack of client awareness of professionals working parameters including, practice, education and legal constraints.

These areas contribute to over-arching uncertainty for some clients and professionals working within the health industry. Legal inconsistencies were identified in a range of areas (as discussed in section 4.1.3) but particularly with regards to the use and interpretation of the Veterinary Surgeon's Act where the EOs require updating to better reflect government de-regulation policy and EU regulation (DEFRA, 2010a; BEVA, 2015c). Unfortunately, the financial capacity to attend to the VSA is currently not present (RCVS, 2009; DEFRA, 2012a).

The existing ambiguous situation with the legal working arrangements of musculoskeletal practitioners, reproductive technologists and equine dental technicians remains unresolved, as a clear professional register with pre-identified training and education requirements does not exist. Attempts to find some resolution for these issues have been made via the RMPR project (DEFRA, 2012a) but have yet to come to any clear conclusions.

Findings from the SQP group were of interest as these practitioners form the only group of paraprofessionals whose training is specifically intended to provide the legal capacity to dispense veterinary medicines (POM-VPS) so their role is a unique one. Veterinary pharmacist training is designed to facilitate their existing legal entitlements of Pharmacists regarding the supply of VMPs. However, discrepancies between working patterns for SQPs and veterinary pharmacists alike within the MDT persists, as legal grey areas concerning what constitutes a veterinary diagnosis for certain areas remains imprecise. Legislative uncertainties and the lack of clearly defined working parameters emphasise

the importance of collaborative inter-disciplinary to maintaining and enhancing service quality.

Defining the role of the paraprofessional is equally challenging and contentious. The use of the term paraprofessional within the animal health sector has arisen from the veterinary division, to describe individuals whose work assists professionals. However, many paraprofessionals are professionals within their own areas of expertise and hold professional licensure. This is best explained using the example of veterinary pharmacists. Pharmacists are a professional group and titles pertaining to the profession of pharmacy are legally protected. However, when Pharmacists work as veterinary pharmacists they become amalgamated with other allied animal health practitioners and are termed paraprofessionals. This is arguably a contradiction and a source of tension. Inconsistencies in naming and categorisation of professionals is not only an area of contention but presents confusion to the client, especially if clients make comparisons between human practitioners and their equivalent animal health professionals.

During completion of the study interviews it was quickly deemed necessary to provide the client interviewees with a list of professionals who are categorised as paraprofessionals prior to the interview, as many were confused by the term. This was also necessary within the wider survey, as clients referred to the list of paraprofessionals provided before questionnaire completion. Client confusion regarding the terminology is a noteworthy result and raises questions on the categorisation of professionals into the broader group of paraprofessionals and wider discussions regarding the defining of professional categories and who should make these decisions.

5.2 Perception of Service

This section will consider and discuss research objective two

Explore and compare stakeholder perceptions of service delivery, expectations and fulfilment

Research objective two was investigated using qualitative interviewing and quantitative surveying of all stakeholders. Results from the qualitative research phase are embedded within the questionnaire items of the survey. Chi -squared relationship testing was utilised to identify differences between respondents and EFA dimension determination. Nine dimensions of service quality were emergent from the qualitative research and from the stakeholder surveying and subsequent EFA, five dimensions. The resultant dimensions, in combination with the literature and industry mapping exercise were integrated to form the definitive six factors of animal health service quality (section 4.3.5) Throughout the data analysis process, it was apparent that there were both similarities and differences

between the stakeholder groups and their expectations and perceptions of service (Figure 5.1 and Figure 5.2).

Client perceptions of paraprofessional and veterinary service	
Companion Animal Client	Equine Client
<p>Paraprofessional service Most satisfied group (68% extremely satisfied) Middle group with (60% extremely likely to recommend)</p> <p>Veterinary service Most satisfied (53% extremely satisfied) Most likely to recommend (61% extremely likely to recommend) No difference on factors of team working and animal welfare</p>	<p>Paraprofessional service Middle group for satisfaction (62% extremely satisfied) Most likely to recommend (77% extremely likely) Paraprofessional communication better than vet Paraprofessional more compassionate than vet Relationship with paraprofessional better than vet</p> <p>Veterinary service Least satisfied group (28% extremely satisfied) Group least likely to recommend (37% extremely likely) Vet communication less good than paraprofessional</p>
Farm Animal Client	All Clients
<p>Paraprofessional service Least satisfied (29% extremely satisfied) Least likely to recommend (33% extremely likely) Less positive on factors of animal welfare</p> <p>Veterinary service Middle satisfied group (41% extremely satisfied) Middle group (46% extremely likely to recommend) Consider there to be more unexpected costs from the vet</p>	<p>Paraprofessional service High levels of satisfaction on service quality Most clients extremely likely or likely to recommend the paraprofessional Most favoured for factors of value for money</p> <p>Veterinary service Lower satisfaction compared to paraprofessional service</p> <p>Paraprofessional and veterinary service No between group difference on factors of team work No between group difference on factors of animal welfare</p>

Figure 5.1 Client perception of paraprofessional and veterinary service

Stakeholder Perception of Service Professionals Versus Clients	
Professionals	Client
Vet believes there are greater expectations of animal handling skills	Equine client perceives animal handling to be performed better by the paraprofessional
Paraprofessional more able to provide continuity of care	Equine client reports better continuity of care with paraprofessional service
Both less certain about time for compassion but paraprofessionals more positive	Equine client reports the paraprofessional to have more time for compassion
On factors of communication and relationships with clients, paraprofessionals were more positive	Equine clients report the paraprofessional to be better at communicating and to have a better relationship with the paraprofessional
Vets were more confident that price reflects service given	All clients scored paraprofessional service to better reflected by the price paid
Paraprofessionals greater confidence in pricing strategies	All clients scored paraprofessional service to be consistent in pricing
Both groups agreed that rapport with clients is important	All groups agreed that rapport with professionals is important
Overall service satisfaction Paraprofessionals rated their provision of service slightly higher than veterinarians	Overall service satisfaction Clients rated paraprofessional service higher than veterinarian service

Figure 5.2 Stakeholder perception of service

The existing similarities and differences between the three client sub-groups perceptions of paraprofessional and veterinary service are shown in Figure 5.1. Figure 5.2, compares the professionals' perception of the service provided and the client perception. As can be seen the responses to service satisfaction and recommendation of the professional were answered differently by the client groups; confirming the clients to have different views on the service provided by vets and paraprofessionals. Overall, clients considered paraprofessional service to more closely match the service expectations in all factors where a significant difference was identified. However, dimensionality structures demonstrate certain consistency between all three stakeholders (Figure 5.3) suggesting strong allegiance between groups in service provision end goals.

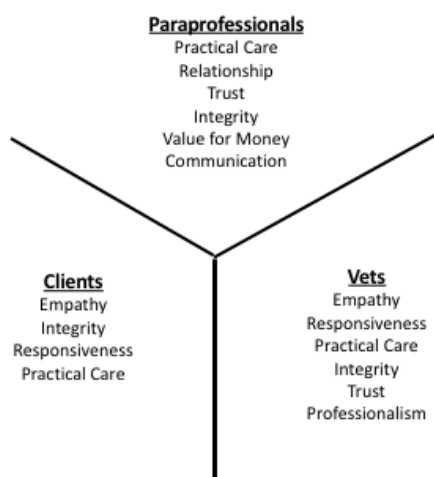


Figure 5.3 Comparative dimensionality for sector stakeholders

The equine client was quite different to the other groups and surprisingly the farm animal and companion animal client were more closely aligned than would be anticipated given the differences between the client characteristics. From the perspective of the equine client, it seems that paraprofessional service meets their expectations more than the vet. However, the results from the vet group suggests they are less aware of this gap between the equine clients' perception of service received and what the veterinary service is providing. The companion animal group appears to have the highest level of satisfaction for service received from both professional groups, with only factors of price and value for money reported less favorably. As would be expected, given the business focus of their involvement, farm animal clients were more interested financial aspects of service,

Both professional groups agreed on the significance of animal welfare, rapport development and the importance of having up-to-date knowledge and training and the clients could not identify any differences between the stakeholders' provision on these factors of service. Thus, confirming the importance of these dimensions to service quality and supporting that industry is currently meeting these expectations.

A key finding was that the client groups are confirmed as different through their perceptions and expectations of service and will expect to be treated differently. It is therefore important for the professional stakeholders to reflect on this point when considering how service is provided. The study confirms that provision of generalised service to the whole client base is not a viable option as all clients are different. This further supports a theory of a non-standardised service quality model which is valuable to the wider service sector.

Both professional groups were less sure of the time which they have available to treat the client with the compassion needed and therefore are less able to respond to the differing needs of different clients. In some areas of the veterinary sector, there is clear recognition and acceptance of client difference and service is articulated to match the differentiation. One example is the introduction of the Cat-Friendly Clinic (CFC) accreditation scheme, introduced by the International Society of Feline Medicine (International Society of Feline Medicine, 2015). The CFC is now widely adopted by veterinary practices in the UK and is seen to be a rapidly developing and successful scheme (Royal Veterinary College, 2016; Vets for Pets, 2016). Adoption is not reflected through all veterinary practice and only represents consideration for one client sub-group. However, the scheme is consistent with the finding that clients are different and that they do want a different service. In other areas, the capacity to provide specialist service is declining rather than becoming more enhanced. This is the case for the livestock sector as there is a continual decreasing numbers of farm animal veterinarians (RCVS, 2010; Woods, 2011; RCVS, 2014c) and the sector is unlikely to keep pace with client requirements. In contrast, most paraprofessionals do train as species specialists, and are, therefore, often already fulfilling this client service expectation.

5.3 Interdisciplinary Working

This section will consider and discuss research objective three

Assess the value of a multidisciplinary team approach in the animal health sector from the perspective of all industry stakeholders.

Research objective three was investigated via thematic analysis of qualitative semi-structured interviews data and subsequent quantitative surveying of all stakeholders. Chi-squared relationship testing was utilised to identify differences between respondents on

factors of inter-disciplinary care. The starting point for this factor was the available veterinary health provision literature which strongly emphasizes the importance of interdisciplinary working for the sector but was critical of industry uptake (Lowe, 2009; VDC, 2012). Comparable human health services understand the benefits of team working to client service provision (Martin and Finn, 2011) but also do recognise the inter-professional challenges and barriers it presents (Dalley and Sim, 2001). It was, therefore, valuable to assess the current perception of multidisciplinary team working, to appraise the stakeholder perspectives and to ascertain if the challenges are the same as those currently experienced by equivalent human health professionals.

Two specific questions were directed to the stakeholders regarding factors of team working within animal health service. There was no significant difference between the paraprofessional and vets' perception of team working on the two measures of "*I actively seek to work with others*" (question 15) and "*All animal health professionals work together in a team*" (question 18). These questions were rated lower than many of the other questions, suggesting a lack of confidence in the professionals' ability to work as a team. The qualitative interviews provided more opportunity for reflection on team working as the findings demonstrated all stakeholders to be supportive of MDTs but all were less sure of how well used it is at the current time. Clients were found to highly value interdisciplinary working but the group also suggested that the veterinarians may be less inclined to actively seek to work as a team. Most noteworthy was the apparent conflict between the farm animal client and vet upon who should lead the MDT. Veterinary literature refers to the veterinary-led team (Reader, 2012; VDC, 2012, Williams and Jordan, 2015) as do veterinary businesses (XLVets, 2016) which was supported by the qualitative investigation. The client, however, considered themselves to be central and to lead the team thus presenting a solution and an expectation yet to be contemplated by the veterinary sector. This finding supports work by Coe *et al.*, (2008) which identifies an emergent phenomenon of clients wishing to work in a partnership-like way with the veterinarian. The focus of the relationship would be clear lines of communication between the professional and client, therefore, enabling the client to be able to make informed decisions and for the health professionals to be respectful of such decisions.

Results from the survey data indicated that overall the clients' consensus was that there is no difference between the vets and paraprofessionals ability to work within a team; which concurs with the viewpoint of the professionals. There was no indication from the stakeholders to suggest that MDT working is not currently well-utilised and that there is a gap between the wish to work as teams and the ability to do so. However, the findings from this study equally do not support a comprehensive and wide scale use of inter-disciplinary working in the UK animal health sector (overall mean ratings were low relation

to questions of integrated care), suggesting that the sector still has some work to do in this area since the reports from Lowe (2009) and the VDC (2012). But, it is accepted that this area does require further investigation to understand more about MDT working within the industry. Conversely, team work is deeply embedded into human health provision and consideration is now being given to the importance of the self-user (patient) as a collaborator within their own care; which is further discussed in section 5.4

5.4 Conceptualisation of Value Co-creation

This section will consider and discuss research objective four.

Conceptualisation of value co-creation and co-production within the animal health sector through the analysis of sector stakeholder service expectations and experience

Research objective four was investigated via thematic analysis of qualitative semi-structured interview data and subsequent quantitative surveying of all stakeholders. Qualitative interviews produced data rich results which are of significant value to the understanding and relevance of value co-creation in this sector. Subsequently EFA was then used to define dimensions of service quality and the emergent results defined elements of value co-creation conceptualised for the animal health sector.

Within service quality provision, the notion of S-D logic assumes all service to be inherently relational in nature (Lusch and Vargo, 2011) as the client is endogenous to and is an active participant in the service provided (Vargo and Lusch, 2008; Grönroos, 2008). Bharti *et al.*, (2015), produced a 5-pillar representation of value co-creation to define construct categories. Of these categories, concepts of trust, bonds and relationships were evident within the results of this study, which are similar to findings from other animal health service studies (Coe *et al.*, 2008; Shaw *et al.*, 2008; Shaw *et al.*, 2012; Grand *et al.*, 2013). Of the nine emergent themes from the qualitative results, factors of *trustworthiness, communication* and *empathy* have clear connections with concepts of value co-creation. These results were confirmed within the quantitative surveying which identified dimensions of *empathy, integrity, confident relationships* and *trustworthy service*. Factor one, *empathy* was a strong and reiterated theme and included concepts of relationship; compassion; highly prioritised care through adherence to animal welfare and that financial trust is achieved through value for money within service. Communication was a recurrent theme and clients stressed the wish to be listened to and further support the role of the client within the MDT. The results re-confirm the findings of Coe *et al.*, (2008) and reflect the recognition that listening encouraged feelings of respect, care and interest in the clients' situation thus providing empathetic service.

On occasions, client articulation of the dimensions of value co-creation differed to the professionals' interpretation; when discussing *trust*, clients were keen to emphasise the

importance of trust but also to stress the *reciprocal* nature of trust between client and professional. The professional must recognise the role of the client in the service process and, therefore, trust the clients' judgement. Development of the concept of *self-care* was raised by the equine and farm animal clients and the wish to be involved in the service process. This idea of *involvement* was common to all client groups as they did not wish the value of their own personal experience to be ignored or dismissed or to feel that they were not active in the health process. Reciprocity of engagement and involvement was an interesting feature and novel to the client; to the farm animal client this notion was so strongly developed that they wished to be '*challenged by the professional*'. Thus, active participation in the service encounter is being sought by the client a concept suggested by only a limited number of previous studies (Coe *et al.*, 2008; Grand *et al.*, 2013). A practical framework to determine levels of client involvement in animal health provision is proposed in Section 5.6.2 and is described as an Involvement framework (Table 5.2). Every service encounter contributes to a relationship (Grönroos, 2000) and so value co-creation may build loyalty (Leppiman and Same, 2011) and improve the longevity of relationships (Lusch and Vargo, 2006). Recognising these benefits, the human health sector in the UK has adopted concepts of value co-creation into the daily provision of care, extending the role of MDT to involve active collaboration with the patient (Martin and Finn, 2011). This is not without its challenges however, as effective team working requires the development of strong foundations of trust. Trust can be defined as "...firm belief in the reliability, truth, or ability of someone" (Oxford English Dictionary, 2017), thus requiring the participants in the health service encounter to behave reliably and predictably (Tomlinson, 2005) which may be difficult to engender between professionals and untrained clients. The clients lack the skill base which defines the professional and for them to be part of the MDT is a complex and challenging ambition (Martin and Finn, 2011), which has thought-provoking implications should this ethos be formally extended into animal health.

Interconnected to the notion of the service user to be an integral member of the health team is the potential for the patient to have a "lay expertise" (Martin, 2008); an identified factor in animal health factor has shown rapid development with the advent of social media and self-diagnosis of health conditions using search engines such as Google. A survey of small animal vets in 2014 (BVA, 2014) reported that 98% of the 1208 respondents believed that clients' behaviour is influenced by online material but only 6% of the small animal vets determined this client research to be helpful. Within the veterinary literature, these client behaviours have been colloquially termed 'Dr Google', with reported client use of 'Dr Google' by pet owners in Canada increasing from 39% in 2011 to 48% in 2014 (Gauvin, 2015). Work in the UK (Belshaw *et al.*, 2016) confirms widespread use of online searches for questions regarding animal health, but also finds that there is little

understanding of how clients do this or why they do it. The study also reiterates that vets believe the use of the internet in this manner to be potentially hazardous to animal health and welfare. Within the interview analysis only one of the professional respondents (paraprofessional) referred to how social media and online access to information could be positively harnessed to build client relationships. It is unlikely that social media or search engine usage by clients will diminish, suggesting that active reflection on the presence of social media within the client- professional service encounter to be a beneficial move rather than a straightforward dismissal of the practise.

Factors of continuity of care were raised during the qualitative phase of this study and so were incorporated within the broader survey. Clients could determine no significant difference between the different groups of professionals and their respective ability to provide continuity of care, however, the paraprofessionals felt that they were more able to provide continuity of care as compared to the veterinarians. Furthermore, the paraprofessionals appeared to be more confident in their ability to form relationships with their clients when compared to the veterinarians, thus, endorsing the link between repeated service encounters and relationship formation. Research within the human health sector has emphasised the importance of continuity of care in the development of relationships with patients and the central role of continuity in treatment compliance and enhanced recovery. Work by Hjortdahl and Laerum (1992) examined the influence of continuity of care on patient satisfaction, with 3918 Norwegian primary care patients, and determined that patients who identified a significant relationship with a personal doctor also demonstrated a seven-fold increase in service satisfaction. Therefore, where sustained continuity of care is present, communication between the patient and physician is enhanced and service satisfaction improved. With chronically ill patients' treatment outcome has been shown to be improved as demonstrated through the systematic article review completed by Cabana and Jee (2004).

Challenges associated with client loyalty and compliance have been anecdotally raised within the animal health sector and are well emphasised within human medicine as compliance arises through patient: physician interaction (DiMatteo and DiNicola, 1982). The determinants of compliance for animal health are not established but extrapolation from the existing human health knowledge is the best extension to make given the lack of specific literature.

Summary

Elements of value co-creation are developed within human health service (McCelland and Vogus, 2016) and are proposed and supported through the results of this study to be valuable to the animal health sector. The emergent dimensions are strong advocates for the wider adoption of value co-creation as a useful marketing tool for the animal health

sector. Additional to the recognised dimensions of value co-creation is the notion of sustained continuity of care which seems to serve as a proxy for relationship formation and, therefore, can aid the development of empathetic care from the practitioner. Client involvement in the health care process is evident through the stated wish for *self-care* of their animals and strong desire for there to be reciprocity of communication and through the practitioner: client relationship. Involvement is central to the animal health clients' experience and service satisfaction.

5.5 Dimensions of Service Quality

This section will consider and discuss research objective five

Identify, develop and define the dimensions of service quality in the UK animal health sector.

This objective was investigated using a mixed methods technique. Qualitative semi-structured interviews were analysed using NVivo© software using GA, CIT and thematic analysis, and the results informed the quantitative survey. Surveying of all stakeholders generated data which were evaluated by EFA. The emergent results defined nine qualitative-derived dimensions, five quantitative-derived dimensions which are consolidated and presented as six overall dimensions of service quality for the animal health sector. The specific industry context affects how the dimensions manifest and the dimensions of service quality in the animal health sector are therefore different to other service sectors. The dimensions are unique to this study, distinct to the sector and therefore provide a better way of understanding this market and what the clients within this market want from the service provided. Application of the dimensions is articulated through the conceptual framework presented in Figure 5.6.

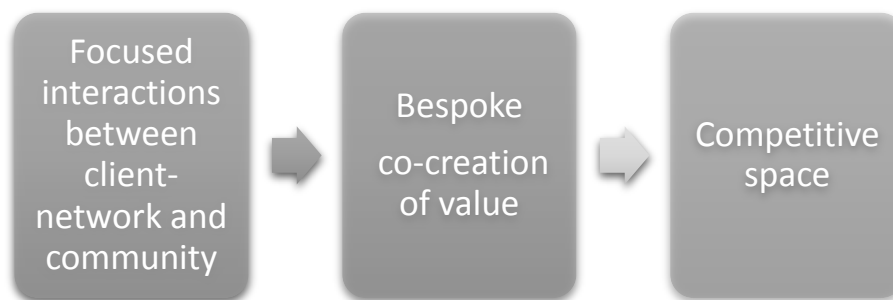
Animal health service dimensions were found to be different to the dimensions defined in the SERVQUAL RATER model (Parasuraman *et al.*, 1988). The discrepancy is consistent with other studies which applied SERVQUAL to specific service contexts (Carman, 2000; Grönroos, 2000; Harrison-Walker, 2008; Ladhari, 2009) including human health (Wisniewski and Wisniewski, 2005) and found dimension instability. Therefore, suggesting the requirement for a sector distinctive approach to service quality as opposed to a generalisable model. Together the research phases within this study have enabled the production of a conceptual model, providing insight into the subject area and into the distinctive animal health client and, therefore, enabling practical industry recommendations. Work by Loomans (2008) constructed a service provision framework for the animal health industry but the scope was restricted to the equine veterinary sector only. The model presented herewith encompasses all stakeholder groups and a range of clients who keep or own domesticated animals in the UK (Figure 5.6).

5.6 Industry Recommendations

This section will use the findings of the study to develop a number of practical industry recommendations and will discuss the contribution to knowledge achieved. The interpretation of the research will give business informed insight into client wants and needs, techniques to enhance client loyalty and treatment compliance and so improve business competitiveness in a rapidly evolving market environment. Additionally, the conceptual framework for the animal health sector will be defined and explained.

5.6.1 Creation of a Competitive Space

A key benefit to the sector through the successful adoption of co-creation of value will be the development of a unique competitive space for specific animal health business. This study has found that co-creation of value fulfils important criteria for the animal health sector including enhanced business outcomes, improved client loyalty and treatment compliance and so treatment outcome. Effective adoption of value co-creation is therefore proposed to be a tool to facilitate the development of a distinctive competitive space for business (Figure 5.4).



(Adapted from: Prahalad and Ramaswamy, 2004)

Figure 5.4 Creation of a competitive space

Successful development of the business competitive space in the animal health sector requires health professionals to practise two-way communication with clients and encompass concepts of education and knowledge transfer which actively involve the client. For realisation of personal (client) co-creation of value this exchange must take place within day-to-day business and become a company ethos rather than single points of education via a monthly or annual newsletter. Active communication completed in this manner will enhance value co-creation. However, to gain the benefits conferred through adoption of value co-creation the animal health sector will need to consciously and actively engage with the client. To be effective in this aim the profession will need to ask questions unique to their business offering. These questions are outlined below:

1. How does the client actively participate in the co-creation of value?
2. How does the quality of the interactions influence the perception of clients overall?
Is the quality measured in time and/ or emotional connection and how much influence does continuity of care or sustained continuity of care have?

3. What is the basis of client value? How much influence is derived from the total network of service experience?
4. Is the network able to accommodate different situations associated with different clients/ different types of animals? Therefore, is each experience unique to the client and contextualised and what is the effect of individuals?

All the above questions lead to the final question,

Will different clients react differently even though a situation is similar and how may this be pre-empted? (Adapted from Prahalad and Ramaswamy, 2004)

Education of the client presents a significant opportunity for professionals to develop themes of value co-creation through communication and equally to facilitate business development (Gummesson, 1998). Clients engaged within this study expressed interest in being educated on the health process being undertaken. S-D logic supports the usefulness of customer engagement to business success (Lusch *et al.*, 2007) as do theories of value co-creation (Grönroos, 2007) thus endorsing this to be a valuable proposition for the sector.

5.6.2 Portfolio of Health Service

Provision of animal health service is more complex than ever before as clients can readily access a wide range of expertise from contact with other clients and from other health professionals. This has a profound impact on requirements of clients and in-turn client demands. The portfolio of the client requirements and how choices are made are based on a range of influencing factors as shown in Figure 5.5.

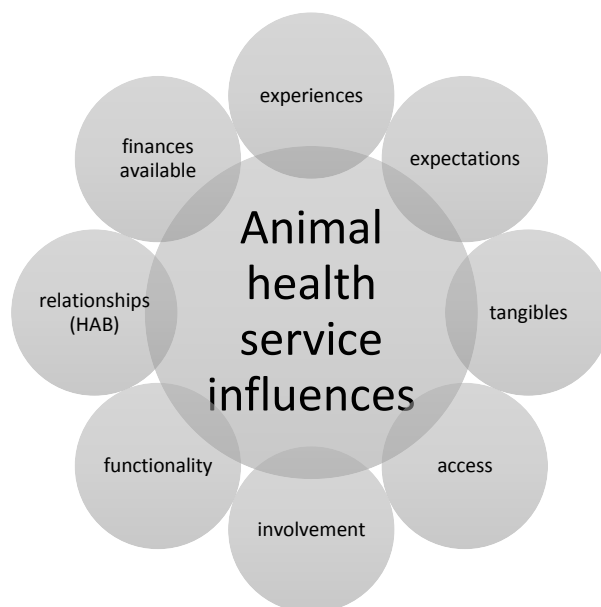


Figure 5.5 Portfolio of influencing factors on animal health choice

These elements will influence the decision-making process of clients when faced with animal health options and correspondingly affect the provision of service quality.

Expectations: Service relationships may evolve over long periods of time and will be comprised of a series of service encounters. The dynamic nature of the service encounter will affect how service expectations also develop with time (Grönroos, 2000) presenting an additional temporal challenge to the management of client expectations. Precisely defined service expectations will enhance service quality (Ojasalo, 1992) but individual client expectations, particularly clients holding unrealistic expectations, can further complicate the situation. Results of this study indicated that cost of service was the least well managed expectation as perceived by the client group when discussing veterinary service and more specifically an understanding of how price reflected on the service given. Pricing and value are expectations which could be managed effectively and it was suggested by the VN interviewee, that often clients were poorly informed about costings and bills. Contributing factors to the confusion appears to arise from the client parallels made with the NHS and medical treatment being free at the point of service and from the historical occurrence of the veterinary to charge for products rather than for their services and time. Other expectations are more difficult to manage. Personal experience and the experiences of other actors all encroach on client expectation and the latter is now considerably more accessible with shared animal focused social media forums. Comments from the veterinarians and paraprofessionals interviewed in this study referred to the client expectation of the professional as '*the fixer*'. Defining the professional as someone who can fix the animal is by Ojasalo's framework (1992) either a *fuzzy expectation* (the problem is to be solved by the professional but the client does not understand how) or an *explicit expectation* (the client has very clear ideas about what should be done but they are entirely unrealistic). These create considerable challenges for the professional and amelioration may only be achieved through clear and active communication with clients regarding what is an accurate and realistic outcome of the treatment.

Experiences: Prior experience and the experience of others has a strong influence upon the client expectation of service quality. The value of comprehending client drives and their interactions with all stakeholders of the service experience (including other clients, employees other than the direct health professionals) should not be overlooked. Understanding the interactions can enable some control to be gained and, therefore, to be able to manage the client experience (Walter *et al.*, 2010). This is not a straightforward process as each experience is unique and evolving but practising of value co-creation facets of continued dialogue and active communication (Grönroos, 2006) are proposed to the sector as valuable tools to be used.

Tangibles: This factor encompasses the facilities and resources which are available to ensure that the professional can provide the best service and therefore secure the best treatment outcome.

Access: Geographical location was an important factor for the clients of this study but equally accessibility of professionals by phone and email were also considered to be valuable. There was no notable dissatisfaction from the clients on how this was provided by both professional groups but it remains an essential component in this portfolio. Accessibility via social media tools is an important component of this category.

Involvement, functionality and relationships (HAB): These three influences are considered together as they often do not act as discrete criteria and there may be overlap between two or all the categories, yet each is important in its own way. From the results of this study and the review of the service quality literature an *involvement framework for animal health* (Table 5.2) has been devised and is proposed as an instrument for professionals to understand the relationship between animal value and involvement and how this can affect client behaviour. Involvement can be considered as the level of importance an animal has and it could fall into one (or more than one) of the defined three categories. These definitions do not determine the actual level of involvement that the client wishes to invest into the service encounter, but understanding of how the client values the animal is essential to be able to tailor service provision accordingly.

Financial value refers to the actual cost of the animal should replacement be required. This would most frequently apply to livestock but equally may be relevant to high value competition/ racing horses or show dogs. *Functional value* which may be related to the financial value but also may be for a sports or competition animal which has undertaken years of training to attain a high level of performance hence the value is in both the financial worth and the time taken to achieve a specified skill set. Assistance dogs could be categorised by this definition but equally these animals are valued by the Human Animal Bond (HAB).

Table 5.2 Involvement framework for animal health service

Involvement value of the animal	Definition	Example
Financial value	Replacement cost	High yielding dairy cow
Functional value	Sports/ competition/ working animals which has undergone significant specialised training	Sports / Racehorse Gun / Military/Medical dog
Relationship value	Determined by the strength of the unique human-animal bond	Family pet

Within the Involvement Framework the *Relationship value* is determined by the strength of the Human-Animal Bond (HAB) which is, like each service encounter, unique to each

client. HAB was first introduced to the veterinary sector in 1983 (Hines, 2003) and is now a widely accepted concept, describing the relationship between humans and companion animals. Anthropomorphism of animals is so strongly developed that pets are considered to be part of the family (Brown and Silverman, 1999) and are often given human names (Beaver, 2009). Perceived as a loved family member, pets are often treated according to this status, therefore affecting health expectations and influencing health decisions (Timmins, 2008). The need for empathetic care in human medicine is well documented (Neumann *et al.*, 2009) and as a member of the family, clients will expect pets to be treated in the same way (Timmins, 2008) even though the animal health professional may not be equipped so to deliver.

Finances available: Findings from this study have confirmed the importance of clear pricing strategies and that the service received provides value for money. These results reflect the perspective of all stakeholders, but it is the view of clients which will have the most significant impact on business. Clients are not necessarily looking for cheap service but that the service provides value and this can be reflected by both the treatment outcome and how the service is given, with value co-creation an important element of service delivery. This element is also influenced by the type of animal for which the treatment is required and is linked to the Involvement framework (Table 5.2). Furthermore, animal health insurance can have a strong effect on health decisions. Most frequently it is dogs, cats and horses who are insured for veterinary and paraprofessional care. In the UK in 2015, 911,000 pet insurance claims were made at a total cost of £657million, representing a 9% increase on 2014 figures from the Association of British Insurers (ABI), (2016). Part of the increase in claims could be due to the exposure of the benefits of pet insurance via high profile household companies such as Tesco and Sainsbury's. Interestingly the veterinary sector suggest that insurance provides a way to inform and educate already bonded and loyal clients; which both promotes allegiance and encourages new clients to the practice, whilst enabling the best and most current treatment practice to be used (Robinson, 2017). It is not possible to comment upon the specific impact of insurance upon paraprofessional business as these records are not maintained.

5.6.3 Conceptual Framework

The over-arching research study aim was to:

To propose a framework to understand service quality in the animal health sector.

The presented conceptual framework (Figure 5.6) is an extension of the model shown in section 2.8 (Figure 2.7) and is further contextualised to reflect the literature, study results and findings, to fully incorporate and address the research objectives. Some factors have remained consistent with the earlier presented framework, as they were connected to

relevant literature and are therefore a repetitious discussion in these areas has been deliberately avoided. Some connections with the static PSQ model (Grönroos, 1984) are maintained and the framework demonstrates how the animal health client perceives the core business offering and defines how client expectations are influenced.

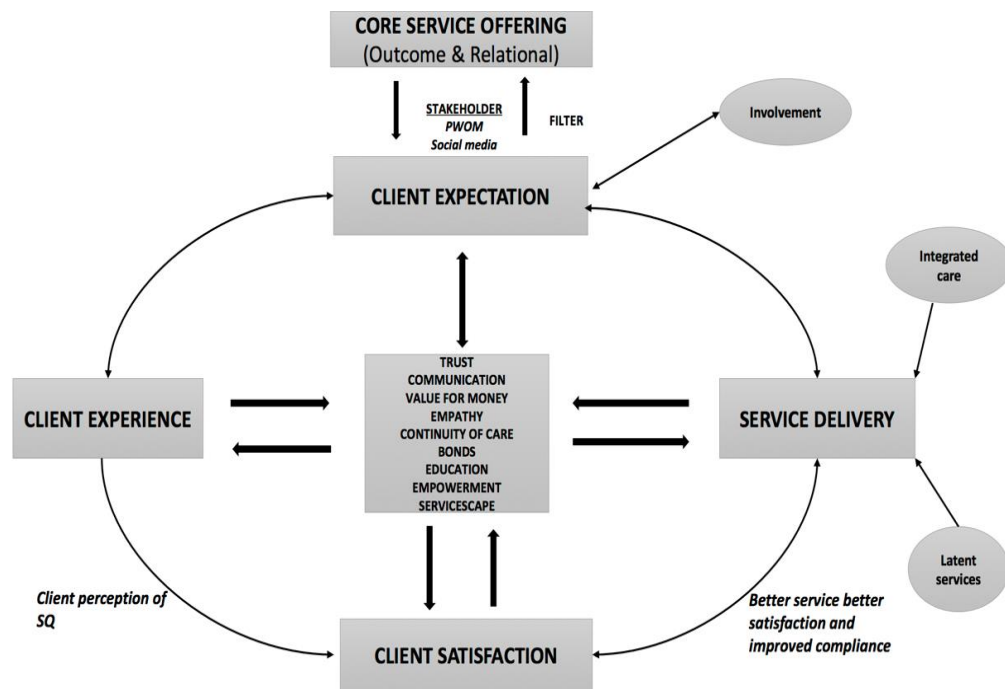


Figure 5.6 Conceptual framework for animal health service provision

The core service offering is now divided up into *Outcome* and *Relational* to reflect the process driven aspect of the service requirements and the strong emotive feature which is apparent within all parameters of health provision, reflecting the HAB and socio-economic importance of domesticated animals. The core service offering is subject to a reputational image filter comprised of *Stakeholder Interaction*, which is further categorised into *Positive Word of Mouth and Social Media*. Recommendation of service was frequently made by interaction between clients and the use of online based forums is proposed within the literature to be a strong influencing factor for animal health clients' decision making process. The reputation image presented by the business to the clients can also impact upon client expectation, managing expectation and therefore service quality.

The framework is presented as a dynamic model with each feature able to impact and influence another in either a positive or negative manner as determined by the service encounter. Central to the model are the elements now considered to define service quality in this sector and each of these influences the four factors of client expectation, client experience, client satisfaction and service delivery. These include; *trust, communication,*

empathy, continuity of care, bonds, education, empowerment and all are determinants of value co-creation, highlighting the operant nature of the client in the service encounter. Continuity of care is important for building and maintenance of relationships, thus promoting the interconnected loyalty and treatment compliance and influencing positive health outcomes. Servicescape is an important component which is also positioned centrally in the model, as the tangibles such as the environment and the available equipment, are important features to the client.

The results of this study have demonstrated the role of client involvement in the service process and this aspect will influence client expectation. The involvement framework as presented in section 5.6.2, determines the degree of emotional, financial (or combination of both) investment which the client has in the animal owned or kept. The value placed on the animal by the client will affect the service required and the service provider will be required to adapt the provision correspondingly. Service delivery within the animal health sector is affected by the practitioners' capacity and willingness to work within a MDT and to be able to provide integrated care. The importance of interdisciplinary working was highlighted through the animal and human health literature and was a defined result from all stakeholder groups within this study. The notion of the part-time marketer (PTM) (Gummesson, 1998; Grönroos, 2006) and the integral nature to value creation is an important aspect of service delivery within the animal health model. The benefits of hidden and non-billable service are most clearly demonstrated within the veterinary practice by the value-added service provided by the veterinary nurse. The VN may offer a range of additional services but often most importantly is the extra time that the VN may have to talk with a client. This is represented within the model as latent services and is not unique to veterinary work as it encompasses all other elements of the service provision which are latent but valuable to the client.

5.6.4 Development of Conceptual Models

In recent years, a multitude of perceived service quality models have been proposed by researchers, each one intending to provide a superior framework to conceptualise and understand service quality. The four models considered in this study to have potential relevance and usefulness to the animal health sector are, the American (SERVQUAL) model and Gaps model (Parasuraman *et al.*, 1988; Zeithaml, 1990), the subsequently developed SERVPERF model (Cronin and Taylor, 1992;1994), and the Nordic (European) model (Grönroos, 1984; 2007). The application of each model to the sector was considered within the review of the literature, the study findings and subsequently in the development of the conceptual framework (Figure 5.6), and the integrated conceptualisation model which is presented in Chapter 6 (Figure 6.1). The SERVQUAL model presented some face validity and the model provided a good conceptual base for

this research. Comparison of the six service quality dimensions defined for the animal health sector revealed there to be some resonance with three of the five SERVQUAL RATER dimensions, and these are shown in Table 5.3.

Table 5.3 Comparable SERVQUAL RATER dimensions and animal health sector service quality dimensions

SERVQUAL RATER DIMENSIONS		ANIMAL HEALTH SECTOR SERVICE QUALITY DIMENSIONS	
Empathy	Caring, individualised attention the firm provides its customers	Empathy	Compassion and caring service, two-way open communication with respect and rapport
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence	Professional Integrity	Trust, honesty and morality of service. Professionalism
Tangibles	Physical facilities, equipment, and appearance of personnel	Access	Accessibility of professionals, facilities and resources

Despite the evident parallels with the SERVQUAL model, dimensions for the animal health industry are distinctive and thus are required to be sector-specific. Service quality in animal health provision was found to be more closely aligned to the SERVPERF model as compared to SERVQUAL. Service performance and therefore overall service quality are central to the SERVPERF model and the findings of this study have demonstrated the significance of service *outcome* to perceived service quality. Animal health clients are principally interested in two core service offerings, which have been defined as *outcome* and *relational*. These findings confirm both the connection with the SERVPERF model and the Nordic model, the latter of which incorporates value co-creation. Co-creation of value, including SDL as a way of thinking, was found to be implicit in all dimensions of service quality for the animal health sector. Value creation is, therefore, embedded in the presented conceptual framework (Figure 5.6) and conceptualisation of service quality (Figure 6.1), emphasising the importance of relational interaction to service encounters within this sector. Application of the Gaps model to the animal health sector presents an interesting agenda for future research, particularly as a means to further understand the client-group differences and to therefore enhance business competitiveness. Differentiation between client-groups was found to be an essential requirement and the need for individualised health provision is exemplified through the dimension *bespoke outcome*.

6.0 Conclusion

This chapter provides a summary of the adopted study design; the key outcomes of the research; the contribution to knowledge, and makes recommendation for future areas of study.

Main Conclusions

The fundamental conclusions of the study are as follows:

Dimensionality: SERVQUAL dimensions are proposed to be generic across service contexts, however the findings from this research advocate sector specific dimensions.

Disconfirmation: The study finds there to be strong evidence for themes of continuity of care and support for a temporal perception of service which refute the disconfirmation paradigm as a measure of service quality. As reported in human health care service quality research, clients will respond to each service experience over time making expectations dynamic in nature.

Clients are distinctive: Variation between sector clients' expectations and perceptions of service support the requirements for an adaptable framework unique to the sector which can reflect this differentiation.

Importance of value co-creation: Qualitative and quantitative findings from this study for all sector stakeholders confirm the importance of value co-creation and co-production to the provision of animal health service. Reciprocity of communication, trust, empathy and involvement are found to be compelling and enduring themes of value co-creation endemic throughout the research.

6.1 Study Design

Adoption of the three-phase research process was necessary to confirm an informed and robust approach to the investigation. Scoping and mapping of the sector proved to be vital to orientate the study since the necessary information was disparate and often hard to come by. Subsequent use of a mixed methodology was valuable to overcome the limitations of individual techniques but also added significant worth to the final understanding of the results and wider industry application and accessibility.

All research investigations will have some limitations and it is essential to identify and present these to ensure that a meaningful contribution is made and study limitations and potential bias have, accordingly been noted throughout the thesis.

The sampling process is sufficiently representative and diverse to present meaningful and valuable results; however, the quantitative surveying could be extended to include wider groups of paraprofessionals such as farriers and foot trimmers, equine dental technicians and reproductive technologists. Results obtained from the qualitative and quantitative phases of the study do present with a dimension differentiation in structure and in number.

However, results from interviews do not always extrapolate directly from interviews to the wider situations (Coe *et al.*, 2008), as qualitative inquiry allows respondents the opportunity to discuss topics important to them in greater depth. Linkage between the qualitative and quantitative results has resonance with the existing animal health service literature and parallel human health literature thus supporting the value and contribution of the study.

6.2 Contribution to Marketing Theory

As a novel and original study, confirmed through the paucity of relevant service quality and client-focused literature, the findings of this study make important contributions to understanding the sector (as discussed in section 6.3) and to wider service quality theory.

6.2.1 Unique Application of Service Quality Theory

This study is the first time that service quality theory has been applied exclusively to the animal health sector, the valuable contribution and understanding of the sector is, therefore, completely industry specific. The meaning of the results is to be found through the sectors' own opinion of themselves thus providing a valuable and valid industry representation. However, parallels between the animal and human health service sectors, as discussed and applied throughout the thesis, also indicate the study findings to be relevant to our understanding of wider health care service provision.

6.2.2. Non-Standardisation of Service Quality

Client and professional stakeholder differences found within this study signifies an overarching contribution defined as: the animal health sector requires the adoption of a non-standardised model of service quality and a framework which can be adapted to reflect client differentiation. The study identifies with a bespoke and flexible approach to service quality, not achieved through a replication study such as those previously proposed for usage in other service sectors. Understanding service quality in a complex environment such as the animal health sector requires contextualisation to the sector, unique interpretation and specificity. Challenging but essential, and achievable through collaborative working and adoption of a value co-creation perspective.

6.2.3 Conceptualisation of Service Quality for the Animal Health Sector

One purpose of this research was to understand service quality in the animal health sector, thus enabling dimension identification and, conceptualisation of service quality for the sector. Conceptualisation of service quality for the animal health sector is illustrated in the integrated model, Figure 6.1. The service quality dimensions which emerged, are defined and described as *empathy*, *bespoke outcome*, *professional integrity*, *value for money*, *confident relationships* and *access*. These dimensions are unique and specific to the sector. They provide a foundation for future industry-specific research to be based

upon and a means by which service provision for the sector may be understood. Value co-creation, as a novel and unexpected, but significant finding of the study is integrated within the conceptualisation (Figure 6.1). Value co-creation is implicit within the dimensions and through the requirement for openness in communication between clients and professional stakeholders. Themes of value co-creation and co-production realised within animal health service provision mirror contemporary human health service research, and present a valuable area for future research.

The conceptual framework shown in the discussion chapter (Figure 5.6), establishes the significance of two core service offerings for this sector, which are described as *outcome* and *relational*. Service quality for the sector was found to be promoted through enhanced relationship formation and treatment outcome. However, enhanced service quality in-turn leads to improved treatment compliance, treatment outcome and consequently overarching improvements to animal health and welfare. These factors will boost business competitiveness as service is perceived to be bespoke and the client is central to the model.

Movement from a service-led to a client-focused approach is vital to the development of relationship quality and service quality in this sector, whilst still taking account of patient requirements.

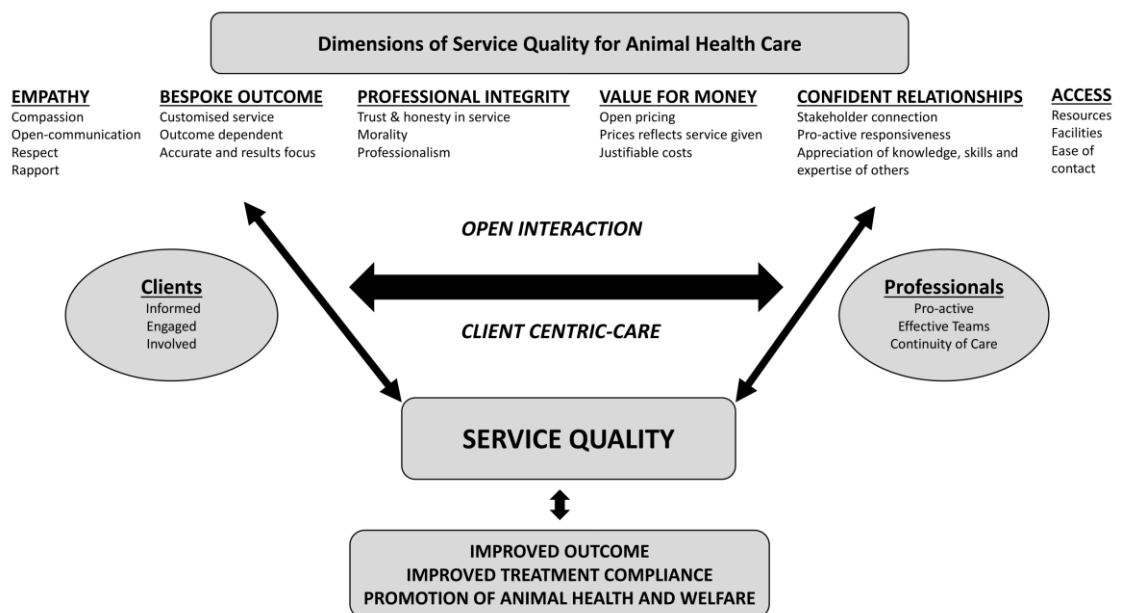


Figure 6.1 Integrated conceptualisation of service quality for the animal health sector

6.3 Contribution to the Sector

The animal health sector is a large and lucrative sector, diverse and complex in nature and structure but extremely important for the health and welfare of domesticated animals

in modern society. Rapidly changing business models, the emergence of many new types of allied health professionals, evolving demographics and a highly sophisticated clientele make for an intricate market place. The environment is changing for all professional stakeholders within the sector and to keep pace, the practitioner must be able to respond to these changes. The contribution to the sector is defined in five pathways: Professional transparency; legislative confidence; client differentiation; value co-creation; sector conceptualisation.

6.3.1 Professional Transparency

Professional transparency in some sector areas was found to be successfully upheld through clear educational and training routes, well-maintained professional registers, recognised codes of ethics, practise and accountability. Yet for other services, clients are unable to access professional registers nor be clear on the training requirements of the practitioner. These inconsistencies exist both between professional stakeholder groups but also are apparent within stakeholder groups and in these cases, underlying conflicts add to the sector tensions.

6.3.2 Legislative Confidence

Mapping and scoping the sector was a considerable undertaking which reflects the overly complicated state of the animal health industry and one which is a confusing environment for clients. The comparable information collated from a diverse range of sources for the fulfilment of the first phase of the research is not available elsewhere. It provides an original contribution to the sector and facilitates a more comprehensive appraisal of the current sector position in terms of service provision. Contradictions within legal frameworks and legislative grey-areas, which are often only understood by the sector practitioners, do very little to provide a clear environment for the client. A confusing market-place for clients renders the management of service expectations by the practitioners challenging and ultimately impacts service quality.

6.3.3 Stakeholder Differentiation

The animal health client is distinctive to other service clients and, service expectation and perception is further distinguished by differences between client groups and professionals. This is the first time that differences between animal health clients' service requirements have been reported subsequent to specific research. Equally novel were the findings of distinct differences between professionals and between professionals and clients. Where discrepancies exist between professionals and clients' perceptions and expectations of service these are indicative of inconsistencies in supply and demand. Some professionals have recognised the importance of the client in the delivery of service and have adapted their provision to enable tailored and highly specialised care, but this approach is not standard practise. Paraprofessionals such as the musculoskeletal practitioners, are best

placed to provide tailored care, and veterinary practice in equine and companion animal are adapting to a more bespoke service provision. Conversely, farm animal dedicated practice is becoming less accessible and is moving away from client expectations as determined from the study findings, rather than towards a model of specialism.

A unique framework for the sector has been presented, but as groups of clients within the sector are different the model should be interpreted and applied to reflect the distinctive nature of all stakeholders. Hence, the framework is intended to be adaptable and the integrated sub-framework defined by involvement proposes a method to facilitate this. It is possible to produce a model for the sector but it is not possible to generalise to the whole client base as there is potential for differences both between and within client groups.

6.3.4 Value Co-creation and Relationships

The role of value co-creation has been found to present a distinct and important opportunity to the animal health sector. The study findings make a significant contribution by determining value co-creation to be fundamental to the sectors' provision of service quality. It is proposed that animal health professionals could look to the rapidly developing client-centred ethos of equivalent human health service for explanations and answers on client service expectation. Factors of *empathy*, *trust*, *collaboration* and *two-way communication* were supported by all client groups in all research phases; these represent areas of service which need to be fulfilled by practitioners. Holistic care is sought by all and clients seek an active role in the initiation of care for their animal through notions of *self-care* and working in *partnership* with practitioners. Clients are seeking an integral position with decisions on health care and its management; beliefs which are accentuated through the cost of service and proposed involvement framework. Social media, whilst not a panacea, provides a platform for client relationship formation, maintenance and enhancement. Thus, improving continuity of care which is known to improve client; practitioner relationships, empathetic care and treatment outcomes the latter two of which have been shown by this study to be fundamental to the provision of service quality.

6.3.5 Sector Frameworks

Findings from this study have enabled conceptualization of the sector through the framework for animal health provision. As an intentionally devised practicable model based on the perceptions and experiences of all stakeholders' contributors to the sector (clients, paraprofessionals and veterinarians) the structure makes an important contribution to the overall understanding of the sector. Previously, conceptual frameworks (Loomans, 2008) have been devised in response to litigious situations in one sub-group of the sector not to promote, support and understand the delivery of service quality as is the case with this research.

6.4 Recommendations for Further Study

There are three areas highlighted for future study, which are defined as follows: study replication for other paraprofessional groups; interdisciplinary and holistic patterns of working and the impact of value co-creation on the sector.

6.4.1 Allied Health Professionals

Replication of the survey for the paraprofessional groups of EDT, farriers and foot trimmers, reproductive technologists and nutritionists presents an opportunity for future research. This would require extensive further mapping of the sectors to define certain sub-group populations (including nutritionists, foot trimmers, AI technicians) due to a lack of professional registers but would give valuable additional insight across the sector.

6.4.2 Holistic Approach to Care

Results from the present study concur with the literature on factors of integrated care, reflecting the need for the development of effective MDTs from the perspective of all sector stakeholders. Whilst this was investigated within the study, it would be beneficial to have greater understanding of MDT modes of usage in the UK animal health sector. Broader investigation into the actual uptake of team working by the professional groups was not explored within the quantitative survey and this would complement the results obtained in this study. Additionally, such inquiry would make a valuable contribution to the overall understanding of how effective MDT working currently is within the animal health sector from a practical perspective. Future work should then focus on the development of multidisciplinary team working models to embrace value co-creation through operable and realistic solutions.

6.4.3 Industry Commitment to Value Co-creation

The research is novel and distinctive and, therefore, replication of the study will be beneficial to the broader understanding and application of value co-creation to the high-involvement services of animal health. Value co-creation was an emergent theme from the qualitative research and as a complex concept, it could not be fully explained within the survey. A return to interview based inquiry is proposed to gain further insight into the potential role of value co-creation and the way that animal health is provided.

6.5 Reflection on Pathways to Impact

There are two proposed routes for the dissemination of research impact these are identified as the impact of research at a UK national level and wider application internationally, specifically orientated to developing nations.

6.5.1 National Impact

Nationally, this work is important as the keeping of domesticated animals makes a valuable socio and economic contribution. As owners and keepers of animals, there is an

ethical and sometimes legal requirement to ensure that high standards of health and welfare are adhered to and equally the financial contribution of these animals is significant. However, the emotional importance of domesticated animals to their owners and keepers should not now be overlooked. The rapid development of the pet as a valued family member will produce both greater business opportunities for animal health professionals but additionally higher expectations of the care provided. Clients will draw on expectations from other forms of health service delivery, such as experiences from human medicine. As human health looks forward to embracing concepts of value co-creation within its provision expectations from animal health clients will be raised. Translation of the conceptual model into workable solutions for veterinarians or paraprofessionals could be achieved through the use of familiar professional based language, publishing in lay-press and presenting of papers at recognised industry conferences. This would facilitate use of the work by veterinarians and paraprofessionals alike. Additionally, veterinary practice managers who would oversee the day to day running of the practice would be able to implement the findings. The wider understanding of client service provision as determined through the results of this study provide opportunities for all professional stakeholders within the sector.

For the paraprofessional groups with complex training routes and complicated professional structures development of clear self-promotion to other stakeholders including vets would enhance collaborative working. Greater transparency through well-defined professional information would enable veterinarians to refer with greater confidence and so enhance interdisciplinary working. The veterinary profession is aiming to tackle current issues, including client-centrality and so service quality, through the vet and vet nurse focused Vet Futures project. However, for the highly specialised animal health sector, maximum benefit would be gained through a holistic approach to these considerations and one which considers all allied health professionals. Professional stakeholders in the sector need to work in collaboration to ensure that they are providing the service that they want to provide and that the clients wish to receive.

6.5.2 International Impact

The use of veterinary paraprofessionals is widespread in developing countries, where access to veterinarians is restricted and there are complex issues of animal disease, zoonotic transfer and veterinary public health. The study methods utilised within this research could be adapted to fit international requirements and complementary studies be completed, with a greater focus on the process of service delivery.

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Appendix 8.1: Numbers of animal health clients in the UK (as at July 2013)

Client	Sub-group	Professional Association(s)/ Groups	Number of producers or owners' GB / holdings	Number of animals
Farm	Intensive Dairy	Animal & Horticulture Development Board: Dairy	9, 777 dairy producers	1.9 million cattle
	Extensive Beef	Animal & Horticulture Development Board: Beef	60, 737 beef holdings	1.5million cattle
	Extensive Sheep	Animal & Horticulture Development Board: Sheep	69,249 sheep holdings	22.9 million sheep
Equine	Leisure/ Pleasure	BETA Survey	NA	3.5 million
	Professional (non-racing)	British Eventing (BE) British Show Jumping (BS) British Dressage (BD)	10,000 16,096	
Companion Animal	Working	Groups combined as it is not possible to distinguishing data	NA	16 million
	Companion only (pet)			

(Sources: AHDB Dairy, 2015; BETA 2013; 2015; EBLEX, 2015b; Murry, 2010; PFMA, 2013)

Appendix 8.2: Professional engagement for sector mapping

Presented below are the details of professional conferences, symposiums and meetings attended to inform the initial exploratory stage of the research (Phase one) and to inform data analysis and understanding of the results obtained. Some details regarding professional discussions have been withheld due to confidentiality and data protection.

Organisations contacted

ACPAT Association of Chartered Physiotherapists in Animal Therapy

AHDA The Animal Health Distributors Association

BETA British Equestrian Trade Association

BVNA British Veterinary Nursing Association

CEPT Canine and Equine Physiotherapy

DEFRA Department for Environment, Food and Rural Affairs

IRVAP Institute of Registered Veterinary & Animal Physiotherapists

NAVPA National Association of Veterinary Physiotherapists

RCVS Royal College of Veterinary Surgeons

RMPR Review of Minor Procedures Regime (project)

RPS Royal Pharmaceutical Society

RVN Registered Veterinary Nurse

SOAP Society of Osteopaths in Animal Practice

VPF Veterinary Pharmacist Forum

Professional meetings/ discussions

Organisation	Organisation Details	Details	Date	Location
2013				
Twemlows	Equine stud (AI & ET centre)	Professional meeting	26 July & 4 Sept	Twemlows, Shropshire
National Association of Veterinary Physiotherapist	Professional organisation for veterinary physiotherapists	Examiner's meeting	13 Nov	Harper Adams University, Shropshire
2014				
Veterinary Pharmacy Education Programme (VPEP)	CPD provider for Pharmacists	Professional discussion	10 Jan	Harper Adams University, Shropshire
National Association of Veterinary Physiotherapist (NAVVP)	Professional organisation for veterinary physiotherapists	Vet. Physiotherapist educator's meeting	4 June	Harper Adams University, Shropshire
Lantra	Awarding body for land-based courses	RMPPR/ DEFRA project meeting	17 Sept	Cribb's Causeway, Bristol
Natural Animal Feeds (NAF)	Animal feed company	Professional discussion	15 Oct	NAF Head Office, Monmouth
2015				
Lantra	Awarding body for land-based courses	RMPPR/ DEFRA project meeting	29 Jan	Cribb's Causeway, Bristol
Royal Pharmaceutical Society (RPS)	Membership body for pharmacy in GB	Annual meeting for veterinary pharmacists. Meeting of the Veterinary Pharmacy Forum	15 Sept 17 Dec	Harper Adams University Smithfield, London
Animal Health Distributors Association (AHDA)	Association representing animal health product distributors	Professional discussion	17 Dec	Smithfield, London
2016				
University of Namibia (UNAM)	School of Pharmacy	Professional discussion with Associate Dean, School of Pharmacy, UNAM	5 July	Harper Adams University, Shropshire
University of Namibia (UNAM)	School of Pharmacy,	Series of professional meetings and discussions with sector stakeholders regarding veterinary paraprofessionals in Namibia	9-18 Aug	UNAM, Windhoek, Namibia

Conferences and symposiums

Organisation	Organisation and conference details	Date	Location
2013			
VetEd Symposium	Veterinary Educator's symposium	3-5 July	UCD, Dublin
The Pharmacy Show	Annual conference for pharmacists, pharmacy technicians and support staff	29-30 Sept	NEC, Birmingham
2014			
Animal Health Distributors Association (AHDA)	Association representing animal health product distributors annual conference	28-29 Jan	NEC, Birmingham
National Equine Forum	Industry representatives' annual forum	6 March	Birdcage Walk, London
VetEd Symposium	Veterinary Educator's symposium	9-11 July	Langford Campus, Bristol University
The Pharmacy Show	N/A Annual conference	4-6 Oct	NEC, Birmingham
2015			
British Pharmacy Student Association (BPSA)	Representative group for UK pharmacy students Annual conference	1 April	John Moores Liverpool University
National Association of Veterinary Physiotherapist	Professional organisation for veterinary physiotherapists Annual conference	17 Oct	Warwickshire
Royal College of Veterinary Surgeons (RCVS)	Regulatory body for veterinary profession UK EBVM skills conference	30 Oct	Westminster, London
London Vet Show	Annual conference veterinarians and allied health professionals	19-21 Nov	Olympia, London
2016			
National Equine Forum	Industry representatives' annual forum	3 Jan	Birdcage Walk, London
The Pharmacy Show	Annual conference for pharmacists, pharmacy technicians and support staff	25-26 Sept	NEC, Birmingham
London Vet Show	Annual conference for veterinarians and allied health professionals	17-18 Nov	Excel, London

Appendix 8 3: Project Information Sheet



Information sheet for participants- client/ professionals interviews

Study title: Service management in the veterinary sector

Who is the researcher?

My name is Alison Pyatt. I am a lecturer at Harper Adams University and am carrying out a part time PhD in veterinary services. My supervisors are from Harper Adams University and Manchester Metropolitan University.

What is my research about?

My research is looking at the current provision of service in the UK veterinary sector from the perspective of the vet, paraprofessionals and the client. To do this, I will be interviewing a wide range of people who are directly involved in the provision of or use veterinary services.

What do the interviews involve?

The face to face interviews will normally last about an hour. I have a range of questions which I will ask and am particularly interested in your opinions and prior experiences. The interviews are all audio-recorded so that I may transcribe the sessions and then analyse the data.

How will I maintain your anonymity?

All data will be kept anonymous. Your name or place of work will not appear in any publication but you will be identified by a coding system. All data is stored confidentially and is only accessible by me. You can withdraw your data at any time should you wish.

Thank you for your important contribution to this research.

If you would like any additional information please contact the researcher: apyatt@harper-adams.ac.uk

Appendix 8.4: Questionnaires

Paraprofessional version



Harper Adams
University

Client Service Questionnaire 2015

Please comment on the service you provide to your clients

Do you agree or disagree with the following: <i>please use a pen to fill or tick the box</i>	Strongly agree	agree	neither agree or disagree	disagree	Strongly disagree	not applicable
I work within my own area of specialism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients expect me to demonstrate excellent animal handling skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am always able to provide continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients wish to me to take control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In my organisation/role all animal health professionals work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment I use is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients expect me to maintain a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My location is important to clients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The animals' welfare is always the main priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have time to treat clients with the compassion they need	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is easy to talk to clients at their level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients are able to understand what I am telling them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with clients is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients are not faced with unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I provide health plans for animals under my care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I actively seeks to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients feel welcome at my practice/ place of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients require me to provide out of hours care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable to tell clients if I need a 2nd opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients can easily contact me by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important to attend conferences and stay up to date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Developing a rapport with clients is important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Service Satisfaction:	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
Overall, how would you rate your provision of service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please contact Alison Pyatt for further information apyatt@harper-adams.ac.uk

Client Service Questionnaire 2015

The following will be used to help analyse the results:

Animals I treat?

Equine Canine Livestock

Other please name:

Your age?

18-24 25 to 34 35 to 44
45-54 55 to 64 65 and over

Are you?

Male Female

My profession is

Vet Nurse Vet Physiotherapist Farrier/ foot trimmer
Pharmacist SQP Dental technician
Nutritionist Reproductive technologist Chiropractor
Osteopath

Other please name:

Thank you for your views

Please contact Alison Pyatt for further information apyatt@harper-adams.ac.uk



Client Service Questionnaire 2015 (Veterinarian)

Please comment on the service you provide to your clients

Do you agree or disagree with the following:
please fill or tick the box

	Strongly Agree	Agree	Neither agree or disagree	Disagree	Strongly Disagree	Not Applicable
I work within my own area of specialism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients expect me to demonstrate excellent animal handling skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am always able to provide continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients wish to me to take control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At my practice all animal health professionals actively work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment I use is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients expect me to maintain a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The veterinary practice is conveniently located	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The animals' welfare is always the main priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have time to treat clients with the compassion they need	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is easy to talk to clients at their level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients are able to understand what I am telling them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with clients is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients are not faced with unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I provide health plans for animals under my care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I actively seek to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clients feel welcome in the surgery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Out of hours care is always up to standard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable to tell clients if I need a 2nd opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can easily be contacted by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important to attend conferences and stay up to date with current research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Developing a rapport with clients is essential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Service Satisfaction:

	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
Overall, how would you rate your provision of service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please contact Alison Pyatt for further information apyatt@harper-adams.ac.uk

Client Service Questionnaire 2015 (Veterinarian)

The following will be used to help analyse the results:

Most of your
time is spent
working in?

Mixed
Practice

Farm Animal
Practice

Equine
Practice

Companion
Animal
Practice

Other (please name)

Your age

18-24

25 to 34

35 to 44

45-54

55 to 64

65 and over

Gender

Male

Female

Thank you for your views

Please contact Alison Pyatt for further information apyatt@harper-adams.ac.uk



Client Service Questionnaire 2016 (CA client paraprofessional)

Please comment on the service you have received from your Paraprofessional (PP)

Do you agree or disagree with the following:

please use a pen to fill or tick the box

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Not applicable
The PP I use is a specialist companion animal professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My pet is well handled by the PP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP takes control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All animal health professionals work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment used by the PP is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP maintains a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP I use is conveniently located	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My pet's welfare is always the PP's priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP is able to treat clients with the compassion needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP talks to me on my level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand what the PP is telling me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with the PP is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are no unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is an effective health plan designed for my pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP I use actively seeks to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I go to the PP's practice/base I feel welcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can easily get a suitable PP out of hours within a reasonable timeframe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable if the PP needs to seek a second opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can contact the PP by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP has up to date knowledge and is willing to listen to new research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important that I have a good rapport with my PP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thinking about the overall service you received:

Service Satisfaction:

	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
How satisfied were you with service provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Client Service Questionnaire 2016 (CA client paraprofessional)

Service Recommendation:

Extremely Likely
Likely
Fairly Likely
Unlikely
Very Unlikely
Not Applicable

How likely would you be to recommend this professional to others?

The following will be used to help analyse the results:

Which type of paraprofessional group have you based your answers on?.....

.....

What type of pet are your answers based on?

Dog

Cat

Small mammal/other

Your age?

18-24

25 to 34

35 to 44

45-54

55 to 64

65 and over

Are you?

Male

Female

Thank you for your views

Please contact Alison Pyatt for further information: apyatt@harper-adams.ac.uk



Client Service Questionnaire 2016 (Companion animal client vet)

Please comment on the service you have received from your Veterinarian

Do you agree or disagree with the following: <i>please use a pen to fill or tick the box</i>	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Not applicable
The vet I use is a specialist companion animal vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My pet is well handled by the vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet takes control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All animal health professionals work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment used by the vet is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet maintains a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The veterinary practice is conveniently located	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My pet's welfare is always the vet's priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet is able to treat clients with the compassion needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet talks to me on my level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand what the vet is telling me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with the vet is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are no unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is an effective health plan designed for my pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet I use actively seeks to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I go to the vets I feel welcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can easily get a suitable vet out of hours within a reasonable timeframe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable if the vet needs to seek a second opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can contact the vet by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet has up to date knowledge and is willing to listen to new research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important that I have a good rapport with my vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thinking about the overall service you received:

Service Satisfaction:	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
How satisfied were you with service provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Client Service Questionnaire 2016 (Companion animal client vet)

Service Recommendation:

	Extremely Likely	Likely	Fairly Likely	Unlikely	Very Unlikely	Not Applicable
How likely would you be to recommend this professional to others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following will be used to help analyse the results:

What type of pet are your answers based on?

Dog

Cat

Small mammal/other

Your age?

18-24

25 to 34

35 to 44

45-54

55 to 64

65 and over

Are you?

Male

Female

Do you use a mixed practice or a specialist companion animal practice?

.....

Thank you for your views

Please contact Alison Pyatt for further information: apyatt@harper-adams.ac.uk



Client Service Questionnaire 2016 (equine client paraprofessional)

Please comment on the service you have received from your Paraprofessional (PP)

Do you agree or disagree with the following: <i>please use a pen to fill or tick the box</i>	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Not Applicable
The PP I use is a specialist equine professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Horses are always well handled by the PP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP takes control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All animal health professionals work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment used by the PP is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP maintains a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP I use is conveniently located	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My horses' welfare is always the PP's top priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP is able to treat clients with the compassion needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP talks to me on my level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand what the PP is telling me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with the PP is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are no unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is an effective health plan to fit my horse (s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP I use actively seeks to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I go to the PP's practice/base I feel welcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can easily get a suitable PP out of hours within a reasonable timeframe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable if the PP needs to seek a second opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can contact the PP by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP has up to date knowledge and is willing to listen to new research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important that I have a good rapport with my PP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thinking about the overall service you received:

Service Satisfaction:	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
How satisfied were you with service provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Client Service Questionnaire 2016 (equine client paraprofessional)

Service Recommendation:

	Extremely Likely	Likely	Fairly Likely	Unlikely	Very Unlikely	Not Applicable
How likely would you be to recommend this professional to others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following will be used to help analyse the results:

What do you predominantly keep your horse(s) for?	Hacking/fun	<input type="checkbox"/>	Unaffiliated competitions	<input type="checkbox"/>	Affiliated competitions	<input type="checkbox"/>
Your age?	18-24	<input type="checkbox"/>	25 to 34	<input type="checkbox"/>	35 to 44	<input type="checkbox"/>
	45-54	<input type="checkbox"/>	55 to 64	<input type="checkbox"/>	65 and over	<input type="checkbox"/>
Are you?	Male	<input type="checkbox"/>	Female	<input type="checkbox"/>		

Which type of paraprofessional have you based your answers on?

Thank you for your views

Please contact Alison Pyatt for further information: apyatt@harper-adams.ac.uk



Client Service Questionnaire 2016 (equine client vet)

Please comment on the service you have received from your Veterinarian

Do you agree or disagree with the following:
please use a pen to fill or tick the box

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Not Applicable
The vet I use is a specialist equine professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Horses are always well handled by the vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet takes control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All animal health professionals work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment used by the vet is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet maintains a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The veterinary practice I use is conveniently located	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My horses' welfare is always the vet's top priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet is able to treat clients with the compassion needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet talks to me on my level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand what the vet is telling me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with the vet is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are no unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is an effective health plan to fit my horse (s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet I use actively seeks to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I go to the vet's I feel welcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can easily get a suitable vet out of hours within a reasonable timeframe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable if the vet needs to seek a second opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can contact the vet by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet has up to date knowledge and is willing to listen to new research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important that I have a good rapport with my vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thinking about the overall service you received:

Service Satisfaction:

	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
How satisfied were you with service provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Client Service Questionnaire 2016 (equine client vet)

Service Recommendation:

	Extremely Likely	Likely	Fairly Likely	Unlikely	Very Unlikely	Not Applicable
How likely would you be to recommend this professional to others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following will be used to help analyse the results:

What do you predominantly keep your horse(s) for?	Hacking/fun	<input type="checkbox"/>	Unaffiliated competitions	<input type="checkbox"/>	Affiliated competitions	<input type="checkbox"/>
Your age?	18-24	<input type="checkbox"/>	25 to 34	<input type="checkbox"/>	35 to 44	<input type="checkbox"/>
	45-54	<input type="checkbox"/>	55 to 64	<input type="checkbox"/>	65 and over	<input type="checkbox"/>
Are you?	Male	<input type="checkbox"/>	Female	<input type="checkbox"/>		

Do you use a mixed practice or a specialist equine practice?

Thank you for your views

Please contact Alison Pyatt for further information: apyatt@harper-adams.ac.uk



Client Service Questionnaire 2016 (Livestock client paraprofessional)

Please comment on the service you have received from your Paraprofessional (PP)

Do you agree or disagree with the following:
please use a pen to fill or tick the box

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Not applicable
The PP I use is a specialist livestock professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Animals are well handled by the PP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP takes control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All animal health professionals work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment used by the PP is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP maintains a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP I use is conveniently located	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The animals' welfare is always the PP's priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP is able to treat clients with the compassion needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP talks to me on my level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand what the PP is telling me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with the PP is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are no unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a proactive health plan designed for my stock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP I use actively seeks to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I go to the PP's practice/base I feel welcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can easily get a suitable PP out of hours within a reasonable timeframe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable if the PP needs to seek a second opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can contact the PP by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The PP has up to date knowledge and is willing to listen to new research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important that I have a good rapport with the PP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thinking about the overall service you received:

Service Satisfaction:

	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
How satisfied were you with service provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Client Service Questionnaire 2016 (Livestock client paraprofessional)

Service Recommendation:

	Extremely Likely	Likely	Fairly Likely	Unlikely	Very Unlikely	Not Applicable
How likely would you be to recommend this professional to others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following will be used to help analyse the results:

Which type of paraprofessional group have you based your answers on?.....

.....

How would you describe the farming system you use?

Intensive Extensive

Your age? 18-24 25 to 34 35 to 44
 45-54 55 to 64 65 and over

Are you? Male Female

Thank you for your views

Please contact Alison Pyatt for further information: apyatt@harper-adams.ac.uk



Client Service Questionnaire 2016 (livestock client vet)

Please comment on the service you have received from your Veterinarian

Do you agree or disagree with the following:
please use a pen to fill or tick the box

	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Not Applicable
The vet I use is a specialist livestock professional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Animals are always well handled by the vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is continuity of care or treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet takes control of the situation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All animal health professionals work together as a team	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Equipment used by the vet is up to date, clean and works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet maintains a tidy and professional appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Calls or emails are promptly responded to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The veterinary practice I use is conveniently located	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Animals' welfare is always the vet's top priority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet is able to treat clients with the compassion needed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet talks to me on my level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand what the vet is telling me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My relationship with the vet is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price always reflects service given	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There are no unexpected costs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There is a farm animal health plan to fit my stock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet I use actively seeks to work with others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I go to the vet's I feel welcome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can easily get a suitable vet out of hours within a reasonable timeframe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am comfortable if the vet needs to seek a second opinion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can contact the vet by text and/or email if required	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vet has up to date knowledge and is willing to listen to new research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is important that I have a good rapport with my vet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thinking about the overall service you received:

Service Satisfaction:

	Extremely Satisfied	Satisfied	Moderately Satisfied	Barely Satisfied	Un-Satisfied	Not Applicable
How satisfied were you with service provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Client Service Questionnaire 2016 (livestock client vet)

Service Recommendation:

	Extremely Likely	Likely	Fairly Likely	Unlikely	Very Unlikely	Not Applicable
How likely would you be to recommend this professional to others?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following will be used to help analyse the results:

How would you describe the farming system you use?

Intensive Extensive

Your age? 18-24 25 to 34 35 to 44
 45-54 55 to 64 65 and over

Are you? Male Female

Do you use a mixed practice or a specialist farm animal practice?

Thank you for your views

Please contact Alison Pyatt for further information: apyatt@harper-adams.ac.uk

Appendix 8.5: Item Coding

Values

Strongly Agree/ Extremely Satisfied	5
Agree/Satisfied	4
Neither Agree or Disagree/ Neither Satisfied or Dissatisfied	3
Disagree/ Dissatisfied	2
Strongly Disagree/ Extremely Dissatisfied	1
N/A	0
Missing Value	9

Coding Column One

Group	Code
Paraprofessionals	1
Vets	2
Clients- (Vet questionnaire)	3
Clients (Paraprofessional questionnaire)	4

Coding Column Two

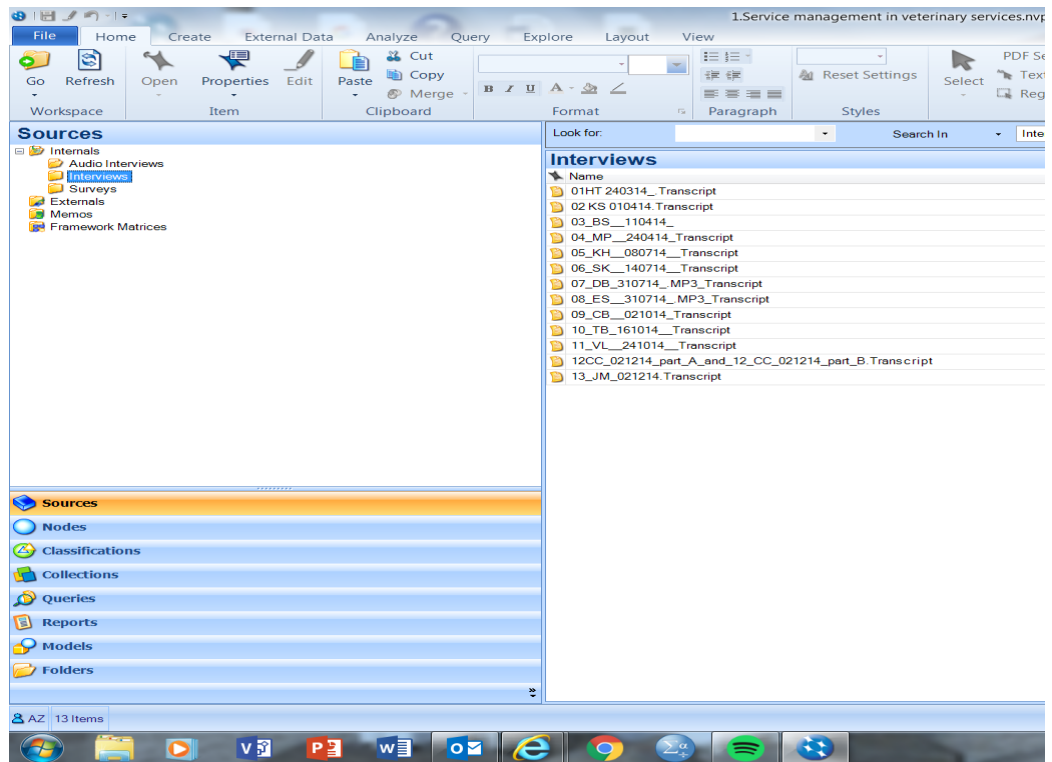
Group Paraprofessionals	Code
VP & SQP	11
Vet Physio (M/S)	12
Osteopaths (M/S)	13
Chiropractor (M/S)	14
VN	15
Farriers & foot trimmers	16
Nutritionists	17
Dentists	18
Reproductive techs & genetists	19
Other	20
Group Vets	Code
Mixed practice	21
Equine	22
Farm	23
Companion Animal	24
Group Clients	Code
Farm extensive	31
Farm intensive	32
Equine Leisure	33
Equine Professional	34
Companion Animal	35

Category Questions

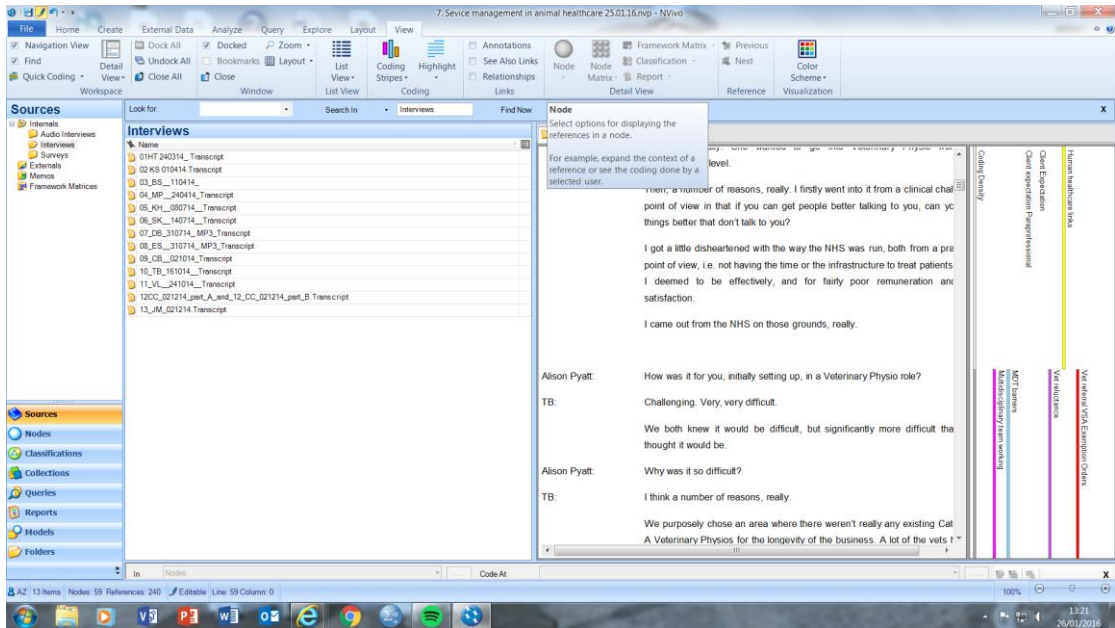
Question	Code	Question number
Age: 18-24	40	27
Age: 25-34	41	
Age: 35-44	42	
Age: 45-54	43	
Age: 55-64	44	
Age: 65 & over	45	
Male	50	28
Female	51	
(PP) Animals I treat: Equine	60	29
(PP)Animals I treat: CA	61	
(PP)Animals I treat: Livestock	62	
(PP)Animals I treat: Other	63	
What do you keep your horses for: Hacking/fun (leisure)	33	Professional or non-professional
What do you keep your horses for: Unaff comp. (leisure)	33	
What do you keep your horses for: Aff comp. (professional)	34	
Which PP have you based your answer on: VP & SQP	80	30
Which PP have you based your answer on: Vet Physio (M/S)	81	
Which PP have you based your answer on: Osteopaths (M/S)	82	
Which PP have you based your answer on: Chiropractor (M/S)	83	
Which PP have you based your answer on: VN	84	
Which PP have you based your answer on: Farrier/ foot trimmer	85	
Which PP have you based your answer on: Nutritionist	86	
Which PP have you based your answer on: Dentist	87	
Which PP have you based your answer on: Reprod. tech	88	
Which PP have you based your answer on: Other	89	
Do you use: A mixed practice	90	31
Do you use: A specialist equine practice	91	
Do you use: A specialist farm animal practice	92	
Do you use: A specialist companion animal practice	93	
What type of pet are your answers based on: Dog	95	32
What type of pet are your answers based on: Cat	96	
What type of pet are your answers based on: Small mammal	97	

Appendix 8.6: NVivo Screenshots

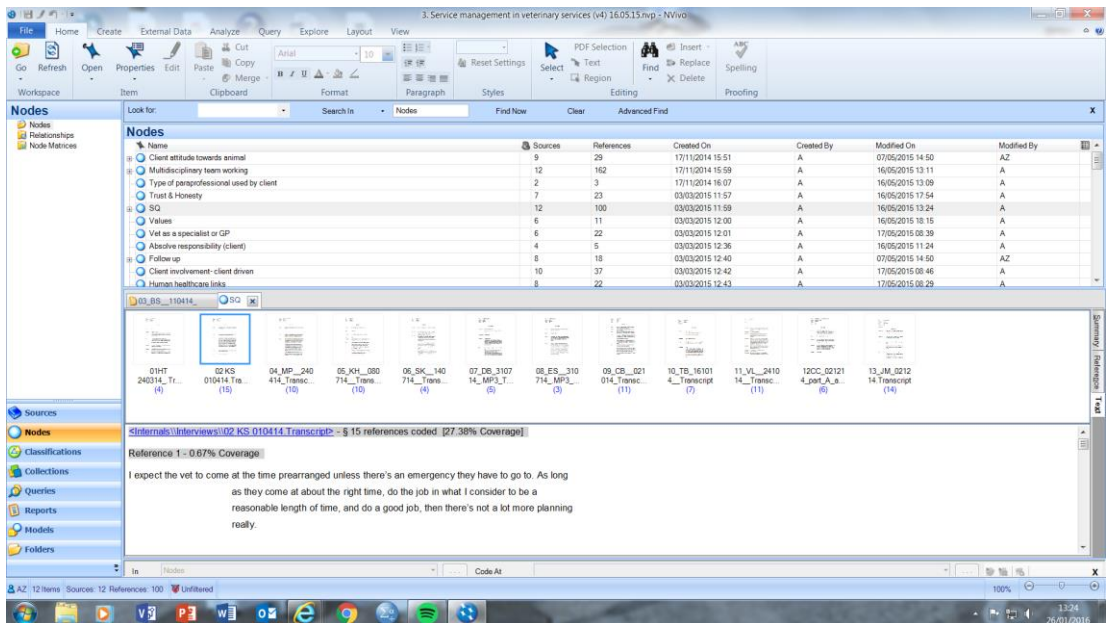
Screen shots from NVivo©



Full list of completed interview transcripts, imported from word documents and then stored and coded within NVivo©



Process of interview transcript coding. Different codes are identifiable via the coloured (coding) stripes seen on the right-hand side of the screen



Grounded analysis technique in use as the text is free coded line by line in detail

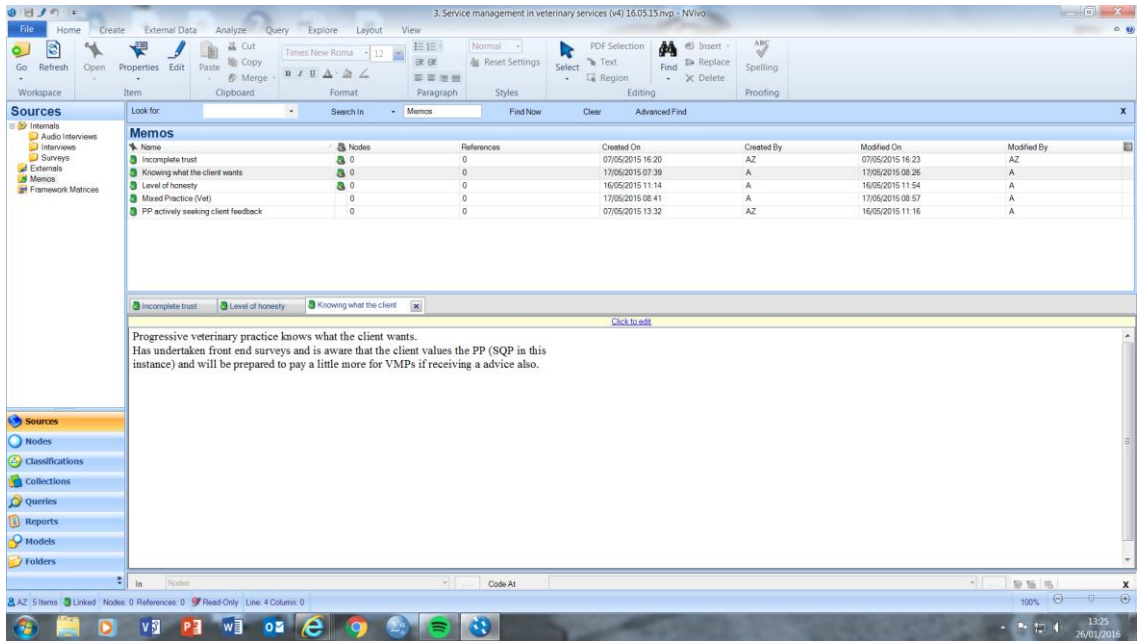


Figure 4 Showing memo generation through the coding process

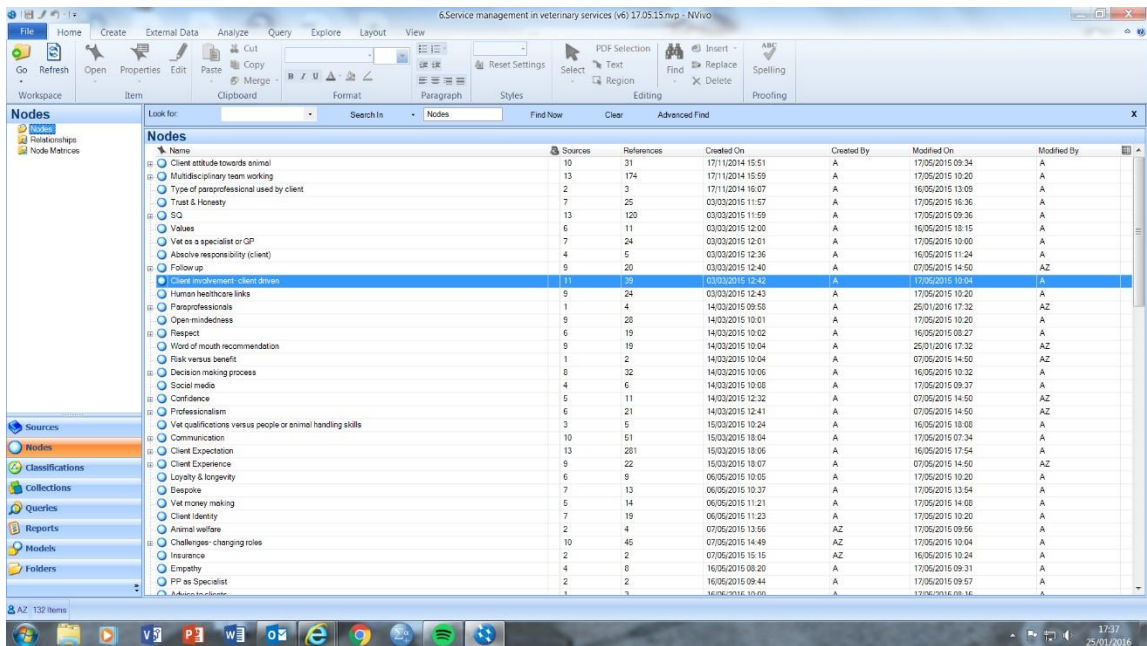


Figure 5- Demonstrate the developing stages of the coding process with the creation of a network of tree codes

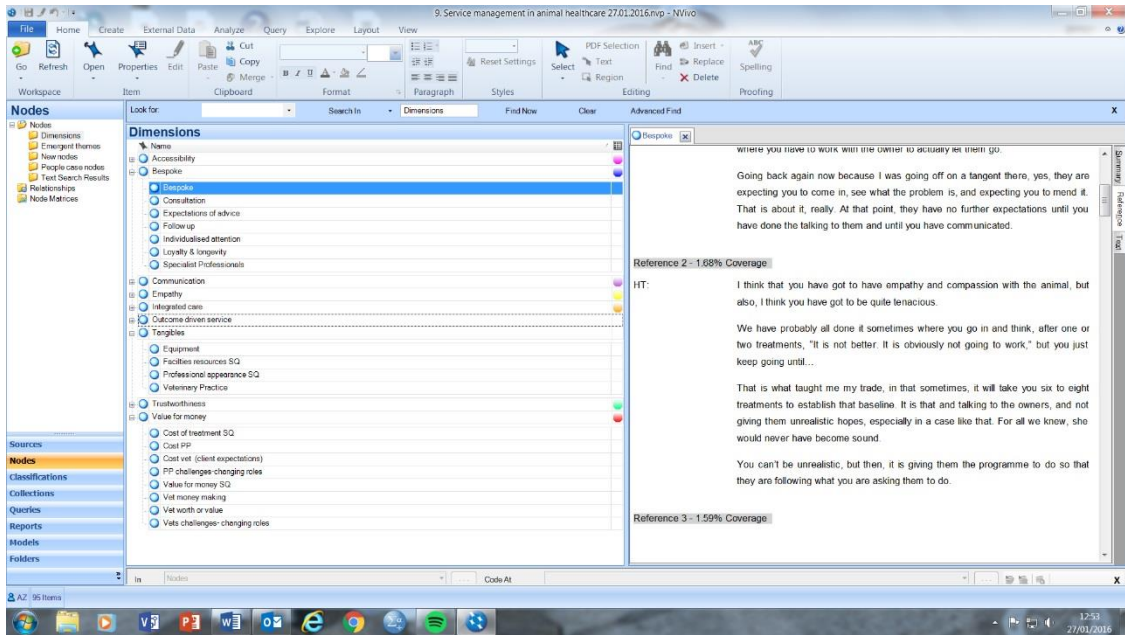


Figure 6- Emergent dimensions through thematic analysis

Appendix 8.7: Thesis Publications

Peer Reviewed Conference Papers, Abstracts, Posters

Pyatt, A, Z.; Wright, G.H.; Walley, K.E; Bleach, E. 2014. Looking to the future....equipping the graduate for modern day practice. VetEd Symposium, Bristol Veterinary School, UK.

Pyatt, A.Z.; Bleach, E.C.L.; Wright, G.H.; Walley, K.E. 2017 Service Quality: Client compliance. An integrated approach to animal health provision. 1st Conference International Society for Economics and Social Sciences of Animal Health (ISESSAH) 27-28 March 2017. Aviemore, Scotland.

Pyatt, A, Z.; Wright, G, H; Walley, K.E.; Bleach, E. 2015 Taking care of man's best friend: A model of service quality in the domestic animal health sector. 3rd International Conference on Contemporary Marketing Issues (ICCM), Kingston University, London. 30 June-3 July 2015

Pyatt, A, Z.; Wright, G.H.; Walley, K.E.; Bleach, E. 2016 Value co-creation in the animal healthcare sector. 4th International Conference on Contemporary Marketing Issues (ICCM), 22-24 June 2016, Heraklion, Greece

Pyatt, A, Z.; Wright, G.H.; Walley, K.E.; Bleach, E.C.L. 2017. Stakeholders in animal health services. 5th International Conference on Contemporary Marketing Issues (ICCM), 21-23 June 2017, Thessaloniki, Greece

Research Outputs: Refereed Papers

Pyatt, A, Z.; Wright, G.H.; Walley, K.E.; Bleach, E, 2017. Value co-creation in high involvement services: the animal healthcare sector, International Journal of Retail & Distribution Management, Vol. 45 Issue: 5, pp., doi: 10.1108/IJRDM-11-2016-0209