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WITS BUSINESS SCHOOL
UNIVERSITY OF THE WITWATERSRAND

FACTORS INFLUENCING PURCHASING BEHAVIOUR OF VETERINARY PHARMACEUTICALS IN SOUTH AFRICA

RESEARCH REPORT

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A Research Report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration.

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ABSTRACT

Veterinary pharmaceutical companies in South Africa operate in a very competitive environment. Understanding the buying centre and consumer behaviour of a veterinary practice will enable these companies to effectively reach their target market.

This research specifically investigated which members of a veterinary practice form the buying centre and what the level of involvement is in the purchasing decision process. The objective was to determine what the most important selection criteria are when purchasing veterinary pharmaceutical products and to identify any differences between three product categories of veterinary pharmaceuticals *viz.* Biologicals, Ethicals and Veterinary Over the Counter products. Moreover, the relative importance's of different sources of information were investigated as well as any variances between the product groups. Gender, age, ownership status, number of vets per clinic and consultation fee were used to determine if the veterinary market could be segmented. The research was conducted across South Africa by means of a structured questionnaire. The total sample comprised 327 respondents, with the data collected then being analysed using descriptive and inferential statistics.

The research exposed that there are certain differences between the product groups when considering both the selection criteria and information sources. The important purchasing decision criteria included *inter alia* experience with the product, efficacy and safety of the product, technical information on the product, price and service levels provided by the pharmaceutical company. The important information sources included sales representatives, scientific journals and veterinary colleagues. Suggestions for segmenting the veterinary market seemed limited based on the demographic variables investigated. A dashboard of attributes for each of the product groups are suggested as a basis upon which marketing strategies can be developed. The research highlighted the need to understand the buying centre of a veterinary practice and to understand the buying behaviour thereof. The successful veterinary pharmaceutical company is one that will be able to create successful synergies with these important attributes. This will ensure the best return on a limited set of marketing resources.

DECLARATION

I, Brett Simpson, declare that this research report is my own, unaided work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other University.

Brett Simpson

July 2008

DEDICATION

This work is dedicated to my best friend and wife, Ainsley.

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I wish to express my sincere thanks to:

- Geoff Bick, my supervisor, for his guidance and support.
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ABBREVIATIONS

ANOVA	Analysis of Variance
CI	Confidence Interval
CPD	Continuing Professional Development
CME	Continuing Medical Education
DMU	Decision-Making Unit
KOL	Key Opinion Leader
IVS	Index of Veterinary Specialists
NA	Not Applicable
ROMI	Return on Marketing Investment
SAAHA	South African Animal Health Association
SAVC	South African Veterinary Council
VAT	Value Added Tax
VOTC	Veterinary Over the Counter

1 INTRODUCTION

This section provides a brief background to the research problem and sub-problems. The following topics are also discussed: purpose of the study, context and significance of the study, assumptions and delimitations.

1.1 The Purpose of the Study

This study proposes to investigate the different criteria on which veterinarians base their purchasing decisions for different categories of veterinary pharmaceutical products and to suggest how the veterinary market can be segmented. The objective is to apply the theory of buyer behaviour and marketing segmentation strategy to make suggestions towards effective marketing strategies for veterinary pharmaceutical companies operating in the South African Animal Health Industry.

1.2 Context of the Study

The Animal Health Industry comprises a wide variety of stakeholders *inter alia* pets and pet owners, livestock and farmers, game and game farmers, veterinarians, vet nurses, veterinary pharmaceutical companies, nutrition companies, veterinary wholesalers, co-ops as well as research and training institutes. In the context of this study, the Animal Health Industry includes those veterinary pharmaceutical companies which produce products that promote the health and well being of both food producing and companion animals. In 2007, the South African Animal Health Industry was valued at R1,027,686,129, which increased by 4.8% compared to 2006 (SAAHA Stats, 2008). There are a number of veterinary pharmaceutical companies in South Africa, which invest vast amounts of capital on marketing, in order to gain a share of this market. The industry is categorised into two major divisions; the livestock division and the companion animal division. The former can further be divided into extensive (e.g. beef farming) and intensive (feedlots, broiler houses, etc.) divisions.

As there are a number of similar products available from different companies, the veterinary pharmaceutical industry is very competitive. In order to gain a competitive edge, pharmaceutical companies are continually striving to ensure that their products become preferred in the market, at the most profitable margins possible.

This study focuses on the companion animal pharmaceutical division in South Africa and attempts to determine what decision criteria are used in the purchasing process of different categories of veterinary pharmaceutical products. Furthermore, it will endeavor to suggest how the veterinary market can be segmented and accordingly, how best to develop strategic marketing plans in order to gain a competitive advantage.

A number of products are consumed directly by the veterinarian in performing their duties and only some products are used directly by the pet owner. In the context of this study, the customer will refer to the veterinarian and the consumer will refer to the pet owner.

Veterinary pharmaceutical products have been divided into three categories, based on the following definitions:

1. Biologicals – those products made from living organisms such as vaccines;
2. Ethicals – those products which require dispensing by a veterinarian (usually higher scheduled drugs such as antibiotics, anaesthetics, etc.); and
3. Veterinary Over the Counter (VOTC) – those products sold legally, from a veterinary practice or vet shop, without the need for a veterinary consultation, e.g. dewormers and tick and flea products.

The above categorisation is based a combination of factors including, *inter alia*, the role and use of the product within the veterinary practice, the Act under which the product is registered, the storage requirements of the products and their scheduling status.

This study investigates which different criteria (e.g. price, technical quality, promotions, brand loyalty etc.) are used in selecting products from these three different categories. The results of these findings are used to suggest effective marketing strategies and provide recommendations to guide marketing programmes.

1.3 The Problem and Sub-Problems

The research problem is to understand the buying behaviour of South African veterinary practices for different categories of veterinary pharmaceuticals. The outcome of the study will allow for veterinary pharmaceutical companies to strive for better client satisfaction.

The sub-problems can be stated as follows:

- To determine the composition of the buying centre or decision-making unit (DMU) at a veterinary practice.
- To determine the relative importance of different decision criteria the DMU uses for purchasing different categories of veterinary pharmaceutical products.
- To suggest how the veterinary market can be segmented based on decision-making criteria.
- To suggest effective marketing strategies for veterinary pharmaceutical companies based on the findings of the above.

1.4 Delimitations of the Study

This study is limited by the following:

- It focuses on decision-making criteria used by South African veterinary practices when purchasing companion animal products.
- It does not investigate decision variables used by farmers or pet owners.
- It is not an exhaustive investigation of all buyer behaviour and marketing strategy theory.

1.5 Significance of the Study

This study has significance for the veterinary pharmaceutical industry in that it:

- provides insight into the criteria which influence the buying behaviour of veterinary pharmaceutical products by veterinary practices;
- provides recommendations reading important aspects to be considered for segmenting the veterinary market;
- recommends marketing strategies for veterinary pharmaceutical companies wishing to gain a competitive edge in the aggressive South African Animal Health Industry; and
- has implications for the best return on limited resources invested in the marketing of veterinary pharmaceuticals.

1.6 Assumptions

This study is based on the following assumptions:

- The veterinarians sampled are a representative sample of the veterinary population.
- The respondents answered the questions as a true indication of their ideas and motives and not as they believe the questions should be answered.
- The categorisation of the veterinary pharmaceutical products into Biologicals, Ethical and VOTC products is a fair and logical categorisation.

1.7 Subsequent Chapters

The following chapters are included in this report:

- **Chapter 2** – literature review including the research propositions derived from the review.
- **Chapter 3** – research methodology including the type of analysis and data collection.

- **Chapter 4** – results are interpreted and discussed relative to the research propositions.
- **Chapter 5** – conclusions are drawn and recommendations made to organisations within the veterinary pharmaceutical industry. Suggestions for further research are presented.

2 LITERATURE REVIEW

The literature review discusses aspects of buyer behaviour and debates whether a veterinary practice and its veterinarian purchase pharmaceuticals as a business or as a consumer. Consideration is given to the segmentation of markets and finally marketing strategy theory is reviewed.

2.1 Market Analysis

2.1.1 South African Animal Health Industry

Companies

The South African Animal Health Industry is very competitive with no less than 50 registration holders and distributors, refer to Appendix A for a list of registration holders and distributors (IVS, Dec 2007). Excluding instruments and foods, the industry was valued at R1,027,686,129 in 2007. Of this, the companion animal products accounted for approximately R190,000,000 or 18.5% of the total value of the market (South African Animal Health Association, 2008). Although the industry characteristically has a much smaller companion animal market compared to the livestock market, the former is traditionally much more profitable with margins ranging from 40 - 70 %; while only around 30 - 50% for the livestock products. The companion animal pharmaceutical division in South Africa is dominated by seven large multinationals namely; Bayer, Intervet, Merial, Novartis, Pfizer, Schering Plough and Virbac. Intervet merged with Schering Plough in 2007.

Veterinarians

According to the South African Veterinary Council (SAVC), 2870 veterinarians were registered in South Africa in 2008 (SAVC, 2008). Any veterinarian wishing to practice in South Africa can only do so provided they are registered with the SAVC. However, not all veterinarians registered with the SAVC necessarily practice in South Africa. A number of veterinarians registered with the SAVC practice abroad. The estimated

figures with regards to the numbers of veterinarians working in the various veterinary facilities are shown in Table 1 below (SAVC, 2008).

Table 1: Estimated numbers of veterinarians working in the different types of veterinary facilities in South Africa.

Type of facility	Number of veterinarians
Rural bird practice	89
Rural equine practice	204
Rural mixed practice	216
Rural prod animal practice	240
Rural small animal practice	213
Urban bird practice	149
Urban equine practice	141
Urban mixed practice	81
Urban prod animal practice	119
Urban small animal practice	857
Academic	93
Animal welfare	166
Government	44
Industry	95
Local authority vet	6
SANDF/SAPS	15
Research	52
State vet	41
Wildlife	140
Pathology	5
Opthalmology	1
Fish / poultry	12
State vet provincial government	159
State vet national government	32
None / unknown	575

Note that a registered veterinarian may fall under more than one category of veterinary facility. In total, there were 901 registered veterinary facilities in South Africa in 2008.

Legislation

In South Africa, veterinary medicines are regulated by one of two bodies, the Medicines Control Council or the National Department of Agriculture. This is dependent on whether a veterinary product is registered under:

- Act No. 101 of 1965, The Medicines and Related Substances Control Act - The Medicines Act. (www.mccza.com, 2008); or
- Act No. 36 of 1947, The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act - The Stock Act (www.nda.agric.za, 2008).

These bodies govern the manufacture, distribution, sale and marketing of these products (www.mccza.com, 2008). Each of the bodies has a different set of standards. This has significant implications regarding the marketing possibilities for an Act 101 versus an Act 36 product. A code of marketing ethics for veterinary pharmaceuticals has also been developed by the South African Animal Health Association, which provides guidelines for pharmaceutical companies with respect to the marketing of veterinary pharmaceuticals in the South African Code of marketing ethics for veterinary pharmaceuticals (http://www.saaha.co.za/marketing.html, 2008).

2.2 Business to Business Marketing

There are a number of well documented differences between business to business and business to consumer markets (Brierty, Eckles & Reeder, 1998; Kotler, 2003 and Lamb, Hair, McDaniel, Boshoff & Terblance, 2004). According to Reed, Story & Saker (2004) these differences concern:

- the structure of the market and its demand;
- the character of the buying centre; and
- the decision processes involved.

In the context of companion animals, a veterinary practice is a business offering a health care service for peoples' pets. In providing preventative and curative healthcare, the veterinarian makes use of various veterinary pharmaceutical products in their practice. Although many of the pharmaceutical products sold to a veterinary practice are consumed by veterinarians themselves, they are done so in order to provide a service to the pet owner. A retailer may be regarded as a business that sells products and services to consumers for their personal or family use. Since a pet may be regarded as part of the family unit, the service that a veterinary practice provides may be regarded as retailing and the veterinary pharmaceutical product is consumed in this process. The sale of veterinary pharmaceutical products to veterinary practices should thus be regarded as business to business marketing.

2.2.1 The Veterinary Business

Business markets, with specific reference to the veterinary companion animal business, are characterised by the following in comparison to consumer markets: (based on; Kotler, 2003; Reed *et al*, 2004 and Lamb *et al*, 2004):

- There are fewer buyers – there is a total of 901 registered veterinary facilities in South Africa compared to the hundreds of thousands of pet owners.
- The average veterinary practice buys a great deal more veterinary pharmaceutical products than does the average pet owner.
- There may be close supplier customer relationships between veterinary practices, veterinary pharmaceutical companies and veterinary wholesalers. It must be said however, that very close supplier customer relationships may also exist between veterinarians and their clients.
- The majority of veterinary practices are concentrated in the urban areas where the largest part of the pet owner populations reside.
- The demand for veterinary products is derived from the pet owners demands. The more veterinary health care services are required by pet owners, the

greater will be the demand for companion animal veterinary pharmaceutical products by veterinarians.

- Fluctuating demand – small increments in pet owner demands sum collectively and lead to large changes in demands by veterinary practices.
- Professional purchasing – a professional veterinarian is almost always involved in the purchasing process.
- Multiple sales calls – The veterinary pharmaceutical industry is characterised by personal selling whereby sales representatives call on the veterinary practices to market the products. This is with the intention of creating long-term relationships with the veterinary practice. It often requires a number of sales calls to close a sale and, it certainly requires numerous and ongoing sales calls to achieve add-on sales and gain customer loyalty. What is important is not so much the frequency or quantity of calls per customer, but rather the quality or value-add of each call.
- Enterprise purchasing is very important within the veterinary practice. The purchasing of veterinary pharmaceuticals forms one of the biggest monthly expenses for a veterinary practice, second only to pet food purchases and employee salaries.

2.2.2 Differences of Veterinary Business to the Traditional Business Market

There are certain differences when comparing the veterinary practice to the typical industrial market:

- The demand is not entirely inelastic. The fact that veterinary medical aid is by far the exception than the rule, and the fact that euthanasia is a recognised veterinary procedure, means that should veterinary pharmaceutical products increase in price too considerably, the demand for those products may fall sharply. A pet owner will rather opt for euthanasia, if veterinary treatment becomes too costly. That said however, it is the veterinarians professional fees

which often comprise a significant portion of the pet owners cost and the pharmaceutical product is the “add-on”.

- Uncharacteristic for business buying, is that there tends to be few buying influences on veterinarians. More often than not, it is only the veterinarian who decides what will or will not be purchased. Influences may rarely present in the form of a veterinary nurse or a pet owner, they are more likely to present in the form of veterinary colleague. Traditionally, businesses purchasing decisions are based on the outcome of a buying centre which comprises a number of important role players. This is a proposition which is tested in this research.

2.3 Buyer Behaviour

Buyer behaviour, as defined by Du Plessis, Rousseau & Blem (1994), is the decision-making process of consumers and organisations. Industrial or business products and services are acquired to be used as part of the final product or to be used in producing the final product. In the case of veterinary pharmaceuticals, the product is used by the veterinary practice in providing healthcare service for its patients.

2.3.1 The Buying Centre

A good understanding of buyer behaviour is paramount to successful sales and marketing. Providing the correct communication mix to the correct person requires a clear understanding of the buying centre. Various buyer behaviour models have been described by numerous authors. Webster and Wind (1972) suggest that the industrial buying centre consists of all members involved in the buying process and include:

- Users– those who physically use the product or service.
- Influencers– those who influence the buying decision process either directly or indirectly by providing information and reasons for alternative buying decisions.
- Buyers - those who have the authority to contract with suppliers.

- Deciders– those who have the authority to choose between alternative purchase options.
- Gatekeepers– those members who are able to control the flow of information into the buying centre.

According to Webster and Wind (1972), members of the buying centre are influenced by individual, social, organisational and environmental variables. They are also influenced by previous experiences, awareness of and attitudes towards certain suppliers and products or services.

Webster and Wind (1972) claim that organisational buying behaviour is a complex process involving many people, multiple sources of information, the integration of many inter-organisational relationships and that it usually takes place over an extended period of time.

Webster and Wind (1972) suggest that more than one individual may occupy a role in the buying centre. Furthermore, one individual may occupy more than one single role in the buying centre. Pitt and Nel (1988) state that the medical practitioner plays multiple roles in the buying decision process of pharmaceutical products. They claim that the medical practitioner acts as user, influencer, gatekeeper and decider. It is suggested that the veterinarian plays very similar roles in the purchasing decision processes of veterinary practices. The veterinarian most certainly acts as a user (with respect to anaesthetics, vaccines etc); they act as influencers (in advising pet owners what product should be used to treat their pets' various ailments); they act as gatekeepers (controlling what information is used in the buying decision process) and finally, they act as the decision maker (they decide what to buy for their patients). It is suggested therefore, that the veterinarian is always involved in the decision purchasing process. What may differ, with different types of products (Ethicals, VOTC and Biologicals), is the involvement of other role players in the purchasing decision process. The pet owner or receptionist may, for example, play an influential role in the ordering of VOTC products, but have no influence in the purchasing of

veterinary Ethical products. Moreover, the receptionist could act as gatekeeper to information originating from the sales representative and thereby influence the buying decision process in this manner.

2.3.1.1 Differences between Medical and Veterinary Buying Centres

A difference between the medical practitioner buying process and the veterinary buying process is the fact that a doctors' patient acts as both the buyer and user of the product, whereas the veterinarian's patient acts only as a passive user of the pharmaceutical product. A medical practitioner writes a script for his/her patient who then gets the script filled by a pharmacy. This affords the opportunity for a pharmacist to modify the script in some way, from a patented product to a generic product, for example. The medical practitioner therefore does not act as a buyer. A veterinarian, however, acts as a buyer as described by Webster and Wind (1972), i.e. the vet has the formal authority and responsibility to contract with pharmaceutical suppliers. The veterinarian buys in pharmaceutical products and dispenses them to the pet owner directly from the veterinary practice. There is thus no opportunity for the script to be changed as the veterinary practice is also the dispensary. All marketing efforts should therefore be aimed at the veterinarian. There is no need to dilute marketing efforts elsewhere, besides perhaps a small share to veterinary wholesalers.

Furthermore, medical practitioners are able to communicate directly with their patients, whereas the veterinarian does not have this luxury. For this reason, veterinarians encounter greater potential difficulties in the diagnostic process as they have to rely on a history from the owner, clinical signs and other diagnostic procedures and tests. The veterinary patient, unlike the medical practitioner's patient, has no direct influence on the purchasing process.

Most veterinary practices are owned by one or two veterinarians and it is believed that the purchasing decisions for the business are made predominantly by the owning veterinarian. One individual will therefore make decisions for the business as

opposed to a number of individuals making buying decisions, which would be the case in large companies.

<u>Proposition 1</u>: The owner of the veterinary practice forms the buying centre and the veterinary nurses, receptionists, kennel assistants and pet owners have little say in the buying decision process.

2.3.1.2 Structure of the Buying Centre

Lau, Goh and Phua (1999) suggest that purchase related factors, such as the importance of the purchase, time constraints for the purchase, and the novelty of the purchase situation all influence the structure of the buying centre. These authors define the buying centres' structure in terms of three dimensions, namely:

- Complexity (the degree of differentiation between groups);
- Formalisation (the degree of ruling and authority); and
- Centralisation (the distribution of formal control and power).

Lau *et al* (1999) findings suggest that as the importance of the purchase or time pressure increase, so too does the complexity of the buying centre. They also suggest that novel purchases require a less formalised buying centre structure and that increased time pressures result in more centralised buying centres. In contrast, Laios and Moschuris (2001) state that various literature supports the notion that high levels of uncertainty in the purchasing process result in greater levels of centralisation and a higher level of formalisation. This would imply that in terms of the different classes of buying as described by Robinson, Faris and Wind (1967) in Kotler (2003), the straight rebuy would not involve as high a level of centralisation, formalisation and complexity in the buying decision process than would a modified rebuy or new task purchase.

Different buy classes result in varying degrees of involvement from different members of the buying centre. What is more likely to be the case in the veterinary practice, is that the different buy classes will still involve predominantly one individual, the veterinarian, but the degree of formalisation, complexity and centralisation or level of thinking within the individual will vary with different situations. The veterinarian, for example, might give significantly more internal debate, thought and reasoning for the purchasing of a new pharmaceutical than simply asking the receptionist to order more of an already used pharmaceutical. Thus, changes in the decision-making process of buying centres of large industrial organisations may still be characterised in a veterinary practice, the difference being that they take place at the individual level.

Sheth (1973) suggests that there are two types of factors which influence the purchasing process:

1. Product specific factors
    a. *Perceived risk* – the greater the perceived risk the greater the likelihood of joint decisions.
    b. *Type of purchase* – routine purchases will only require few individuals compared to a totally new purchase, which may involve a number of buyers.
    c. *Time constraints* – time pressured decisions normally involve fewer people.

2. Company specific factors
    a. *Company orientation* – technically oriented companies are likely to rely on engineers and professionals to make purchasing decisions.
    b. *Size of the company* – larger companies tend to make joint decisions.
    c. *Degree of centralisation* – highly centralised companies are likely to have few decision makers.

It thus follows that a privately owned, technically oriented veterinary practice is unlikely to have large buying centres.

2.3.1.3 Stages of the Buying Process

Webster and Wind (1972) describe five stages in the purchasing decision process namely:

1. Need identification;
2. Establishment of specifications;
3. Identification of alternatives;
4. Evaluation of the alternatives; and
5. Selection of suppliers.

In most business organisations, various members of the buying centre are likely to be involved in the different phases of buying or the different buying tasks (Laios & Moschuris, 2001; and Robinson *et al*, 1967 in Kotler, 2003). The veterinarian however, is likely to be central to each of these phases. It is suggested that the veterinary buying centre is far less complex than the traditional business buying centre. This may have significant implications for the marketing strategies developed by veterinary pharmaceutical companies. The marketer will have only to focus one person with respect to the communication, authority, status and rewards subsystems as described in Webster and Wind (1972). The factors causing differentials in expectations as described by Sheth (1973) such as the individuals background, exposure and participation in information sources, the individual bias of information retention and the satisfaction with past purchases will be applicable for only one or a few individuals. If however, the veterinarian does not form the buying centre it may well be that the veterinary pharmaceutical marketer needs to focus efforts, such as advertising, on the pet owner or incentivise, within the regulations, the receptionist to recommend one particular VOTC product over another.

The personal sales agent has to be aware of all the different buy classes and buy phases of the buygrid (Kotler, 2003) and how they influence the buy centres' decisions. Webster and Wind (1972) state that in order for a marketer to influence the buying process of an organisation, they must clearly understand the buying tasks/phases; the organisations structure, including the task and non-task dimensions; its technology; and the role players in the buying centre. For example, it would not be useful for a pharmaceutical representative to detail a vaccine to a receptionist, if s/he has no role to play in the buying centre for that product.

Sheth (1973) describes how conflict within buying centres is a common result of joint decision-making processes. It is suggested that conflict may occur, even if there is autonomous decision-making of the buying centre. The buyer may have a conflict of opinion with regard to the option of alternatives, for example. Just as a joint decision process of a large buying centre resolve the conflict through information seeking, so too would the individual buyer seek further information until the internal conflict can be resolved. A veterinarian may seek to gather more information from various pharmaceutical companies until the concerns are addressed.

2.3.2 Factors Influencing Veterinary Buyer Behaviour

There is a fair amount of literature regarding the interaction between pharmaceutical companies and doctors. There is however, little information to be found on the interactions between drug companies and veterinarians. In a literature review by Wazana (2000), Gibbons, Landry, Blouch, Jones, Williams, Lucey, & Kroenke (1998); Poirer, Giannetti, Guidici (1994) and Banks & Mainos (1992) in Wazana (2000) it is claimed that a greater influence on medical practitioner behaviour comes from product sampling, continuing medical education and the funding of conferences than does promotional material. Wazana (2000) also found that pharmaceutical representatives were indeed able to influence the prescribing practice of residents and physicians. Furthermore, it was discovered that contact with sales representatives and the attendance of educational events would decline, if it were not

for free meals and gifts. It is suggested by Wazana (2000) that physicians do not always comprehend how interactions with industry affect them. This is an important point which must be borne in mind when interpreting any results of a survey or questionnaire. A veterinarian may believe that they are not influenced by pharmaceutical representatives when in actual fact they may be. This is difficult to measure and limitations such as these need to be recognised.

Webster and Wind (1972) state that there are both task and non-task dimensions with respect to a buyers motivation for decision:

- Task variables are those used to satisfy the buying objective. They will include factors such as buying the correct product in the correct quantities at the correct price for delivery at the correct time.
- Non-task variables on the other hand involve more personal motives not specifically related to the buying task and include one of two:

    1. Achievement motives – related to personal development and recognition.
    2. Risk reduction motives – related to avoiding uncertainty.

Risk reduction motives should not be underestimated in the veterinary buying centre. A veterinarian may choose not to purchase a new veterinary pharmaceutical such as a new anaesthetic but rather continue using an existing product. This would remove the risk of uncertainty to the patient and thus, the risk to the vet of legal action being taken by the pet owner, should something go awry with the anaesthetic, for example.

Sheth (1973) suggests that members of the buying centre are influenced by their expectation of suppliers and the brand with regard to satisfying explicit or implicit objectives:

- Explicit objectives are those which satisfy product quality, delivery time, quantity of supply, etc. Similar to the task variables as described by Webster and Wind (1972).
- The implicit objectives on the other hand, are those objectives which satisfy criteria regarding the reputation, size and location of the supplier as well as the personality, technical knowledge and lifestyle of the sales agent (Sheth, 1973).

Pitt and Nel (1988) found that indirect organisational and interpersonal factors had a greater influence on prescribing decisions of medical doctors than did direct pharmaceutical promotional tools. Of the direct promotional tools, however, sales calls by pharmaceutical representatives were discovered to be the most influential in terms of prescribing decisions.

Various authors have identified a number of factors as being able to influence a medical doctors prescribing/purchasing behaviour (Bellin, McCarthy, Drevlow, & Pierach, 2004; Dana, 2003; Griffith, 1999; Hemminki, 1975; Moynihan, 2003; Lexchin,1993 and Wazana, Granich, Primeau, Bhanji, & Jalbert 2004). Factors may include some of the following:

- Continuing medical education (CME);
- Interacting with medical students at a university, either on clinics or prior to clinic years;
- Sales representative interactions;
- Meals; and
- Gifts.

2.3.3 Types of Products Purchased

According to Laios & Moschuris (2001) there are various references which support the view that different types of industrial products purchased will elicit different organisational buying activities. It is suggested that there may not necessarily be

different buying activities by the veterinary buying centre, but there will most certainly be different decision variables for the different veterinary products purchased.

Studies by Jackson, Keith & Burdick (1984); Mattson (1988) in Xideas and Moschuris (1998) suggest that different categories of products result in different influences from different members of the buying centre. Whilst this is possible with the veterinary buying centre, it is far more likely that different categories of product will call upon different decision criteria of the same individual that forms the buying centre, i.e. the veterinarian.

Proposition 2: The importance of different decision criteria used by veterinarians in the purchasing process varies for the different categories of veterinary pharmaceutical products, namely Biologicals, Ethicals and VOTC products.

Surprisingly, there is very little literature on the influence of the category of veterinary pharmaceutical product on the purchasing decision process. The information provided to the veterinary buying centre should be tailored to the needs of the decision-making unit. This could include, for example, safety and efficacy data, profitability data, direct to consumer promotions, etc. This proactive approach will help facilitate the decision-making process and alleviate any reservations that the buying centre may have. This will help prevent delays during which the competition may target the buying centre. The decision-making unit should be encouraged to communicate with the sellers and marketers at all times.

Previous research by Pitt and Nel (1988) identified various factors which influence pharmaceutical product prescription decisions by medical practitioners. No effort was made to differentiate different categories of pharmaceuticals and it is assumed that the prescription drugs in this study would be similar to the veterinary Ethical category of products.

2.4 Segmentation

Market segmentation is the grouping of customers based on a shared, similar set of wants (Kotler, 2003) and is an important tool in directing a marketing strategy as well as allocating limited resources amongst the different markets and products (Rao and Wang, 1995). Sudharshan and Winter, (1998) propose that it may be useful to approach segmentation of industrial markets through an investigation of derived demand from their customers. They suggest that one should target customers based on their buying strategy as well as the firms demographics. Bonoma and Shapiro (1993) in Sudharshan and Winter (1998) recommend a segmentation approach based on five levels:

- Organisational demographics
- Operating variables
- Purchasing approaches
- Situational factors
- Personal characteristics of decision makers

Based on the nature of the proposed buying centre, the personal characteristics of the veterinarian are likely to play a significant role in segmenting the veterinary market. Personal characteristics of a veterinarian may include:

- Gender
- Age
- Number of years in practice
- Technically focused vs. business or client focused.

<u>Proposition 3</u>: The criteria used when purchasing products from the different categories vary according to the personal characteristics of the veterinarian.

As an organisation, veterinary practices may differ on a number of criteria such as;

- Single-vet vs. multi-vet practice;

- General practitioner vs. specialist referral practice;
- Companion vs. mixed practice (small animal + equine or large animal); and
- Socio-demographics of the suburbs which they serve.

Proposition 4: The criteria used when purchasing products from the different categories vary according to the nature and characteristics of the veterinary practice.

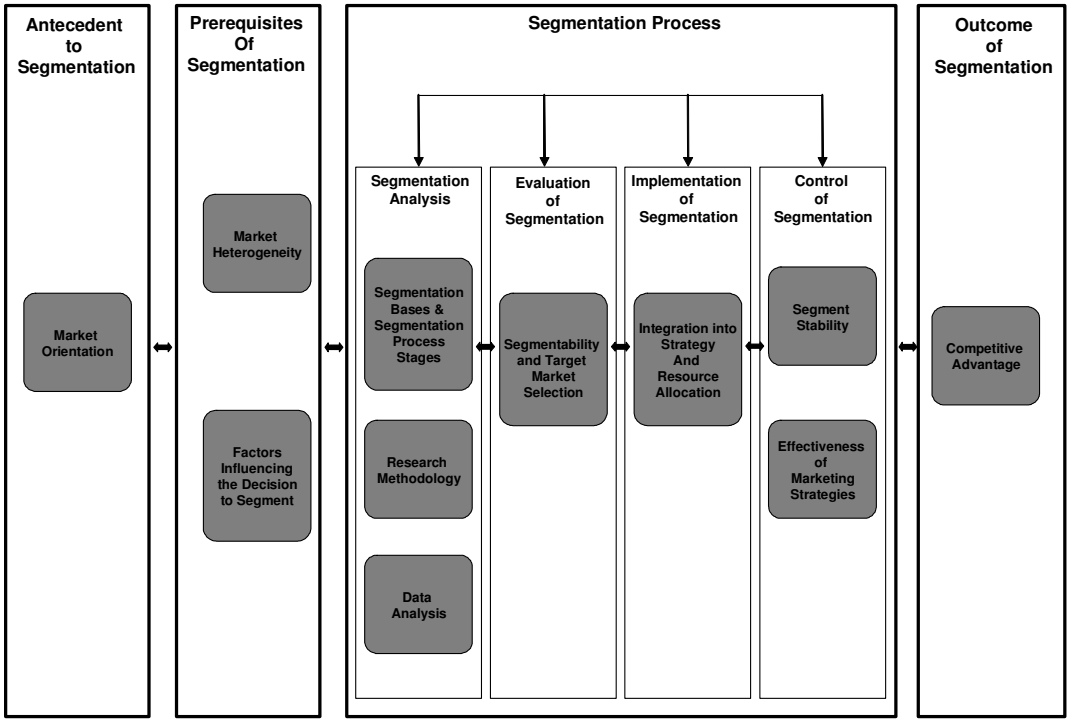
A comprehensive integrated framework for segmenting business markets is presented by Goller, Hogg & Kalafatis (2002). This framework is divided into four components (Figure 1):

1. Antecedent to segmentation
2. Prerequisites of the segmentation process
3. The segmentation process
4. An outcome of segmentation

This research focuses on the segmentation process, specifically with respect to segmentation bases. Part of the study aims to implement segmentation within the veterinary industry with the intention of altering the outcome of the segmentation process. These findings are then applied to suggest strategies for gaining a competitive advantage.

Pitt and Nel (1988) discovered that gender had no significant importance in the medical practitioners' susceptibility to the different determinants of prescribing behaviour. Furthermore, Pitt and Nel (1988) attempted to determine whether the number of years spent in practice would influence the susceptibility to prescribing determinants. Their results demonstrated no significant differences between prescribing decisions and number of years in practice.

Figure 1: An integrated framework of business segmentation.



Source: Adapted from Goller, Hogg & Kalafatis (2002).

It is possible that aspects such as the gender of veterinarians, the number of veterinarians in a practice, the number of years in practice, the type of practice, etc., will have an effect on the factors influencing the purchasing decisions of various categories of pharmaceutical products. If it is found, for example, that vets with few years in practice are influenced by educational activities such as conferences and seminars, then it follows that this is where marketing resources should be expended on this particular segment of veterinarians.

2.5 Marketing Strategy

As suggested by Wilson (2000), a successful marketing strategy will depend on the development and careful management of relationships with the correct people in the organisation and it's DMU.

According to Thomas, Reinartz and Kumar (2004), companies spend billions of dollars annually on marketing efforts directed at acquiring new customers and managing relationships with existing ones. Wolfe (1996) and Woosley (1994) in Wazana (2000) estimate this figure to be $11 billion with a full $5 billion being apportioned to sales representatives. In the South African veterinary industry, millions of Rands are spent annually on marketing efforts. Excluding the salaries of marketing staff and sales agents, multinational companies in South Africa. spend approximately 4-5% of their companion animal turnover on advertising and promotion per annum. This limited resource needs to be spent in the best possible way. Targeting the right customer with the right marketing or communication mix is crucial to this. It is the aim of pharmaceutical company to get the best return on marketing investment and thereby increase their potential profits.

Understanding how to get the most value for ones marketing spend involves an investigation into what information sources are used the most by veterinarians during the process of informing their decisions. Certain authors (Cuk & Fuznik, 2002 and Wales, 2000) have investigated what sources of information are used by veterinarians in informing themselves with respect to drugs and veterinary medicine in general. These types of research could prove very useful for marketers in developing key channels of communication. Although no literature is available on the different sources of information for different veterinary pharmaceuticals, veterinarians may employ different sources of information depending on the category of product they are attempting to be informed of.

According to Kotler (2003), the major sources of information for the consumer can be divided into the following categories:

- Personal sources – family, friends, acquaintances
- Commercial sources – advertising, salespersons, dealers, packaging, displays
- Public sources – mass media, research based companies
- Experiential sources – handling, examining, using the product

The veterinarian will have similar sources of information with experiential sources being of importance. Colleagues and key opinion leaders are likely to form important personal sources of information, just as sales representatives are likely to be important commercial sources.

Proposition 5: **Information sources vary according to the category of product being purchased.**

Standardisation of marketing strategies for different types of veterinary products will only be appropriate if customer needs are similar for the different categories of products. The ongoing debate regarding the pros and cons of standardisation versus customisation of marketing strategies should be confined to that method which results in the greatest return on marketing investment (ROMI) (Doherty and Ennew, 1995). Whilst this study does not look at the ROMI in the veterinary pharmaceutical industry, it can be assumed that if there are differences in customer needs for different categories of drugs, then these should call for different marketing strategies, in order to optimise on satisfying the differing needs. The product:marketing modification costs described by Levitt (1983) for globalising strategies would then need to be investigated for domestic markets.

Proposition 6: **Marketing strategies need to be customised for different categories of veterinary pharmaceutical products and for the different segments of veterinary practices.**

Rackham and Vincentis (1999) in Kotler (2003) claim there are three groups into which businesses buyers can be classified;

1. Price sensitive customers – these would be veterinary practices who seek value through the lowest price.
2. Solution oriented customers – could include veterinary practices who seek value through technical advise and benefits.
3. Strategic value customers – would include the veterinary practice that seeks value through the involvement of the supplier in investing and participating in their business.

According to Reed *et al* (2004), consumer marketing entails mass communication and the development of the brand. Those categories of veterinary products which are influenced by the pet owner may require far more brand equity and mass communication to the end user than would other categories of pharmaceuticals which are influenced less by the pet owner. For these categories, value equity to the veterinary practice, particularly quality of physical product, service delivery, ease of use and availability as well as retention equity to the veterinary practice, particularly loyalty programmes and knowledge building programmes, may be more important.

Should purchasing decisions of veterinarians be influenced by pet owners, marketers may need to investigate thoroughly the concept of direct to consumer advertising. There are various references which debate the merits and demerits of direct to consumer marketing (Baca, Holguin, & Stratemeyer, 2005; Handlin, Mosca, Forgione, & Pitta, 2003 and Paul, Handlin & Stanton, 2002). From a marketing perspective, the benefits are well proven. The marketing would, however, need to be in strict accordance with the regulations of the applicable Acts.

The aim of this study is to determine how limited marketing resources can best be allocated across the marketing mix for the different categories of pharmaceutical veterinary products, to get the best return on investment, similar to what was done for

medical practitioners in a study by Pit and Nel (1988). Different influences on the purchasing decision processes of different veterinary products will enable marketers to effectively focus their efforts on products and areas where they are able to have the greatest influence. In order to improve the overall effectiveness of marketing efforts, a veterinary pharmaceutical company needs to:

- understand who is involved in the buying process and what roles they play,
- target the respective segments with the most effective communications mix,
- understand whether different categories of veterinary pharmaceuticals have differing purchasing determinants or not, and finally
- integrate this all into an effective marketing strategy.

Knowing who to target and with what marketing mix will significantly impact on the costs of acquiring and retaining customers. It will also impact on the profitability of customers. The more effective the marketing mix, the greater the perceived value of the product and the greater the margins that can be achieved from sales to the customer. Thomas *et al* (2004) claim that companies often place too much emphasis on the acquisition and retention costs of customers and not enough emphasis on the profitability of customers.

A study by Thomas *et al* (2004) revealed that the 32% of a mail order company's customers fell into an easy to acquire, easy to retain category yet they only accounted for 20% of the company's profits. Forty percent of the company's profits were attained from those customers who were difficult to acquire yet easy to maintain. This group accounted for only 15% of the company's customer base however. The question arises as to whether the advertising and promotional spend per veterinarian by pharmaceutical companies should be focused on acquiring those difficult to acquire vets but who are easy to maintain and are profitable? It is important to get the correct balance with regards to the allocation of spend between the different categories of product and between the acquisition and retention costs. Allocating too heavily to one category of product, and too little to other, more profitable categories of products, will

decrease overall profitability. Understanding what drives a veterinarians purchasing decisions between the different categories of products is one of the first steps in identifying where and how to allocate ones resources and what sort of costs will be required for those allocations. It can be argued that a lot of overlap exists between the acquisition and retention costs and on profitability. The first step in achieving the optimal balance is most certainly who to target and with what message for a specific category of product. Thomas *et al* (2004) state that maximising profitability and the optimal allocation of marketing spend involves not only optimisation of acquisition and relationship management allocations, but involves a more detailed look at the level of choices between the different communication channels. This research aims to achieve just that.

2.6 Summary of Propositions

Proposition 1: The owner of the veterinary practice forms the buying centre and the veterinary nurses, receptionists, kennel assistants and pet owners have little say in the buying decision process.

Proposition 2: The importance of different decision criteria used by veterinarians in the purchasing process varies for the different categories of veterinary pharmaceutical products, namely Biologicals, Ethicals and VOTC products.

Proposition 3: The criteria used when purchasing products from the different categories vary according to the personal characteristics of the veterinarian.

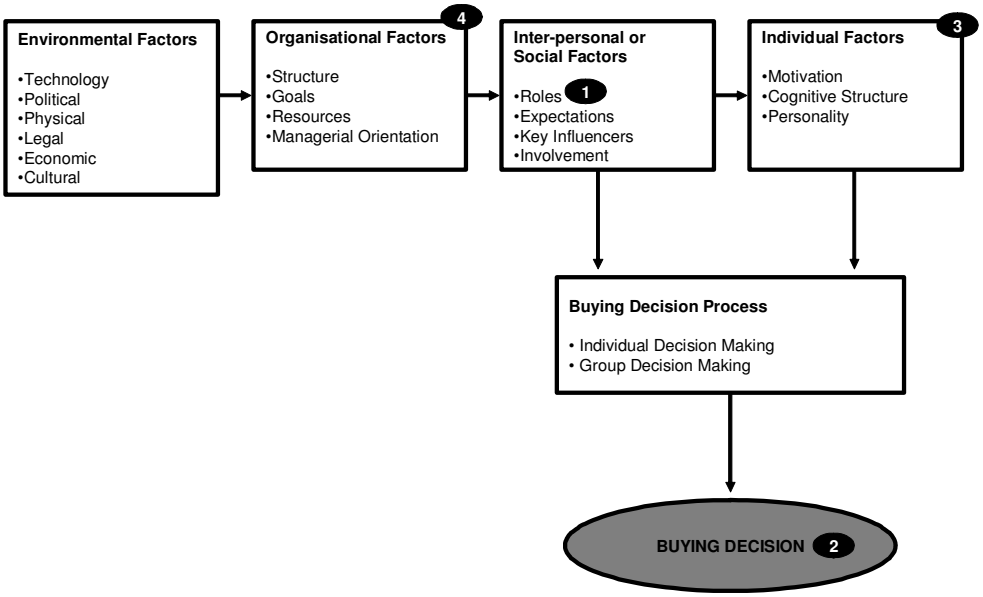
Proposition 4: The criteria used when purchasing products from the different categories vary according to the nature and characteristics of the veterinary practice.

Proposition 5: Information sources vary according to the category of product being purchased.

Proposition 6: Marketing strategies need to be customised for different categories of veterinary pharmaceutical products and for the different segments of veterinary practices.

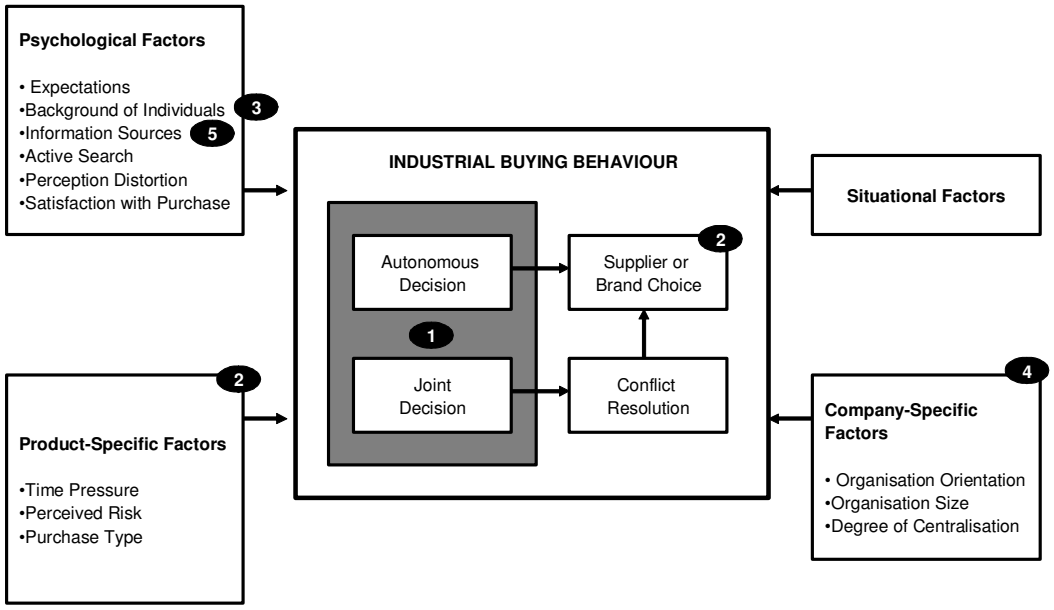
2.7 Relation of Propositions to Buyer Behaviour Models

Figure 2: Webster and Wind's buyer behaviour model (1972).



Note how the different propositions relate to the various elements of the model.

Figure 3: Sheth's buyer behaviour model as taken from Lau *et al* (1999).



Note how the different propositions relate to the various elements of the model.

3 RESEARCH METHODOLOGY

3.1 Introduction

This exploratory research involved a quantitative study based on an analysis of responses obtained from a structured questionnaire. The survey was sent out via email or facsimile. The majority of the data collected was in the form of ranked and partially ranked data. The data collected from the survey was analysed using various statistical techniques in order to support or contest the propositions.

3.2 The Research Population

The research population consisted of all veterinarians practicing within South Africa. There are approximately 2800 vets registered with the South African Veterinary Council (SAVC, 2008). All vets practicing within South Africa are registered with the SAVC, yet not all SAVC registered vets practice within South Africa. The research population was estimated to be approximately 2500 veterinarians.

3.3 Sample Size and Selection

The sampling method used was a convenience sample. Veterinarians selected as a result of convenience are not expected to differ in any way from the total population. For this reason, the convenience sample is regarded as a true and reliable representation of the total population.

A list of veterinarians was obtained from the South African Veterinary Council as all veterinarians wishing to practice in South Africa have to be registered with the SAVC. Three hundred and twenty seven of the approximately 2800 vets registered with the SAVC were sampled from across South Africa. One hundred and nine completed questionnaires from each of the three categories were collected:

- Biologcals
- Ethicals
- VOTC

This then made a total of 327 viable questionnaires. Approximately 355 questionnaires were returned, yet only 327 could be used for the research. The veterinarians sampled were all practicing within South Africa's borders. Some veterinarians may be registered with the SAVC, but may not necessarily be practising within South Africa.

3.4 Data Collection

3.4.1 Overview

Veterinarians were contacted telephonically using contact data obtained from the SAVC. The reason for the survey was clearly explained and the veterinarians' participation in the survey was requested. The questionnaire was then forwarded to those veterinarians who agreed to participate in the survey by either a fax or as an email attachment.

3.4.2 The Measuring Instrument

The measuring instrument was in the form of a survey. The body of the survey included approximately 14 variables as based on previous research (Pitt and Nel, 1988) and on personal experience in the industry. The survey was constructed with the intention of investigating the propositions, which have been developed throughout the literature review.

Three different questionnaires, namely Biological, Ethical and VOTC were made available in the English language. Each vet received only one questionnaire. The questionnaires were divided into five questions:

- Question one: contained questions pertaining to the demographics and characteristics of the individual respondent as well as to the nature and characteristics of the veterinary practice within which the veterinarian worked. This created predominantly nominal data but also some interval data.

- Question two: looked at what sources of information veterinarians use to help inform their purchasing decisions. The respondents were required to partially rank only their top five preferred sources of information from a list of ten. This generated ordinal data.
- Question three: required the respondents to partially rank, in importance from a list of 14, only their top five criteria, which they would use in the decision-making process for the purchasing of the particular category of product – Biologicals, Ethicals and VOTC depending on which questionnaire it was that they were answering. This generated ordinal data.
- Question four: comprised of a single open-ended question enquiring whether any other criteria, previously not mentioned, were important in influencing the purchasing decision behaviour of the veterinarian.
- Question five: required the veterinarian to rank in order of importance, from a list of staff members, who is involved in the purchasing decision process in their practice for the veterinary pharmaceutical product. The list of employees included the vet, the receptionist, the vet nurse, the kennel assistant, the practice manager and the pet owner. Respondents were required to do this for three types of purchases, namely; a totally new purchase, a modified re-buy and a straight re-buy. This also generated ordinal data.

One questionnaire was completed per respondent. All three questionnaires were structured identically except for the type of veterinary pharmaceutical product group (Biological, Ethical or VOTC) to which they pertained. (Refer to Appendix B for a example of the survey).

3.4.3 Administration

After telephonically gaining the vets consent to participate, the survey was delivered to the veterinarian either via email or facsimile, depending on the vets preference. A brief, yet personalised, covering letter was forwarded with the questionnaire

explaining the reasons for the survey and thanking them for participating in it. Completed questionnaires were returned either via fax or email.

The electronic questionnaire was reformatted and restructured into a user-friendly format to reduce a poor response rate from veterinarians. This was achieved with features such as drop downs with choices. By asking the veterinarians for their preferred means of correspondence, the minimum amount of attrition with regard to responses was achieved.

3.5 Reliability and Validity

3.5.1 External Validity

External validity refers to the degree to which the research can be generalised into other areas. The research study entailed convenience sampling. There is no reason to believe that with convenience sampling of the veterinarians, there would be any bias or that the sample was not representative of the population. For this reason, external validity was satisfied.

3.5.2 Internal Validity

The content validity of the research is crucial to ensure that the identified problem is adequately addressed by the measuring instrument, in this case, the survey. A direct relationship exists between the questions in the survey and the propositions which were derived from the literature review. The questionnaire was based on previous research conducted on medical practitioners.

A pilot study was used to validate the construct of the measuring instrument. Respondents were asked to explain their understanding of the questions and highlight any areas of ambiguity.

3.5.3 Reliability

The consistency of the research was achieved through the use of a standard questionnaire, which was tested by means of a pilot study to identify and eliminate any inconsistencies in definitions, terminology or understanding of the questions. The respondents were also asked to indicate their level of fatigue with respect to the questionnaire. Respondent fatigue and a lack of clarity would have resulted in poor reliability.

3.5.4 Pilot Study

A pilot study was important due to the fact that this questionnaire, although based on similar criteria from previous research, was not administered before. The pilot study was used to address the validity and reliability of the survey. Three veterinarians were used for the pilot study. They were required to complete the questionnaire and comment on any ambiguities, uncertainties or confusing areas whilst doing so. All feedback was recorded and the questionnaire was revised and amended based on the findings of the pilot study. The respondents used in the pilot study did not form part of the sample group.

3.6 Data Analysis

The results obtained were accurately collated and captured in a spreadsheet. All original responses have been kept on record. Various statistical techniques have been used to analyse the data such that the propositions could be investigated and conclusions drawn. All statistical analyses were done using a 95% confidence interval as this is the norm for this type of research.

3.6.1 Question 1

The data from this section pertained to the demographics and characteristics of the veterinarian and the veterinary practice. Descriptive statistics were used to analyse the data such as frequency counts and ranges as a measure of dispersion. The descriptive statistic results are illustrated in Appendix C.

3.6.2 Question 2, 3 and 5

Sections two, three and five looked at the sources of information used by vets, the importance of purchasing decision criteria and purchasing involvements of the buying centre, respectively. The partially rank ordered data and rank ordered data was then analysed using a Shotgun Stochastic Parameter Estimation Algorithm as described by Stacey (2006). This algorithmic approach enables one to analysing partially rank ordered data, which carries with it the advantage of reducing respondent fatigue, whilst at the same time retaining a high degree of analytical rigor (Stacey, 2006). The means of the criteria derived from the shotgun algorithm were subject to one-way ANOVA's to determine if there were any differences between the three product groups. Where necessary, further analysis was undertaken by means of t-tests. With regards the question 5, a one-way ANOVA was used to determine if there were statistical differences amongst the six types of staff members for the three types of purchases and three groups of products.

3.6.3 Question 4

This open-ended question was included to determine if there were any other important decision influencing criteria which had been excluded from the survey. The results from this question could be put to use in similar future studies.

The results from the statistical analyses have been used to investigate the propositions developed from the literature review. Furthermore, the findings from these data analyses have then been integrated to provide recommendations for a marketing strategy.

4 PRESENTATION OF RESULTS AND DISCUSSION

4.1 Introduction

The results from the survey are presented and analysed in this chapter. The descriptive statistics of the frequency data from the survey are illustrated in Appendix C. This chapter also includes a discussion as to whether the findings of the results support or refute the research propositions.

4.2 Veterinary Buying Centre

Sub Problem: To determine who forms the buying centre or decision-making unit (DMU) at a veterinary practice.

Proposition 1: The owner of the veterinary practice forms the buying centre and the veterinary nurses, receptionists, kennel assistants and pet owners have little say in the buying decision process.

In order to determine who is involved in the purchasing decision process, respondents were asked to rank the order of importance of involvement in the purchasing decision process in the veterinary practice, from the following list of members:

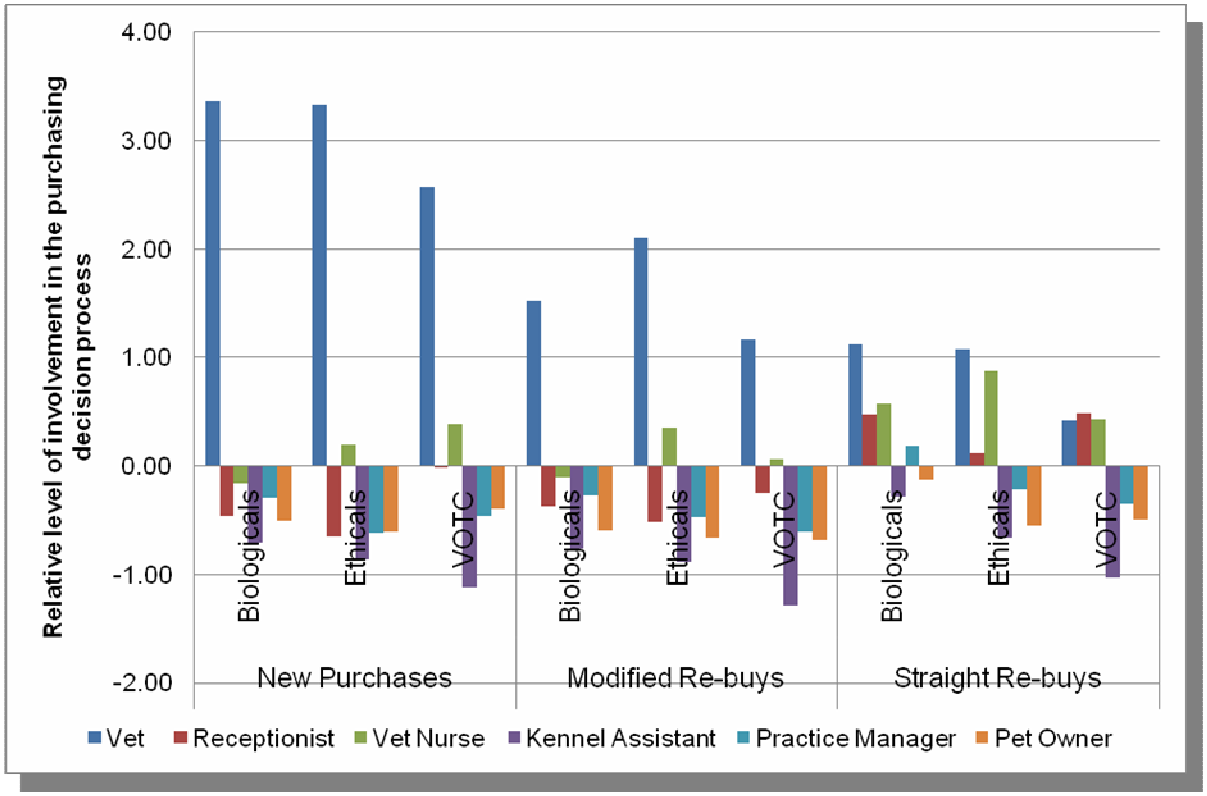
- Vet,
- Receptionist,
- Vet Nurse,
- Kennel Assistant,
- Practice Manager, and
- Pet owner,

.

Respondents were requested to indicate those members not involved in the purchasing decision process with an “N”, and those listed members which were not present in their veterinary practice with an “NA”. This was carried out for a:

1) totally new purchase, i.e. where the particular product has never been purchased before;
2) modified re-buy, i.e. where the product specifications are modified such as purchasing a new pack size; and
3) straight re-buy, i.e. where a previously purchased product is simply reordered.

Figure 4: Involvement of members of the buying centre in the purchase decision.



Results of the 6 way ANOVAs for each of the different types of purchases can be seen in Appendix D.

4.2.1 Veterinarians

Veterinarians display a high degree of involvement for all types of purchases and across all three groups of products. In fact, compared to all other types of staff members in a veterinary practice, the veterinarian's involvement was highest for all categories of purchases except for straight re-buys of VOTC products, where the receptionists and vet nurses showed a relatively higher level of involvement. When comparing purchases within one particular product type, it is interesting to note that the veterinarian's relative level of involvement was highest for new purchases and lowest for straight re-buys. Refer to Appendix E for the results of the one-way ANOVA of the three types of purchases within a product category.

The veterinarian is thus always involved in the purchasing decision process. What seems to differ is that the level of involvement increases relative to the other staff members as the level of importance of the purchasing decision increases. For example, a totally new purchase of any of the product groups would require a vet's involvement to determine whether the product is safe for his/her patients, that it is priced appropriately, etc. The less important a purchase becomes, such as a straight re-buy, the more relative importance the vet relinquishes to his/her staff members. Sheth (1973) states that the greater the perceived risk the greater the likelihood of joint decisions. Sheth (1973) also suggests that routine purchases will only require few individuals compared to a totally new purchase which may involve a number of buyers. Although the number of buyers remains constant, i.e. the vet remains the most important decision maker in the buying centre, the relative level of involvement by that individual increases for non routine purchases and purchases that carry a higher level of perceived risk.

When comparing the same type of purchase between the different product groups, it is evident that with new purchases, veterinarians show a relatively similar high level of involvement in purchases of Biologicals and Ethicals and a relatively lower level of involvement with VOTC products. These findings could be indicative that the vet places a greater degree of thought and internal debate when deciding to purchase a

new type of vaccine or a new anaesthetic product than for example, a new spot on ectoparasiticide. With modified re-buys, vets show a greater level of involvement with Ethical products followed by Biologicals and then VOTC products. The greater involvement in Ethical products can possibly be explained by the fact that Ethical products, such as antimicrobials and anaesthetics, are more technical in nature than Biologicals, such as vaccines, which in turn may be more technical in nature than certain over the counter products. Hence, VOTC's may be sold over the counter. The high level of involvement in the purchasing process of Biologicals may be attributed to the fact that vaccines, together with the vaccination consultation, form such an important part of the day-to-day business and revenue within a veterinary practice that the vet would give a great deal of internal debate in deciding to purchase a vaccine. With regards to straight re-buys, the vet is the primary decision maker for both Biological and Ethical products, but shares this role with the receptionist and vet nurse when it comes to VOTC products.

The highest level of involvement in the purchasing process relative to other veterinary practice members can be equated to being the primary decision maker and is thus a good indicator of the importance that the individual has in the purchasing process. It is quite clear by referring to Figure 4 that the veterinarian is indeed the most important decision maker in the veterinary practice buying centre.

4.2.2 Receptionists

The involvement of the receptionist in the purchasing decision process is illustrated in Figure 4 above. Their involvement in the purchasing decision process is in contrast to the veterinarian's degree of involvement. Receptionists tend to be least involved in new purchases, followed by slightly more involvement with modified re-buys. Straight re-buys represent the highest relative level of involvement in the purchasing process for the receptionists. The straight re-buy was the type of purchase, in all three of the product groups, with the highest level of involvement from the receptionist. When comparing the same type of purchase across the three product groups, it is evident

that the greatest level of involvement from the receptionists is with the purchasing of VOTC products followed by Biological products. The least involvement from the receptionists is with the purchasing of Ethical products. It appears that the more technical a product category, the less involved the receptionists are. Receptionists showed the highest level of involvement in the purchasing decision process for the straight re-purchase of VOTC products. Their level of involvement here even surpassed that of the veterinarian and the vet nurse. When it comes to the marketing of VOTC products in particular, and the maintaining of existing clients (as indicated by straight re-buys), the receptionists must be regarded as a significant role player in the buying centre of a veterinary practice. Marketing and communication should thus include efforts targeted at the receptionist.

4.2.3 Vet Nurses

Indication of the vet nurses involvement in the decision-making process is shown in Figure 4.

Approximately 31 - 37% of the practices sampled, employed vet nurses. Where vet nurses are employed, they appear to participate in the purchasing decision process, second only to the veterinarian. The pattern of involvement in the purchasing decision process was slightly different to that of the receptionists. When comparing the different types of product groups, the highest relative level of involvement was with Ethical products, for both modified and straight re-buys. For new purchases however, the highest degree of involvement was in the purchasing of VOTC products. Overall, the vet nurses showed the greatest level of involvement for the straight re-purchase of products. Since vet nurses have a higher degree of involvement in the purchasing process compared to receptionists, they need to be given significant recognition when marketing plans and brand plans are developed, particularly with respect to Ethical and VOTC products.

4.2.4 Kennel Assistant

The kennel assistant's involvement in the decision-making process of a veterinary practice can be seen in the results of the Shotgun Stochastic Algorithm in Figure 4 above.

The kennel assistants have very little involvement in the decision-making process for purchases in a veterinary practice. In fact, of all the role players in the purchasing decision process, the kennel assistant showed the least degree of involvement. Relatively speaking, the greatest degree of involvement was for Biological products for all three types of purchases. Overall the greatest relative degree of involvement, even though still negative, was for the straight re-purchasing of Biological products. It may seem surprising that there is a relatively higher level of involvement in Ethical products compared to VOTC products, but if one considers that kennel assistants spend most of their working hours in the hospital and procedure sections of the clinic, and little time in the waiting room area, it is understandable that they come into contact with Ethical products far more so than with the VOTC products. Based on the findings of the above, it thus follows that little to no resources should be invested in the kennel assistant with respect to the marketing of veterinary pharmaceutical products.

4.2.5 Practice Manager

Figure 4 above illustrates the relative level of involvement of the practice manager in the purchasing decision process for a veterinary practice.

Results of the Shotgun Stochastic Algorithm show that the practice managers involvement was below average for all types of purchases except for the straight re-ordering of Biological products. Overall, the lowest level of involvement was with new purchases for both Biologicals and Ethicals and for VOTC products it was lowest for modified re-buys.

When compared to vet nurses, the extent of involvement in purchasing decisions by practice managers are lower for all types of purchases and all groups of products. When compared to receptionists, however, the trend was far less obvious with practice managers showing greater involvement in new and modified purchases of both Biological and Ethical products, yet less involvement with straight re-buys of Biological and Ethicals and for all types of purchases of VOTC products. These findings would suggest that few resources should be invested in practice managers with regards to the marketing efforts for veterinary pharmaceuticals.

4.2.6 Pet Owners

The pet owners involvement in the decision-making process of a veterinary practice is indicated in Figure 4 above.

The degree of involvement of the pet owner in the purchasing process was below average in all three product groups. Pet owners showed the highest extent of involvement in the purchasing of VOTC products when compared to Biologicals and Ethicals for new purchases. This is most likely due to the fact that over the counter products are often of a less technical nature compared to Biologicals and Ethicals, thereby enabling the pet owner to make informed decisions and demand certain items from the vet, particularly if it is requesting that the vet purchase a new VOTC product for them. In fact, the pet owner appears to be more involved in the decision process of new purchases of VOTC products than is the practice manager. When considering the different types of purchases for each of the three product groups, it is evident that for both Ethical and VOTC products, the pet owner's involvement in the purchasing process is highest for new purchases. It may be that a veterinary practice does not purchase a totally new product, unless some interest is shown by the pet owner in the product, i.e. there is a confirmed demand for the product. When considering modified and straight re-buys, the pet owner appeared to have the highest level of involvement in the purchasing of Biological products. This was highest overall for the straight re-purchase of Biologicals.

Figure 4 illustrates that in the majority of the purchase categories, the involvement of the pet owner is second lowest to the kennel assistant. It is tempting to conclude that little to no resources should be invested in marketing efforts to pet owners. However, although the pet owner may not show much involvement in the purchasing decision process, they will certainly influence the amount of product sold from a practice, if they are made aware of certain disease conditions for which the particular pharmaceutical product is used to treat. Direct to pet owner education and disease awareness may thus be an important element in the marketing plan of certain veterinary pharmaceutical companies.

Generally, the veterinarian is by far the most important decision maker for all types of purchases and for all product groups. The only exception was that the receptionist, which showed a greater level of importance in the purchasing of VOTC products. More authority is relinquished to other staff members for less complex purchase types. Where practices employ vet nurses, they are generally more involved in purchasing decisions than are receptionists.

Overall, the members with certain above-average levels of involvement in the purchasing decision process, included the veterinarian, the vet nurse, the receptionist and in one instance, the practice manager. It would thus appear that the more veterinary training and expertise a staff member has, the more important role they tend to play in the decision-making process for purchases of veterinary pharmaceutical products. This is particularly evident in the Ethicals group where there is a marked difference between the vet nurse and receptionist.

All marketing efforts should thus be directed in this order. The vet is most certainly the prime target for all marketing material. This does not mean that the other staff members should be ignored. Firstly, they may play very important roles in being “gate keepers” for gaining access to veterinarians. Secondly, they may be involved in a purchasing decision, but at a lower level and they may be able to influence the vets

decision to a certain extent. Their importance as secondary, tertiary or lower decision makers needs to be nurtured. Both vet nurses and receptionists could very well play an important role in selling products from a vet practice and in switching pet owners from one brand to another. They can therefore, not be ignored.

Even though pet owners have little involvement in the purchasing decision processes at a veterinary practice, they are the members who identify a need to have a medical condition treated or prevented in their pets and they therefore, create the demand for veterinary care and the subsequent use of veterinary pharmaceutical products. Therefore, direct to consumer advertising, where possible, and the educating of the pet owners on pet healthcare issues should form an important part of the marketing activities of pharmaceutical companies. Direct to pet owner marketing, particularly where a company is a market leader with the majority of the market share, is a sensible means if increasing sales of a product and indirectly increasing the demand for a product. The pet owners influence should not be underestimated and may even be higher than what the veterinary respondents give credit for. As professionals, veterinarians may subconsciously or consciously not want to admit to how much they are influenced by the pet owner.

In conclusion, based on the findings of the above, the vet must be regarded as the most important person within the decision-making unit of a veterinary practice. Although there is involvement from other people, their involvement is far less relevant.

Proposition 1 - Accepted

The vet does indeed form the DMU of a veterinary practice.

4.3 Purchasing Decision Criteria

Sub Problem: To determine the relative importance of different decision criteria the DMU uses for purchasing different categories of veterinary pharmaceutical products.

Proposition 2: The importance of different criteria used by veterinarians in the purchasing process varies for the different categories of veterinary pharmaceutical products, namely Biologicals, Ethicals and VOTC products.

In order to test the validity of this proposition, respondents were asked to partially rank, their top five factors, from a list of 14, which influence their decisions when purchasing veterinary pharmaceutical products. The fourteen factors listed were the following: personal experience with the product, price of the product, technical information, pharmaceutical representatives, brand name, service levels including product availability, sponsorships by the manufacturing company, specials/promotions on the product, safety of the product, efficacy of the product, what pet owners demand, advocacy from veterinary specialists, conferences/meetings and other forms of continuing education held by the manufacturing company, and finally what was learnt during the respondents years of veterinary studies and whilst on clinics.

Biologicals

It was found that respondents of the Biologicals group placed positive emphasis on the following criteria when making purchasing decisions: efficacy of the product, personal experience with the product, technical information, safety of the product, service levels including product availability, price of the product, and pharmaceutical representatives. These were statistically significant as shown in Table 2 below.

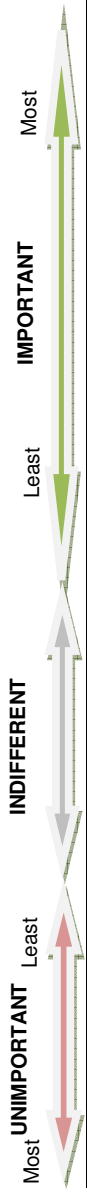
The table illustrates the results of the Shotgun Stochastic Parametric Algorithm for the purchasing decision criteria of the 109 respondents, where the following is relevant:

μ:	Represents the average.
σ:	Represents the standard deviation, which is a measure of variability (the square root of the variance).
t-value	The test statistic for the test of mean
p-value	Represents the observed level of significance. A low p-value provides evidence for rejecting the null hypothesis and accepting the alternative hypothesis.

The outcome of the decision variables are classified into three main categories, with the average equal to zero: (0)

Significantly more important than the average ($p < 0.05$)
Not significantly different to the average ($p \geq 0.05$)
Significantly less important than the average ($p < 0.05$)

Table 2: Factors influencing the purchasing decisions of veterinary Biological products ($p < 0.05$).



Biologicals Overall *(n = 109)*					
Decision criteria	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Efficacy of product	**1.02**	0.804	12.341	0.000	Yes
Personal experience with the product	**0.92**	0.719	11.150	0.000	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	**0.77**	0.586	9.282	0.000	Yes
Safety of product for patient	**0.52**	0.372	6.299	0.000	Yes
Service levels including product availability	**0.28**	0.160	3.326	0.001	Yes
Price of the product	**0.27**	0.159	3.309	0.001	Yes
Pharmaceutical representatives (quality/personality/professionalism)	**0.21**	0.106	2.577	0.011	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	**-0.01**	-0.086	-0.116	0.908	No
Advocacy from veterinary specialists/opinion leaders	**-0.03**	-0.107	-0.415	0.679	No
Specials/promotions on the product	**-0.05**	-0.119	-0.574	0.567	No
Brand name	**-0.34**	-0.372	-4.114	0.000	Yes
Sponsorships by the manufacturing company	**-0.63**	-0.624	-7.647	0.000	Yes
What I learnt during my years of studies and whilst on clinics	**-0.70**	-0.681	-8.446	0.000	Yes
What pet owners demand	**-0.97**	-0.918	-11.762	0.000	Yes

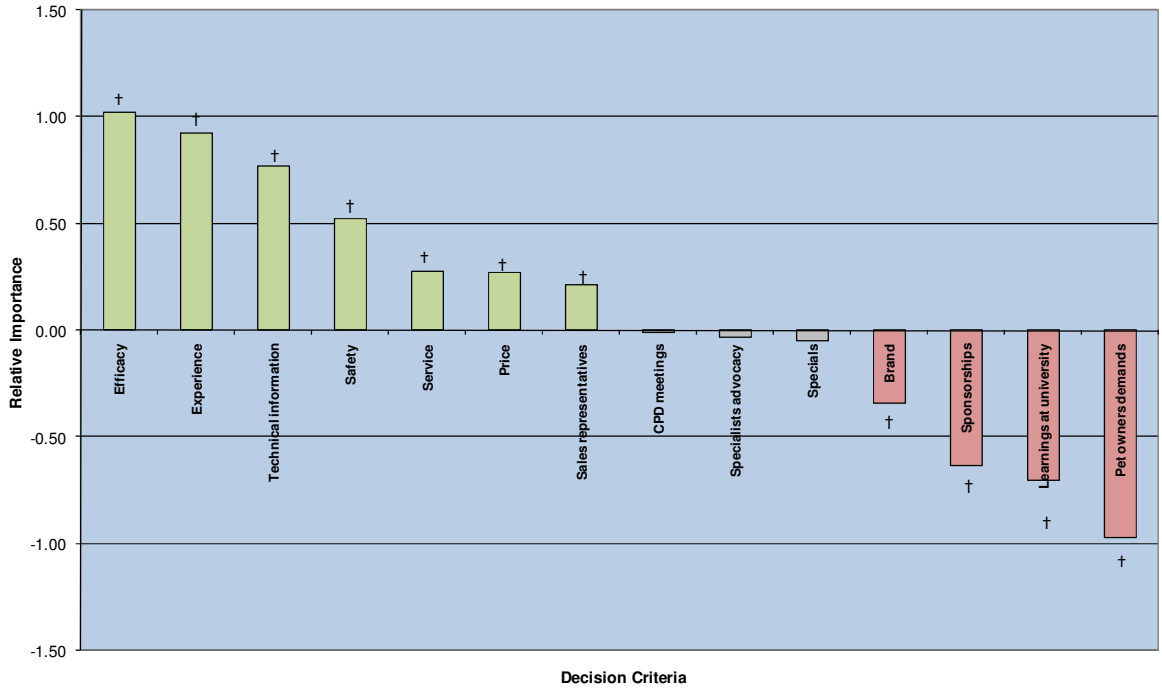
No statistical significance was shown for conferences/meetings and other forms of continuing education held by the manufacturing company, advocacy from veterinary specialists/opinion leaders and specials promotions on the product.

The following criteria were statistically shown to be unimportant influencers of a veterinarians purchasing decisions of Biological products; brand name, sponsorships by the manufacturing company, what was learnt during years of study and whilst on clinics and what pet owners demand.

These findings have important implications for the marketing of veterinary biological products to veterinarians. Since vets rate efficacy of the product, personal experience with the product and technical information on the product as the top three most important influencers of purchasing decisions, it would be wise for pharmaceutical companies to invest resources in developing a communication message which focuses on the efficacy of the product. They should also sample product to the vet where regulations do not prohibit such activities, such that the veterinary practitioner is able to gain confidence in the product. Moreover, the communications mix should create positive perceptions regarding technical aspects of the product.

Based on the above findings, less resources should be invested in the brand name, sponsorships, the targeting of vet students at university and in direct to consumer advertising so as to create a demand by pet owners when marketing biological products as these criteria where statistically shown to have little influence on purchasing decisions of Biologicals. Not investing in the brand name is contrary to what all marketers have been taught. Marketers should invest less in branding the product and more on focusing on those statistically significant positive influencers, such as product efficacy. By doing so, the pharmaceutical company will build brand equity by creating positive efficacy and technical perceptions about the product.

Figure 5: Relative importance of the decision criteria used when purchasing Biological products.

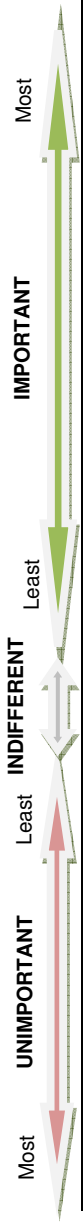


(† indicates that the relative importance is significantly different from the overall mean at the 95% confidence interval).

Ethicals

Respondents of the Ethicals group where shown to place a statistically positive emphasis on the following criteria when purchasing veterinary Ethical products; personal experience with the product, efficacy of the product, safety of the product for the patient, technical information on the product, the price of the product, conferences and meetings held by the manufacturing company and advocacy from veterinary specialists. These findings are illustrated in Table 3 below.

Table 3: Factors influencing the purchasing decisions of veterinary Ethical products ($p < 0.05$).

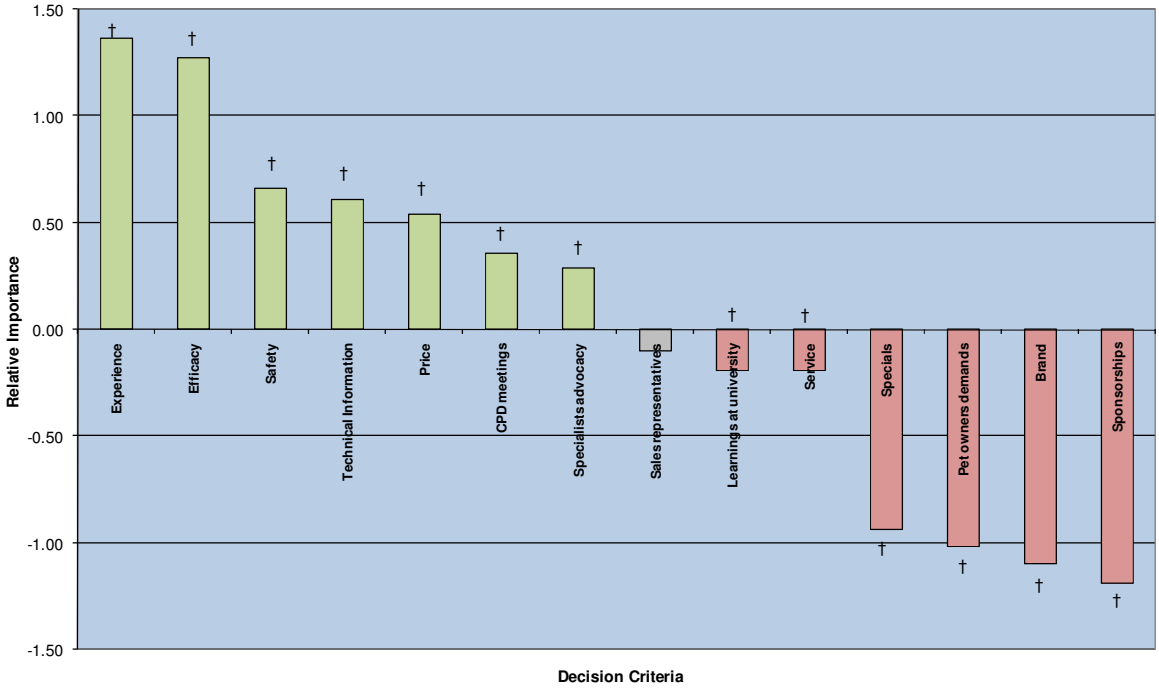


Ethicals Overall *(n = 109)*					
Decision criteria	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Personal experience with the product	**1.36**	1.035	18.175	0.000	Yes
Efficacy of product	**1.27**	0.966	16.989	0.000	Yes
Safety of product for patient	**0.66**	0.491	8.821	0.000	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	**0.61**	0.450	8.101	0.000	Yes
Price of the product	**0.54**	0.396	7.178	0.000	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	**0.36**	0.257	4.786	0.000	Yes
Advocacy from veterinary specialits/opinion leaders	**0.29**	0.203	3.856	0.000	Yes
Pharmaceutical representatives (quality/personality/professionalism)	**-0.10**	-0.099	-1.343	0.182	No
What I learnt during my years of studies and whilst on clinics	**-0.19**	-0.168	-2.521	0.013	Yes
Service levels including product availability	**-0.19**	-0.169	-2.542	0.012	Yes
Specials/promotions on the product	**-0.94**	-0.746	-12.483	0.000	Yes
What pet owners demand	**-1.01**	-0.807	-13.524	0.000	Yes
Brand name	**-1.10**	-0.870	-14.607	0.000	Yes
Sponsorships by the manufacturing company	**-1.19**	-0.940	-15.812	0.000	Yes

Pharmaceutical representatives where shown to have a comparatively negative emphasis, but this was not statistically significant. What was learnt during years of study, service levels, what pet owners demand, brand name and sponsorships by the manufacturing company where all shown to have statistically less influence on the purchasing decisions of Ethical products.

When marketing veterinary Ethical products, pharmaceutical companies should find ways to show the veterinarian how to use the product with confidence. This could be achieved by demonstrating its efficacy, technical advantages and safety. This will create positive perceptions of the product. Once the veterinarian has gained positive personal experience with the product, they will be likely to remain loyal users of the product. CPD meetings also play an important role in the decision-making process of veterinarians. Emphasis should be placed on the content of the meetings (emphasis on efficacy, safety and technical aspects where mention is made to a product) as well as the calibre of the guest speakers. The use of specialists as key opinion leaders and advocates of the product should also be a tool used by marketers of veterinary Ethical products.

Figure 6: Relative importance of the decision criteria used when purchasing Ethical products.



(† indicates that the relative importance is significantly different from the overall mean at the 95% confidence interval).

VOTCs

Respondents of the VOTC group placed positive emphasis on the following decision criteria; the efficacy of the product, personal experience with the product, safety of the product, price of the product and technical information on the product. These findings were all significantly higher than the mean. Significantly less emphasis was placed on service levels, sales representatives, CPD (continuing professional development) meetings, advocacy from veterinary specialists, what pet owners demand, what was learnt during years of study, brand name, specials and sponsorships by the manufacturing company.

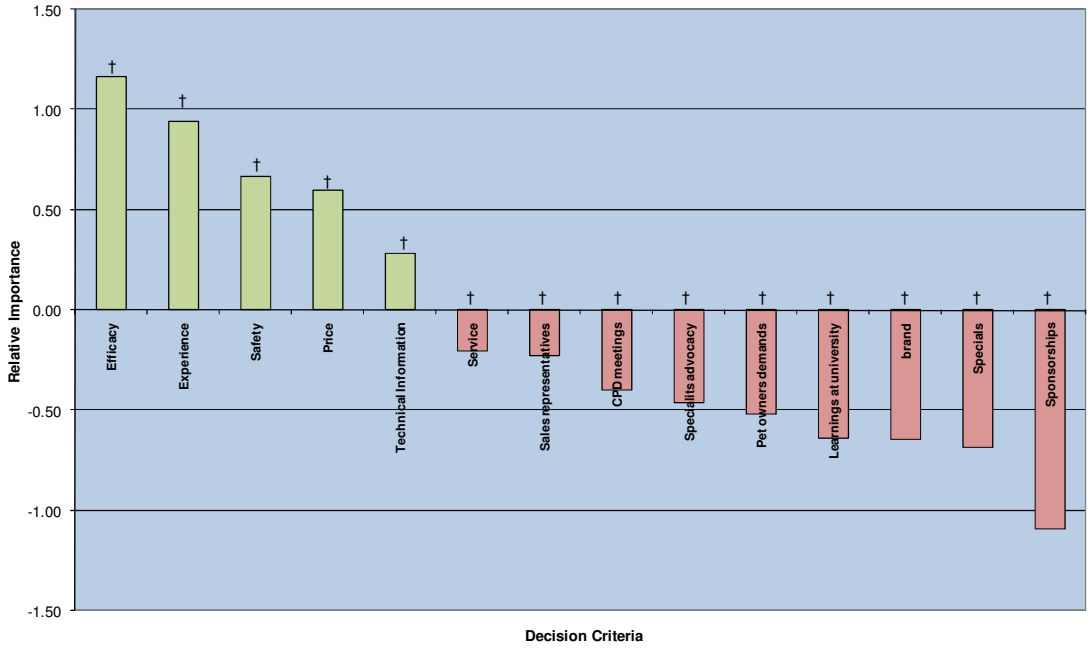
Table 4: Factors influencing the purchasing decisions of VOTC products ($p < 0.05$).



VOTC Overall *(n = 109)*					
Decision criteria	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Efficacy of product	**1.17**	1.042	15.646	0.000	Yes
Personal experience with the product	**0.94**	0.856	12.648	0.000	Yes
Safety of product for patient	**0.67**	0.627	8.943	0.000	Yes
Price of the product	**0.60**	0.571	8.040	0.000	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	**0.28**	0.309	3.814	0.000	Yes
Service levels including product availability	**-0.20**	-0.096	-2.712	0.008	Yes
Pharmaceutical representatives (quality/personality/professionalism)	**-0.23**	-0.116	-3.033	0.003	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	**-0.40**	-0.261	-5.368	0.000	Yes
Advocacy from veterinary specialits/opinion leaders	**-0.46**	-0.314	-6.216	0.000	Yes
What pet owners demand	**-0.52**	-0.358	-6.925	0.000	Yes
What I learnt during my years of studies and whilst on clinics	**-0.64**	-0.462	-8.601	0.000	Yes
Brand name	**-0.64**	-0.464	-8.646	0.000	Yes
Specials/promotions on the product	**-0.68**	-0.497	-9.180	0.000	Yes
Sponsorships by the manufacturing company	**-1.09**	-0.836	-14.646	0.000	Yes

With very few exceptions, VOTC products are registered and regulated by Act 36 of 1947. This Act does allow for the sampling of products to customers. Since personal experience with VOTC products is a very important criterion on which vets make purchasing decisions, it would be advisable that veterinary pharmaceutical companies ensure that their veterinary customers have samples that they can use and become familiar with. This would be particularly important for a new VOTC product introduced to the market place. Emphasis should also be placed on the efficacy and safety of the product as well as ensuring that the product is priced competitively. Although specials and promotions on VOTC products represent a low relative importance to veterinarians, they may have a much more meaningful influence on the receptionists and vet nurses. As evidenced in the previous section, the receptionist, and indeed the vet nurses, play very important roles in the purchasing decision process of straight re-buys for VOTC products.

Figure 7: Relative importance of the decision criteria used when purchasing VOTC products.



(† indicates that the relative importance is significantly different from the overall mean at the 95% confidence interval).

It is every marketer's objective to try and obtain the best return from a limited set of resources. It would be advisable to invest resources into those criteria on which the veterinarian places a great amount of importance and spare investment from those where the vet places little importance. Refer to Figure 8 below for a comparison of the importance of the various decision criteria for the three different categories of products. Results of the t-tests are evident in Appendix F.

Significantly more emphasis was placed on personal experience with Ethical products than compared with Biological and VOTC products. Far less importance was placed on the brand name as well as on special deals on the product for veterinary Ethical products versus Biologicals and VOTC products.

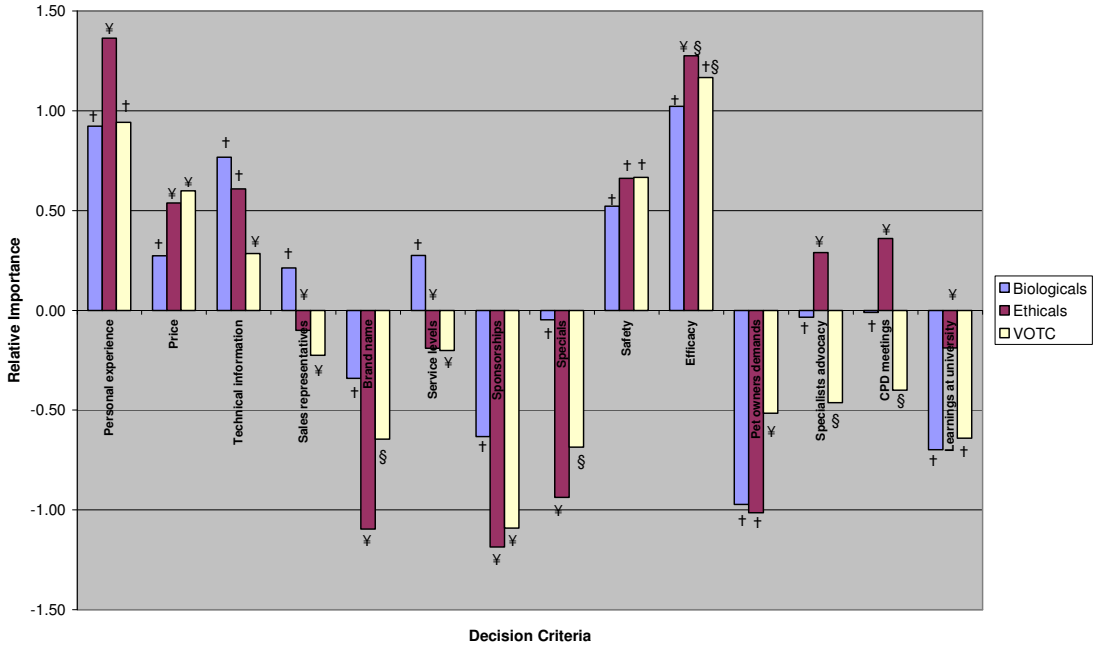
Marketing efforts should ideally be aimed at providing samples of the Ethical product to veterinarians so that they can develop the personal experience and confidence in the product. Where regulations prevent this practice, confidence can be developed through activities such as testimonials, case reports and video material demonstrating the use and outcomes following the usage of such products. Marketing managers should also focus their efforts on promoting the efficacy of the Ethical product. The importance of advocacy from specialists as well as continuing professional development meetings was shown to be significantly greater for Ethicals than for Biologicals or VOTC products. Marketing efforts should thus be aimed at developing and working with Key Opinion Leaders (KOLs) that have a lot of influence with their veterinary colleagues as well as great advocacy for a product. These KOLs could be used at forums such as CPD meetings. Companies should make use of CPD meetings to promote their products, but should ensure that the standard of the meetings remain high so as not to lose credibility with the veterinarians. This is important as the CPD meeting should not be perceived as an advertising meeting, but rather as an informative and educational event. Minimal effort and resources should be placed on creating specials for Ethical products. Although the brand name was regarded as being of significantly lower importance for Ethical products, the brand

equity can be built by focusing on efficacy, CPD and developing key opinion leaders. CPD meetings would probably be most useful in building brand equity for the umbrella brand or company brand as opposed to building brand equity for one single product brand. CPD meetings would be a great forum for promoting more than one product brand.

Very little emphasis was placed on the demands from pet owners. This can be interpreted as vets not easily being swayed by a pet owners demand for a particular brand of Ethical product. Thus, marketers should ensure that their brand of Ethical is preferred by the veterinarians compared to the competitor's brand. Once market leadership has been attained, efforts in direct to pet owner education and advertising can then be used to grow sales even further by creating awareness of a disease condition and thereby growing the particular product category.

When considering where marketing efforts should be invested with regards to Biologicals, it is evident that vets place significantly more importance on sales representatives and service levels as decision criteria than compared with Ethicals and VOTC products. Significantly less importance was placed on price versus Ethicals and VOTC, and significantly less importance was placed on efficacy compared with Ethicals. This difference was not significant when compared with VOTC products. Although not significant, technical information, brand name and sponsorships are more important criteria considered by vets when purchasing Biologicals than compared to purchasing Ethicals or VOTC products.

Figure 8: The relative importance of the three product groups for each of the purchasing decision criteria.



Key: For any particular decision criteria, product groups with different symbols are statistically significantly different from one another at the 95% confidence interval. Symbols are only indicative of the statistical significance within a particular decision criterion, and are not representative of statistically significant differences between different decision criteria.

Specials on Biologicals, although a negative mean, were still significantly more important than compared to Ethicals and VOTC products. A competitive edge can thus be achieved through building strong sales rep/vet relationships, ensuring an adequate stock of goods and value added services such as vaccination reminders and vaccination certificates. Of greater importance, would be an emphasis on efficacy of the vaccines, giving samples to the vet to experience the product, providing technical information, ensuring superb service levels and finally ensuring a competitive price. Although the price of Biologicals was regarded as being relatively less important than was the price of Ethicals and VOTC products, specials carried a far greater relative importance for Biologicals than for Ethicals or VOTC products. The

implications for marketers would be that the list price of vaccines, for example, would not necessarily influence a vet's purchasing decisions, but rather specials would appear to have a greater influential role. Ultimately, specials do equate to lower prices. However, if marketers can create a perception of greater value through specials, they may have a competitive advantage over the opposition who to lead through listed prices rather than specials.

When comparing the relative importance of the decision criteria for VOTC versus Biologicals and Ethicals, it is clear that CPD meetings and advocacy from veterinary specialists play relatively less importance in the decision-making process. Price, however, played a greater role in the decision-making process for VOTC products. Although of fairly low relative importance, pet owners demands were significantly more important in influencing the purchasing decisions of VOTC products than compared to Biologicals and Ethicals. The marketing implications of this are that direct to pet owner communications would indeed influence which spot-on application, for example, a vet would stock on his/her shelves. Significantly less importance is placed on technical information of VOTC products as an influencer of purchasing decisions than for Biologicals and Ethicals.

Although there are statistically significant differences between the three product groupings for certain of the purchasing decision criteria, the overall trends remain similar for all three product groups. Efficacy, personal experience with a product, safety, price, technical information and service levels are the decision criteria which appear to be of greatest importance for these three product groups.

Proposition 2 – Partially accepted

The importance of different criteria used by veterinarians in the purchasing decision process do vary between the different categories of veterinary pharmaceutical products. However, the overall trends of the relative importance of the purchasing decision criteria are similar for Biologicals, Ethicals and VOTC products.

4.4 Personal Characteristics of the Veterinarian

Sub Problem: To suggest how the veterinary market can be segmented based on decision-making criteria.

Proposition 3: The criteria used when purchasing products from the different categories, varies depending on the personal characteristics of the veterinarian.

The personal characteristics investigated in this survey were the gender of the veterinarian, the age of the veterinarian and whether or not the veterinarian was the owner of the practice. Veterinarians that are not practice owners are either assistant veterinarians employed full time by the vet practice or they are veterinary locums.

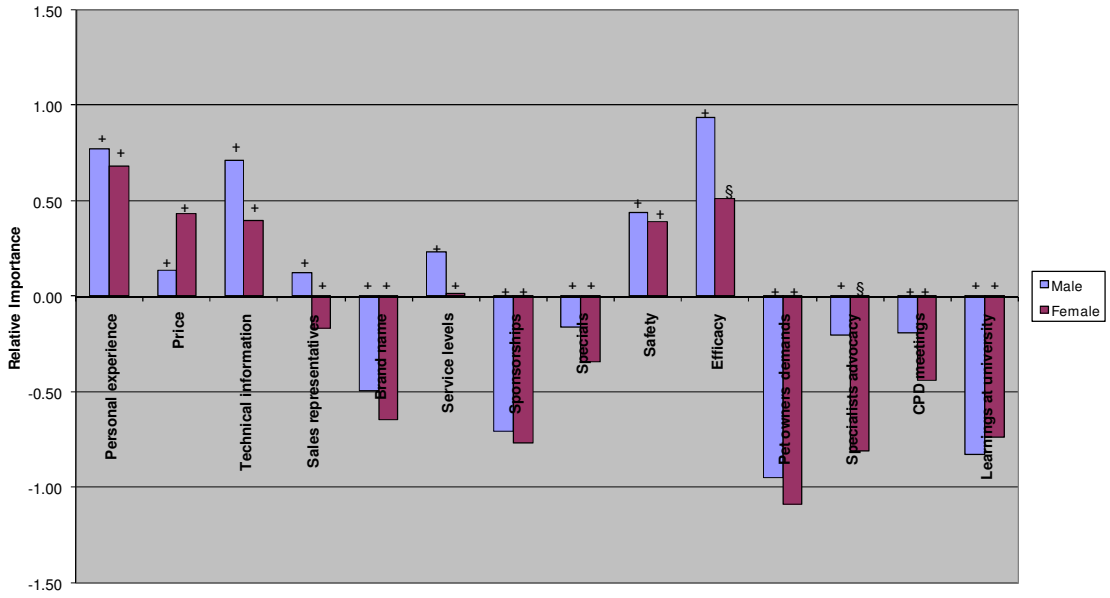
Gender

When it comes to purchasing **Biological** products (refer to Figure 9 below), it would appear that males tend to place significantly greater importance on the efficacy of the product when compared to females. (Results of the t-tests are illustrated in Appendix G).

Moreover, males place a significantly greater degree of importance on advocacy from veterinary specialists than do females. The top three most important criteria for males were efficacy, personal experience and technical information. For females, the top three decision criteria were personal experience, efficacy and safety.

The implications of these gender specific differences for marketers are that communication efforts could be tailored slightly differently for males to include even more focus on aspects of product efficacy as well as emphasising the advocacy of products from key opinion leaders in order to give credibility to Biological products.

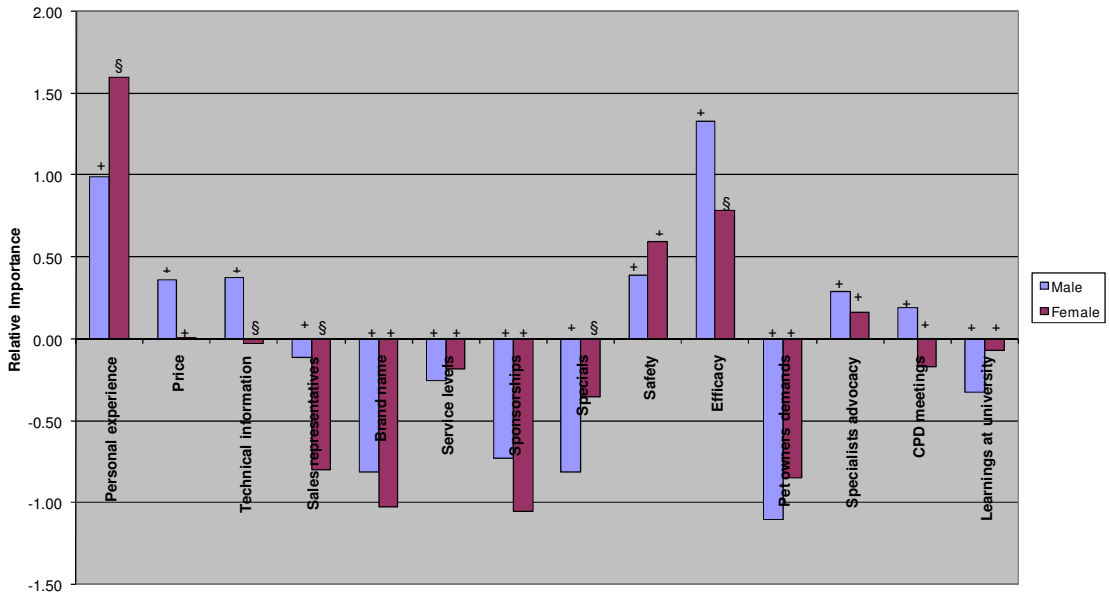
Figure 9: Gender specific differences for the different purchasing decision criteria of Biological products.



Note: within each decision criteria, symbols represent significant difference or similarity of genders at the 95% confidence interval. Seventy eight respondents were male and 31 were female.

In terms of **Ethical** products (refer to Figure 10 below), males place significantly greater importance than females on product efficacy, technical information and sales representatives. Females on the other hand, place significantly more importance on personal experience and specials. Marketing implications are therefore, to vary ones communication mix according to whether one is selling to a male vet or female vet. Preference should be given to females to gain experience with the product. Females are more likely than males to be influenced by a deal. Males are more likely to be influenced by sales representatives, who should communicate efficacy and technical merits of the product they are selling.

Figure 10: Gender specific differences for the different purchasing decision criteria of Ethical products.

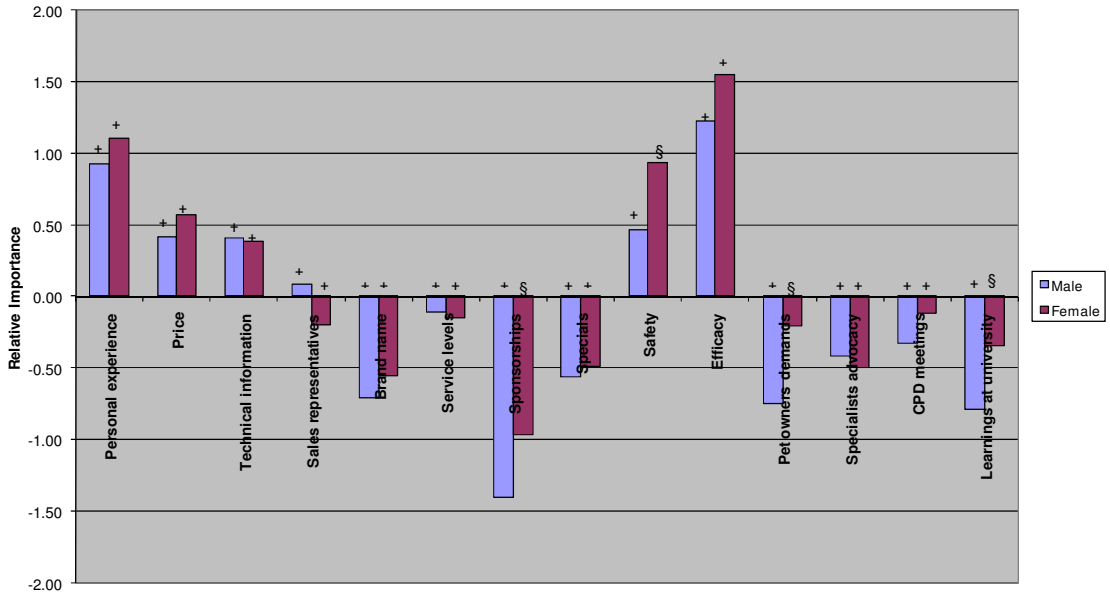


Note: within each decision criteria, symbols represent significant difference or similarity of genders at the 95% confidence interval. Eighty three respondents were male and 26 were female.

For Ethical products, males rated efficacy, personal experience and safety as their top three criteria. Females rated personal experience, efficacy and safety as their top criteria.

When considering **VOTC** products (refer to Figure 11 below), it is evident that males place significantly less importance on the safety of the product, learning's whilst at university, pet owners demands and sponsorships by veterinary pharmaceuticals relative to their female counter parts.

Figure 11: Gender specific differences for the different purchasing decision criteria of VOTC products.



Note: within each decision criteria, symbols represent significant difference or similarity of genders at the 95% confidence interval. Seventy seven respondents were male and 32 were female.

When it comes to the marketing of VOTC products, it would be beneficial to place more emphasis on the safety of the product for females as compared to males. Sponsorships are more likely to influence a female's decision to purchase a VOTC product than compared to males. Both males and females regard efficacy, personal experience and safety to be the top three important criteria.

In conclusion, there are some significant differences between males and females with regards to the relative importance of certain purchasing decision criteria.

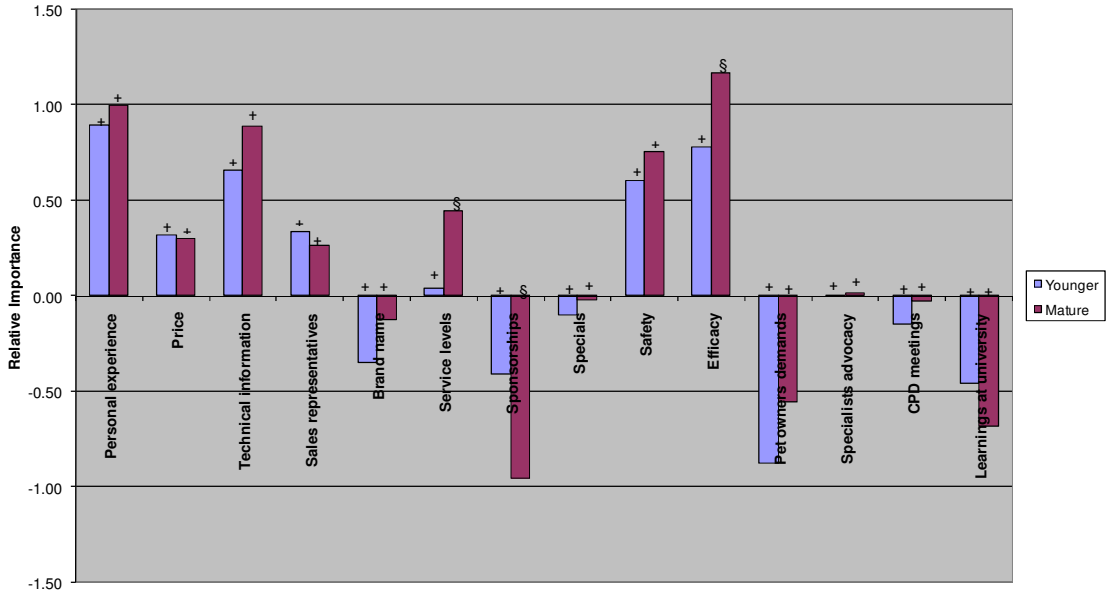
Age

Veterinarians up to and including the age of 44 were classified as being “young”, whereas those vets 45 years and older were regarded as being “mature”. (Results of the t-tests are illustrated in Appendix H).

When considering **Biological** products, it is evident from Figure 12 below that younger veterinarians place significantly less importance on service levels when compared to their older counterparts. The more mature veterinarians regard the efficacy of the product as being a significantly more important factor in influencing purchasing decisions than do younger vets. Moreover, the more mature veterinarians regard sponsorships by pharmaceutical companies as significantly less of an influence on purchasing decisions of Biological products.

The top three most important influencers of biological products for vets 45 years and older, are the efficacy of the product, personal experience with the product and technical information on the product. The top three most important influences on the purchasing decisions for Biological products are the personal experience with the product, the efficacy of the product and technical information on the product. When marketing to the more mature veterinarian, the communication mix should contain more emphasis on the efficacy and the service levels that are to be provided than when compared to communicating with the younger veterinarian.

Figure 12: Age specific differences for the purchasing decision criteria of Biological products.

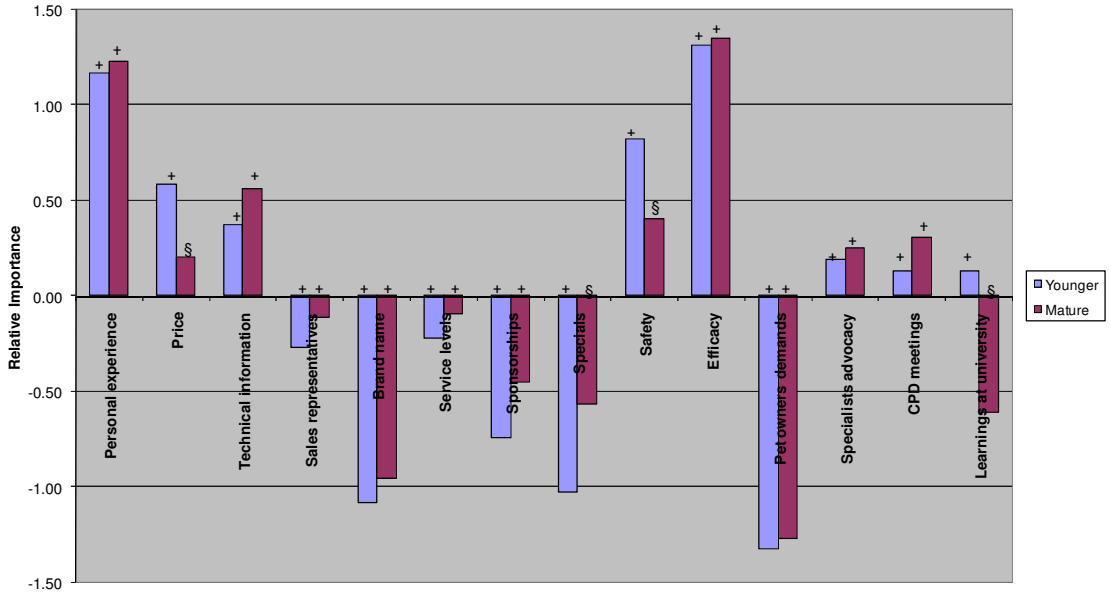


Note: within each decision criteria, symbols represent significant difference or similarity of ages at the 95% confidence interval. Fifty six respondents were young and 53 were mature.

When it comes to **Ethical** products, the younger vets tend to place significantly more emphasis on the price of the product, safety of the product and their learning's at university compared to the older veterinarians. More emphasis may be placed on the safety of Ethical products because they are the scheduled drugs that are, by nature, more technical and generally speaking, have potentially greater side effects. The younger vets may place more emphasis on the safety of Ethicals, as they have not been in practice as long a time as the older vets and may not hold the same confidence as their older colleagues. More importance is most likely placed on learning's at university for younger veterinarians, as they would have been at the academic institute far more recently than the older vets and hence, will rely more heavily on the more recent information. The older veterinarians may not place as much importance on their learning's which are comparatively outdated and have long been forgotten and superseded by more modern and up-to-date information in other

sources of information. Younger vets place significantly less importance on sponsorships than do the more mature veterinarians.

Figure 13: Age specific differences for the purchasing decision criteria of Ethical products.



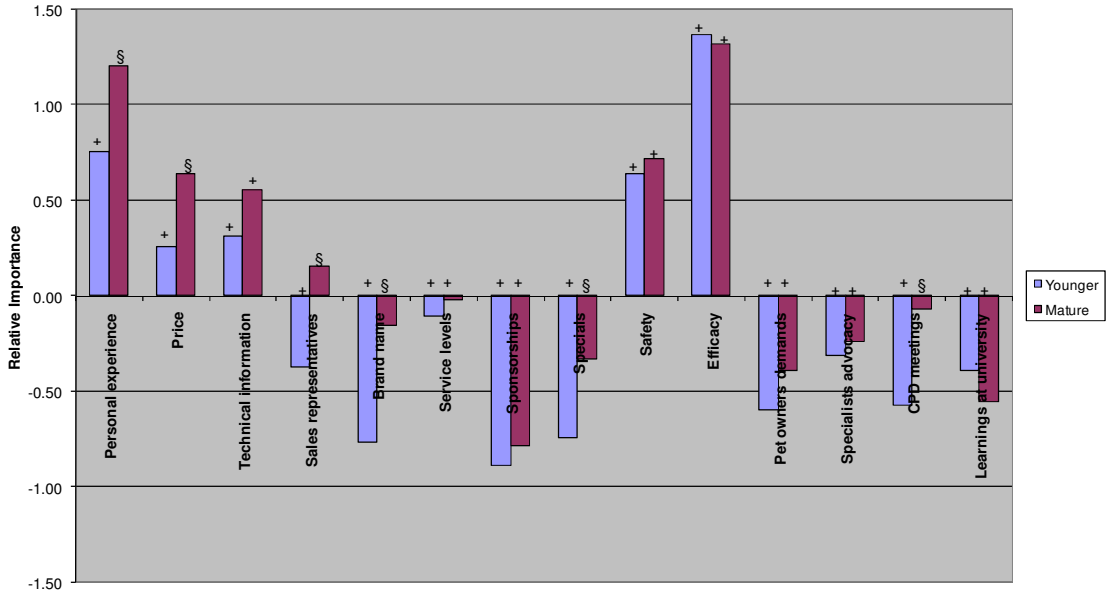
Note: within each decision criteria, symbols represent significant difference or similarity of ages at the 95% confidence interval. Fifty three respondents were young and 56 were mature.

Marketing efforts for Ethical products to younger veterinarians should therefore, focus more on the correct pricing, the safety of the product and targeting the veterinary students at university.

When it comes to **VOTC** products, the more mature veterinarian regards personal experience with the product, price, sales representatives, brand names, specials and CPD meetings as being of significantly greater importance than do the younger veterinarians. More mature vets have been out of university for much longer and may thus place more importance on sales representatives and CPD meetings for keeping themselves up to date with new developments. The more mature vet may possibly

regard the VOTC's as a good source of passive income that does not necessarily require a consultation. It may be that the mature veterinarian sees the VOTC product from a greater commercial perspective than the younger veterinarian and thus, places greater significance on price and specials as influencers of purchasing decisions. Marketing efforts should thus be directed appropriately to tap into these differences, where applicable.

Figure 14: Age specific differences for the purchasing decision criteria of VOTC products.



Note: within each decision criteria, symbols represent significant difference or similarity of ages at the 95% confidence interval. Fifty eight respondents were young and 51 were mature.

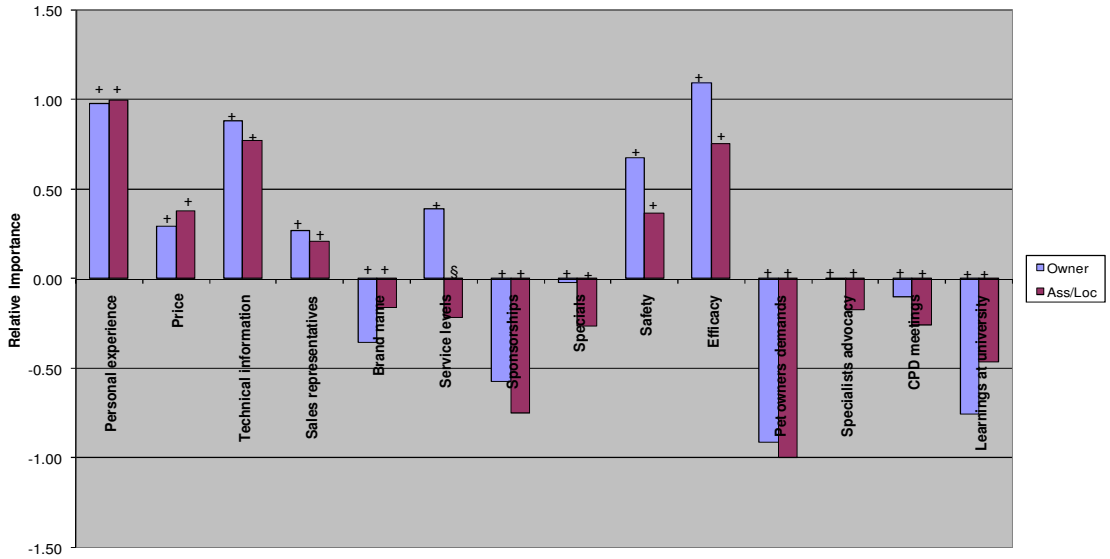
In conclusion, there are certain significant differences between younger vets and more mature vets with regards to the importance of decision criteria when purchasing veterinary pharmaceutical products.

Ownership

The ownership of a practice was categorised into those vets that were either sole owner or co-owners versus those vets that were simply employed as an assistant veterinarian or locum veterinarian. (Results of the t-tests are illustrated in Appendix I)

For **Biological** products (refer to Figure 15 below), the only statistically significant difference between owners of a vet practice and assistant or locum veterinarians are that the former show greater importance to service levels. Service levels include stock availability and could also be linked to value-added services such as vaccination reminders. As vaccinations contribute substantially to the income of a veterinary practice, these are factors which have an important influence on the revenue generated by a veterinary practice and are thus, of significant importance to a practice owner versus a locum vet with no long-term vested interest in the practice.

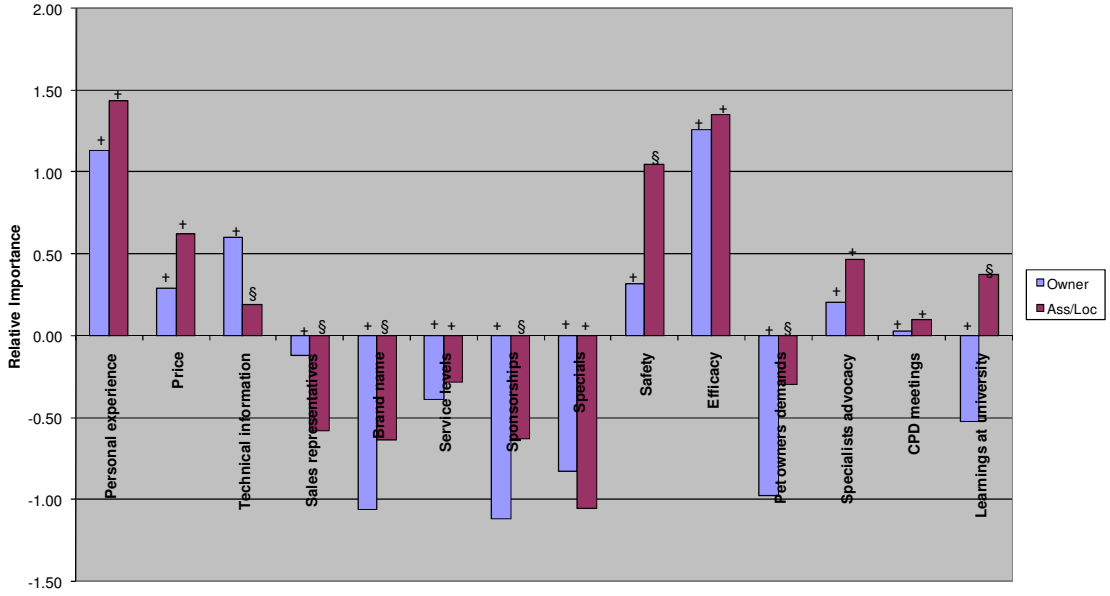
Figure 15: Ownership specific differences for the purchasing decision criteria of Biological products.



Note: within each decision criteria, symbols represent significant difference or similarity per ownership type at the 95% confidence interval. Eighty seven respondents were practice owners and 22 were assistant or locum veterinarians.

There were a number of statistically significant differences between practice owners and associates/locums regarding the **Ethical** products (refer to Figure 16 below). Technical information and sales representatives were regarded as being relatively more important for practice owners. Less relative importance was placed on the brand name, sponsorships, safety, pet owner's demands and learning's at university. Practice owners will generally be more mature than their associate/locum counterparts. This could be the reason they place less importance on learning's at university and more importance on sales representatives, as was the case in younger versus more mature veterinarians.

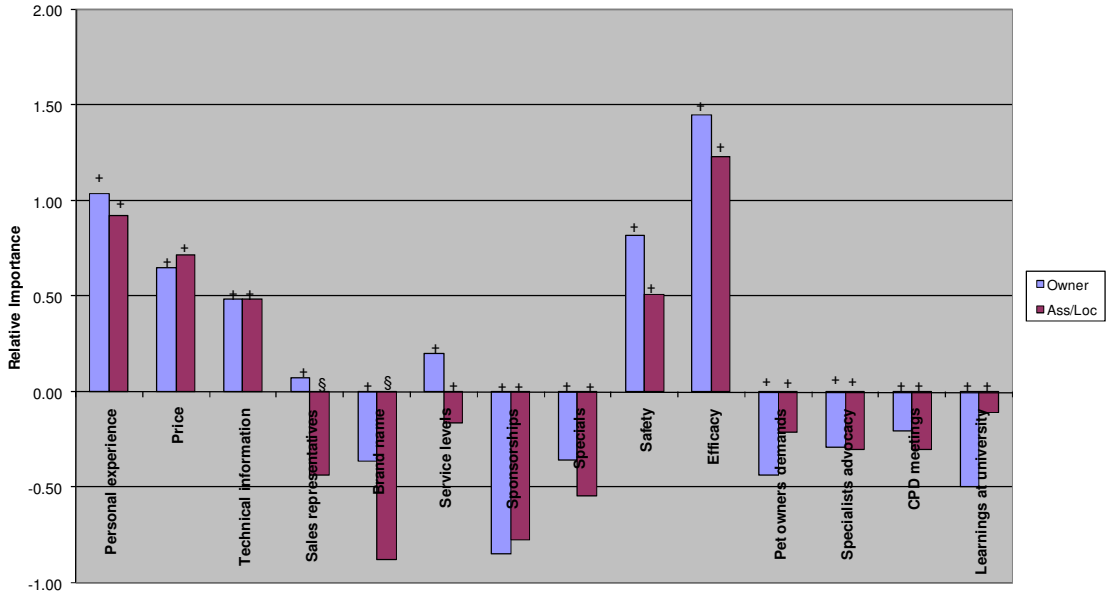
Figure 16: Ownership specific differences for the purchasing decision criteria of Ethical products.



Note: within each decision criteria, symbols represent significant difference or similarity per ownership type at the 95% confidence interval. Eighty three respondents were practice owners and 26 were assistant or locum veterinarians.

Greater relative importance was placed on sales representatives and the brand name by practice owners as influencers of purchasing decisions of **VOTC** products (refer to Figure 17 below). It can be expected that practice owners are more sensitive to issues influencing the profit and loss of their vet practice compared to those vets simply employed at a vet practice. This would obviously also depend on any potential incentives given to vet associates and locums. Practice owners most likely regard sales representatives as being important due to the information that they provide as well as being potential stakeholders in growing the veterinary business and partnering with the vets.

Figure 17: Ownership specific differences for the purchasing decision criteria of VOTC products.



Note: within each decision criteria, symbols represent significant difference or similarity per ownership type at the 95% confidence interval. Ninety one respondents were practice owners and 18 were assistant or locum veterinarians.

In conclusion, there are certain significant differences between practice owners and assistant and locum veterinarians with respect to purchasing decision criteria.

Proposition 3 – partially accepted

The criteria used when purchasing products from the different categories do vary depending on the personal characteristics of the veterinarian. However the overall trends between these attributes remains similar.

4.5 Nature and Characteristics of the Veterinary Practice

Sub Problem: To determine how the veterinary market can be segmented based on decision-making criteria.

Proposition 4: The criteria used when purchasing products from the different groups, varies according to the nature and characteristics of the veterinary practice.

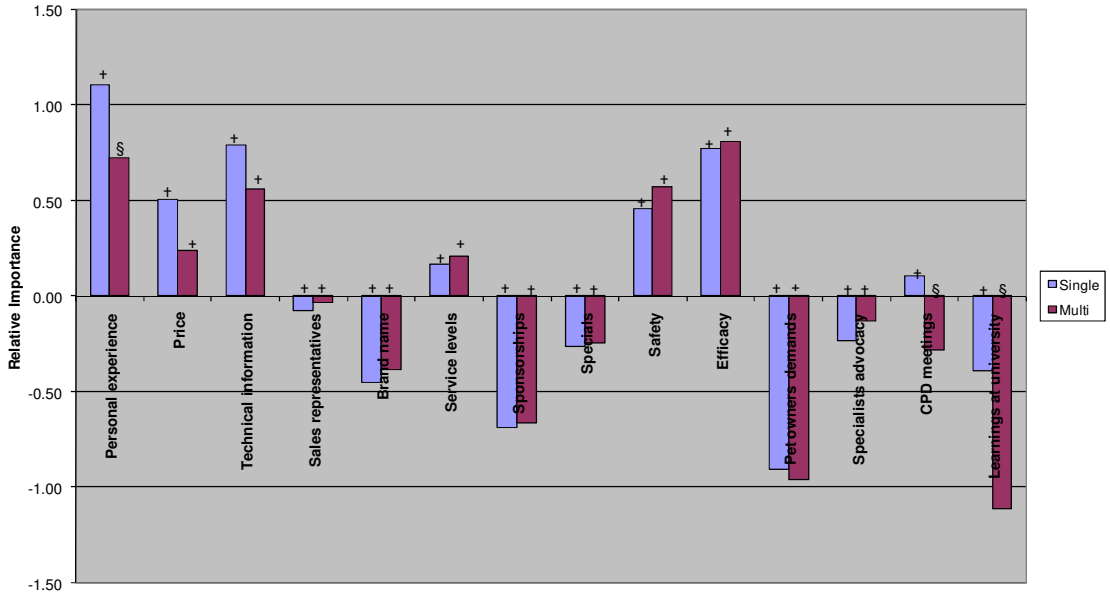
Veterinary practices can differ in many respects. This research investigated the possible influence that 1) the number veterinarians employed at a practice and 2) the consultation fee set by the practice, has on the way the vet sees the relative importance of the different purchasing criteria.

Number of Veterinarians

The statistically significant differences between the single-vet and multi-vet practices with regards to the purchasing of **Biological** products are that the former give greater relative importance to personal experience with the product, CPD meetings given by pharmaceutical companies and learning's at university (refer to Figure 18 below). The results of the t-tests are illustrated in Appendix J. It is interesting to note the importance that single-vet practices place on CPD meetings. In a multi-vet practice one can rely on ones colleagues to discuss various cases and share ideas, experiences and expertise. This is evidenced by the fact that veterinarians in multi-vet practices regard their colleagues as a relatively greater important source of information for all three categories of products, than do their single-vet counterparts. Single-vet practices are far more reliant on events such CPD meetings to gather

information as they do not have colleagues in the practice that they can share information with. Colleagues that they would share information with, would be those at other veterinary practices which would need to be contacted telephonically or via email or some other means of communication. Single-vet practices place a great deal of importance on their personal experience with Biologicals compared to veterinarians from multi-vet practices. It is possible to sample Biologicals, such as vaccines, to veterinarians as they are registered under Act 36. This would be a useful marketing tool for those vets to build up their confidence in the product and gain personal experience with the product.

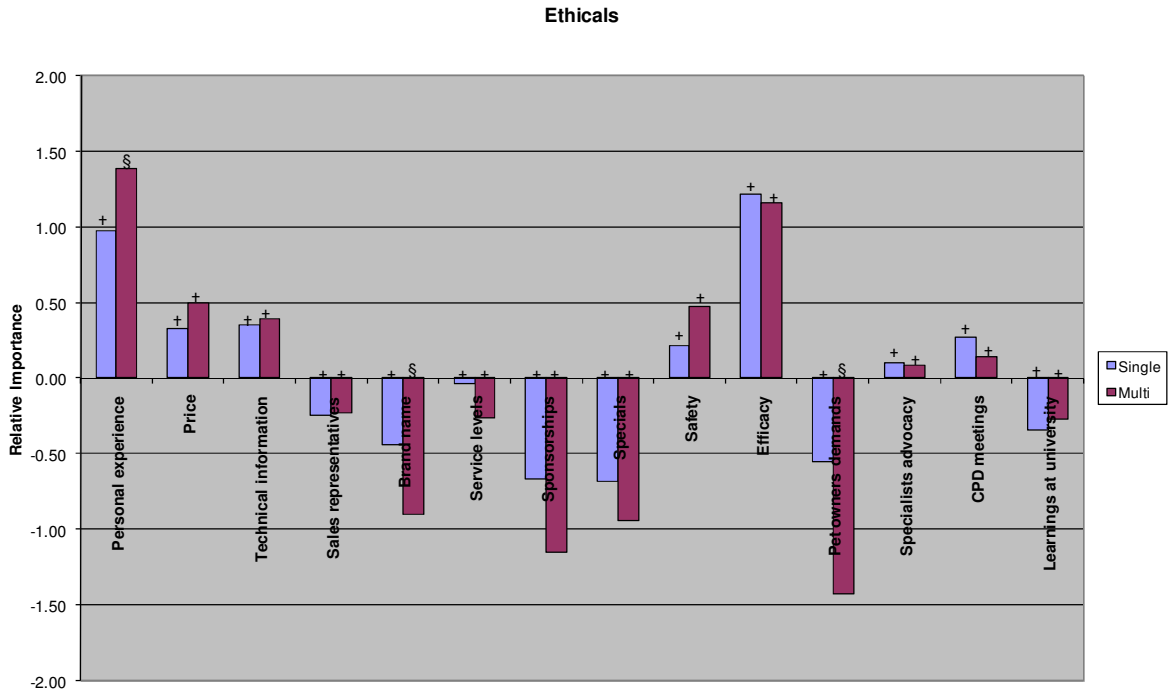
Figure 18: Single-vet versus multi-vet differences for the purchasing decision criteria of Biological products.



Note: within each decision criteria, symbols represent significant difference or similarity of vet number at the 95% confidence interval. Forty respondents were from single-vet practices and 69 were from multi-vet practices.

With regards to **Ethical** products (refer to Figure 19 below), vets from single-vet practices placed relatively less importance on personal experience with the product compared to vets from multi-vet practices. They did however, place a significantly greater relative importance on the brand name and demands from pet owners. It is possible that veterinarians from single-vet establishments place relatively less importance on personal experience for the higher scheduled and more technical Ethical products. Vets from multi-vet practices show higher relative importance as the product, in such practices, is probably chosen based on a group decision thereby giving the greater confidence in terms of personal experience. Respondents from single-vet practices place relatively greater importance on demand from pet owners. This could perhaps be attributed to confidence in numbers. Vets on their own feel they need to be more sensitive to pet owner's needs as they do not have the backing of any veterinary colleagues in the practice. This could also explain the greater relative importance for the brand name. The vet relies more on the brand or the "promise" of the product when making purchasing decisions.

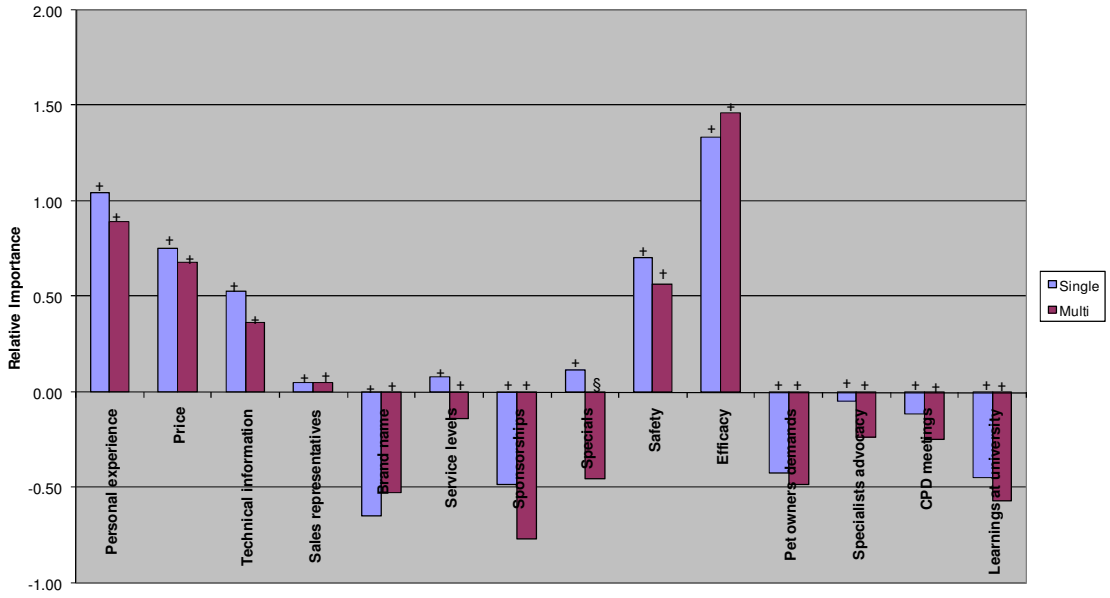
Figure 19: Single-vet versus multi-vet differences for the purchasing decision criteria of Ethical products.



Note: within each decision criteria, symbols represent significant difference or similarity of vet number at the 95% confidence interval. Twenty seven respondents were from single-vet practices and 82 were from multi-vet practices.

The only statistically significant difference for the **VOTC** products was that vets from single-vet practices placed relatively more importance on specials than did vets from multi-vet practices. Specials of VOTC products have an important influence on generating revenue for the practice. Since vets from single-vets practices are almost always practice owners, it could be that the findings are as a result of their effect that they have on the profit and loss of the practice.

Figure 20: Single-vet versus multi-vet differences for the purchasing decision criteria of VOTC products.



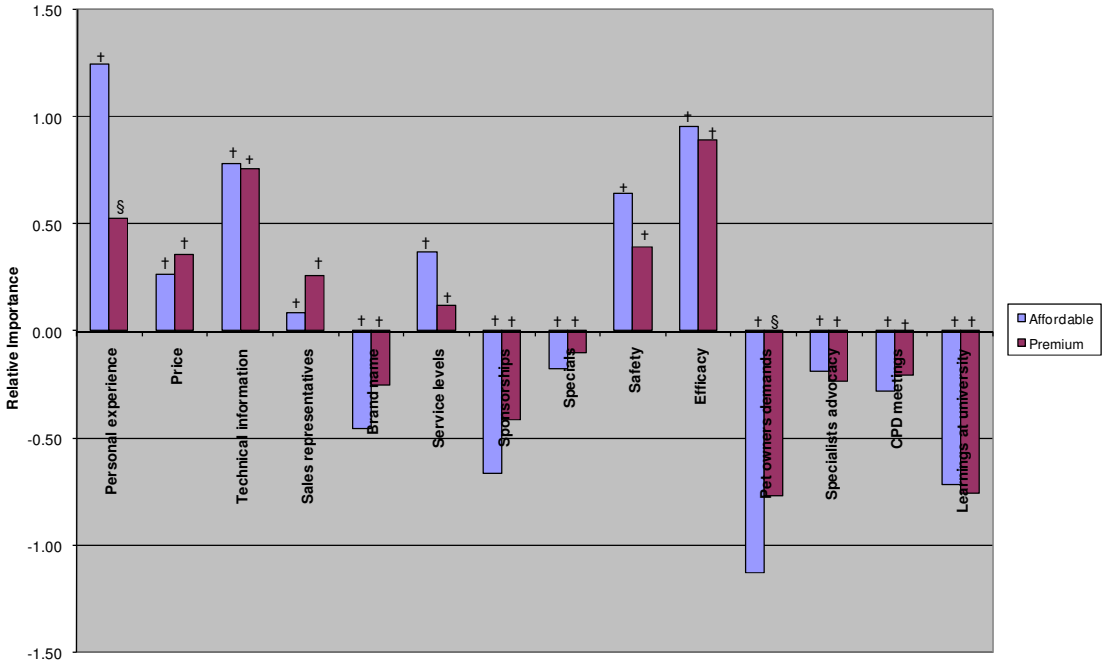
Note: within each decision criteria, symbols represent significant difference or similarity of vet number at the 95% confidence interval. Fifty two respondents were from single-vet practices and 57 were from multi-vet practices.

Consultation Fee

General consultation fees will differ depending on factors such as the area the veterinary practice finds itself in, or the veterinarian's qualifications. At the time this research was conducted, the consultation fee as recommended by the SAVC was from a minimum of R100 to a maximum of R271 exclusive of VAT. For the purposes of this research, consultation fees less < R141 were regarded as being affordable and those ≥ R141 were regarded as being premium.

The statistically significant differences for the **Biologicals** (refer to Figure 21 below) were that the affordable practices placed a greater relative importance on personal experience with the product and relatively less importance on the demands from pet owners, when compared to the premium vet practices (The results of the t-tests are illustrated in Appendix K). It is possible that vets who are charging higher amounts for a consultation are more sensitive to the demands from their customers than are those vets who are charging less and feel that the lower cost warrants them to being less sensitive to their customers' demands.

Figure 21: Affordable versus Premium consultation fees for the purchasing decision criteria of Biological products.

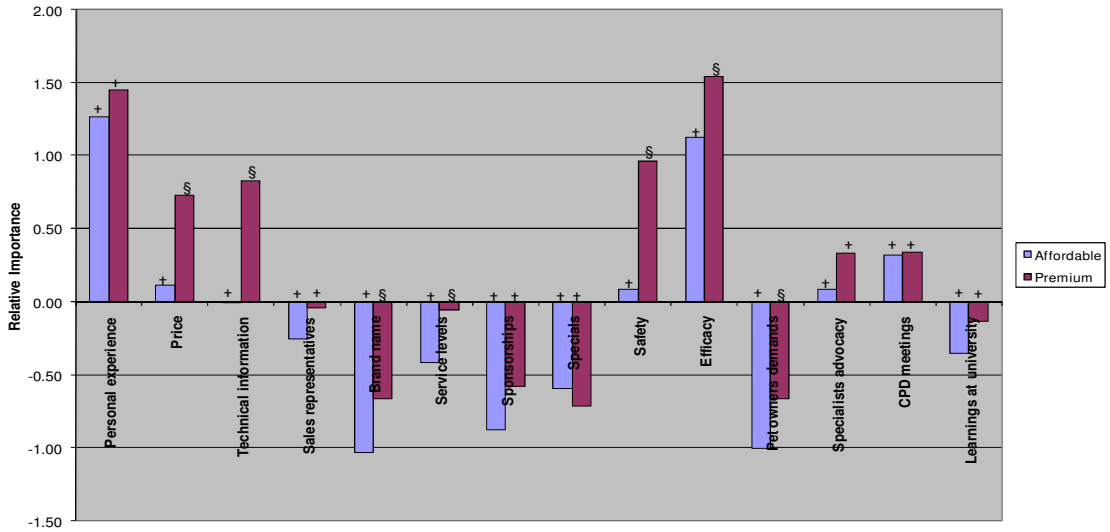


Note: within each decision criteria, symbols represent significant difference or similarity of affordability at the 95% confidence interval. Fifty four respondents were from affordable practices and 55 were from premium practices.

With regard to **Ethical** products (refer to Figure 22 below), veterinarians from the more affordable practices placed significantly less importance on the price, technical

information, brand name, service levels, safety, efficacy and demands from pet owners than compared with vets from so-called premium practices. Veterinarians who charge a higher consultation fee may be more concerned with realising good profit margins and are thus, possibly more concerned about the price of veterinary pharmaceuticals which would influence their potential profits. It is possible that the vets from the premium practices are from more affluent suburbs, where the inhabitants generally have higher levels of education and thus demand more of their vets. This expectation from the pet owner would be transferred to the vet and could possibly explain the reason for the greater relative level of importance on technical information, safety and efficacy of the products compared to vets from more affordable practices and perhaps lower income suburbs. This is a topic which could require further research.

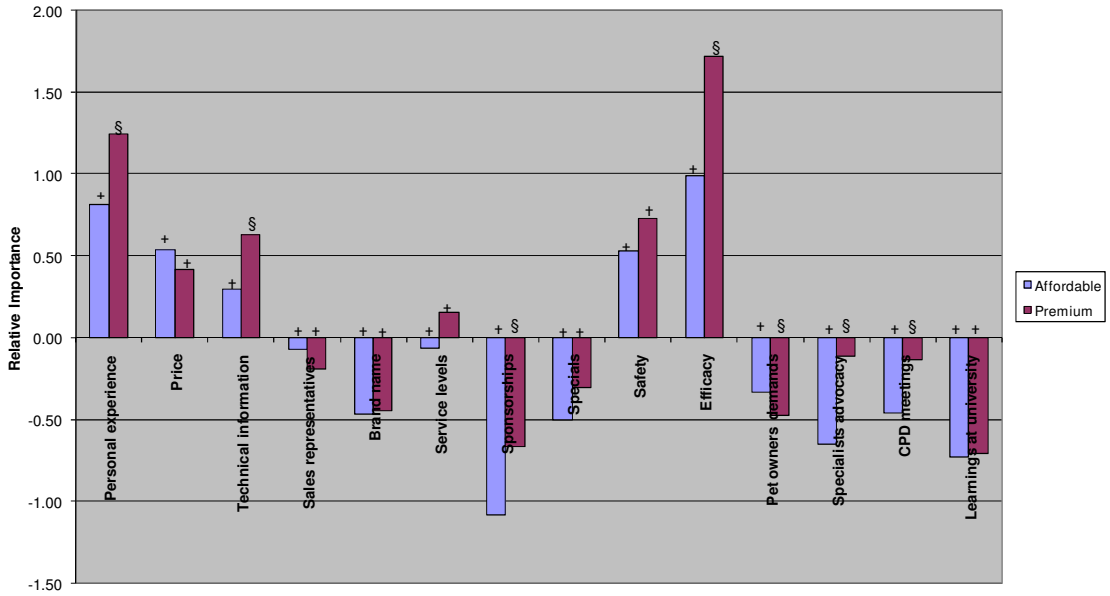
Figure 22: Affordable versus Premium consultation fees for the purchasing decision criteria of Ethical products.



Note: within each decision criteria, symbols represent significant difference or similarity of affordability at the 95% confidence interval. Thirty nine respondents were from affordable practices and 70 were from premium practices.

When considering **VOTC** products (refer to Figure 23 below), the vets from the more affordable practices placed relatively less importance on the personal experience, technical information, sponsorships, efficacy, specialist advocacy and CPD meetings. They appeared to place significantly more emphasis on pet owners demands than compared with vets from the premium practices. Similar reasons as for the Ethical products could be proposed for the greater importance placed on efficacy and technical information of the products by the more premium practices.

Figure 23: Affordable versus Premium consultation fees for the purchasing decision criteria of VOTC products.



Note: within each decision criteria, symbols represent significant difference or similarity of affordability at the 95% confidence interval. Fifty respondents were from affordable practices and 59 were from premium practices.

Practices may be affordable in terms of their consultation fee, but may not necessarily be affordable with regards to other procedures and products. So whilst the consultation fee may be used as an indicator of a clinics level of affordability, there

may be other factors which need to be taken into consideration performing such an investigation.

Proposition 4 – Partially Accepted

The criteria used when purchasing products from the different groups, do tend to vary according to the nature and characteristics of the veterinary practice. There are however, overall trends which appear to be fairly similar for these characteristics.

4.6 Information Sources

Sub problem: To suggest effective marketing strategies for veterinary pharmaceutical companies based on the findings of the above.

Proposition 5: Information sources will vary depending on the category of product being purchased.

There are various sources of information available to the veterinarian which can be used to gain knowledge pertaining to veterinary pharmaceutical products. The gathering of such information ultimately guides them in their purchasing decisions. The three most important sources of information for **Biologicals**, in descending order of importance are, sales representatives, journal articles and colleagues. The top three sources for **Ethical** products are textbooks, sales representatives and journals. Sales representatives, colleagues and journals were regarded as being the top three most important information sources for **VOTC** products. The results of the t-tests are illustrated in Appendix L.

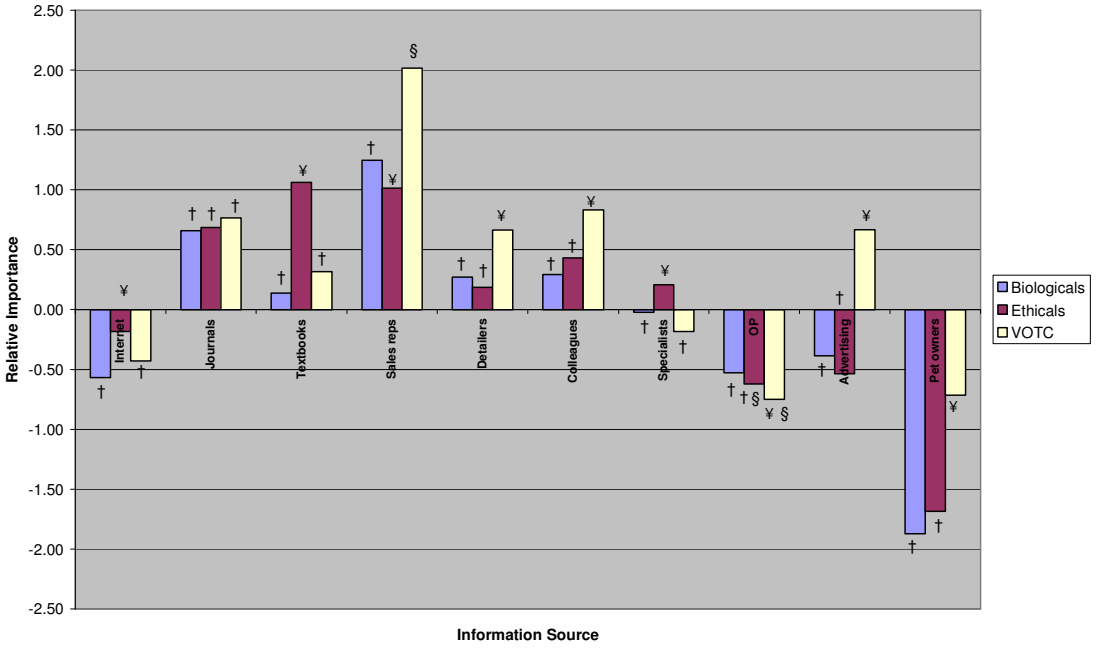
Overall, sales representatives, journal articles, colleagues, detailers and vet textbooks appeared to be the most important sources of information for veterinary pharmaceuticals. Thus according to Kotler's (2003) classification of major information sources, commercial, personal and public sources of information are all of importance

to the veterinarian. Kotler (2003) also describes experiential sources of information i.e. the handling, examining and use of the product as one of the major categories of information sources. It is evident from the section above that personal experience with a product forms a very important purchasing decision criteria for all three types of veterinary pharmaceuticals.

When comparing across the three categories of products (refer to Figure 24 below), it is evident that for Ethical products, significantly more importance was shown for the internet, textbooks, specialists and significantly less importance for sales representatives as a source of information than compared with Biologicals and VOTC products. Using the most important decision-making criteria identified for the Ethical products would have an even greater impact if they were communicated through the most important sources of information. Websites, textbooks and developing strong relations with key opinion leaders who have great influence and advocacy for a brand would be winning formulae for veterinary Ethical products. That is not to say that the other sources of information are not important for Ethical products, but those are the information sources which should be more effective than they would be for Biologicals or VOTC products.

Sales representatives were a significantly more important source of information for Biologicals than for Ethicals and of greatest importance for VOTC products. As far as VOTC products are concerned, veterinarians regard sales representatives, detailers, pet owners, advertising and colleagues to be significantly more important sources of information than compared to Biological and Ethical products. Advertising with a message of efficacy and safety in print media as well as sales representatives carrying the same message through detailers, would be most beneficial when marketing VOTC products, for example. Direct to pet owner education and advertising with the aim of creating demand from the pet owner would be more effective for VOTC products than for Ethicals or Biologicals.

Figure 24: The relative importance of the three product groups for each of the information sources.



Note: For any particular information source, product groups with different symbols are statistically significantly different from one another at the 95% confidence interval. Symbols are only indicative of the statistical significance within a particular information source and are not representative of statistically significant differences between different sources of information.

The marketer of veterinary pharmaceuticals not only needs to look at the most important sources of information, but also needs to consider the costs of using such information sources. Sales representatives may, for example, be the most important information source for VOTC products, but they certainly cost a great deal and the cost:benefit ratio of each of the information sources thus needs to be carefully considered. Perhaps more benefit could be achieved through the use of advertising media and at a lower cost than compared to a team of sales representatives. There is no doubt however, that the sales representative has the greatest potential in terms of versatility and flexibility as a source of information, if used effectively.

Proposition 5 – Partially Accepted

Most information sources do vary depending on the category of product being purchased.

4.7 Marketing Strategies

Sub problem: To suggest effective marketing strategies for veterinary pharmaceutical companies based on the findings of the above.

Proposition 6: Marketing strategies need to be customised for different categories of veterinary pharmaceutical products and for the different segments of veterinary practices.

It is clearly evident that the veterinarian is the most important individual in the decision-making unit of a veterinary practice for all types of purchases and across all groups of products, except for the straight re-buy of VOTC products.

Table 5: A summary of the most important attributes for each of the product groups.

		Biologicals		Ethicals		VOTC	
Individual with Greatest Involvement in the Purchasing Decision Process							
New Purchase		Veterinarian	3.37	Veterinarian	3.33	Veterinarian	2.57
Modified Re-buy		Veterinarian	1.53	Veterinarian	2.10	Veterinarian	1.17
Straight Re-buy		Veterinarian	1.12	Veterinarian	1.08	Receptionist	0.49
Top 5 Purchasing Decision Criteria Overall							
Decision Criteria	1	Efficacy	1.02	Experience	1.36	Efficacy	1.17
	2	Experience	0.92	Efficacy	1.27	Experience	0.94
	3	Tech info	0.77	Safety	0.66	Safety	0.67
	4	Safety	0.52	Tech info	0.61	Price	0.60
	5	Service	0.28	Price	0.54	Tech info	0.28

Table 5: continued

		Biologicals		Ethicals		VOTC	
Personal Characteristics of the Veterinarian – Top 5							
Male	1	Efficacy	0.94	Efficacy	1.33	Efficacy	1.22
	2	Experience	0.77	Experience	0.99	Experience	0.92
	3	Tech info	0.71	Safety	0.39	Safety	0.46
	4	Safety	0.44	Tech info	0.37	Price	0.42
	5	Service level	0.23	Price	0.36	Tech info	0.40
Female	1	Experience	0.68	Experience	1.59	Efficacy	1.55
	2	Efficacy	0.51	Efficacy	0.78	Experience	1.11
	3	Price	0.43	Safety	0.59	Safety	0.93
	4	Tech info	0.40	Specialists	0.16	Price	0.57
	5	Safety	0.39	Price	0.01	Tech info	0.39
Younger	1	Experience	0.89	Efficacy	1.31	Efficacy	1.36
	2	Efficacy	0.78	Experience	1.16	Experience	0.75
	3	Tech info	0.66	Safety	0.82	Safety	0.64
	4	Safety	0.60	Price	0.58	Tech info	0.31
	5	Sales reps	0.34	Tech info	0.37	Price	0.26
Mature	1	Efficacy	1.17	Efficacy	1.35	Efficacy	1.32
	2	Experience	1.00	Experience	1.16	Experience	1.21
	3	Tech info	0.89	Tech info	0.56	Safety	0.72
	4	Safety	0.76	Safety	0.40	Price	0.64
	5	Service level	0.45	CPD	0.30	Tech info	0.56
Owner	1	Efficacy	1.09	Efficacy	1.26	Efficacy	1.45
	2	Experience	0.98	Experience	1.13	Experience	1.04
	3	Tech info	0.88	Tech info	0.60	Safety	0.82
	4	Safety	0.68	Safety	0.32	Price	0.65
	5	Service level	0.39	Price	0.29	Tech info	0.48
Assistant / Locum	1	Experience	1.00	Experience	1.43	Efficacy	1.23
	2	Tech info	0.77	Efficacy	1.35	Experience	0.92
	3	Efficacy	0.75	Safety	1.04	Price	0.71
	4	Price	0.38	Price	0.62	Safety	0.51
	5	Safety	0.37	Specialists	0.47	Tech info	0.48

Table 5: continued

		Biologicals		Ethicals		VOTC	
Nature and Characteristics of the Vet Practice – Top 5							
Single man	1	Experience	1.10	Efficacy	1.22	Efficacy	1.33
	2	Tech info	0.79	Experience	0.98	Experience	1.04
	3	Efficacy	0.77	Tech info	0.36	Price	0.75
	4	Price	0.51	Price	0.32	Safety	0.71
	5	Safety	0.46	Safety	0.22	Tech info	0.53
Multi man	1	Efficacy	0.81	Experience	1.39	Efficacy	1.46
	2	Experience	0.72	Efficacy	1.16	Experience	0.89
	3	Safety	0.57	Price	0.50	Price	0.68
	4	Tech info	0.56	Safety	0.48	Safety	0.56
	5	Price	0.24	Tech info	0.39	Tech info	0.36
Affordable	1	Experience	1.24	Experience	1.27	Efficacy	0.99
	2	Efficacy	0.95	Efficacy	1.13	Experience	0.81
	3	Tech info	0.78	CPD	0.32	Price	0.53
	4	Safety	0.64	Price	0.11	Safety	0.53
	5	Service level	0.37	Specialists	0.08	Tech info	0.29
Premium	1	Efficacy	0.89	Efficacy	1.54	Efficacy	1.72
	2	Tech info	0.75	Experience	1.45	Experience	1.24
	3	Experience	0.53	Safety	0.96	Safety	0.73
	4	Safety	0.39	Tech info	0.83	Tech info	0.63
	5	Price	0.36	Price	0.73	Price	0.42
Top 5 Sources of Information							
Information Sources	1	Sales reps	1.25	Textbooks	1.06	Sales reps	2.02
	2	Journals	0.66	Sales reps	1.01	Colleagues	0.83
	3	Colleagues	0.29	Journals	0.68	Journals	0.77
	4	Detailers	0.27	Colleagues	0.43	Advertising	0.67
	5	Textbooks	0.14	Specialists	0.21	Detailers	0.66

Numbers to two decimal places represent the mean from the Shotgun Stochastic Parametric Algorithm.

Since the veterinarian forms the buying centre of a veterinary practice, all marketing efforts should have the vet as the primary focus. This certainly does not imply that the other individuals should be ignored. Although they may not be the most important people involved in the purchasing decision processes, the receptionist and vet nurse may certainly act as gatekeepers to communicating with the veterinarian. Receptionists and vet nurses thus need to be treated with the utmost respect and courtesy. Furthermore, these individuals may very well as act as influencers of the veterinarians buying patterns. Even if not involved in the purchasing decision process, they certainly play an important role in the education of pet owners and in the dispensing of drugs and add-on VOTC sales and can therefore, influence the sales of veterinary pharmaceuticals from a veterinary practice. Being the most involved individual in the straight re-ordering of VOTC products, the receptionist plays a crucial role in keeping existing clients. Veterinary pharmaceutical companies should therefore, recognise the importance they have in retaining pet owners as customers and hence, maintaining the sales of specific brands of VOTC out of a veterinary clinic.

Pet owners showed a low level of involvement in the purchasing decision process. They will also, most often, accept the brand that the vet prescribes for them. There does however, exist vast amounts of potential in the form of uneducated and uniformed pet owners. Direct to pet owner education and awareness regarding veterinary health conditions would certainly grow the market size. The sensible solution would be to direct marketing activities at the veterinarian to ensure that one's brand is the preferred brand of the vet. Only once this has been successfully achieved should one consider marketing to and creating awareness for the pet owner.

Although the order may vary somewhat, the top five decision criteria for Ethical and VOTC products are the same, refer to Table 5 above. Biological products differ slightly in that service levels replace price in relative order of importance. Veterinary pharmaceutical companies therefore need to focus on efficacy, personal experience, safety, technical information and price when directing their marketing efforts at veterinarians. Biologicals would differ in that service levels such as the availability of

stock and the supply of value added services, for example, free vaccination booklets, would be regarded by the veterinarian as being more important than the list price of the vaccine. It would therefore be of competitive advantage to find value added services which the veterinarian perceives as being of greater value than is the actual cost to the pharmaceutical company. For example, having the buying power to purchase syringes in bulk and use them as value-add in the sale of vaccines would cost the pharmaceutical company far less per syringe than it would cost the vet if they were to purchase the syringes themselves. The perceived value to vet is thus greater than the cost to the pharmaceutical and would be a far more effective marketing tool than dropping the list price by a similar value than the cost of the syringes.

It is the marketer's duty and responsibility to place emphasis on those decision criteria and sources of information which are of significantly greater relative importance to the veterinarian. The simultaneous combination of influential factors, such as KOLs speaking about the efficacy and safety of Ethical products at CPD meetings, is likely to lead to very effective marketing activities. Not only the combination of the highly influential criteria, but the use of such combinations in the most important information sources, which are directed at the key decision makers in the buying centre, will have even greater synergistic effects and lead to greater returns on marketing investments. Marketing is all about the customer's perceptions and, by creating synergies within and between purchasing decision criteria and information sources, the pharmaceutical company will be able to create the perception of extreme value to the veterinarian. This will enable the pharmaceutical company to gain the competitive edge and accrue new customers, whilst maintaining existing customers.

The flexibility and versatility of communication mixes will be entirely dependent on what the source of the communication is. It would be impractical, for example, to publish an advert in a magazine directed at the more mature vet rather than the younger vet, as vets of all ages would read the publication. Sales representatives however, would arguably represent the most versatile source of a communication

mix. If a sales representative learns to know and understand the subtle differences in importance of the various decision criteria for the various attributes, they will be able to tailor the message that they deliver to such an extent that it has the greatest positive impact on their customer. This should realise into effective sales and a positive return on marketing investment.

Using the attributes in this research, one would be able to begin to segment the veterinary market on a very elementary level. Customers should be segmented based on similar sets of wants. There are certain personal characteristics and practice related characteristics which can be used to practically group veterinarians with similar sets of wants. These similar set of wants are illustrated in the top 5 rankings for each of the characteristics in Table 5 above. Marketing and sales efforts can be more effective, if tailored to these specific differences.

Although sales representatives form a substantial cost to any veterinary pharmaceutical company, they are regarded by vets as being the most or, at worst (for Ethical products), the second most important information source. Sales representatives are by far the most adaptable and versatile of all the information sources. With the correct up to date training and given the correct tools and knowledge, they will probably be most effective in delivering the necessary information in such a way that they can positively influence sales by focusing on the most influential purchasing decision criteria. Sales representatives need to be educated and sensitised to how the purchasing decision criteria vary in importance for differing personal characteristics of the veterinarian and the veterinary clinic.

In addition to the mention above of synergies between the different purchasing criteria, it is important to note that combining certain information sources would also have a synergistic effect on the marketing success. Sales representatives making use of journal articles, and detailers including references to journal articles and inserts of testimonials from veterinary colleagues would most likely have a major impact on the average veterinarian.

In summary, marketing strategies need to be tailored to involve and combine the most important purchasing criteria via the most important combination of information sources for each of the product categories.

Proposition 6 – partially accepted

Marketing strategies do need to be fine tuned for the different categories of veterinary pharmaceutical products. Certain veterinarian and veterinary practice characteristics do lend themselves to profiling vets with similar sets of needs and wants.

5 CONCLUSIONS AND RECOMMENDATIONS

The major findings of the research are summarised in the following chapter. Based on the findings of the research, suggestions towards the marketing strategies of veterinary pharmaceutical companies operating in the South African Animal Health Industry are put forward. Topics for future research are recommended.

5.1 Responses to the Research Propositions

The outcomes of the research propositions can be found in Table 6 below.

Proposition 1 states that the owner of the veterinary practice forms the buying centre and the veterinary nurses, receptionists, kennel assistants and pet owners have little say in the buying decision process.

The results show that the veterinarian does form the buying centre. The involvement of the veterinarian is highest for totally new purchases and lowest for straight re-buys. The vet's involvement for the different types of purchases is greater for Ethical and Biological products than for VOTC products. Aside from the straight re-buy of VOTC products, the veterinarian has the greatest degree of involvement in the purchasing of veterinary pharmaceutical products. Certainly for Ethical and Biological products there is very little involvement from the other members of a veterinary practice. Proposition 1 is thus **accepted**.

Proposition 2 states that the importance of different criteria used by veterinarians in the purchasing process will vary for the different categories of veterinary pharmaceutical products, namely Biologicals, Ethicals and VOTC products.

Although there were certain significant differences across the three product groups, the trends in the top five criteria for the groups were similar as illustrated in Table 5 above. It is for this reason that the proposition was **partially accepted**.

Proposition 3 states that the criteria used when purchasing products from the different categories, varies according to the personal characteristics of the veterinarian.

The demographic variables of gender, age and ownership status were considered. Although there were certain significant differences between the polarities of these variables, there were also many similar trends between them. The fact that not all of the significant differences between the polarities were for the important criteria, meant that proposition 3 was only **partially accepted**.

Proposition 4 states that the criteria used when purchasing products from the different categories, varies according to the nature and characteristics of the veterinary practice.

The influence of practice characteristics, namely the number of vets per clinic and the consultation fee were investigated. As with the testing of proposition 4, there were similar trends between the extremes of the two practice variables but also certain significant differences. Proposition 4 was thus also only **partially accepted**.

Proposition 5 states that information sources will vary depending on the category of product being purchased.

The relative importance of the information sources showed some variation between the product groups, but the overall trend was similar. Proposition was thus only **partially accepted**.

Proposition 6 states that marketing strategies need to be customised for different categories of veterinary pharmaceutical products and for the different segments of veterinary practices.

Overall marketing strategies for the three product groups should have similar foundations with importance on similar sets of purchasing criteria and using similar sets of information sources as illustrated in Table 5 above. Where practical, these marketing initiatives need to be customised by placing greater emphasis on certain variables for particular products. For this reason, proposition 6 was **partially accepted**.

Table 6: A summary of the outcomes of the research propositions.

Sub problem	Proposition	Accepted / refuted
To determine who forms the buying centre or decision-making unit (DMU) at a veterinary practice.	**1.** The owner of the veterinary practice forms the buying centre and the veterinary nurses, receptionists, kennel assistants and pet owners have little say in the buying decision process.	**Accepted**
To determine the relative importance of different decision criteria the DMU uses for purchasing different categories of veterinary pharmaceutical products.	**2.** The importance of different criteria used by veterinarians in the purchasing process will vary for the different categories of veterinary pharmaceutical products, namely Biologicals, Ethicals and VOTC products.	**Partially accepted**
To suggest how the veterinary market can be segmented based on decision-making criteria	**3.** The criteria used when purchasing products from the different categories, varies according to the personal characteristics of the veterinarian	**Partially accepted**
	4. The criteria used when purchasing products from the different categories, varies according to the nature and characteristics of the veterinary practice.	**Partially accepted**
To suggest effective marketing strategies for veterinary pharmaceutical companies based on the findings of the above	**5.** Information sources will vary depending on the category of product being purchased.	**Partially accepted**
	6. Marketing strategies will need to be customised for different categories of veterinary pharmaceutical products and for the different segments of veterinary practices.	**Partially accepted**

There are certain associations between the demographic variables and the importance placed on the different purchasing decision criteria.

5.2 Recommendations to Organisations

The main purpose of the study was to suggest effective marketing strategies for South African veterinary pharmaceutical companies.

Based on the findings of testing **proposition 1** it is recommended that veterinary pharmaceutical companies should target the veterinarian with all marketing efforts. The primary objective should be to create a demand for the product with the vet. This is particularly true for new products which are entering the market. Once the product is in the veterinary practice, additional marketing efforts can be directed at the support staff members. It is important to emphasise that this should be complimentary to the investment in communication to the vet and not as a substitute for it. These ancillary marketing efforts will help in promoting products that are already in the practice. Such initiatives will help facilitate the straight re-purchase and thereby increase the re-ordering and flow of the product though the veterinary practice.

The findings of the research show that the main marketing focus for all veterinary pharmaceutical products should have its foundation based on the efficacy of the product, personal experience with the product, the safety of the product, the price of the product and technical information on the product. When testing **proposition 2** it was evident that slightly different emphasis needs to be placed on these levers when comparing the three different product groups with one another. In considering the top five criteria for each of the product groups, those criteria which were significantly greater than at least one other product group are regarded as being the levers which require greater emphasis. It is important to note that the levers or criteria highlighted below are not necessarily the most important levers for the particular product, but they are those levers which when pulled, are likely to have a greater effect than when the same lever is pulled for a different product group.

For Biologicals – additional emphasis should be on:

- **Technical information** on the product. This could be achieved through *inter alia* highlighting manufacturing advantages, benefits on the duration of immunity, time from vaccination to protection.
- **Service levels**. This could be achieved by providing free syringes with the vaccines or complimentary vaccination booklets. These services need to be

incorporated into the price of the product. It would thus be of great advantage to provide services of greater value to the vet than is the cost to the company.

For Ethicals – additional emphasis should be on:

- **Personal experience** with the product. Since regulations prohibit the sampling of Act 101 products, the vet's confidence in the product could be enhanced by making use of testimonials from other veterinarians or using DVDs or in clinic demonstrations illustrating the use of the product.
- **Efficacy** of the product. Articles and detailers illustrating the products efficacy should be employed to create demand.
- **Price**. A competitive price, not necessarily of the list price but, revealed as a cost per treatment course i.e. dose (mg/kg/day) multiplied by the number of days of treatment, will help achieve a competitive edge.

For VOTCs - additional emphasis should be on:

- **Efficacy** of the product. Field trials illustrating the efficacy of Tick and Flea spot-ons for example, or detailers demonstrating the efficacy the product would be most useful.
- **Price**. For typical veterinary over the counter products, such as dewormers and tick and flea products, the frequency of application and spectrum of efficacy are important factors which need to be considered when comparing prices. A competitive pricing does not mean the cheapest on the market but rather implies a competitive price per value that the product delivers.

The recommendations emanating from the testing of **proposition 3** with respect to the three personal characteristic variables are based on significant differences between the respective polarities. Once again, it is important to note that the levers or criteria highlighted below are not necessarily the most important levers for the particular polar variable, but they are those levers which, when pulled, are likely to have a greater effect than when the same lever is pulled for the opposing polar. The

recommendations to organisations are as follows: (Please note that the product categories to which the recommendations apply are indicated in brackets)

- Gender – more emphasis should be placed on **efficacy** (Biologicals and Ethicals) as well as on **technical information** (Ethicals) when dealing with **male** veterinarians compared to their female counterparts. **Female** veterinarians on the other hand are likely to show greater positive sensitivity to **personal experience** with the product (Ethicals) and the **safety** of the product (VOTCs).
- Age – **younger** veterinarians appear to be more sensitive to **safety** (Ethicals) and **price** (Ethicals) issues. The more **mature** vet places comparatively more emphasis on **service levels** (Biologicals), **personal experience** (VOTC) and the **price** (VOTC) of the product. Where possible, marketing efforts should take this into consideration.
- Ownership status – veterinary pharmaceutical companies should place more emphasis on **technical information** (Ethicals) when dealing with practice **owners** versus focusing more on the **safety** (Ethicals) of the product when dealing with veterinary **assistants** or **locums**.

The outcomes from the testing of **proposition 4**, the veterinary practice characteristics, have lead to the following suggestions for pharmaceutical organisations: (Please note that the product categories to which the suggestions apply are indicated in brackets)

- Number of vets – veterinarians from **single-vet** practices regard **personal experience** (Biologicals) to be of great importance. When dealing with vets from **multi-vet** practices, the pharmaceutical marketer should focus more on **personal experience** (Ethicals) than when communicating with single-vet customers.
- Consultation fee – more emphasis should be placed on **personal experience** (Biologicals) when communicating to practices that charge a more **affordable** consultation fee. Greater sensitivity should be given to **efficacy** (Ethicals and VOTC), **safety** (Ethicals), **technical information** (Ethicals), **price** (Ethicals) and

personal experience (VOTC) with the product when marketing to practices that charge a more **premium** consultation fee.

Many of the differences between the personal characteristics and practice characteristics and between the product types are for the indifferent or unimportant variables and thus, have less relevance to organisations.

Most of these segments listed above are not particularly actionable or practical with respect to the channels of communication available to veterinary pharmaceutical companies. For example, it would be difficult to target women vets in a CPD meeting filled with a healthy mix of both genders. Similarly, it would be difficult to target younger vets in the most popular veterinary publication when demographics of the readership show a broad range of ages of their readers. Sales representatives represent the exception. Since they are marketing face-to-face or one-on-one, they will, having the necessary knowledge and intellect, be able to tailor their communication and message to suite the characteristics of any particular customer.

The testing of **Proposition 5** revealed that in general, the most important sources of information used by veterinarians are sales representatives, journals, textbooks, colleagues and detailers. In considering the top five criteria for each of the product groups, those information sources which were significantly greater than at least one other product group are regarded as being the levers which require greater emphasis. It is important to note that the levers or criteria highlighted below are not necessarily the most important levers for the particular product, but they are those levers which when pulled, are likely to have a greater effect than when the same lever is pulled for a different product group.

- For Biologicals – additional emphasis should be placed on **sales representatives**. Factors such as good product knowledge, confidence, friendliness, competence, reliability and motivation are only some of the elements of a successful sales representative.

- For Ethical products – additional emphasis should be placed on veterinary **text books** as well as veterinary **specialists**. Pharmaceutical companies should engage with key opinion leaders with good advocacy for the product and excellent credibility to their colleagues. Textbooks, where applicable, should be used to illustrate technical information on the product.
- For VOTC products – pharmaceutical organisations should place additional emphasis on **sales representatives**, **detailers**, **colleagues** and **advertising**.

All sources of information need to be credible and reliable in order to have the desired effect on the consumer. For example, sales representatives need to build credibility with their customers, textbooks should be from a credible publisher, and so forth.

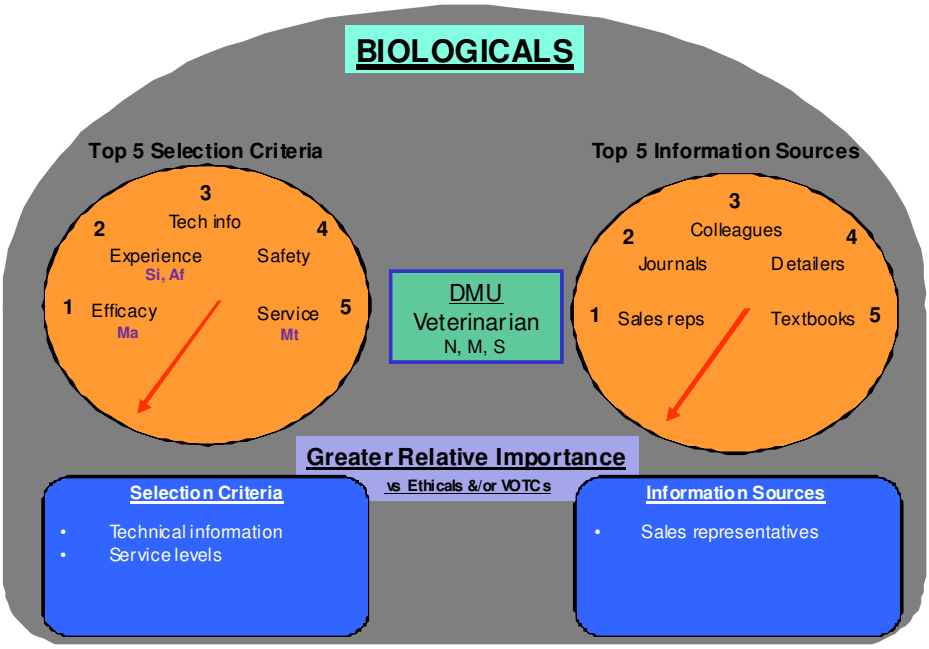
The recommendations to veterinary pharmaceutical companies emanating from the testing of **proposition 6**, all revolve around creating synergies with the purchasing decision criteria and the most important information sources. The effect of combining the most important decision criteria for a particular product category and communicating that through the most important identified information sources will, no doubt, have a greater overall effect than would the sum of individual initiatives.

For example, using the more sensitive levers for each of the product categories would result in the following suggestions to veterinary pharmaceutical organisations:

- For Biologicals – use sales representatives to deliver technical information and offer excellent service levels.
- For Ethicals – use veterinary specialists and key opinion leaders to deliver testimonials and convey their positive experiences with the use of the products. Also make use of veterinary textbooks to illustrate product efficacy where applicable.
- For VOTCs – use sales representatives to detail product efficacy. Colleague's testimonials on product efficacy as well as advertising in the media regarding product efficacy and competitive pricing should also be employed as tactics.

Once again, these do not necessarily represent the most important levers for a product group, but rather levers that are more sensitive and thus more distinguishing compared to the other product categories. Figures 25 - 27 below illustrate a marketing dashboard for each of the three product categories. These dashboards should form the basis of marketing strategies veterinary pharmaceutical companies. They illustrate the most important purchasing decision criteria and the most important information sources with reference to the more sensitive variables and segment differences.

Figure 25: Marketing dashboard for Biologicals.



Key: The DMU indicates the most important decision-making member for; N – totally new purchases, M – modified re-buys and S – straight re-purchases. The top five selection criteria and information sources are ordered numerically. The selection criteria and information sources which showed significantly greater importance than at least one of the other two product categories are listed. Symbols indicate segmentation variables where the mean was significantly greater than the opposing polarity. For example, "M" would indicate that mature vets regarded that particular variable e.g. service levels, to be of significantly greater importance than their opposing polarity – the younger vets.

Gender

Ma	=	**Male**	**Fe**	=	**Female**

Age

Y	=	**Younger**	**Mt**	=	**Mature**

Ownership status

O	=	**Owner**	**A**	=	**Assistant veterinarian**

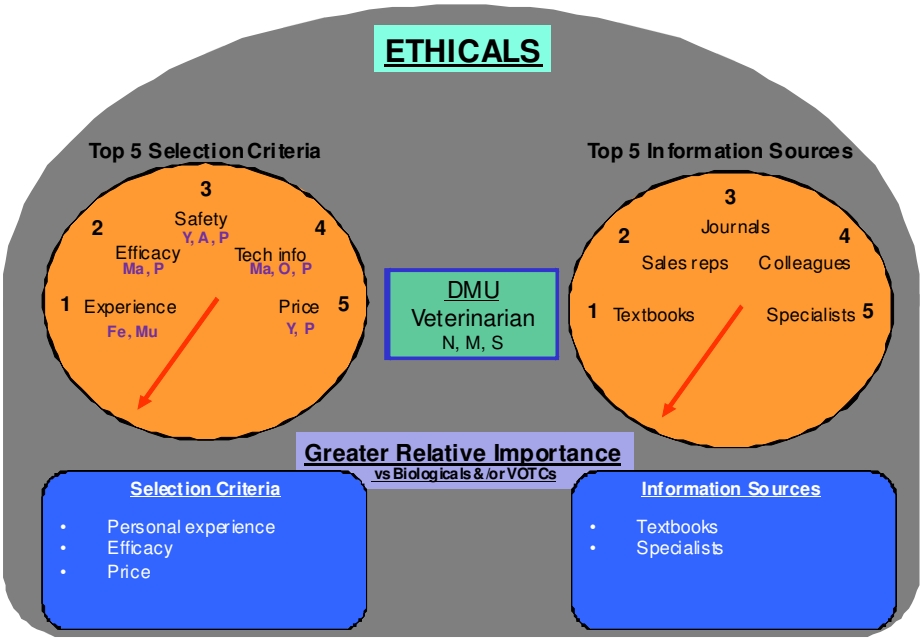
Number of veterinarians

Si	=	**Single-vet**	**Mu**	=	**Multiple-vet**

Consultation fee

Af	=	**Affordable**	**P**	=	**Premium**

Figure 26: Marketing dashboard for Ethicals.



Key: The DMU indicates the most important decision-making member for; N – totally new purchases, M – modified re-buys and S – straight re-purchases. The top five selection criteria and information sources are ordered numerically. The selection criteria and information sources which showed significantly greater importance than at least one of the other two product categories are listed. Symbols indicate segmentation variables where the mean was significantly greater than the opposing polarity. For example, "M" would indicate that mature vets regarded that particular variable e.g. service levels, to be of significantly greater importance than their opposing polarity – the younger vets.

Gender

Ma	=	**Male**	**Fe**	=	**Female**

Age

Y	=	**Younger**	**Mt**	=	**Mature**

Ownership status

O	=	**Owner**	**A**	=	**Assistant veterinarian**

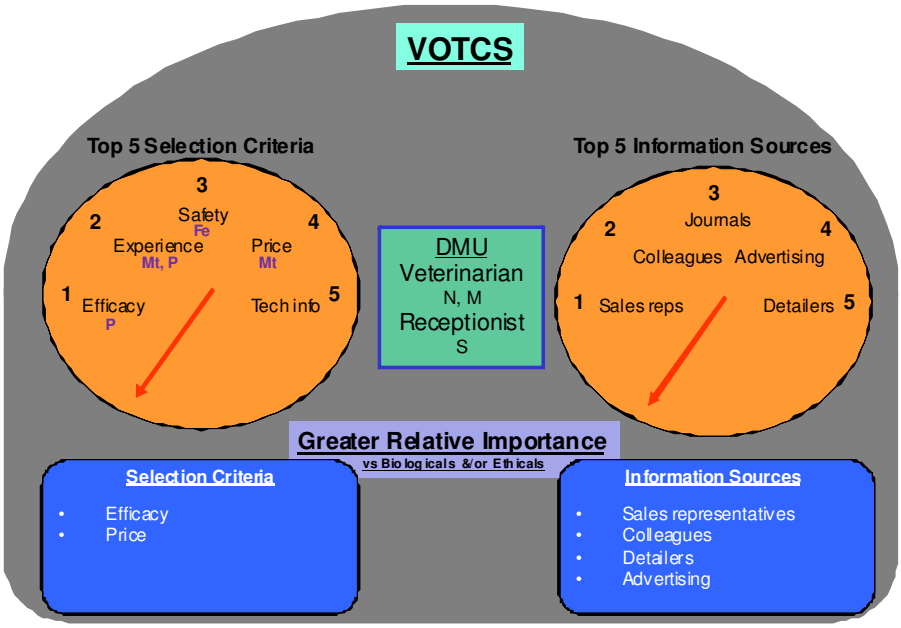
Number of veterinarians

Si	=	**Single-vet**	**Mu**	=	**Multiple-vet**

Consultation fee

Af	=	**Affordable**	**P**	=	**Premium**

Figure 27: Marketing dashboard for VOTCs.



Key: The DMU indicates the most important decision-making member for; N – totally new purchases, M – modified re-buys and S – straight re-purchases. The top five selection criteria and information sources are ordered numerically. The selection criteria and information sources which showed significantly greater importance than at least one of the other two product categories are listed. Symbols indicate segmentation variables where the mean was significantly greater than the opposing polarity. For example, "M" would indicate that mature vets regarded that particular variable e.g. service levels, to be of significantly greater importance than their opposing polarity – the younger vets.

Gender

Ma	=	**Male**	**Fe**	=	**Female**

Age

Y	=	**Younger**	**Mt**	=	**Mature**

Ownership status

O	=	**Owner**	**A**	=	**Assistant veterinarian**

Number of veterinarians

Si	=	**Single-vet**	**Mu**	=	**Multiple-vet**

Consultation fee

Af	=	**Affordable**	**P**	=	**Premium**

Successful marketers are able to carefully influence a customer's perceptions to their advantage. It should therefore, be a company's primary objective to create positive perceptions with respect to those particular criteria which have been identified as being of great importance to veterinarians. Total misalignment between perceptions and the reality of a product are not sustainable in the long-term. It is thus advisable that the real characteristics of the product are able to substantiate those perceptions which have been created in the customer's mind. The veterinary pharmaceutical company that is able to come up with innovative ways of effectively pulling the most sensitive levers will be able to achieve a competitive advantage.

Pharmaceutical companies have a limited set of resources - employees, time, advertising and promotion spend, to name but a few. It is important that these limited set of resources are directed to initiatives which will realise the greatest return. They should ensure that sales representatives have the correct marketing tools and necessary support material to enable them to deliver their message. There needs to be efficient alignment across marketing and sales departments. The most effective marketing tools will fall well short of expectations, if they are not implemented successfully by the sales team. Furthermore, this type of research needs to be on-going within the veterinary pharmaceutical organisation. The relative importance of the purchasing decision criteria and the relative importance of information sources may evolve with time. New sources of information may, for example, develop and others may become obsolete. The organisations which are best able to identify these evolving needs, and most effectively provide for them, will be the organisations that are most successful in the veterinary pharmaceutical industry.

5.3 Limitations of the Research

This research is limited to investigations of veterinarian buying behaviour. It does not investigate decision criteria of pet owners or farmers which could significantly influence a veterinarian's purchasing decisions. Furthermore, it is not an exhaustive

investigation of all buyer behaviour and marketing strategy theory. Decision criteria may very well change with time. Certain decision criteria may become obsolete, whilst other new criteria may develop in the future. This research needs to be on-going in order to stay abreast of changing buyer behaviours and thus, stay ahead of the competition. The research results in recommendations regarding segmentation which are limited to a few demographic variables. Other variables could also play a more significant role in segmenting the veterinary market.

5.4 Recommendations for Future Research

Recommendations for future research in the veterinary pharmaceutical industry could include the following:

- An investigation into the buying behaviour of pet owners when selecting which veterinarian and veterinary practice to make use of.
- A more thorough investigation into the segmentation of veterinarians.
- Investigate the role that other members of the veterinary practice play in buying centre and how they can be incorporated into the marketing strategies, in order to facilitate sales of veterinary pharmaceuticals.
- Understanding the cost: benefit ratio of each of the information sources.
- Understanding the cost: benefit ratio of each of the purchasing decision criteria.

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APPENDIX A

A list of Veterinary registration holders/distributors in South Africa as at December 2007.

Adcock Ingram Critical Care (Pty) Ltd	Fort Dodge Animal Health
Afrivet Business Managemnt (Pty) Ltd	Healthtech Laboratories
Alvet Quality Vet Products	Hipra Southern Africa (Pty) Ltd
AniPharm (Pty) Ltd	IAMS company
Antec (Healthcare) Africa (Pty) Ltd	Immun-Vet Service cc
Antrovet Distributors cc	Instavet Import and Export (Pty) Ltd
Ark Animal Health cc	Intervet SA (Pty) Ltd
Bayer Animal Health Division	Kyron Laboratories (Pty) Ltd
Bedson Africa (Pty) Ltd	Lohmann Animal Health SA (Pty) Ltd
Bestvet cc	MDB Animal Health (Pty) Ltd
Biorem Biological Products	Medpet (Pty) Ltd
Boehringer Ingelheim (VetMedica)	Merial South Africa (Pty) Ltd
Central Vet Franchise cc	Model Product Distributors (Pty) Ltd
Chemeq Ltd	Moriana Pharmaceuticals
Ceva Animal Health (Pty) Ltd	Norbrook Laboratories (Pty) Ltd
Chemunique International (Pty) Ltd	Novartis South Africa (Pty) Ltd
Cipla Agrimed	Onderstepoort Biological Products
Cipla Vet	Ourofino Animal Health (Pty) Ltd
Columbomed (Pty) Ltd	Pfizer Animal Health
Combipharm	Phibro Animal Health
Cooper Veterinary Products (Pty) Ltd	Ramsem (Pty) Ltd
Deltamune (Pty) Ltd	Royal Canin
ECO Animal Health SA(Pty) Ltd	Schering Plough Animal Health
Eden Veterinary Products (Pty) Ltd	Stride Distributors cc
Elanco AH (Division of Eli Lilly)	Virbac RSA (Pty) Ltd
Elangeni Animal Health	
Equifox	
Experto Vet Ltd	

APPENDIX B

Survey – Biologicals questionnaire. The Ethical and VOTC questionnaires were identical but referred to Ethical and VOTC products respectively.

Dear Doctor,

Thank you for agreeing to participate in the following survey which will be used to investigate the purchasing behaviour of professionals such as yourself.

Based on a pilot study, the questionnaire will take approximately 12 minutes to complete. Please note that contact details below are purely for the purpose of follow-up should there be any ambiguity in the answers. Therefore only one of the contact details in section 1.1 below need be provided. Should you have any queries at any time regarding the answering of the questions please contact me on ***082 6917 844****. I will call you straight back and help resolve the query.* ***Fax No. 011 895 1640***

Clear all fields

VETERINARY SURVEY

1.1 RESPONDENT INFORMATION

Date	

Name	
Practice Name	
Telephone Number	
Fax Number	
Cellphone Number	
Email	

1.2 **Veterinarian Information** (Please tick the appropriate answer where applicable)

1.2.1	Gender		Male
			Female
1.2.2	Language		English
			Afrikaans
1.2.3	Age		
			< 30
			30 – 34
			35 – 39
			40 – 44
			45 – 49
			50 – 54
			55 – 59
			60 – 64
			65 – 69
			70 – 74
			75 – 79
			≥ 80
1.2.4	Number of Years in Practice		
			< 5
			5 – 9
			10 – 14
			15 – 19
			20 – 24
			25 – 29
			30 – 34
			35 – 39
			40 – 44
			45 – 49
			≥ 50
1.2.5	Level of **Veterinary** Education		BVSc
			BVSc Hons
			BVSc MMed
1.2.6	Position		Practice owner
			Veterinary assistant
			Locum
1.2.7	I am a member of the following professional Vet bodies.		SAVC
			SAVA
			MRCVS

1.2.8 Who is your wholesaler of choice?

	ANB Vet		M.C.P. Wholesalers
	Antrovet		Midlands Vet
	Bergvet Wholesalers		Midlans Wholesale Chemists
	Biovet		Natal Wholesale Chemist
	Central Vet		National Vet Supplies
	Drakensberg Wholesale Chemist		Pharmed
	General Vet Distributors		Swavet
	Howick Vet		Transfarm
	Kruvet		Vetgripho
	Lakato		Vetserv
	Le'tangs		Other

1.3 Practice Information (Please tick the appropriate answer where applicable)

1.3.1	Which town is your practice in?			
1.3.2	Type of practice			
	☐	Small animal	☐	Welfare
	☐	Large animal	☐	Wildlife
	☐	Equine	☐	Exotic
	☐	Mixed	☐	Specialist/Referral
1.3.3	Number of vets in practice			
	☐	1	☐	6
	☐	2	☐	7
	☐	3	☐	8
	☐	4	☐	9
	☐	5	☐	10
1.3.4	Number of qualified vet nurses in practice			
	☐	1	☐	6
	☐	2	☐	7
	☐	3	☐	8
	☐	4	☐	9
	☐	5	☐	10

1.3.5	Total staff compliment including vets			
	☐	< 5	☐	20 – 24
	☐	5 – 9	☐	25 – 29
	☐	10 – 14	☐	30 – 34
	☐	15 – 19	☐	≥ 35

1.3.6 Approximate number of consults seen per day			
	≤ 10		31 - 40
	11 - 20		41 - 50
	21 - 30		≥ 51

1.3.7 Consultation fee (excl VAT)			
	< R100		R151 - R160
	R100 - R110		R161 - R170
	R111 - R120		R171 - R180
	R121 - R130		R181 - R190
	R131 - R140		R191 - R200
	R141 - R150		> R200

The following definitions apply to veterinary pharmaceuticals:

Definitions

- **Biologicals** – those products made from living organisms such as vaccines
- **Ethicals** – those products which require the dispensing by a veterinarian (usually higher scheduled drugs such as antibiotics, anaesthetics, etc.)
- **Veterinary over the counter (VOTC)** – those products sold legally from a veterinary practice or veterinary shop without the need for a veterinary consultation, e.g. products such as dewormers and tick and flea products

*This questionnaire applies **only** to **Biological** products. Veterinary products which fall into the other two categories of products should be ignored when answering the below questions.*

2. INFORMATION SOURCES

	Where do you source your information from regarding veterinary **Biological** products? Rank ***only your top 5*** sources of information in order importance as 1 - most NB source; 2 - 2nd most NB source; and so on. You will thus rank the top five most important criteria from the list of 11 and **leave 6 blank**.	**Biologicals** (e.g. vaccines)
2.1	Internet	
2.2	Journal articles	
2.3	Vet textbooks	
2.4	Sales representatives	
2.5	Pharmaceutical detailers	
2.6	Colleagues	
2.7	Specialists	
2.8	Onderstepoort - Faculty of Veterinary Science	
2.9	Advertising	
2.10	Pet owners	
2.11	Don't need info	

3. CRITERIA USED IN PURCHASING FROM THE DIFFERENT CATEGORIES OF VETERINARY PRODUCTS

Of the 14 criteria listed below, rank ***only your top 5*** criteria in order of importance which influence your decision in purchasing veterinary **Biological** products. 1 - most NB; 2 - 2nd most NB; and so on. You will thus rank the top five most important criteria from the list of 14 and **leave 9 blank**.

	Criteria	**Biologicals** (e.g. vaccines)
3.1	Personal experience with the product	
3.2	Price of the product	
3.3	Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effects, indications, etc.)	
3.4	Pharmaceutical representatives (quality/personality/professionalism)	
3.5	Brand name	
3.6	Service levels including product availability	
3.7	Sponsorships by the manufacturing company	
3.8	Specials/promotions on the product	
3.9	Safety of product for the patient	
3.10	Efficacy of product	
3.11	What pet owners demand	
3.12	Advocacy from veterinary specialists/opinion leaders	
3.13	Conferences/meetings and other forms of continuing education held by the manufacturing company	
3.14	What I learnt during my years of studies and whilst on clinics	

4. What other factor/s not previously listed in question 3 above are of importance to you in the decision-making process when purchasing veterinary **Biological** products?

5. WHO IS INVOLVED IN THE PURCHASING DECISION PROCESS

Rank in order of importance who is involved in the purchasing *decision* process for veterinary **Biological** products in your practice. 1 - most NB; 2 - 2nd most NB; and so on. ***Thus 1 may only appear once, 2 may only appear once etc. for each of the three types of purchases***.If certain of the people listed are not involved in the purchasing decision process - these should be indicated with a letter "N". If you do not employ a qualified vet nurse or practice manager then indicate these with a "N/A".			**Biologicals** (e.g. vaccines)
5.1	**Totally new purchase** (never purchased the product before)	Vet	
		Receptionist	
		Vet nurse	
		Kennel assistant	
		Practice manager	
		Pet owner	
5.2	**Modified re-buy** (Modifying product specifications) e.g. purchasing a new pack size or different concentration of the active.	Vet	
		Receptionists	
		Vet nurse	
		Kennel assistant	
		Practice manager	
		Pet owner	
5.3	**Straight re-buy** (re-ordering an existing product)	Vet	
		Receptionist	
		Vet nurse	
		Kennel assistant	
		Practice manager	
		Pet owner	

Thank you.

APPENDIX C

Frequency Data

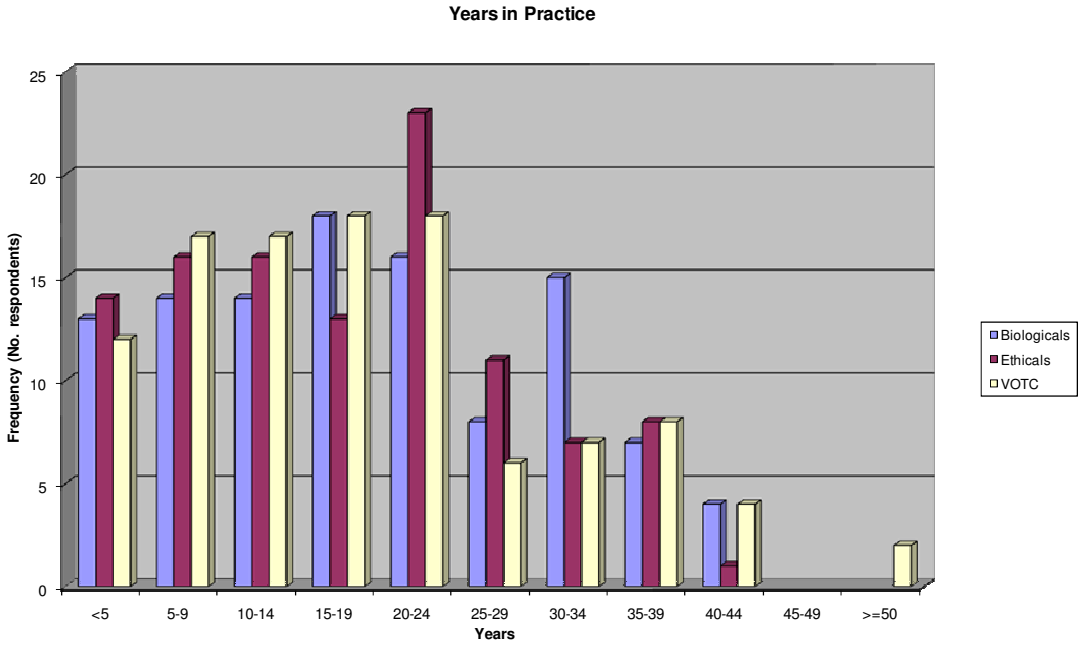

Figure: Frequency data for the number of years in practice.

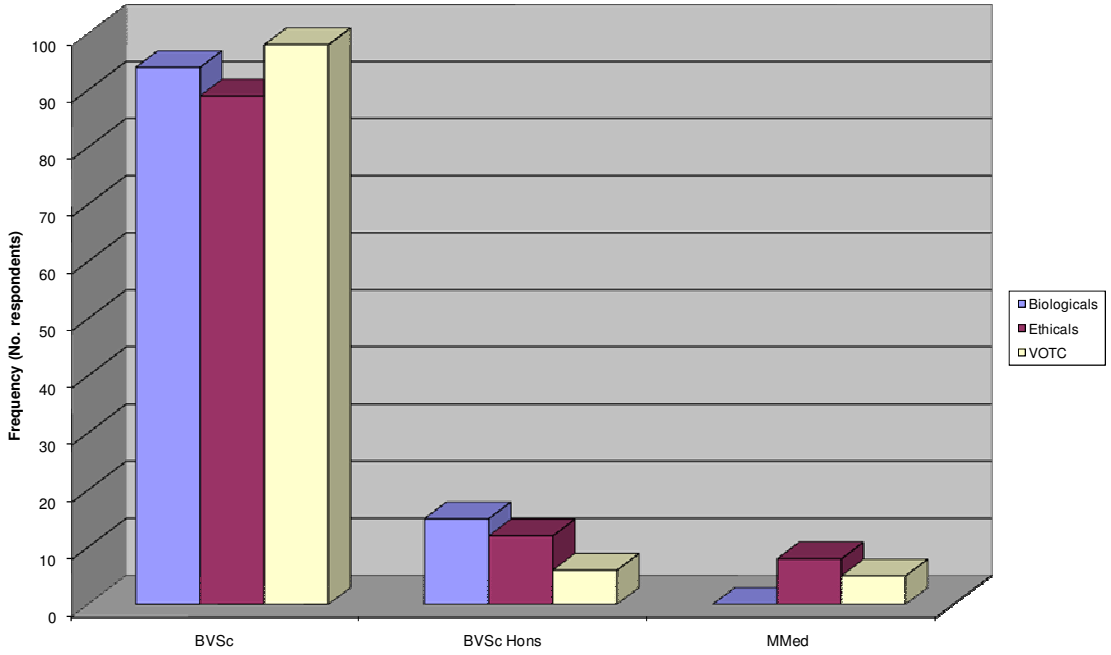

Figure: Frequency data for the level of education.

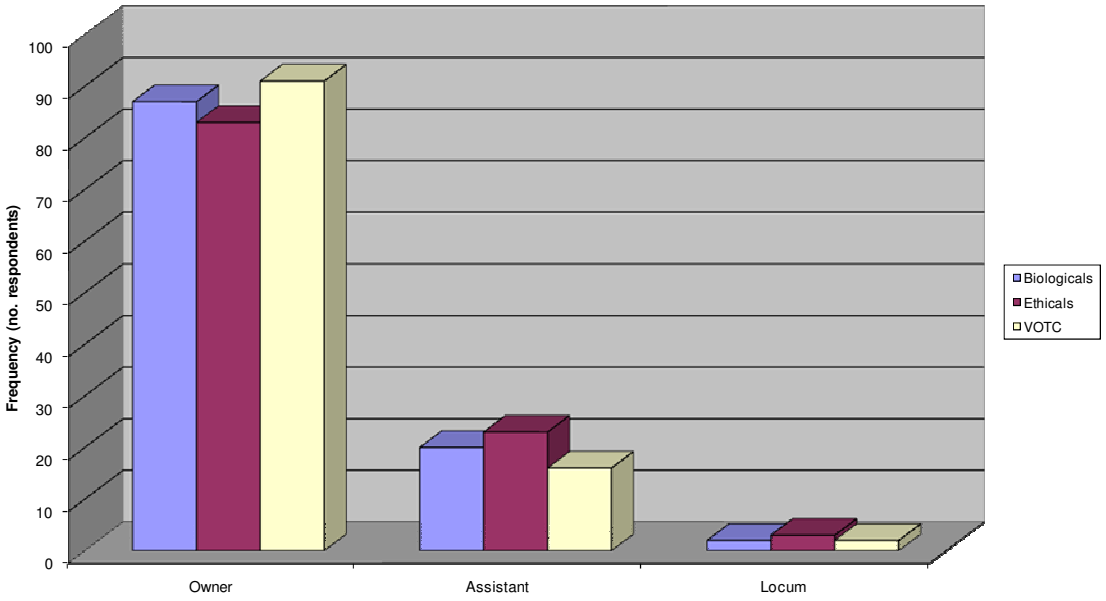

Figure: Frequency data for the level of ownership.

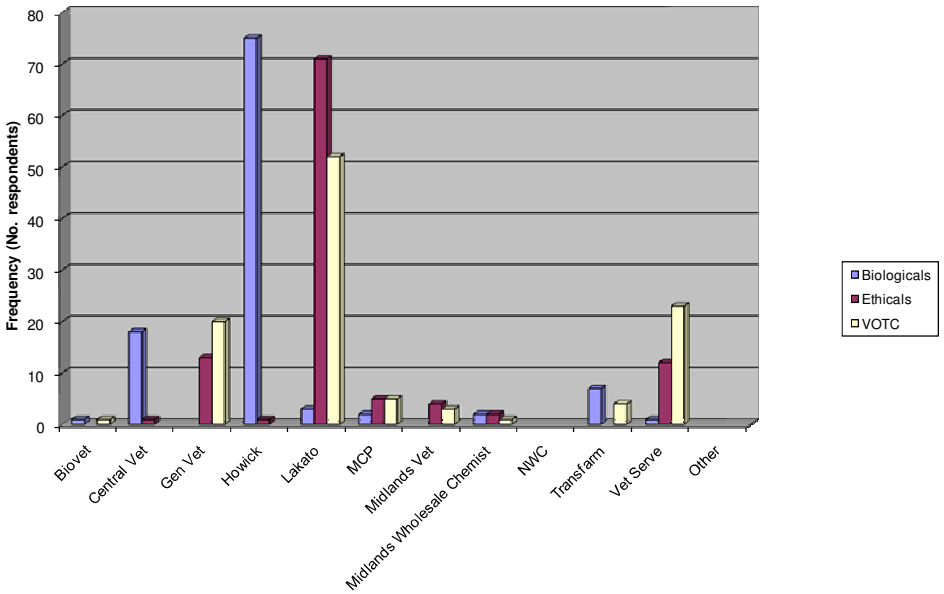

Figure: Frequency data for the wholesaler of choice.

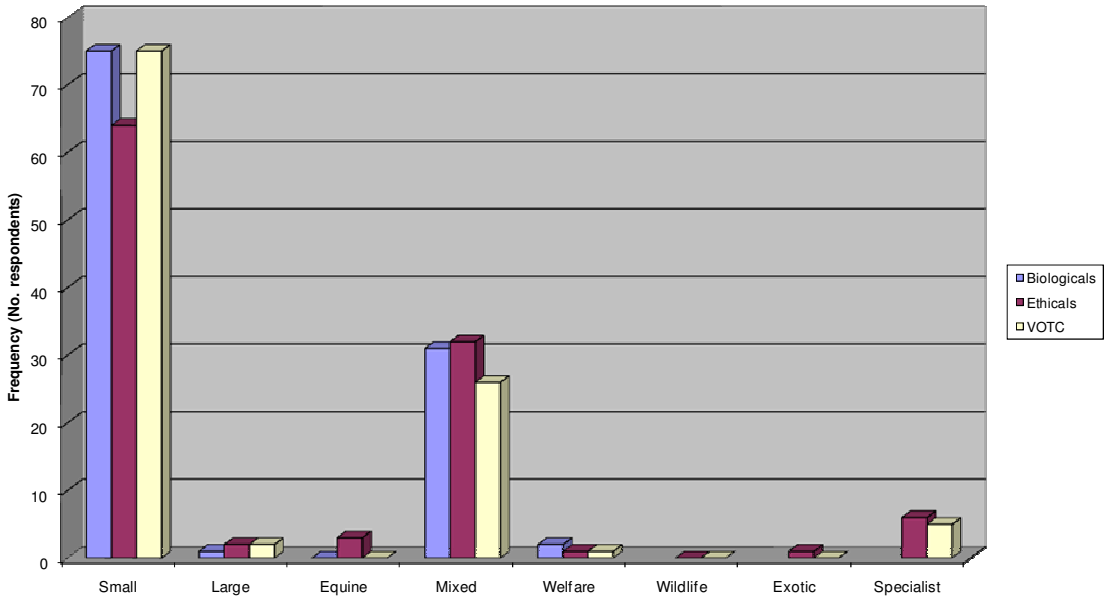

Figure: Frequency data for the type of practice.

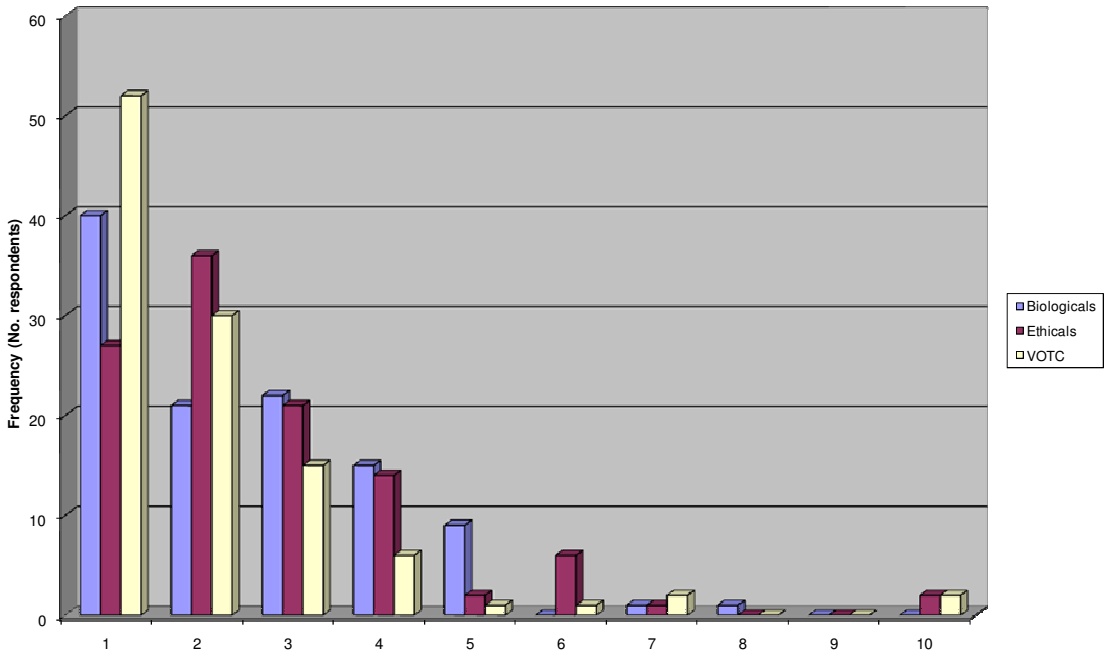

Figure: Frequency data for the number of veterinarians in practice.

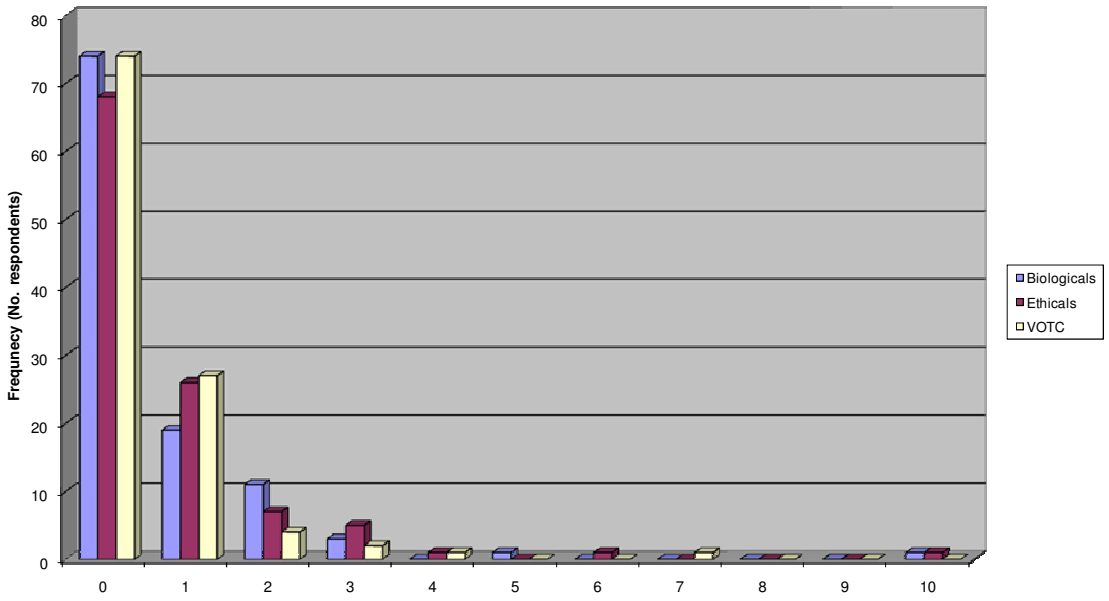

Figure: Frequency data for the number of qualified vet nurses in practice.

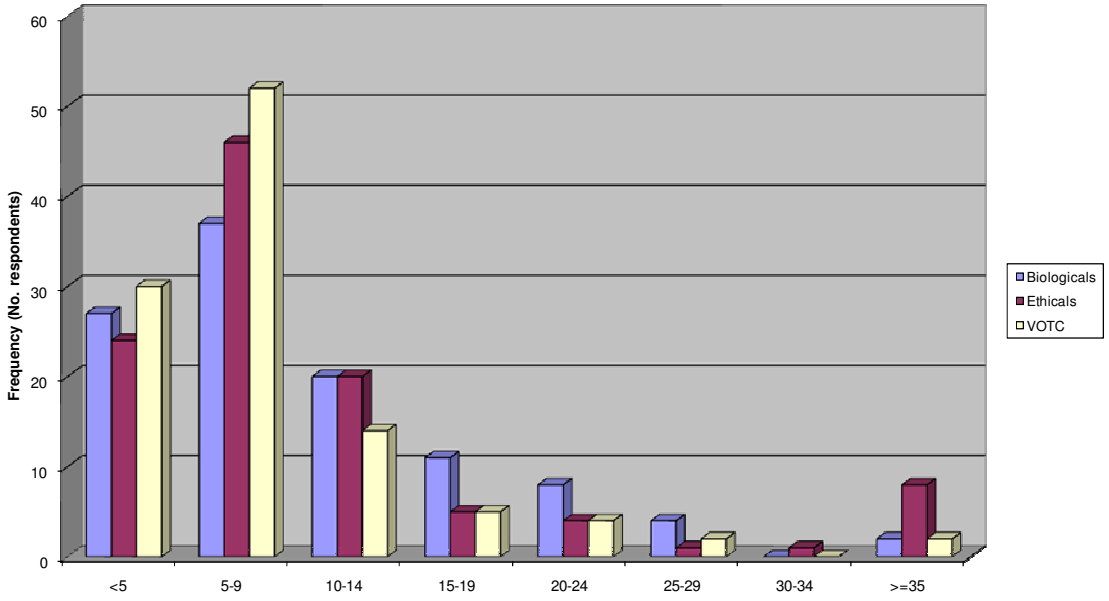

Figure: Frequency data for the total staff compliment.

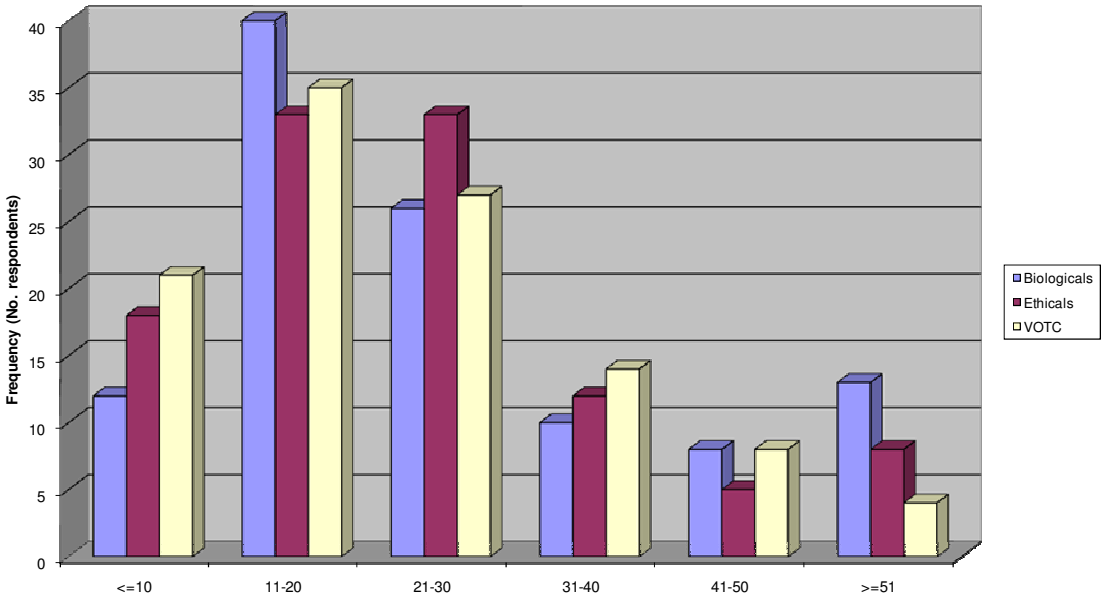

Figure: Frequency data for the number of consultations.

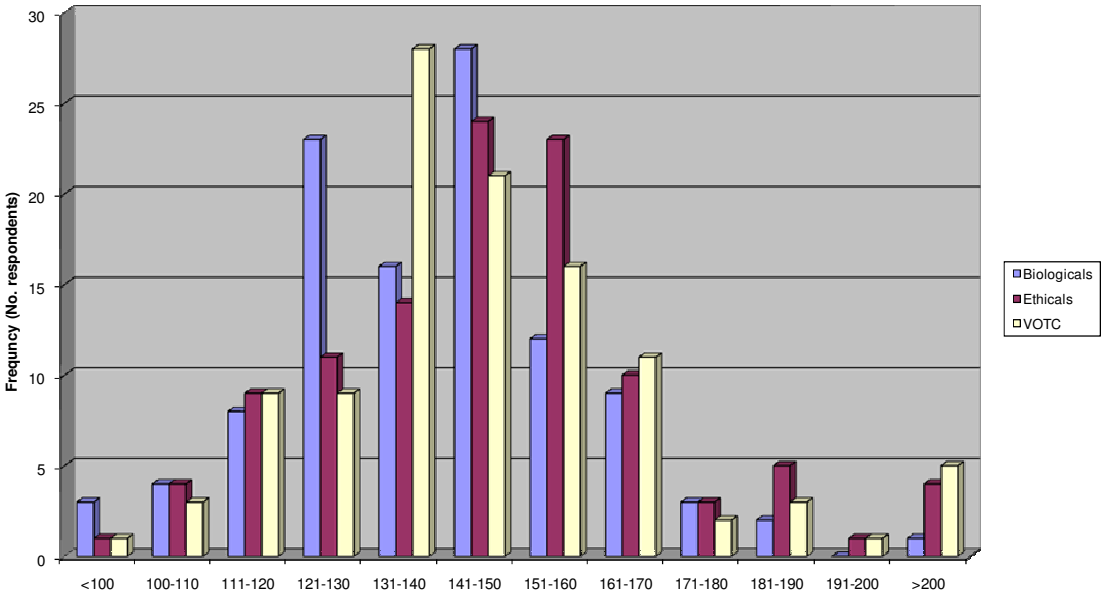

Figure: Frequency data for the consultation fee.

APPENDIX D

Table of the 6 way ANOVA for the members involved in the purchasing decision process of a veterinary practice viz. veterinarians, receptionist, vet nurses, kennel assistants, practice managers and pet owners.

Purchase Type	Product Group	F	p-value
New Purchases	Biologicals	315.277	0.0000
	Ethicals	337.933	0.0000
	VOTC	243.615	0.0000
Modified Re-buy	Biologicals	163.689	0.0000
	Ethicals	218.017	0.0000
	VOTC	162.696	0.0000
Straight Re-buy	Biologicals	126.62	0.0000
	Ethicals	152.764	0.0000
	VOTC	136.083	0.0000

APPENDIX E

Table of the 3 way ANOVA across the three different types of purchases and across the three different product groups for veterinarians.

		F	p-value
Purchase Types	Biologicals	84.950	0.0000
	Ethicals	68.428	0.0000
	VOTC	97.949	0.0000
		F	p-value
Categories of Products	New Purchases	7.408	0.0007
	Modified Re-buys	13.916	0.0000
	Straight Re-buys	36.208	0.0000

APPENDIX F

Results of the two sample t-tests for the various product groups.

Biologicals vs Ethicals *(n = 218)*

Decision criteria	μ	σ	μ	σ	t-value	p-value	Significant
Personal experience with the product	**0.92**	0.719	**1.36**	1.035	-3.950	0.000	Yes
Price of the product	**0.27**	0.159	**0.54**	0.396	-2.372	0.019	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	**0.77**	0.586	**0.61**	0.450	1.433	0.153	No
Pharmaceutical representatives (quality/personality/professionalism)	**0.21**	0.106	**-0.10**	-0.099	2.811	0.005	Yes
Brand name	**-0.34**	-0.372	**-1.10**	-0.870	6.766	0.000	Yes
Service levels including product availability	**0.28**	0.160	**-0.19**	-0.169	4.171	0.000	Yes
Sponsorships by the manufacturing company	**-0.63**	-0.624	**-1.19**	-0.940	4.958	0.000	Yes
Specials/promotions on the product	**-0.05**	-0.119	**-0.94**	-0.746	7.961	0.000	Yes
Safety of product for patient	**0.52**	0.372	**0.66**	0.491	-1.261	0.209	No
Efficacy of product	**1.02**	0.804	**1.27**	0.966	-2.272	0.024	Yes
What pet owners demand	**-0.97**	-0.918	**-1.01**	-0.807	0.373	0.709	No
Advocacy from veterinary specialits/opinion leaders	**-0.03**	-0.107	**0.29**	0.203	-2.898	0.004	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	**-0.01**	-0.086	**0.36**	0.257	-3.301	0.001	Yes
What I learnt during my years of studies and whilst on clinics	**-0.70**	-0.681	**-0.19**	-0.168	-4.562	0.000	Yes

Biologicals vs VOTC *(n = 218)*

	Biologicals		VOTC				
Decision criteria	**μ**	**σ**	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Personal experience with the product	**0.92**	0.719	**0.94**	0.856	-0.183	0.855	No
Price of the product	**0.27**	0.159	**0.60**	0.571	-2.925	0.004	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	**0.77**	0.586	**0.28**	0.309	4.342	0.000	Yes
Pharmaceutical representatives (quality/personality/professionalism)	**0.21**	0.106	**-0.23**	-0.116	3.944	0.000	Yes
Brand name	**-0.34**	-0.372	**-0.64**	-0.464	2.732	0.007	Yes
Service levels including product availability	**0.28**	0.160	**-0.20**	-0.096	4.286	0.000	Yes
Sponsorships by the manufacturing company	**-0.63**	-0.624	**-1.09**	-0.836	4.124	0.000	Yes
Specials/promotions on the product	**-0.05**	-0.119	**-0.68**	-0.497	5.719	0.000	Yes
Safety of product for patient	**0.52**	0.372	**0.67**	0.627	-1.308	0.192	No
Efficacy of product	**1.02**	0.804	**1.17**	1.042	-1.307	0.193	No
What pet owners demand	**-0.97**	-0.918	**-0.52**	-0.358	-4.101	0.000	Yes
Advocacy from veterinary specialits/opinion leaders	**-0.03**	-0.107	**-0.46**	-0.314	3.853	0.000	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	**-0.01**	-0.086	**-0.40**	-0.261	3.508	0.001	Yes
What I learnt during my years of studies and whilst on clinics	**-0.70**	-0.681	**-0.64**	-0.462	-0.516	0.606	No

Ethicals vs VOTC *(n = 218)*

	Ethicals		VOTC				
Decision criteria	**μ**	**σ**	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Personal experience with the product	**1.36**	1.035	**0.94**	0.856	3.978	0.000	Yes
Price of the product	**0.54**	0.396	**0.60**	0.571	-0.575	0.566	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	**0.61**	0.450	**0.28**	0.309	3.058	0.003	Yes
Pharmaceutical representatives (quality/personality/professionalism)	**-0.10**	-0.099	**-0.23**	-0.116	1.185	0.237	No
Brand name	**-1.10**	-0.870	**-0.64**	-0.464	-4.268	0.000	Yes
Service levels including product availability	**-0.19**	-0.169	**-0.20**	-0.096	0.108	0.914	No
Sponsorships by the manufacturing company	**-1.19**	-0.940	**-1.09**	-0.836	-0.894	0.372	No
Specials/promotions on the product	**-0.94**	-0.746	**-0.68**	-0.497	-2.385	0.018	Yes
Safety of product for patient	**0.66**	0.491	**0.67**	0.627	-0.046	0.964	No
Efficacy of product	**1.27**	0.966	**1.17**	1.042	1.024	0.307	No
What pet owners demand	**-1.01**	-0.807	**-0.52**	-0.358	-4.712	0.000	Yes
Advocacy from veterinary specialits/opinion leaders	**0.29**	0.203	**-0.46**	-0.314	7.116	0.000	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	**0.36**	0.257	**-0.40**	-0.261	7.178	0.000	Yes
What I learnt during my years of studies and whilst on clinics	**-0.19**	-0.168	**-0.64**	-0.462	4.274	0.000	Yes

APPENDIX G

Results of the two sample t-tests for the various product groups when comparing gender.

Biologicals Gendar	Male *(n = 78)*						Female *(N = 31)*						Male vs Female *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significan**
Personal experience with the product	2	**0.77**	0.679	7.871	0.000	Yes	1	**0.68**	0.755	4.370	0.000	Yes	0.478	0.633	No
Price of the product	6	**0.13**	0.126	1.364	0.177	No	3	**0.43**	0.537	2.774	0.009	Yes	-1.626	0.107	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	3	**0.71**	0.629	7.286	0.000	Yes	4	**0.40**	0.503	2.526	0.017	Yes	1.731	0.086	No
Pharmaceutical representatives (quality/personality/professionalism)	7	**0.12**	0.116	1.239	0.219	No	7	**-0.17**	0.012	-1.081	0.288	No	1.574	0.118	No
Brand name	11	**-0.49**	0.418	-5.042	0.000	Yes	10	**-0.64**	0.402	-4.120	0.000	Yes	0.812	0.418	No
Service levels including product availability	5	**0.23**	0.213	2.378	0.020	Yes	6	**0.02**	0.174	0.107	0.915	No	1.172	0.244	No
Sponsorships by the manufacturing company	12	**-0.70**	0.599	-7.179	0.000	Yes	12	**-0.77**	0.510	-4.913	0.000	Yes	0.350	0.727	No
Specials/promotions on the product	8	**-0.16**	0.127	-1.624	0.109	No	8	**-0.34**	0.137	-2.176	0.038	Yes	0.981	0.329	No
Safety of product for patient	4	**0.44**	0.393	4.509	0.000	Yes	5	**0.39**	0.501	2.508	0.018	Yes	0.270	0.788	No
Efficacy of product	1	**0.94**	0.822	9.553	0.000	Yes	2	**0.51**	0.606	3.279	0.003	Yes	2.296	0.024	Yes
What pet owners demand	14	**-0.95**	0.810	-9.656	0.000	Yes	14	**-1.09**	0.787	-6.947	0.000	Yes	0.756	0.451	No
Advocacy from veterinary specialits/opinion leaders	10	**-0.20**	0.164	-2.054	0.043	Yes	13	**-0.81**	0.546	-5.177	0.000	Yes	3.295	0.001	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	9	**-0.19**	0.156	-1.965	0.053	No	9	**-0.44**	0.223	-2.805	0.009	Yes	1.333	0.185	No
What I learnt during my years of studies and whilst on clinics	13	**-0.82**	0.704	-8.407	0.000	Yes	11	**-0.73**	0.480	-4.690	0.000	Yes	-0.492	0.624	No

Ethicals Gendar	Male *(n = 83)*						Female *(n = 26)*						Male vs Female *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significan**
Personal experience with the product	2	**0.99**	0.829	10.877	0.000	Yes	1	**1.59**	1.381	9.978	0.000	Yes	-3.312	0.001	Yes
Price of the product	5	**0.36**	0.313	3.978	0.000	Yes	5	**0.01**	0.086	0.039	0.969	No	1.929	0.056	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	4	**0.37**	0.323	4.111	0.000	Yes	6	**-0.03**	0.057	-0.186	0.854	No	2.190	0.031	Yes
Pharmaceutical representatives (quality/personality/professionalism)	8	**-0.11**	-0.080	-1.258	0.212	No	11	**-0.80**	-0.569	-4.988	0.000	Yes	3.718	0.000	Yes
Brand name	13	**-0.82**	-0.659	-8.995	0.000	Yes	13	**-1.02**	-0.753	-6.405	0.000	Yes	1.133	0.260	No
Service levels including product availability	9	**-0.25**	-0.196	-2.807	0.006	Yes	9	**-0.18**	-0.068	-1.148	0.262	No	-0.387	0.699	No
Sponsorships by the manufacturing company	11	**-0.73**	-0.588	-8.045	0.000	Yes	14	**-1.05**	-0.778	-6.594	0.000	Yes	1.766	0.080	No
Specials/promotions on the product	12	**-0.81**	-0.658	-8.984	0.000	Yes	10	**-0.36**	-0.209	-2.229	0.035	Yes	-2.494	0.014	Yes
Safety of product for patient	3	**0.39**	0.337	4.301	0.000	Yes	3	**0.59**	0.564	3.708	0.001	Yes	-1.103	0.272	No
Efficacy of product	1	**1.33**	1.113	14.664	0.000	Yes	2	**0.78**	0.718	4.888	0.000	Yes	2.984	0.004	Yes
What pet owners demand	14	**-1.11**	-0.899	-12.195	0.000	Yes	12	**-0.85**	-0.609	-5.301	0.000	Yes	-1.406	0.163	No
Advocacy from veterinary specialits/opinion leaders	6	**0.29**	0.251	3.151	0.002	Yes	4	**0.16**	0.214	1.017	0.319	No	0.671	0.504	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	7	**0.19**	0.169	2.063	0.042	Yes	8	**-0.17**	-0.057	-1.061	0.299	No	1.941	0.055	No
What I learnt during my years of studies and whilst on clinics	10	**-0.33**	-0.255	-3.602	0.001	Yes	7	**-0.07**	0.024	-0.435	0.668	No	-1.399	0.165	No

VOTC Gendar	Male *(n = 77)*						Female *(n = 32)*						Male vs Female *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significan**
Personal experience with the product	2	**0.92**	0.845	9.924	0.000	Yes	2	**1.11**	0.848	7.635	0.000	Yes	-1.061	0.291	No
Price of the product	4	**0.42**	0.432	4.489	0.000	Yes	4	**0.57**	0.406	3.917	0.000	Yes	-0.870	0.386	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	5	**0.40**	0.421	4.345	0.000	Yes	5	**0.39**	0.258	2.674	0.012	Yes	0.099	0.922	No
Pharmaceutical representatives (quality/personality/professionalism)	6	**0.08**	0.159	0.901	0.370	No	8	**-0.20**	-0.222	-1.364	0.182	No	1.635	0.105	No
Brand name	11	**-0.71**	-0.488	-7.605	0.000	Yes	13	**-0.55**	-0.514	-3.823	0.001	Yes	-0.894	0.374	No
Service levels including product availability	7	**-0.11**	-0.002	-1.210	0.230	No	7	**-0.15**	-0.184	-1.044	0.305	No	0.224	0.823	No
Sponsorships by the manufacturing company	14	**-1.40**	-1.056	-15.077	0.000	Yes	14	**-0.97**	-0.853	-6.674	0.000	Yes	-2.532	0.013	Yes
Specials/promotions on the product	10	**-0.56**	-0.370	-6.054	0.000	Yes	11	**-0.49**	-0.459	-3.363	0.002	Yes	-0.442	0.659	No
Safety of product for patient	3	**0.46**	0.469	4.984	0.000	Yes	3	**0.93**	0.703	6.416	0.000	Yes	-2.705	0.008	Yes
Efficacy of product	1	**1.22**	1.090	13.142	0.000	Yes	1	**1.55**	1.211	10.688	0.000	Yes	-1.890	0.061	No
What pet owners demand	12	**-0.75**	-0.521	-8.036	0.000	Yes	9	**-0.21**	-0.231	-1.446	0.158	No	-3.126	0.002	Yes
Advocacy from veterinary specialits/opinion leaders	9	**-0.41**	-0.247	-4.430	0.000	Yes	12	**-0.49**	-0.465	-3.414	0.002	Yes	0.478	0.634	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	8	**-0.33**	-0.176	-3.500	0.001	Yes	6	**-0.12**	-0.157	-0.822	0.418	No	-1.200	0.233	No
What I learnt during my years of studies and whilst on clinics	13	**-0.79**	-0.556	-8.497	0.000	Yes	10	**-0.34**	-0.340	-2.363	0.025	Yes	-2.604	0.011	Yes

APPENDIX H

Results of the two sample t-tests for the various product groups when comparing age.

Biologicals Age	Younger *(n = 56)*						Mature *(n = 53)*						Younger vs Mature *(n = 109*		
Decision criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	1	**0.89**	0.715	7.489	0.000	Yes	2	**1.00**	0.698	8.516	0.000	Yes	-0.614	0.541	No
Price of the product	6	**0.32**	0.201	2.660	0.010	Yes	6	**0.30**	0.106	2.575	0.013	Yes	0.097	0.923	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	3	**0.66**	0.503	5.501	0.000	Yes	3	**0.89**	0.606	7.591	0.000	Yes	-1.385	0.169	No
Pharmaceutical representatives (quality/personality/professionalism)	5	**0.34**	0.217	2.809	0.007	Yes	7	**0.26**	0.073	2.239	0.029	Yes	0.439	0.662	No
Brand name	11	**-0.35**	-0.394	-2.926	0.005	Yes	11	**-0.12**	-0.254	-1.045	0.301	No	-1.358	0.177	No
Service levels including product availability	7	**0.04**	0.047	0.332	0.741	No	5	**0.45**	0.229	3.814	0.000	Yes	-2.433	0.017	Yes
Sponsorships by the manufacturing company	12	**-0.41**	-0.447	-3.417	0.001	Yes	14	**-0.96**	-0.964	-8.171	0.000	Yes	3.279	0.001	Yes
Specials/promotions on the product	9	**-0.10**	-0.170	-0.821	0.415	No	9	**-0.02**	-0.166	-0.158	0.875	No	-0.476	0.635	No
Safety of product for patient	4	**0.60**	0.454	5.039	0.000	Yes	4	**0.76**	0.495	6.477	0.000	Yes	-0.936	0.351	No
Efficacy of product	2	**0.78**	0.615	6.549	0.000	Yes	1	**1.17**	0.842	9.967	0.000	Yes	-2.300	0.023	Yes
What pet owners demand	14	**-0.87**	-0.863	-7.322	0.000	Yes	12	**-0.55**	-0.621	-4.724	0.000	Yes	-1.922	0.057	No
Advocacy from veterinary specialits/opinion leaders	8	**0.00**	0.079	0.038	0.969	No	8	**0.01**	-0.138	0.127	0.900	No	-0.061	0.951	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	10	**-0.15**	-0.215	-1.241	0.220	No	10	**-0.03**	-0.172	-0.215	0.831	No	-0.736	0.464	No
What I learnt during my years of studies and whilst on clinics	13	**-0.46**	-0.490	-3.821	0.000	Yes	13	**-0.68**	-0.732	-5.844	0.000	Yes	1.362	0.176	No

Ethicals Age	Younger *(n = 53)*						Mature *(n = 56)*						Younger vs Mature *(n = 109*		
Decision criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**1.16**	0.908	10.855	0.000	Yes	2	**1.23**	0.978	11.343	0.000	Yes	-0.401	0.690	No
Price of the product	4	**0.58**	0.454	5.438	0.000	Yes	7	**0.21**	0.153	1.903	0.062	No	2.481	0.015	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	5	**0.37**	0.288	3.462	0.001	Yes	3	**0.56**	0.440	5.196	0.000	Yes	-1.247	0.215	No
Pharmaceutical representatives (quality/personality/professionalism)	10	**-0.27**	-0.213	-2.520	0.015	Yes	9	**-0.11**	-0.106	-1.053	0.297	No	-1.029	0.306	No
Brand name	13	**-1.08**	-0.846	-10.071	0.000	Yes	13	**-0.95**	-0.785	-8.826	0.000	Yes	-0.833	0.407	No
Service levels including product availability	9	**-0.22**	-0.175	-2.063	0.044	Yes	8	**-0.10**	-0.092	-0.892	0.377	No	-0.821	0.413	No
Sponsorships by the manufacturing company	11	**-0.74**	-0.583	-6.936	0.000	Yes	10	**-0.45**	-0.381	-4.195	0.000	Yes	-1.910	0.059	No
Specials/promotions on the product	12	**-1.03**	-0.807	-9.599	0.000	Yes	11	**-0.56**	-0.471	-5.228	0.000	Yes	-3.053	0.003	Yes
Safety of product for patient	3	**0.82**	0.638	7.638	0.000	Yes	4	**0.40**	0.312	3.731	0.000	Yes	2.734	0.007	Yes
Efficacy of product	1	**1.31**	1.025	12.250	0.000	Yes	1	**1.35**	1.076	12.469	0.000	Yes	-0.217	0.828	No
What pet owners demand	14	**-1.32**	-1.037	-12.342	0.000	Yes	14	**-1.27**	-1.039	-11.730	0.000	Yes	-0.373	0.710	No
Advocacy from veterinary specialits/opinion leaders	6	**0.19**	0.148	1.784	0.080	No	6	**0.25**	0.191	2.349	0.022	Yes	-0.410	0.683	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	8	**0.13**	0.098	1.192	0.239	No	5	**0.30**	0.232	2.812	0.007	Yes	-1.156	0.250	No
What I learnt during my years of studies and whilst on clinics	7	**0.13**	0.101	1.229	0.225	No	12	**-0.61**	-0.509	-5.662	0.000	Yes	4.884	0.000	Yes

VOTC Age	Younger *(n = 58)*						Mature *(n = 51)*						Younger vs Mature *(n = 109*		
Decision criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**0.75**	0.718	6.820	0.000	Yes	2	**1.21**	0.900	10.132	0.000	Yes	-2.793	0.006	Yes
Price of the product	5	**0.26**	0.303	2.338	0.023	Yes	4	**0.64**	0.419	5.375	0.000	Yes	-2.352	0.021	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	4	**0.31**	0.348	2.827	0.006	Yes	5	**0.56**	0.348	4.674	0.000	Yes	-1.505	0.135	No
Pharmaceutical representatives (quality/personality/professionalism)	8	**-0.37**	-0.226	-3.372	0.001	Yes	6	**0.15**	0.008	1.302	0.199	No	-3.247	0.002	Yes
Brand name	13	**-0.76**	-0.556	-6.931	0.000	Yes	9	**0.15**	-0.254	-1.290	0.203	No	-3.766	0.000	Yes
Service levels including product availability	6	**-0.11**	-0.006	-0.988	0.327	No	7	**0.02**	-0.141	-0.173	0.863	No	-0.545	0.587	No
Sponsorships by the manufacturing company	14	**-0.89**	-0.661	-8.062	0.000	Yes	14	**0.79**	-0.791	-6.603	0.000	Yes	-0.640	0.524	No
Specials/promotions on the product	12	**-0.74**	-0.538	-6.731	0.000	Yes	11	**0.33**	-0.405	-2.784	0.008	Yes	-2.534	0.013	Yes
Safety of product for patient	3	**0.64**	0.621	5.771	0.000	Yes	3	**0.72**	0.486	6.036	0.000	Yes	-0.503	0.616	No
Efficacy of product	1	**1.36**	1.232	12.371	0.000	Yes	1	**1.32**	0.996	11.080	0.000	Yes	0.286	0.775	No
What pet owners demand	11	**-0.60**	-0.417	-5.430	0.000	Yes	12	**-0.39**	-0.455	-3.273	0.002	Yes	-1.292	0.199	No
Advocacy from veterinary specialits/opinion leaders	7	**-0.31**	-0.176	-2.832	0.006	Yes	10	**-0.24**	-0.330	-2.033	0.047	Yes	-0.434	0.665	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	10	**-0.57**	-0.396	-5.205	0.000	Yes	8	**-0.07**	-0.186	-0.609	0.545	No	-3.092	0.003	Yes
What I learnt during my years of studies and whilst on clinics	9	**-0.39**	-0.245	-3.570	0.001	Yes	13	**-0.55**	-0.594	-4.655	0.000	Yes	0.986	0.326	No

APPENDIX I

Results of the two sample t-tests for the various product groups when comparing ownership status.

Biologicals Ownership	Owner *(n = 87)*						Ass/Loc *(n = 22)*						Owner vs Ass/Loc *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**0.98**	0.722	10.740	0.000	Yes	1	**1.00**	0.857	5.378	0.000	Yes	-0.085	0.933	No
Price of the product	6	**0.29**	0.136	3.211	0.002	Yes	4	**0.38**	0.316	2.034	0.055	Yes	-0.407	0.685	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	3	**0.88**	0.639	9.681	0.000	Yes	2	**0.77**	0.660	4.162	0.000	Yes	0.539	0.591	No
Pharmaceutical representatives (quality/personality/professionalism)	7	**0.27**	0.116	2.957	0.004	Yes	6	**0.21**	0.171	1.135	0.269	No	0.287	0.775	No
Brand name	11	**-0.35**	0.414	-3.853	0.000	Yes	7	**-0.16**	0.150	0.852	0.404	No	-0.936	0.351	No
Service levels including product availability	5	**0.39**	0.219	4.286	0.000	Yes	9	**0.22**	0.202	1.172	0.254	No	2.943	0.004	Yes
Sponsorships by the manufacturing company	12	**-0.57**	0.601	-6.258	0.000	Yes	13	**-0.75**	0.667	4.047	0.001	Yes	0.869	0.387	No
Specials/promotions on the product	9	**0.02**	0.132	-0.235	0.815	No	11	**0.26**	0.240	1.405	0.175	No	1.157	0.250	No
Safety of product for patient	4	**0.68**	0.463	7.415	0.000	Yes	5	**0.37**	0.306	1.973	0.062	No	1.503	0.136	No
Efficacy of product	1	**1.09**	0.816	11.951	0.000	Yes	3	**0.75**	0.644	4.061	0.001	Yes	1.632	0.106	No
What pet owners demand	14	**-0.91**	0.891	-9.986	0.000	Yes	14	**-1.00**	0.880	5.365	0.000	Yes	0.405	0.686	No
Advocacy from veterinary specialits/opinion leaders	8	**0.00**	0.117	-0.041	0.968	No	8	**-0.17**	0.164	0.934	0.361	No	0.820	0.414	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	10	**-0.10**	0.199	-1.094	0.277	No	10	**-0.26**	0.237	1.387	0.180	No	0.762	0.448	No
What I learnt during my years of studies and whilst on clinics	13	**-0.75**	0.755	-8.230	0.000	Yes	12	**-0.46**	0.415	2.491	0.021	Yes	-1.398	0.165	No

Ethicals Ownership	Owner *(n = 83)*						Ass/Loc *(n = 26)*						Owner vs Ass/Loc *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**1.13**	0.974	12.826	0.000	Yes	1	**1.43**	1.028	9.121	0.000	Yes	-1.685	0.095	No
Price of the product	5	**0.29**	0.302	3.307	0.001	Yes	4	**0.62**	0.379	3.966	0.001	Yes	-1.843	0.068	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	3	**0.60**	0.547	6.778	0.000	Yes	7	**0.19**	0.035	1.225	0.232	No	2.246	0.027	Yes
Pharmaceutical representatives (quality/personality/professionalism)	8	**-0.12**	-0.029	-1.384	0.170	No	11	**-0.58**	-0.586	-3.709	0.001	Yes	2.558	0.012	Yes
Brand name	13	**-1.06**	-0.784	-12.075	0.000	Yes	13	**-0.64**	-0.631	-4.071	0.000	Yes	-2.353	0.020	Yes
Service levels including product availability	9	**-0.39**	-0.241	-4.391	0.000	Yes	9	**-0.29**	-0.349	-1.827	0.080	No	-0.553	0.581	No
Sponsorships by the manufacturing company	14	**-1.12**	-0.826	-12.667	0.000	Yes	12	**-0.63**	-0.625	-4.019	0.000	Yes	-2.688	0.008	Yes
Specials/promotions on the product	11	**-0.83**	-0.598	-9.438	0.000	Yes	14	**-1.05**	-0.962	-6.701	0.000	Yes	1.230	0.221	No
Safety of product for patient	4	**0.32**	0.324	3.613	0.001	Yes	3	**1.04**	0.715	6.635	0.000	Yes	-4.021	0.000	Yes
Efficacy of product	1	**1.26**	1.076	14.267	0.000	Yes	2	**1.35**	0.961	8.588	0.000	Yes	-0.514	0.608	No
What pet owners demand	12	**-0.98**	-0.715	-11.095	0.000	Yes	10	**-0.30**	-0.358	-1.896	0.070	No	-3.772	0.000	Yes
Advocacy from veterinary specialits/opinion leaders	6	**0.20**	0.231	2.299	0.024	Yes	5	**0.47**	0.255	2.973	0.006	Yes	-1.469	0.145	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	7	**0.03**	0.089	0.293	0.770	No	8	**-0.10**	-0.038	-0.644	0.525	No	-0.419	0.676	No
What I learnt during my years of studies and whilst on clinics	10	**-0.52**	-0.352	-5.955	0.000	Yes	6	**0.37**	0.177	2.358	0.027	Yes	-4.968	0.000	Yes

VOTC Ownership	Owner *(n = 91)*						Ass/Loc *(n = 18)*						Owner vs Ass/Loc *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**1.04**	0.770	11.802	0.000	Yes	2	**0.92**	0.772	4.600	0.000	Yes	0.548	0.585	No
Price of the product	4	**0.65**	0.441	7.348	0.000	Yes	3	**0.71**	0.597	3.566	0.002	Yes	-0.302	0.763	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	5	**0.48**	0.304	5.493	0.000	Yes	5	**0.48**	0.404	2.424	0.027	Yes	-0.005	0.996	No
Pharmaceutical representatives (quality/personality/professionalism)	7	**-0.07**	-0.040	0.839	0.404	No	11	**-0.44**	-0.379	-2.193	0.043	Yes	2.345	0.021	Yes
Brand name	11	**-0.36**	-0.408	-4.136	0.000	Yes	14	**-0.88**	-0.753	-4.397	0.000	Yes	2.357	0.020	Yes
Service levels including product availability	6	**0.20**	0.064	2.242	0.027	Yes	7	**-0.16**	-0.145	-0.815	0.426	No	1.650	0.102	No
Sponsorships by the manufacturing company	14	**-0.85**	-0.813	-9.608	0.000	Yes	13	**-0.77**	-0.663	-3.870	0.001	Yes	-0.331	0.741	No
Specials/promotions on the product	10	**-0.36**	-0.403	-4.069	0.000	Yes	12	**-0.55**	-0.472	-2.742	0.014	Yes	0.869	0.387	No
Safety of product for patient	3	**0.82**	0.584	9.283	0.000	Yes	4	**0.51**	0.425	2.550	0.021	Yes	1.409	0.162	No
Efficacy of product	1	**1.45**	1.113	16.430	0.000	Yes	1	**1.23**	1.035	6.150	0.000	Yes	0.995	0.322	No
What pet owners demand	12	**-0.44**	-0.468	-4.943	0.000	Yes	8	**-0.21**	-0.188	-1.066	0.301	No	-1.017	0.311	No
Advocacy from veterinary specialits/opinion leaders	9	**-0.29**	-0.348	-3.317	0.001	Yes	10	**-0.30**	-0.266	-1.526	0.145	No	0.059	0.953	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	8	**-0.21**	-0.275	-2.334	0.022	Yes	9	**-0.30**	-0.265	-1.518	0.147	No	0.448	0.655	No
What I learnt during my years of studies and whilst on clinics	13	**-0.50**	-0.521	-5.669	0.000	Yes	6	**-0.11**	-0.102	-0.561	0.582	No	-1.772	0.079	No

APPENDIX J

Results of the two sample t-tests for the various product groups when comparing vet numbers per practice.

Biologicals Vet No	Single *(n = 40)*						Muli *(n = 69)*						Single vs Multi *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	1	**1.10**	0.902	8.065	0.000	Yes	2	**0.72**	0.668	6.966	0.000	Yes	2.212	0.029	Yes
Price of the product	4	**0.51**	0.383	3.689	0.001	Yes	5	**0.24**	0.247	2.275	0.026	Yes	1.563	0.121	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	2	**0.79**	0.631	5.779	0.000	Yes	4	**0.56**	0.527	5.394	0.000	Yes	1.342	0.182	No
Pharmaceutical representatives (quality/personality/professionalism)	8	**-0.07**	-0.120	-0.546	0.588	No	7	**-0.03**	-0.014	-0.323	0.747	No	-0.239	0.811	No
Brand name	12	**-0.45**	-0.445	-3.287	0.002	Yes	11	**-0.39**	-0.291	-3.716	0.000	Yes	-0.371	0.711	No
Service levels including product availability	6	**0.17**	0.091	1.231	0.226	No	6	**0.21**	0.225	2.036	0.046	Yes	-0.250	0.803	No
Sponsorships by the manufacturing company	13	**-0.69**	-0.653	-5.038	0.000	Yes	12	**-0.66**	-0.528	-6.358	0.000	Yes	-0.169	0.866	No
Specials/promotions on the product	9	**-0.26**	-0.283	-1.922	0.062	Yes	9	**-0.25**	-0.169	-2.362	0.021	Yes	-0.103	0.918	No
Safety of product for patient	5	**0.46**	0.340	3.331	0.002	Yes	3	**0.57**	0.538	5.522	0.000	Yes	-0.685	0.495	No
Efficacy of product	3	**0.77**	0.614	5.638	0.000	Yes	1	**0.81**	0.743	7.803	0.000	Yes	-0.226	0.822	No
What pet owners demand	14	**-0.91**	-0.841	-6.622	0.000	Yes	13	**-0.96**	-0.787	-9.242	0.000	Yes	0.312	0.756	No
Advocacy from veterinary specialits/opinion leaders	9	**-0.23**	-0.259	-1.713	0.095	No	8	**-0.13**	-0.071	-1.268	0.209	No	-0.598	0.551	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	7	**0.10**	0.035	0.758	0.453	No	10	**-0.28**	-0.199	-2.692	0.009	Yes	2.231	0.028	Yes
What I learnt during my years of studies and whilst on clinics	11	**-0.39**	-0.393	-2.849	0.007	Yes	14	**-1.11**	-0.917	-10.683	0.000	Yes	4.189	0.000	Yes

Ethicals Vet No	Single *(n = 27)*						Muli *(n = 82)*						Single vs Multi *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**0.98**	0.822	5.817	0.000	Yes	1	**1.39**	1.138	16.136	0.000	Yes	-2.173	0.032	Yes
Price of the product	4	**0.33**	0.255	1.951	0.062	No	3	**0.50**	0.443	5.758	0.000	Yes	-0.887	0.377	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	3	**0.36**	0.279	2.114	0.044	Yes	5	**0.39**	0.364	4.579	0.000	Yes	-0.205	0.838	No
Pharmaceutical representatives (quality/personality/professionalism)	9	**-0.24**	-0.243	-1.445	0.160	No	8	**-0.23**	-0.121	-2.666	0.009	Yes	-0.072	0.943	No
Brand name	11	**-0.44**	-0.419	-2.638	0.014	Yes	11	**-0.90**	-0.641	10.428	0.000	Yes	2.403	0.018	Yes
Service levels including product availability	8	**-0.03**	-0.060	-0.195	0.847	No	9	**-0.26**	-0.146	-3.039	0.003	Yes	1.210	0.229	No
Sponsorships by the manufacturing company	13	**-0.67**	-0.615	-3.973	0.001	Yes	13	**-1.15**	-0.842	13.422	0.000	Yes	2.578	0.011	Yes
Specials/promotions on the product	14	**-0.68**	-0.628	-4.062	0.000	Yes	12	**-0.94**	-0.678	10.976	0.000	Yes	1.385	0.169	No
Safety of product for patient	6	**0.22**	0.158	1.291	0.208	No	4	**0.48**	0.428	5.529	0.000	Yes	-1.370	0.173	No
Efficacy of product	1	**1.22**	1.034	7.259	0.000	Yes	2	**1.16**	0.962	13.507	0.000	Yes	0.309	0.758	No
What pet owners demand	12	**-0.55**	-0.516	-3.300	0.003	Yes	14	**-1.42**	-1.051	16.545	0.000	Yes	4.601	0.000	Yes
Advocacy from veterinary specialits/opinion leaders	7	**0.10**	0.056	0.598	0.555	No	7	**0.09**	0.126	1.030	0.306	No	0.063	0.950	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	5	**0.27**	0.205	1.608	0.120	No	6	**0.14**	0.168	1.657	0.101	No	0.677	0.500	No
What I learnt during my years of studies and whilst on clinics	10	**-0.34**	-0.329	-2.030	0.053	No	10	**-0.27**	-0.152	-3.127	0.002	Yes	-0.383	0.703	No

VOTC Vet No	Single *(n = 52)*						Muli *(n = 57)*						Single vs Multi *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**1.04**	0.749	8.713	0.000	Yes	2	**0.89**	0.721	7.966	0.000	Yes	0.910	0.365	No
Price of the product	3	**0.75**	0.498	6.278	0.000	Yes	3	**0.68**	0.541	6.071	0.000	Yes	0.429	0.669	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	5	**0.53**	0.304	4.397	0.000	Yes	5	**0.36**	0.270	3.219	0.002	Yes	1.007	0.316	No
Pharmaceutical representatives (quality/personality/professionalism)	8	**0.05**	-0.109	0.396	0.694	No	6	**0.05**	0.008	0.451	0.654	No	-0.019	0.985	No
Brand name	14	**-0.65**	-0.708	-5.417	0.000	Yes	12	**-0.53**	-0.479	-4.684	0.000	Yes	-0.749	0.456	No
Service levels including product availability	7	**-0.08**	-0.083	0.641	0.524	No	7	**-0.14**	-0.154	-1.259	0.213	No	1.329	0.187	No
Sponsorships by the manufacturing company	13	**-0.48**	-0.567	-4.054	0.000	Yes	14	**-0.77**	-0.688	-6.887	0.000	Yes	1.752	0.083	No
Specials/promotions on the product	6	**-0.12**	-0.050	0.968	0.337	No	10	**-0.45**	-0.417	-4.034	0.000	Yes	3.465	0.001	Yes
Safety of product for patient	4	**0.71**	0.459	5.897	0.000	Yes	4	**0.56**	0.440	5.005	0.000	Yes	0.880	0.381	No
Efficacy of product	1	**1.33**	1.000	11.152	0.000	Yes	1	**1.46**	1.199	13.007	0.000	Yes	-0.758	0.450	No
What pet owners demand	11	**-0.43**	-0.516	-3.556	0.001	Yes	11	**-0.48**	-0.444	-4.311	0.000	Yes	0.354	0.724	No
Advocacy from veterinary specialits/opinion leaders	9	**-0.05**	-0.191	-0.402	0.689	No	8	**-0.24**	-0.237	-2.129	0.038	Yes	1.163	0.248	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	10	**-0.12**	-0.250	-0.971	0.336	No	9	**-0.25**	-0.243	-2.190	0.033	Yes	0.789	0.432	No
What I learnt during my years of studies and whilst on clinics	12	**-0.45**	-0.536	-3.753	0.000	Yes	13	**-0.57**	-0.517	-5.080	0.000	Yes	0.736	0.464	No

APPENDIX K

Results of the two sample t-tests for the various product groups when comparing consultation fees.

Biologicals Cons Fee	Affordable *(n = 54)*						Premium *(n = 55)*						Affordable vs Premium *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	1	**1.24**	0.992	10.964	0.000	Yes	3	**0.53**	0.436	4.365	0.000	Yes	4.320	0.000	Yes
Price of the product	6	**0.26**	0.175	2.311	0.025	Yes	5	**0.36**	0.286	2.978	0.004	Yes	-0.591	0.556	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	3	**0.78**	0.607	6.883	0.000	Yes	2	**0.75**	0.640	6.252	0.000	Yes	0.151	0.880	No
Pharmaceutical representatives (quality/personality/professionalism)	7	**0.08**	0.027	0.733	0.467	No	6	**0.26**	0.195	2.134	0.037	Yes	-1.054	0.294	No
Brand name	11	**-0.45**	-0.420	-4.004	0.000	Yes	11	**-0.25**	-0.263	-2.100	0.040	Yes	-1.209	0.229	No
Service levels including product availability	5	**0.37**	0.266	3.269	0.002	Yes	7	**0.12**	0.068	0.961	0.341	No	1.536	0.128	No
Sponsorships by the manufacturing company	12	**-0.67**	-0.597	-5.876	0.000	Yes	12	**-0.42**	-0.408	-3.440	0.001	Yes	-1.513	0.133	No
Specials/promotions on the product	8	**-0.18**	-0.190	-1.565	0.123	No	8	**-0.10**	-0.126	-0.832	0.409	No	-0.465	0.643	No
Safety of product for patient	4	**0.64**	0.490	5.642	0.000	Yes	4	**0.39**	0.316	3.255	0.002	Yes	1.487	0.140	No
Efficacy of product	2	**0.95**	0.750	8.403	0.000	Yes	1	**0.89**	0.761	7.373	0.000	Yes	0.374	0.709	No
What pet owners demand	14	**-1.13**	-0.981	-9.953	0.000	Yes	14	**-0.77**	-0.724	-6.365	0.000	Yes	-2.169	0.032	Yes
Advocacy from veterinary specialits/opinion leaders	9	**-0.19**	-0.200	-1.666	0.102	No	10	**-0.24**	-0.247	-1.954	0.056	No	0.285	0.776	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	10	**-0.28**	-0.278	-2.498	0.016	Yes	9	**-0.20**	-0.219	-1.691	0.097	Yes	-0.476	0.635	No
What I learnt during my years of studies and whilst on clinics	13	**-0.72**	-0.639	-6.328	0.000	Yes	13	**-0.76**	-0.714	-6.273	0.000	Yes	0.244	0.808	No

Ethicals Cons Fee	Affordable *(n = 39)*						Premium *(n = 70)*						Affordable vs Premium *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	1	**1.27**	1.143	9.554	0.000	Yes	2	**1.45**	0.972	15.117	0.000	Yes	-1.104	0.272	No
Price of the product	4	**0.11**	0.184	0.833	0.410	No	5	**0.73**	0.395	7.614	0.000	Yes	-3.782	0.000	Yes
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	7	**0.00**	0.091	-0.008	0.993	No	4	**0.83**	0.475	8.656	0.000	Yes	-5.074	0.000	Yes
Pharmaceutical representatives (quality/personality/professionalism)	8	**-0.26**	-0.120	-1.929	0.061	No	8	**-0.04**	-0.225	-0.467	0.642	No	-1.290	0.200	No
Brand name	14	**-1.03**	-0.764	-7.789	0.000	Yes	12	**-0.66**	-0.721	-6.915	0.000	Yes	-2.267	0.025	Yes
Service levels including product availability	10	**-0.42**	-0.256	-3.166	0.003	Yes	9	**-0.06**	-0.235	-0.592	0.556	No	-2.220	0.029	Yes
Sponsorships by the manufacturing company	12	**-0.88**	-0.636	-6.625	0.000	Yes	11	**-0.58**	-0.657	-6.081	0.000	Yes	-1.811	0.073	No
Specials/promotions on the product	11	**-0.60**	-0.402	-4.490	0.000	Yes	14	**-0.71**	-0.762	-7.453	0.000	Yes	0.723	0.472	No
Safety of product for patient	6	**0.08**	0.159	0.611	0.545	No	3	**0.96**	0.580	10.013	0.000	Yes	-5.366	0.000	Yes
Efficacy of product	2	**1.13**	1.025	8.479	0.000	Yes	1	**1.54**	1.043	16.051	0.000	Yes	-2.522	0.013	Yes
What pet owners demand	13	**-1.01**	-0.743	-7.596	0.000	Yes	13	**-0.67**	-0.725	-6.974	0.000	Yes	-2.076	0.040	Yes
Advocacy from veterinary specialits/opinion leaders	5	**0.08**	0.161	0.625	0.536	No	7	**0.33**	0.077	3.469	0.001	Yes	-1.524	0.130	No
Conferences/meetings and other forms of continuing education held by the manufacturing company	3	**0.32**	0.357	2.407	0.021	Yes	6	**0.34**	0.082	3.540	0.001	Yes	-0.120	0.904	No
What I learnt during my years of studies and whilst on clinics	9	**-0.35**	-0.199	-2.652	0.012	Yes	10	**-0.14**	-0.299	-1.418	0.161	No	-1.320	0.190	No

VOTC Cons Fee	Affordable *(n = 50)*						Premium *(n = 59)*						Affordable vs Premium *(n = 109)*		
Decision Criteria	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**Importance**	**μ**	**σ**	**t-value**	**p-value**	**Significant**	**t-value**	**p-value**	**Significa**
Personal experience with the product	2	**0.81**	0.767	6.679	0.000	Yes	2	**1.24**	0.908	11.634	0.000	Yes	-2.672	0.009	Yes
Price of the product	3	**0.53**	0.531	4.405	0.000	Yes	5	**0.42**	0.234	3.913	0.000	Yes	0.722	0.472	No
Technical information on the product (incl. pharmacokinetics, pharmacodynamics, side effect, indications, etc.)	5	**0.29**	0.325	2.416	0.019	Yes	4	**0.63**	0.409	5.925	0.000	Yes	-2.101	0.038	Yes
Pharmaceutical representatives (quality/personality/professionalism)	7	**-0.07**	0.016	-0.563	0.576	No	9	**-0.19**	-0.265	-1.793	0.078	No	0.762	0.448	No
Brand name	10	**-0.46**	-0.324	-3.835	0.000	Yes	11	**-0.45**	0.474	-4.195	0.000	Yes	-0.107	0.915	No
Service levels including product availability	6	**-0.06**	0.021	-0.511	0.611	No	6	**0.15**	0.018	1.440	0.155	No	-1.335	0.185	No
Sponsorships by the manufacturing company	14	**-1.08**	-0.855	-8.953	0.000	Yes	13	**-0.67**	-0.655	-6.269	0.000	Yes	-2.579	0.011	Yes
Specials/promotions on the product	11	**-0.50**	-0.358	-4.164	0.000	Yes	10	**-0.30**	-0.356	-2.840	0.006	Yes	-1.250	0.214	No
Safety of product for patient	4	**0.53**	0.526	4.353	0.000	Yes	3	**0.73**	0.490	6.850	0.000	Yes	-1.257	0.211	No
Efficacy of product	1	**0.99**	0.918	8.136	0.000	Yes	1	**1.72**	1.298	16.103	0.000	Yes	-4.531	0.000	Yes
What pet owners demand	8	**-0.34**	-0.213	-2.768	0.008	Yes	12	**-0.48**	-0.499	-4.481	0.000	Yes	0.883	0.379	Yes
Advocacy from veterinary specialits/opinion leaders	12	**-0.65**	-0.484	-5.377	0.000	Yes	7	**-0.12**	-0.203	-1.088	0.281	No	-3.318	0.001	Yes
Conferences/meetings and other forms of continuing education held by the manufacturing company	9	**-0.46**	-0.319	-3.786	0.000	Yes	8	**-0.13**	-0.217	-1.248	0.217	No	-2.017	0.046	Yes
What I learnt during my years of studies and whilst on clinics	13	**-0.73**	-0.553	-6.042	0.000	Yes	14	**-0.70**	-0.685	-6.611	0.000	Yes	-0.168	0.867	No

APPENDIX L

Results of the two sample t-tests for the various sources of information.

Biologicals vs Ethicals ***(n = 218)***

	Biologicals		Ethicals				
Sources of Information	**μ**	**σ**	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Internet	**-0.57**	-0.385	**-0.18**	-0.185	-3.649	0.000	Yes
Journal articles	**0.66**	0.576	**0.68**	0.493	-0.260	0.795	No
Vet textbooks	**0.14**	0.168	**1.06**	0.789	-8.719	0.000	Yes
Sales representatives	**1.25**	1.037	**1.01**	0.749	2.193	0.029	Yes
Pharmaceutical detailers	**0.27**	0.274	**0.19**	0.102	0.821	0.413	No
Colleagues	**0.29**	0.290	**0.43**	0.292	-1.282	0.201	No
Specialists	**-0.02**	0.043	**0.21**	0.118	-2.154	0.032	Yes
Onderstepoort - Faculty of Veterinary Science	**-0.53**	-0.354	**-0.62**	-0.531	0.883	0.378	No
Advertising	**-0.39**	-0.242	**-0.54**	-0.463	1.411	0.160	No
Pet Owners	**-1.87**	-1.407	**-1.68**	-1.363	-1.753	0.081	No

Biologicals vs VOTC ***(n = 218)***

	Biologicals		VOTC				
Sources of Information	**μ**	**σ**	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Internet	**-0.57**	-0.385	**-0.43**	-0.581	-1.330	0.185	No
Journal articles	**0.66**	0.576	**0.77**	0.348	-1.030	0.304	No
Vet textbooks	**0.14**	0.168	**0.32**	0.000	-1.714	0.088	No
Sales representatives	**1.25**	1.037	**2.02**	1.322	-7.287	0.000	Yes
Pharmaceutical detailers	**0.27**	0.274	**0.66**	0.269	-3.702	0.000	Yes
Colleagues	**0.29**	0.290	**0.83**	0.399	-5.083	0.000	Yes
Specialists	**-0.02**	0.043	**-0.18**	-0.390	1.516	0.131	No
Onderstepoort - Faculty of Veterinary Science	**-0.53**	-0.354	**-0.75**	-0.832	2.103	0.037	Yes
Advertising	**-0.39**	-0.242	**0.67**	0.271	-9.941	0.000	Yes
Pet Owners	**-1.87**	-1.407	**-0.72**	-0.805	-10.915	0.000	Yes

Ethicals vs VOTC ***(n = 218)***

	Ethicals		VOTC				
Sources of Information	**μ**	**σ**	**μ**	**σ**	**t-value**	**p-value**	**Significant**
Internet	**-0.18**	-0.185	**-0.43**	-0.581	2.332	0.021	Yes
Journal articles	**0.68**	0.493	**0.77**	0.348	-0.769	0.442	No
Vet textbooks	**1.06**	0.789	**0.32**	0.000	7.037	0.000	Yes
Sales representatives	**1.01**	0.749	**2.02**	1.322	-9.493	0.000	Yes
Pharmaceutical detailers	**0.19**	0.102	**0.66**	0.269	-4.528	0.000	Yes
Colleagues	**0.43**	0.292	**0.83**	0.399	-3.800	0.000	Yes
Specialists	**0.21**	0.118	**-0.18**	-0.390	3.680	0.000	Yes
Onderstepoort - Faculty of Veterinary Science	**-0.62**	-0.531	**-0.75**	-0.832	1.218	0.224	No
Advertising	**-0.54**	-0.463	**0.67**	0.271	-11.364	0.000	Yes
Pet Owners	**-1.68**	-1.363	**-0.72**	-0.805	-9.162	0.000	Yes