AN ASSESSMENT OF THE ROLE OF DIFFERENT CADRES OF ANIMAL HEALTH SERVICE PROVIDERS IN ANIMAL HEALTH SERVICE DELIVERY IN KIAMBU DISTRICT, KENYA.

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A thesis submitted in partial fulfillment of the requirements for the degree of Masters of Science in Veterinary Epidemiology and Economics.

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DECLARATION

This thesis is my original work and has not been presented for the award of a degree in any other University.

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DEDICATION

TO MY DEAR PARENTS SAMUEL NJOGU MAHIA & MARY WAMBUI

NJOGU
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LIST OF ACRONYMS

OIE- Office international des épizooties (World Organisation for Animal Health)
AHITIs- Animal Health and Industry Training Institutes
FAO-Food and Agriculture Organisation
KVA- Kenya Veterinary Association
KVAPS- Kenya Veterinary Association Privatisation Scheme
AHAs - Animal Health Assistants
ASALs- Arid and Semi-arid Areas
CAHWs - Community based Animal Health Workers
PVS - Performance, Vision and Strategy
VS – Veterinary Services
TLU- Tropical Livestock Numbers
AHT - Animal Health Assistants/technicians
AHIQ - Animal Health Improvement in Quebec
CDVM - Centre for Distribution of Veterinary Medicines
GVS - Government Veterinary System
HMPAs - high/medium potential areas
KCC – Kenya Cooperative Creameries
VPUs - Viable Practice Units
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This study was found necessary due to the changing nature of the veterinary services in Kenya whereby, hitherto, the delivery of veterinary services had been solely dependent on the government until some components were privatised. Privatisation was ad hoc as there were no policies in place to ensure quality of the services provided. The overall objective of the study was therefore to assess the role of private animal health service providers in the provision of veterinary services in Kiambu District, Kenya. The specific objectives were: 1) To identify and categorise the various ways farmers access veterinary services in Kiambu District, Central Kenya; 2) To identify the problems experienced by veterinary practitioners and farmers in the animal health service delivery in the district; and 3) To identify the categories of veterinary service providers most frequently consulted by farmers and the reasons behind it.

The study was conducted in Kiambu District, Kenya. The district is located in Central Province. A total of 125 farmers and 21 animal health service providers were randomly selected for the study. All data on household characteristics and animal health service providers was obtained through questionnaires, which were administered via personal interviews to the selected farmers and the animal health service providers.

The data was entered and managed in MS Excel. The data was then exported to SPSS Statistical Software for statistical analysis on animal health service providers and household characteristics.
A high percentage (86.4%) of Kiambu farmers consider livestock as their main source of income, with 36% of farmers scoring it as the main source while 50.4% practised mixed farming. About 66.4% of the farmers interviewed were in agreement that over half of their household incomes were derived from livestock. All this demonstrates the importance of livestock to the lives of the Kiambu people.

Kiambu farmers interviewed cited various constraints which they face in accessing of veterinary services. Affordability topped the list with 48.8% (61/125) of the respondents citing poverty as the greatest problem hindering their access to veterinary services. Other reasons cited were infrastructure (28.8%; 36/125 of respondents), inadequate qualified personnel (11.2%; 14/125) of the interviewed farmers indicated there was no constraints at all. The animal health problems mostly encountered by the farmers in the district included mastitis, tickborne diseases, reproductive diseases and helminthosis in that order. About 52.8% (66/125) of the farmers interviewed singled out mastitis as the most important disease in their animals, 24% (30/125) identified tickborne diseases, 14.4% (18/125) reproductive diseases and 8.8% (11/125) talked of helminthosis.

Paraveterinarians, veterinarians, and the nearest agrovets attendants were identified as the categories providing veterinary services in Kiambu District. The results show that paraveterinarians serve the largest percentage of the farmers in Kiambu District (56.8%). Among the reasons given for this were that they were readily available and charged less compared to veterinarians. This can be attributed to the high number of animal health
assistants (AHTs) released each year into the market from Animal Health and Industry Training Institutes (AHITIs).

Poverty among the farmers was identified by most animal health service providers (38.1%; 8/21) as a major problem such that their clients could not afford their services. This was closely followed by debts whereby 28.6% (6/21) of the animal heath service providers talked of incurred debts after the service had been rendered. The two problems above are closely intertwined. Other problems cited were unfair competition (19%; 4/21 of the animal health service providers) and poor policies from the Government (14.3%; 3/21).
1.0 INTRODUCTION

Professional activities of all types are increasingly coming under critical scrutiny. Animal health and production are no exception. In this era of globalisation, the development and growth of many countries depend on the performance of their agricultural and food policies and economies and this in turn directly relates to the quality of their Veterinary services (OIE, 2007).

From the time of Kenya's independence in 1963 until 1988, the Government, through the Department of Veterinary Services, provided virtually all the animal health services to the farmers. Until 1988/89 the government adopted an open-door employment policy for veterinarians and paraveterinarians. During this period, all the veterinarians and paraveterinarians graduating from any accredited university and Animal Health and Industry Training Institutes (AHITIs), respectively who sought employment in the Department of Veterinary Services were automatically employed. This policy led to considerable increases in personnel costs such that by the 1990/91 financial year, 70% of recurrent budget was taken up by salaries and personnel allowances, leaving a mere 30% for operations and maintenance (Wamukoya et al, 1995). This situation inevitably led to marked deterioration of Government veterinary services. The Government therefore saw the need to encourage development of private veterinary practice, and at the same time stopped the automatic employment of newly graduating veterinarians and paraveterinarians.
In 1991, some components of veterinary services were privatised in a bid to improve their efficiency (Bett, 2001). Kiambu District (a peri-urban and high potential area), which comprises mainly small-scale zero-grazing farmers, was one of the areas affected. Privatisation was *ad hoc* as there were no policies in place to ensure quality of the services provided. As a result, there has been a mushrooming of retail drug outlets in most parts of the country offering veterinary drugs, insecticides and other veterinary inputs (Bett, 2001). There are also various players in the private sector who are currently involved in the provision of veterinary services in the country.

The Department of Veterinary Services now mainly plays a regulatory role. Major veterinary components such as clinical services, artificial insemination and tick control have been privatised.

The overall objective of the study was to assess the role of animal health service providers in the provision of veterinary services in Kiambu District.

The specific objectives were:

- To identify and categorise the various ways farmers access veterinary services in Kiambu District, Central Kenya;
- To identify the problems experienced by veterinary practitioners and farmers in the animal health service delivery in the district; and
- To identify the categories of veterinary service providers most frequently consulted by farmers and the reasons behind it.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The development of private services in Kenya during the colonial administration

Private veterinary practice has existed in Kenya for more than half a century. Between the early 1930s and the mid-1960s, provision of clinical and advisory services almost entirely involved servicing commercial ranches and dairy farms. The Department of Veterinary Services was mainly responsible for providing regulatory services in these areas (Chema and Gathuma, 2004). Until the mid-1960s, Public sector veterinary responsibilities were predominantly associated with the prevention of notifiable diseases outside the commercial farming areas. In 1954 an aggressive campaign of promoting the dairy industry in the wetter areas of the country among small-scale farmers was started. In an effort to encourage dairy development, the Department of Veterinary Services decided to provide some services, mainly tick control and subsidised artificial insemination. The support had a great positive impact on the dairy industry more so among the small-scale farmers. After the end of the colonial administration in 1963, most private practitioners left the country and their services were taken over by government. This was accompanied by significant expansion of training and the deployment of both professional veterinarians and para-professionals (Chema and Gathuma, 2004).
2.2 The changing structure of animal health service delivery in post-colonial Kenya and the role of the Kenya Veterinary Association

Beginning in the early 1980s, the Government of Kenya instituted several economic and institutional reforms aimed at improving economic performance and microeconomic stability. In general, the reforms sought to reduce government support and its direct participation in various sectors of the economy. Such measures include price deregulation, trade liberalisation, withdrawal of subsidies and non-participation, input and services provision (Lawrence et al., 2002). The government expected these reforms to permit the forces of supply and demand to determine the production, distribution and marketing of various goods and services in the economy and in essence to promote efficiency and economic growth.

The government's reduced participation in the provision of veterinary services, however, gained momentum in the early 1990s. Until then, the government had been the main provider of animal health services, either free of charge or at a highly subsidised level (Leonard, 2000). The major success had been achieved in the control of epidemic and transboundary animal diseases such as rinderpest and contagious bovine pleuropneumonia (Lawrence et al., 2002).

With the growth of the livestock sector, the range and volume of veterinary services to be provided increased tremendously. Consequently, a full range of heavily subsidised services was to be made available to livestock producers ranging from clinical services, extension services, artificial insemination, disease surveillance, and vector control to the production and distribution of drugs and vaccines (Lawrence et al., 2002).
By mid-1980s, various structural reforms were being implemented in the public sector. Consequently, budgetary allocations were reduced for most public sector activities, including animal health service delivery (Umali et al., 1994). As budgets failed to keep pace with costs, the government found it easier to make cuts in the operating expenses than in the number of service providers (Anteneh, 1984). In some areas, therefore, state provided veterinary services effectively ceased to exist, and in most areas, they fell below the level needed and expected by producers (Lawrence et al., 2002). In response, the state engaged in interesting and commendable experimentation with the aim of finding new models of animal health service delivery that would be adapted to the prevailing financial reality. These innovative approaches, which principally entailed privatisation, were undertaken after considerable prodding from donors, mainly the World Bank and the European Union (De Haan and Bekure, 1991). With the broad based market reforms and the scaling down of government expenditures, the private sector was expanded to play a greater role in this field (Otieno-Oruko et al., 2000). This privatisation, which reflected the neoliberal thinking of the 1980s, was considered more or less a panacea for addressing government failure in providing animal health services. It was argued that the private sector would outperform the public sector even under imperfect market conditions (Bos, 1991). Besides efficiency considerations, input delivery through the private sector was considered more sustainable (Leonard, 1993; Umali et al., 1994). Against this background, the privatisation of activities hitherto regarded as the domain of the public sector gained credibility.
2.3 Essential components for rational delivery of veterinary services

Successful delivery of veterinary services in their broadest sense, which largely takes into account the pressures by major stakeholders, has evolved in many countries to include five essential components (FAO, 1997). These are:

1) Livestock producers and their organisations;
2) A national public veterinary service;
3) A private veterinary sector;
4) A statutory regulatory body; and
5) A veterinary professional association.

Each component has different responsibilities and may represent different stakeholders. Ideally the five components should interact with checks and balances such that all stakeholders are fairly represented. The logic and rationale for creation of each component, as well as assigning specific tasks and responsibilities, are based on economic, biological, professional and social principles.

Training institutions also form a very important component in successful delivery of veterinary services. Veterinary institutions help improve animal health by providing training that will enhance livestock production and trade and protect public health. The increasing role of animals in emerging infectious diseases has emphasized the need to improve veterinary services and integrate them with public health services more effectively (McDermott, 2004).
2.3.1 Division of responsibilities

A number of publications (Leonard, 1993; FAO/RLAC, 1992; Umali et al., 1992; FAO/RNEA, 1994; OIE, 1995; Schillhorn van Veen and de Haan, 1995;) have considered the distribution of the different animal health functions performed by the public and the private sector. A list of services was considered and modified at a Technical Consultation meeting held by FAO in March 1997. The list is intended as a guide for consideration by governments; it lists functions which could be considered as falling under the responsibility of the private sector; remain under the responsibility of the public sector; or are candidates for shared responsibility and shared execution. The consultation recognised the primary responsibility of the livestock producer for the health of his/her animals; that the process of structural adjustment is a dynamic one involving transitional periods; and that all countries are different in their manner and stage of implementation.

The criteria for assigning functions of the public or private sector were: economic theory; technical judgement by national veterinary authorities; tradition; and prevailing socio-cultural conditions within various countries. Services under the responsibility of, but not necessarily executed by, the public sector include: assuring the health of the national herd including disease surveillance, compliance monitoring, quarantine, quality control of remedies and vaccines, planning for emergencies and reporting to international bodies and neighbouring countries; oversight of food safety, import and export inspection and certification according to international standards; regulation, monitoring and support of other partners in the animal health care system;
accreditation of personnel; creation of an enabling environment for the private sector; and general formulation of livestock development policy.

Services under the responsibility of the private sector include clinical diagnosis and treatment; production and distribution of remedies and vaccines; artificial insemination; management of herd health and production programmes; marketing livestock and products; and others (FAO, 1997).

Functions under shared responsibilities include disease diagnosis and reporting; compulsory testing; accreditation; tick and tsetse control; food hygiene and inspection; continuing veterinary education and training; diagnostic support; animal welfare; notifiable disease control; disease emergency response; zoonosis control; research; and advice and extension.

Several recommendations are contained in the FAO report of 1997 as pertains to the strategy for transition, enabling private sector development and veterinary services delivery by non-veterinarians. They are as described briefly below:

2.3.1.1 Strategy for the transition

The overall objective of restructuring of veterinary services should be to increase the efficiency and effectiveness of animal health care delivery and, consequently, livestock productivity; safeguard public health; and contribute to national development. The end result should be:

- A public veterinary service better able to carry out its redefined responsibilities;
- A functioning private sector; and
- The necessary supporting personnel and infrastructure able to contribute to the overall objective.

The institution of a special transition team to plan and oversee the implementation of any restructuring process has been found useful. This team should be guided by an advisory council with stakeholder representatives including members appointed from the national veterinary service; the national treasury; the pharmaceutical industry; livestock producer groups; and consumer groups. Advice should be sought from countries that have successfully gone through a similar transition process, e.g. Morocco and Canada. Should external funding be envisaged, representatives of funding agencies may be invited as members of the restructuring council.

Stakeholders need to be informed of the outcome of deliberations for the sake of transparency and need to be consulted frequently for their input. Experience shows that only when there is free flow of information and consultations as well as participation of stakeholder representatives can a workable agreement for change be reached (Till, 1995).

2.3.1.2 Enabling private sector development

Delivery of veterinary services not specifically under the responsibility of the public sector should, by default, reside with the private sector. Nonetheless, the relationship between the two sectors is dynamic and mutually supportive. Private practitioners may be contracted to execute
tasks under the responsibility of the public sector and the latter should enable the full
development of private practice.

In general the private sector thrives best in environments without government’s interference.
However, governments can help by creating and ascertaining conditions and regulations that
support private initiative and private sector operation. Thus, it is important to obtain input from
the private sector, whether producers, processors, consumers or veterinarians in the process of
policy formulation and drafting of quality control regulations.

Subject to the prevailing laws (as implemented by the veterinary registration body), the private
sector should not be obstructed but encouraged to provide new services as technological change
presents opportunities; as consumer demand evolves; as consumer willingness to pay for services
increases; and as the oversight authority of government bodies permits. In the abridged words of
Umali and Schwartz (1994), encouraging private sector participation implies promoting private
sector investment. The prevailing economic, cultural, social and political character of the
economy will determine the optimal programme for the privatisation process. What is clear is
that the private sector will invest only if a favourable economic environment prevails and
barriers to entry are eliminated. This requires macroeconomic stability, essential infrastructure,
changes to the regulatory framework, and a functioning legal system. These are the “public
goods” that governments have to provide.
Enabling national legislation needs to legally define veterinary and other animal health care practices to state academic and other qualifications required before registration, and to define the powers of the statutory body.

2.3.1.3 Veterinary services delivery by non-veterinarians

This is a highly contentious issue requiring consensus within the veterinary profession and with stakeholders. An agreed plan is needed which focuses on a practical method to employ these persons in a productive manner and at the same time protecting the public from sub-standard service.

There is a need to clearly define the tasks permitted to various cadres of the animal health team, the remedies and vaccines they are permitted to administer, and the procedures and tests they are allowed to carry out. In making these decisions, the countries making regulations need to assure that producers who desire economic animal health interventions are able to obtain them, that the long term quality needs of producers are being secured, and that problems with the abuse of remedies are avoided. In either case, the economic welfare of both the animal health cadre and of the producers is a legitimate basis for making the decision (FAO, 1997).

In the absence of a veterinarian in some areas in Kenya farmers have used the services of paraveterinarians, traditional healers, pharmacists, businessmen and even fellow farmers. Often these people have carried out animal treatments for years and have established a loyal clientele.
Initially newly establishing veterinarians find it difficult to compete with these informal suppliers of veterinary services (Wamukoya et al., 1995).

2.4 The Kenya Veterinary Association Privatisation Scheme

The Kenya Veterinary Association (KVA) launched a privatisation scheme (the Kenya Veterinary Association Privatisation Scheme) in 1994 to provide members with credit to set up private practices.

The main reason for setting up the scheme was to provide a mechanism to support the delivery of private animal health care at a time when the government was withdrawing from service provision and seeking ways of fostering privatization. The scheme was in line with the Government’s policy on the privatization of the delivery of animal health services. The scheme provides for the establishment, development and expansion of private veterinary practices in high and medium potential agricultural farming areas through careful selection of veterinarians to whom subsidized financial, technical and business skills training support are given (KVAPS 2005).

The objectives of the scheme are:

1. Improvement of the quality and availability of animal health services through the setting up of more private veterinary practices in rural high and medium potential areas of Kenya;
2. Reduction in unemployment of graduate veterinarians through promotion of owner-managed veterinary clinics; and
3. Reduction of budgetary pressure on the government in the provision of veterinary services through the privatization process, thus allowing the Government to concentrate more on the surveillance and control of the major epidemic diseases and its other core functions.

The overall objective was to provide improved delivery of animal health services to livestock farmers in Kenya.

The first phase of the scheme (1994-1996) was rated a success, with 100% loan repayments. The second phase of the project (from 1997) was characterised by a low number of loan applications, which increased the cost of loan administration per unit. There was some defaulting in loan repayments during this phase (Chema and Gathuma, 2004).

2.5 Privatisation of veterinary services

Privatisation broadly entails transferring ownership of resources and responsibilities for provision of services from the public to the private sector (James and Upton, 1995). The perfectly competitive market structures that are required for privatisation to work, however, are rarely obtainable in the real world (Otieno-Oruka et al., 2000). In addition, given sub-Saharan Africa's thinly spread markets with dispersed producers and service providers, weak institutions for contract enforcement, and underdeveloped infrastructure, questions remain regarding the performance of the private sector in service delivery. Therefore, the veterinary service privatisation programme has had a varied impact in Kenya depending on a range of
circumstances (Lawrence et al., 2002). Reasons cited for poor performance of private veterinary practices in sub-Saharan Africa (De Haan and Bekure, 1991) include:

i) Unfair competition from public services, which dispense subsidised treatments and often use para-veterinary staff to compete with would-be professional private veterinarians;

ii) Uncertain availability of drugs and equipment and

iii) Perceived poor financial perspectives, especially in the pastoral and smallholder areas.

Drugs and vaccines, as well as other biological products and disinfectants, if properly used, are major tools in the prevention and control of livestock production losses and in dealing with veterinary public health problems. The provision of effective veterinary care and the treatment of the most important diseases of animals are based on their rational use (Bett, 2001).

2.5.1 Private and public goods in veterinary services

The concepts of excludability and rivalry have been widely used to identify those services that can (and should) be financed by the private sector, and those that can be financed by the public sector (Umali et-al., 1992). Excludability refers to whether or not the consumer of a service can prevent others from simultaneously benefiting from the service. Low excludability means that non-paying consumers cannot be prevented from using the service.

In contrast, rivalry is defined as the extent to which the use or consumption of a good or service by one individual reduces the availability of this good to other people. Thus, high rivalry enables individual consumption, whereas low rivalry permits joint or communal consumption.
According to Gros, (1994) and Holden (1999), services with low excludability and low rivalry are known as public goods, while those with high rivalry and high excludability are referred to as private goods.

2.6 Principal/agent theory

The privatisation process and livestock keeper's choice of veterinary services is best understood through the principal/agent framework. Principal/agent theory is a framework that has been expanding rapidly and is devoted to explanation of micro-analytic organisation details (Williamson, 1984; Leonard, 1993; Leonard, 2000). The theory explains social organisational phenomena using assumptions derived from transaction cost economics. It is, therefore, an analytical tool, joining aspects of law, economics, and organisational theory to observe and understand the organisational variety involved in economic activity (Williamson, 1984; Leonard, 1993; Leonard, 2000).

Principal/agent theory can be used to analyse situations in which there is severe imbalance in information between consumers and suppliers. In the veterinary field, clients are at a disadvantage in dealing with the health practitioners. The veterinarians are consulted because they have specialised knowledge but clients cannot be sure that the veterinarians' skills are appropriate to their problem (Ly, 2000). Unless this problem is solved, clients may lose confidence in the quality of services offered by the practitioners. Clients may reduce their consumption of the services, or they may be prepared to pay no more than the value of the
lowest-quality services available in the market, because they fear that this is the service level they are likely to receive. If this information asymmetry is not eliminated, it would lead to a "market of lemons", a situation in which transaction costs are dominated by inferior products (Akerlof, 1970). Possible mechanisms for assuring clients that they are getting high quality service from their agents are the incentive systems (Lawrence et al., 2002). These include professional supervision, information supply, and strict legislation enforcement that will maximise the agents' effort. If left alone, the market for veterinary services in Kenya may evolve toward a situation similar to "market of lemons", in which clients demand low quality services. This situation is likely to produce sub-optimal results for livestock keepers, animal health practitioners, and the society at large (Lawrence et al., 2002).

2.7 Various players in the private practice in Kenya

Kenya has had a system of training paraveterinary personnel at three levels for many years. At the bottom of the line there used to be certificate holders who were trained to handle a few animal emergencies but these have now been phased out. At a higher level, there are a group of Animal Health Assistants (AHAs) who have been trained to assist veterinarians in areas such as sample collections, simple diagnostic procedures and injections. The highest level of this group is diploma holders and graduates in animal science. These have been trained reasonably in animal health and production. This group of personnel, like newly graduating veterinary graduates, have found themselves with no automatic government employment as was the case in the years passed. Consequently they have tried to earn a living through treatment of animals.
Since there is no law governing their mode of operation, they have established themselves in the same areas with the veterinarians (Wamukoya et al., 1995).

In Kenya, veterinarians are controlled in their professional activities by an Act of Parliament; the Veterinary Surgeons' Act (Cap 366) and the paraveterinarians are not. Paraveterinarians therefore take all manner of professional short-cuts and are a formidable group for a veterinarian to contend with. Most of them operate from their homes and therefore have no overheads to shoulder. Like the government veterinarians, they can afford to undercut a private veterinarian by charging cheaply and therefore become more popular with farmers, although some of their services may be substandard (Wamukoya et al., 1995).

In arid and semi-arid areas (ASALs), there is another class of animal health service providers referred to as community based animal health workers (CAHWs). These are trained local herders in basic animal health care. They are provided with a basic veterinary kit so that they may treat other people's animals for a small fee. The gap created due to few governments veterinary staff and due to non-viability of private practice in ASALs have given rise to these (Chema and Gathuma, 2004).

2.8 Performance, Vision and Strategy tool

Performance, Vision and Strategy (PVS) is a tool developed by the OIE to assist Veterinary Services (VS) to establish their current level of performance, to identify gaps and weaknesses regarding their ability to comply with OIE international standards, to form a shared vision with stakeholders and to establish priorities and carry out strategic initiatives (OIE, 2007).
The PVS tool is comprised of four fundamental components which are:

1) the human, physical and financial resources to attract resources and retain professionals with technical and leadership skills;

2) the technical authority and capability to address current and new issues including prevention and control of biological disasters based on scientific principles;

3) the sustained interaction with stakeholders in order to stay on course and carry out relevant joint programmes and services; and

4) the ability to access markets through compliance with existing standards and the implementation of new disciplines such as the harmonisation of standards, equivalence and zoning.

The PVS tool also promotes a culture of raising awareness and continual improvement, which can be either passively or actively depending on the level of interest, priorities and commitment of the VS and its stakeholders (OIE, 2007).
CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 STUDY AREA

The study was conducted in Kiambu District, Kenya during the period May-July 2004. The district is located in Central Province. It borders Nairobi City and Kajiado District to the South, Nakuru District to the North west and Thika District to the East and lies between latitudes 0°75' and 1°20' South of the equator and longitudes 36° and 36°5' East. The total land area of the district is 1,460km² divided into five administrative divisions, namely, Kiambaa (192km²), Limuru (291km²), Githunguri (172km²), Kikuyu (240km²) and Lari (565km²) (Fig.3.1). Kiambu District has a total human population of 744,010 with a density of 562 persons per km² (Kenya Government, 1999).
3.1.1 Topography and climate

Kiambu District is divided into four broad topographical regions, namely, Upper Highland, Lower Highland, Upper Midland and Lower Midland (Kiambu District Development Plan 1997-2001). The Upper Highlands is found in Lari Division and is an extension of the Aberdare Ranges. It lies at an altitude of over 1800m above sea level and is dominated by highly dissected ranges. The upper areas are very wet and steep and are important water catchment areas for rivers like Bathi and Gatamaiyu. The steepness of the area, especially the escarpment, are major obstacles to road construction and acts as an impediment for the establishment of private veterinary practice.

The Lower Highland is mostly occupied by Limuru and parts of Kikuyu and Githunguri divisions. This is characterised by hills, plateaus and level structural plains, which makes it fairly easy for the development of road network. The altitude ranges between 1500 and 1800 metres above sea level. The Upper Midland lies below 1500 metres above sea level and covers parts of all divisions in the district, except Lari. The lower Midland is found in Ndeiya and Karai locations of Kikuyu Division. The area comprises of dry plains.

Altitude is the single most important factor influencing climate in Kiambu District. With regard to rainfall, the amount received varies from 845mm in Ruiru, situated at 1555 metres above sea level, to 1373mm at Kereita forest, which lies at an altitude of 2438 metres. The distribution of
Rainfall, too, is influenced by altitude; the leeward side of the escarpment receives less rainfall than the areas on the windward side. The rainfall regime is bimodal, with long rains occurring between April and May while the short rains fall from October to November. Temperatures also are determined by altitude. Average temperatures range from 20.4°C in the upper highland to 24°C in the lower Midland of Karai in Kikuyu Division. July and August are the months during which the lowest temperatures are experienced.

Rainfall is reliable and favourable for pasture growth, which is essential for livestock rearing in the district. Similarly, the district is ideal for the location of agro-based industrial activities. For instance, coffee and tea processing factories are found in Githunguri, Kiambaa and Limuru divisions (Kiambu District Development Plan, 1997-2001).

3.1.2 Livestock populations

Cattle continue to represent the most important source of milk in the district, constituting 65% of the total milk produced. Currently, 40 milk processors and several milk bars have emerged as a result of liberalisation of the dairy industry. Due to increasing human population, demand for milk has also increased (Ministry of Agriculture, Livestock Development and Marketing Annual Report, 2000).

The types and numbers of livestock kept by farmers in Kiambu District are shown in Table 3.1.
Table 3.1 Types of livestock in numbers and in tropical livestock numbers (TLU) kept by farmers in Kiambu District, (MoLD&F, 2003).

<table>
<thead>
<tr>
<th>Type of livestock</th>
<th>Number</th>
<th>TLU conversion factor</th>
<th>TLU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy cattle</td>
<td>156,700</td>
<td>0.70</td>
<td>109,690</td>
</tr>
<tr>
<td>Beef cattle</td>
<td>4,300</td>
<td>0.70</td>
<td>3,010</td>
</tr>
<tr>
<td>Sheep</td>
<td>76,500</td>
<td>0.10</td>
<td>7,650</td>
</tr>
<tr>
<td>Goats</td>
<td>42,500</td>
<td>0.10</td>
<td>4,250</td>
</tr>
<tr>
<td>Pigs</td>
<td>151,300</td>
<td>0.20</td>
<td>30,260</td>
</tr>
<tr>
<td>Chicken (Broiler)</td>
<td>161,200</td>
<td>0.01</td>
<td>1,612</td>
</tr>
<tr>
<td>Chicken (Layers)</td>
<td>225,300</td>
<td>0.01</td>
<td>2,253</td>
</tr>
<tr>
<td>Chicken (Indigenous poultry)</td>
<td>179,000</td>
<td>0.01</td>
<td>1,790</td>
</tr>
<tr>
<td>Donkeys</td>
<td>16,200</td>
<td>0.50</td>
<td>8,100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,013,000</td>
<td></td>
<td>168,615</td>
</tr>
</tbody>
</table>

The tropical livestock is commonly taken to be an animal of 250 kg liveweight. TLU conversion factors constitute a compromise between different common practices (Jahnke 1982).

3.2 Study design

A stratified sampling approach was used whereby the division was regarded as the primary unit, location the secondary unit and sub-location the tertiary unit.
3.2.1 Selection of dairy farmers

All of the five administration divisions in the Kiambu district were involved in the study.

One of the 6 (Kikuyu), 9 (Lari), 6 (Limuru), 9 (Kiambaa), 5 (Githunguri) locations per division were selected randomly. Subsequently, one of the 4 (Kikuyu), 4 (Kijabe), 3 (Limuru), 2 (Ndumberi), 4 (Ikinu) sublocations per selected location was randomly selected (Appendix I). A list of dairy farmers in each selected sublocation was obtained from the local cooperative societies. For each selected sublocation 25 dairy farmers of 124 (Sigona), 148 (Ndumberi), 149 (Limuru), 92 (Githunguri), 75 (Lari) were randomly selected for a total of 125 farmers.

3.2.2 Selection of animal health service providers

A veterinarian was defined as a person with a university degree in Veterinary Medicine / Science. A paraveterinarian was a person who provides veterinary services in a community and in possession of a certificate or a diploma in animal health from recognized college e.g. animal health assistants/technicians (A.H.T).

All the 5 divisions of Kiambu District were sampled. In each division, a list of all the animal health service providers was obtained from the District Veterinary Office out of which a fixed proportion of 20% of 18 (Limuru), 24 (Kikuyu), 30 (Lari), 11 (Githunguri) and 18 (Kiambaa) was randomly selected per division. A total of 21 animal health service providers were sampled who included 8 veterinary surgeons, 6 animal health technicians and 7 agrovet attendants with no formal training in animal health.
3.3 Data collection

All data on household characteristics and animal health service providers was obtained through questionnaires, which were administered via personal interviews to the selected farmers and the animal health service providers. The information collected on farmers included household characteristics, source of income, animal health service providers consulted and constraints in accessing veterinary services (Appendix II) and on animal health service providers, problems faced, types of services, farmers' category (Appendix III).

3.4 Data handling and analysis

The data were entered and managed in MS Excel, Spanish spelling Engine 1998-2000 by SIGNUM Cia.Ltda. Quito, Ecuador. The data was then exported to SPSS Statistical Software-Release 11.5.1-standard version for statistical analysis on animal health service providers and household characteristics. Descriptive statistics were generated.
CHAPTER FOUR

4.1 RESULTS

4.1.1 Household characteristics

The animals kept by the farmers were exotic cattle of which the average per household in Kiambu District was 4 cows (Table 4.2). Mostly the dairy farmers practised zero-grazing production system. About 51.2% (64/125) also reared sheep and goats, 12% (15/125) kept pigs with an average of 10 animals and 61.6% (77/125) reared chickens. Among the farmers who reared chickens 80.5% (62/77) kept indigenous poultry while 19.5% (15/77) kept layers/broilers.

The distribution of livestock in Kiambu District is displayed in Table 4.1.

Table 4.1 Distribution of livestock by Division among the farmers interviewed in Kiambu District, 2004.

<table>
<thead>
<tr>
<th>Division</th>
<th>Dairy cattle</th>
<th>Beef cattle</th>
<th>Sheep &amp; goats</th>
<th>Pigs</th>
<th>Poultry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kikuyu</td>
<td>96</td>
<td>2</td>
<td>9</td>
<td>11</td>
<td>3200</td>
</tr>
<tr>
<td>Lari</td>
<td>75</td>
<td>15</td>
<td>80</td>
<td>0</td>
<td>225</td>
</tr>
<tr>
<td>Kiambaa</td>
<td>172</td>
<td>26</td>
<td>112</td>
<td>136</td>
<td>582</td>
</tr>
<tr>
<td>Githunguri</td>
<td>101</td>
<td>10</td>
<td>39</td>
<td>6</td>
<td>357</td>
</tr>
<tr>
<td>Limuru</td>
<td>84</td>
<td>6</td>
<td>79</td>
<td>0</td>
<td>3338</td>
</tr>
<tr>
<td>Total</td>
<td>528</td>
<td>59</td>
<td>319</td>
<td>153</td>
<td>7702</td>
</tr>
</tbody>
</table>
Table 4.2: Mean livestock of species by Division in Kiambu District, 2004.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy cattle</td>
<td>4.2 (2.8)</td>
<td>3.8 (2.4)</td>
<td>3 (1.4)</td>
<td>6.9 (4.2)</td>
<td>4.0 (1.7)</td>
<td>3.4 (1.6)</td>
</tr>
<tr>
<td>Beef cattle</td>
<td>0.5 (0.8)</td>
<td>0.08 (0.4)</td>
<td>0.6 (0.9)</td>
<td>1.1 (0.9)</td>
<td>0.4 (0.6)</td>
<td>0.3 (0.5)</td>
</tr>
<tr>
<td>Sheep</td>
<td>1.6 (2.3)</td>
<td>0.4 (1.3)</td>
<td>2.4 (2.3)</td>
<td>2 (2.5)</td>
<td>1.5 (1.8)</td>
<td>2 (3)</td>
</tr>
<tr>
<td>Goats</td>
<td>1 (2.3)</td>
<td>0 (0)</td>
<td>0.8 (2.2)</td>
<td>2.5 (3.5)</td>
<td>0.1 (0.6)</td>
<td>1.2 (2.5)</td>
</tr>
<tr>
<td>Pigs</td>
<td>1.2 (2.4)</td>
<td>0.4 (1.3)</td>
<td>0</td>
<td>5.5 (11.7)</td>
<td>0.2 (1.2)</td>
<td>0</td>
</tr>
<tr>
<td>Donkey</td>
<td>0.01 (0.08)</td>
<td>0 (0)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.04 (0.2)</td>
</tr>
<tr>
<td>Poultry</td>
<td>62 (189)</td>
<td>128 (248)</td>
<td>9 (12)</td>
<td>23.3 (59.1)</td>
<td>14.3 (19.9)</td>
<td>133.5 (320.3)</td>
</tr>
</tbody>
</table>

Figures in brackets are standard deviation

In all areas combined, the most kept species of livestock was poultry followed in decreasing order by dairy cattle, sheep, pigs, goats, beef cattle, and donkeys.

4.1.2 Source of income of Kiambu dairy farmers

Of the 125 dairy farmers interviewed, 36 % (45/125) indicated keeping of livestock as their main source of income while 50.4 % (63/125) received their livelihoods from mixed farming. Only 12.8 % (16/125) indicated salaried employment as their main source of income. Figure 4.1 shows the various sources of income by the interviewed farmers.
1-livestock (36%) 3-Salaried employment (12.8%)
2-Mixed farming (50.4%) 4-Other businesses (0.8%)

Figure 4.1: The main sources of income of Kiambu District dairy farmers, 2004.

4.1.3 Various ways farmers access veterinary services in Kiambu District

Of the service providers reportedly consulted by the farmers, private paraveterinarians were the most popular being consulted by 56.8% (71/125) of the interviewed farmers. The other types of service providers consulted by the farmers in decreasing order of importance were the private veterinarians (32%;40/125), agroveta attendants (6.4%;8/125) and lastly government veterinarians who were reportedly consulted by only 6 (4.8%) of the interviewed farmers as shown in Figure 4.2.
1-Government Veterinarian (4.8%) 3-Private paraveterinarian (56.8%)
2-Private veterinarian (32%) 4-Agrovet attendant (6.4%).

Figure 4.2: Animal health service providers and the percentage of farmers they serve in Kiambu District, 2004.

The attributes of the service providers given prominence by farmers on choosing who to consult were varied, including ready availability (68%; 85/125), qualification (16% ;20/125), reliability (9.6%;12/125) and lastly cost (4.8% ;6/125). A few farmers 1.6% (3/125) gave no reason.

4.1.4 Farmers constraints in accessing veterinary services

Kiambu farmers interviewed cited various constraints which they face in accessing of veterinary services. Affordability topped the list with 48.8% (61/125) of the respondents citing poverty as
the greatest problem hindering their access to veterinary services. Other reasons cited were infrastructure (28.8%; 36/125 of respondents), Inadequate qualified personnel (11.2%; 14/125); 11.2% (14/125) of the interviewed farmers indicated there was no constraints at all (Figure 4.3).

![Pie chart showing the greatest problem to farmers in their access to veterinary service in Kiambu District, 2004.]

1-Poverty (48.8%) 3-Inadequate qualified personnel (11.2%)
2-Infrastructure (28.8%) 4-No constraints (11.2%)

**Figure 4.3: Greatest problem to farmers in their access to veterinary service in Kiambu District, 2004.**

The animal health problems mostly encountered by the farmers in the district included mastitis, tickborne diseases, reproductive diseases and helminthosis in that order. About 52.8% (66/125) of the farmers interviewed singled out mastitis as the most important disease in their animals, 24% (30/125) identified tickborne diseases, 14.4% (18/125) reproductive diseases and 8.8% (11/125) talked of helminthosis. This is illustrated in Figure 4.4.
1. Tickborne diseases (24%).
2. Reproductive diseases (14.4%).
3. Mastitis (52.8%).
4. Helminthosis (8.8%)

**Figure 4.4: Most important animal health problems experienced by farmers in Kiambu District, 2004.**

The literacy levels of the farmers interviewed were generally high. About 49.6% (62/125) of the respondents had gone up to secondary school, 28.8% (36/125) had college education, 18.4% (23/125) had primary school education and only 3.2% (4/125) of the farmers interviewed had no formal education (Figure 4.5).
1- No formal education (3.2%)
2- Primary education (18.4%)
3- Secondary education (49.6%)
4- College education (This includes post-secondary education) (28.8%).

Figure 4.5: Kiambu District farmers' education level, 2004.

4.1.5: Problems faced by animal health service providers

Poverty among the farmers was identified by most animal health service providers (38.1%; 8/21) as a major problem such that their clients could not afford their services. This was closely followed by debts whereby 28.6% (6/21) of the animal health service providers talked of incurred debts after the service had been rendered. The two problems above are closely intertwined. Other
problems cited were unfair competition (19%; 4/21 of the animal health service providers) and poor policies from the Government (14.3%; 3/21). This is as shown in Figure 4.6.

1-Poverty (38.1%) 3-Unfair competition (19%)
2-Debts (28.6%) 4-Poor policies (14.3%)

Figure 4.6: Greatest problems facing animal health service providers in Kiambu District, 2004.
4.1.6 Comparison between government veterinary services and private veterinary services.

Farmers were also asked to compare the services provided by the Government personnel and those provided by the private practitioners on the basis of availability, promptness, courtesy, reliability, service quality, cost and friendliness.

There was high concurrence that the private veterinary practitioners were more prompt (90.4%; 113/125) when called upon to attend cases and they were also more available (90.4%; 113/125) to the farmers. Asked about the cost of veterinary services offered, 61.6% (77/125) of the respondents were in agreement that private veterinary services were cheaper while 30.4% (38/125) said it was government veterinary services. A high proportion (86.4%; 108/125) of the respondents said private veterinary practitioners were more friendly and courteous while 5.6% (7/125) said it was government veterinary practitioners. On the question of who offered a high quality service, 77.6% (97/125) of the respondents said it was private practitioners and 14.4% (18/125) said it was the government veterinary service providers. Most of the respondents also said private veterinary providers were more reliable as opposed to the government practitioners (Table 4.3).

Among the 125 of the respondents, 8% said they were not aware of the government veterinary services in the area. Among the respondents who were aware of the existence of both the government and private veterinary service the comparison is as shown in Table 4.3.
Table 4.3: Comparison between government and private veterinary services in Kiambu District, 2004.

<table>
<thead>
<tr>
<th></th>
<th>Private services</th>
<th>Government services</th>
</tr>
</thead>
<tbody>
<tr>
<td>More prompt</td>
<td>98.3%</td>
<td>1.7%</td>
</tr>
<tr>
<td>More available</td>
<td>98.3%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Cheaper</td>
<td>67%</td>
<td>33%</td>
</tr>
<tr>
<td>Friendly</td>
<td>94%</td>
<td>6%</td>
</tr>
<tr>
<td>Courteous</td>
<td>94%</td>
<td>6%</td>
</tr>
<tr>
<td>High quality</td>
<td>84.3%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Reliable</td>
<td>92.2%</td>
<td>7.8%</td>
</tr>
</tbody>
</table>
CHAPTER FIVE

5.0 DISCUSSION

Sound policy decisions must be based on factual data. This study was intended to avail such data which would be of great value, especially at this time when the Government of Kenya is addressing policy issues in the livestock sector. It is evident from the present study that Kiambu farmers are not getting quality, reliable and affordable animal health services in a timely manner.

From the results obtained, it is apparent that quite a high percentage (86.4%) of Kiambu farmers considers livestock as their main source of income. About 66.4% of the farmers interviewed were in agreement that over half of their household incomes were derived from livestock. All this demonstrates the importance of livestock to the lives of the Kiambu people.

Veterinarians, paraveterinarians and agrovet attendants were identified as the categories of people providing veterinary services in Kiambu District. The results show that paraveterinarians serve the largest percentage of farmers in Kiambu District (56.8%). This is a cadre in the animal health service delivery whose role is often misunderstood and underestimated. Their activities are not regulated. Their growth has been in response to the demand of livestock farmers in the absence of veterinarians. Among the reasons given to explain this finding were that they were readily available and charged less compared to veterinarians. This can be attributed to the high number of animal health technicians (AHTs) released each year into the market from the Animal
Health and Industry Training institutes (AHITIs). There are three AHITIs in the country, namely Kabete, Ndomba and Nyahururu. Each year they produce about 300 AHTs. Most of these AHTs do not get formal employment as the Government which used to absorb them no longer does so. Due to the high competition among themselves and other cadres of veterinary service providers they are forced to charge less for their own survival. Similar studies done by the IDL Group (2003) in Kenya, Philippines and Tanzania indicate a similar pattern. It is recommended that countries should develop or strengthen the capacity to co-ordinate, regulate and supervise the animal health service delivery system according to the OIE guidelines (1995).

The study is in agreement with the OIE evaluation report conducted in Kenya in 2007. The study reported that, in the department of Veterinary Services, the Veterinary Officers comprise of 21.6% (410); Livestock health assistants 66.3% (1257) among others (Hassan and Willis, 2007).

Most of the farmers in the district (52.8%) identified mastitis as the most important animal health problem to their livestock. In their book, Blood et al. (1979) described mastitis as undoubtedly the most important disease with which the dairying industry has to contend in terms of economic loss. Although it occurs sporadically in all species, it assumes major economic importance only in dairy cattle.

Tickborne diseases were also significant in that 24% of the interviewees identified them as the most important. This can be explained by the collapse of dipping programme in the region since the government handed over the formally government managed dips to the local communities. This was done abruptly without due regard to sustainability. Control of ticks has therefore been
left to the individual farmers; this has often not been successful owing to the improper use of acaricides.

The major problems cited by farmers as hindering their access to veterinary services were high cost (48.8%) and poor infrastructure (28.8%). The issue of cost could have arisen due to hitherto poor returns from milk sales. The collapse of KCC resulted in development of an informal market, with hawkers and an array of private processors, trying to fill the existing gap (Omore et al., 2004). However, many of the hawkers and private processors also disappeared or went under, while owing millions of shillings to farmers. Excess supplies and lack of marketing infrastructure in form of financially stable processors resulted in low farm gate prices and disillusioned producers. Subsidised government services, such as artificial insemination, veterinary services and tick control (dipping) also deteriorated. The result was a dairy sector on its knees, farmers unwilling and unable to invest in productivity-enhancing inputs like adequate feeding and improved genetics. Those farmers able to sell their milk received low prices and often milk was collected only on a few days per week, leaving farmers with large surpluses.

Various models have been tried by various countries to resolve the issue of cost of veterinary services. In the Province of Quebec, which is a member of the Canadian Federation, 70 per cent of all veterinarians work in private practice and the remainder are within the various branches of the state veterinary service. It is the largest province and has the second highest population. In 1971, the Province set up a programme called Animal Health Improvement in Quebec (AHIQ). The programme subsidizes transportation costs and keeps the cost of quality veterinary remedies low. The farmer pays a proportion of the private veterinarian’s professional fees that is pre-
negotiated between the province and the veterinary association of Quebec plus the costs of drugs and vaccines (Marsolais and Sanfacon, 1995). The programme ensures all farmers pay the same fees even though their farms vary greatly in distance from the same practitioner. The AHIQ programme is administered by the Ministry of Agriculture but the services are provided by private practitioners. Veterinarians work in clinics of two to ten practitioners to provide both curative and preventive services. In many clinics each practitioner develops a specialist field. The AHIQ-participating private practitioners use only the remedies distributed by the Centre for Distribution of Veterinary Medicines (CDVM) and resell them at a price fixed by the CDVM after an agreed markup on the purchase price (Marsolais and Sanfacon, 1995). State employed veterinarians conduct animal health surveillance, laboratory analysis and control of contagious diseases. They are not allowed to undertake other veterinary work. As a result of this policy, the number of farm visits rose dramatically by the private veterinarians while government contributions fell from 70 per cent in 1971-72 to 40 per cent in 1995. This is a policy that would merit consideration here as it can cushion farmers from being exploited by some of the practitioners who use these loopholes to overcharge farmers.

Animal health service providers cited poverty among the farmers as the greatest problem facing their practices. The low purchasing power resulted in farmers incurring debts despite the willingness to pay for services. This low purchasing power would result in farmers shying away from seeking professional help hence leading to sub-standard services resulting to escalation of animal diseases. This is dangerous as studies conducted elsewhere show that animal diseases pose a particular threat to poor livestock keepers; that their key problem is the presence of disease (Ashley and Nanyeenya 2002; Catley et al, 2002). Morocco is one of the countries which
have tried to assist in the development of the private veterinary practice with a view to cushion the farmers who could not afford the high veterinary costs. It has done this through the introduction of sanitary mandates in the 1980s. The sanitary mandates make use of the private sector to control notifiable diseases. A sanitary mandate is an agreement between the Government veterinary system (GVS) and accredited private veterinarians. Yearly contracts are negotiated between the GVS and individual private practitioners for undertaking specific prophylactic programmes that are planned and subsidised by government in a defined area and under specified conditions. Farmers do not pay for those vaccinations. The practitioner receives the vaccines from the Directorate of Livestock who is equivalent to Director of Veterinary Services in Kenya. At the end of each campaign, the practitioner submits to local authorities a payment claim, a control report and other supporting administrative documents (Fassi-Fehri and Bakkoury, 1995). Private veterinarians who fail to adhere to the terms of agreement are denied future contracts either temporarily or permanently. This policy has encouraged private veterinarians to establish in rural areas. The number of private veterinarians rose from just 10 in 1983 to 134 full time private practice veterinarians in 1995, approximately half of the provinces (Fassi-Fehri and Bakkoury, 1995). It would be worth emulating the above Morocco model to assist private practitioners in Kenya.

Improved delivery and assured access to appropriate livestock services, including health, husbandry, management and extension advice, are predicted to improve livestock productivity to more economic levels as reported in Southern Afghanistan (Schreuder et al., 1995).
Livestock owners in Kenya have recent memory of receiving a wide range of nominally free veterinary services. However, in most cases where goods and services must be paid for, livestock owners are readily persuaded to do so provided that goods and services are consistently available, genuinely wanted, and perceived to be beneficial to the health of the animals and thus to enhancing the livestock owners’ welfare.

Schrender et al. (1995) reported beneficial animal health and financial effects resulting from access to basic animal health in Southern Afghanistan. In districts with access to basic services and remedies compared to districts without, mortality was reduced an average of 26 per cent and 43 per cent in young and adult ruminants, respectively. The basic services consisted of readily available clinic-based and part-time, field-based auxiliary animal health staff, vaccines, remedies and curative treatments. The estimated annual net benefits of the programme were in the order of 500 per cent of the costs involved and amounting to some US$120,000 per district. Further, there are many studies of the losses caused by individual diseases, groups of diseases or disease complexes and the benefits attendant on their control. Recent examples include: studies on tsetse and trypanomosis control in Ethiopia (Jemal and Hugh-Jones, 1995; Swallow et al., 1995); the combination of different tick control strategies with immunisation against Theileria parva in Zimbabwe (Peagram et al., 1996); and Kenya (Mukhebi et al., 1995). All these studies document significant loss reductions and net financial benefits and hence the need to revive programmes meant for disease control in Kiambu District, e.g. tick control.

A government’s operational capacity and effectiveness can be improved by rationalizing the delivery of public good veterinary services while divesting those services which can be
commercialised and which benefit individual owners of livestock (FAO, 1997). The overall aim is delivery of efficient and effective animal health services, with three parties directly involved, namely, livestock owners with their animals, private animal health care providers, and government agencies. A fourth group, the consumers for whose benefit animals are kept and their products marketed, are indirectly involved. From the consumers' point of view, it is imperative that the concerted efforts of the three other parties result in sufficient output of good quality products at reasonable prices. One way of achieving this is by focusing on what each party is best able to contribute, which is: livestock owners raising livestock; health care providers delivering appropriate services; and government agencies securing overall stability through regulation, monitoring and providing an enabling environment. The right policies need to be put in place to enable this for the benefit of Kiambu District farmers.

The constraints in animal health service delivery are not unique to Kenya. A study conducted in Nigeria pointed to institutional constraints as the major limiting factor, and this arose from a general lack of understanding on the part of various participants of the basic principles governing the privatisation policy. The result of this was the adoption of the wrong attitudes that had limited the rate and level of progress that had been achieved, since the introduction of the policy in Nigeria (Odeyemi, 1994). The study further showed the level of viability of private practices varied from one place to another in the country, and it was possible to determine the level of viability of different areas by looking at the prevailing socio-economic conditions. Therefore, it was expedient that the appropriate model of privatisation for the different parts of the country be determined only after area-specific viability studies nation-wide (Odeyemi, 1994). In Kenya, a recent study was designed to identify opportunities and options available for Kenya Veterinary
Association Privatization Scheme (KVAPS) to realize its current objective of promoting sustainable private veterinary services (KVAPS, 2005). The study included an evaluation of the "viable practice unit" concept as a possible approach in enhancing sustainable private veterinary services. It covered selected districts in both high/medium potential areas (HMPAs) and arid and semi-arid lands (ASALs). Among the findings of the study were:

- Existing service delivery models range from outright illicit models to professionally managed models. Based on economic/financial, policy/legal, organizational and social considerations, the service delivery models considered as options for support in HMPAs were Private vet model, vet-Chemist model, (Animal Health Technicians) AHT model, cooperative society model, specialized service delivery model (e.g. lab services, livestock breeding, animal feeds production, vaccine production), meat processing, livestock trade and a consortium or a cooperative society of vet professionals (Isiaho et al., 2004). In ASALs the models considered were Vet-AHT-Community Animal Health Workers (CAHW), vet-chemist, AHT model and vet model.

The above study recommended that the concept of viable practice units (VPUs) needs to be addressed holistically in Kenya where there are completely different scenarios as witnessed in HMPAs and ASALs. It does not just depend on livestock numbers or units that can sustain a private veterinary practice in a defined area, but also depends on many factors including nature and structure of production systems, effective demand for services, availability of a functional legal system, effective monitoring and evaluation systems and entrepreneurial skills, among others.
The results obtained also agree with the recent OIE evaluation report conducted in Kenya in 2007. Among the conclusions were that the role of private veterinarians in Kenya in the delivery of VS is highly appreciated. That the private veterinarians continuously interact with the producers and they are considered as main VS providers in high livestock potential areas. It further reported that the private veterinarian in the area is often the first to report disease incidence to the district veterinary officer or the government Veterinary Officers (OIE, 2007).
CHAPTER 6

6.0 Conclusions and recommendations

6.1 Conclusions

Paraveterinarians, veterinarians and the agrovet attendants were identified as the various cadres offering animal health services in the district.

The study shows several problems are still being encountered both by the livestock farmers and the animal health service providers in the district. The study reveals that poverty among farmers, debts; unfair competition and poor policies are among the problems experienced by the animal health service providers. On the other hand livestock farmers cited affordability, poor infrastructure and lack of qualified personnel as some of the problems hindering their access to quality and timely services

The study shows private paraveterinarians were the cadre of the animal health service providers mostly consulted by farmers. The reasons cited were that they are readily available charged less compared to veterinarians and they are more reliable.
6.2 Recommendations

As with the past changes in the veterinary profession’s role in society, we will be called upon to change our approaches and thinking. Clearly, there will be a number of difficulties in this transition. However, there are a number of opportunities as well, and the right policies will be important tools in our future activities.

It is hoped that this study will prove informative and relevant to researchers and policy makers seeking ways to better serve the millions of small-scale livestock keepers currently suffering under the effects of a range of livestock diseases in Kenya.

- The present study clearly shows that paraveterinarians are essential and play a major role in the delivery of animal health service in Kiambu District and by extension in other high potential areas in Kenya and hence there is a need for them to be regulated by law.

- The right policies need to be put in place so as to make farmers in Kiambu District to easily afford quality veterinary services. Models which have been practiced and worked elsewhere can be used e.g. the ones cited in the study from Quebec province of Canada. In 1971, the Province set up a programme called Animal Health Improvement in Quebec (AHIQ). The programme subsidizes transportation costs and keeps the cost of quality veterinary remedies low. The farmer pays a proportion of the private veterinarian’s professional fees that is pre-negotiated between the province and the veterinary association of Quebec plus the costs of drugs and vaccines. The programme ensures all
farmers pay the same fees even though their farms vary greatly in distance from the same practitioner.
7.0 REFERENCES


The IDL Group (2003). Community Based Animal Health Workers- Threat or Opportunity?, The IDL Group, P.O.Box 20, Crewkerne, U.K.


*Veterinary Surgeons Act* (1953). Chapter 366. An Act of Parliament to make provision for the registration of Veterinary Surgeons and for other matters incidental to and connected with the practice of veterinary surgery.


### 8.0 APPENDICES

Appendix I- Kiambu District Administrative units 2004

KIAMBU DISTRICT ADMINISTRATIVE UNITS

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KIAWAROGA
MABROUKE
BIBIRIONI
KAMIRITHU
LIMURU TOWN
NDERU
NDIUNI
THIGIO
TIEKUNU
KABUKU
NGECHA
NGECHA
GATIMU
RIRONI
RIRONI
ITHANJ
RED HILL
Appendix II:

UNIVERSITY OF NAIROBI-DEPARTMENT OF PHPT.

AN ASSESSMENT OF THE ROLE OF DIFFERENT CADRES OF PRIVATE ANIMAL HEALTH
SERVICE PROVIDERS IN ANIMAL HEALTH SERVICE DELIVERY TO THE DAIRY
FARMERS IN KIAMBU DISTRICT, KENYA.

FARMER INTERVIEW ON VETERINARY SERVICES.

Interviewer: -------------------------------
Survey (household) No: ------------------------------- Date: -------------------------------
Division: ------------------------------- Location: -------------------------------
Sub-location: -------------------------------
Address (family name): -------------------------------
Interviewee: -------------------------------
Relation of interviewee to the head of the household (tick one): 1. Head 2. Spouse 3. Son
4. Daughter 5. Employee 6. Other (specify) -------------------------------

A) Please fill the number of each of these animals in the household: -

2. Beef cattle------------------5. Poultry------------------7. Other (specify)-------
3. Goats------------------

B) Main source of income (tick one):

1. Livestock
2. Crops.
4. Salaried employment.

5. Other (specify)-----------------

C) What proportion (%) of household income comes from livestock?

1. 80-100
2. 50-79
3. 25-49
4. Below 25

D) What proportion (%) of household income comes from milk?

1. 80-100
2. 50-79
3. 25-49
4. Below 25

E) Which categories of animal health service providers are you aware of in the veterinary profession?

1. Veterinarians
2. Paraveterinarians
3. Don’t differentiate between 1 & 2
4. Other (Specify) ---------------

F) Where do you get information about animal diseases and how to treat them? (Tick appropriate answer(s)

1. Veterinarian.
2. Animal Health Assistant.
3. Agrovet owner.
4. Over the counter advice.
5. Other (specify)----------------------

G) Have your animal/s ever fallen sick? Yes / No

H) When your animal gets sick, whom do you go to for assistance? (tick appropriate answer(s))

1. Government Veterinarian
2. Private Veterinarian
3. Government Paraveterinarians (e.g AHTs)
4. Private paraveterinarian (e.g AHTs)
5. Nearest Agrovet attendant
6. Other (specify)-----------------------------

I) Give the reasons for your preference to your answer above.

1. They are cheap.
2. They are readily available.
3. They are more qualified.
4. They are more reliable.
5. No reason.
6. Other (specify)--------------------------

J) Apart from treating the animal does the practitioner offer other extension services? Yes / No.

K) How do you rate their service?

1. Good.
2. Fair.
3. Poor.

L) What is the most important health problem that you encounter in your animals? (Tick one).

1. Tickborne diseases
2. Reproductive diseases
3. Mastitis
4. Helminthiasis
5. Other (specify) -----------------------------

M) Which drugs do you frequently buy?

1. Acaricides
2. Dewormers
3. Antibiotics
4. Antiprotozoa
5. Vaccines
6. Other (specify) -----------------------------

N) What do you consider as the greatest problem affecting your access to veterinary service?

1. Too expensive.
2. Infrastructure
3. Inadequate qualified personnel.
4. Other (specify) -----------------------------

O) How often have you bought veterinary drugs in the last one year? (Tick one)
P) Why do you choose the shop you buy drugs from? (Tick)

1. Price of goods
2. Quality of advice
3. Credit
4. Nearest shop
5. Other (specify) ........................................

Q) Do you ask for advice on drugs and disease from the shopkeeper? Yes / No

R) Does the shopkeeper offer advice without being asked? Yes/ No

S) How do you rate the service from the said shop? (Tick one)

1. Good
2. Satisfactory
3. Poor.

T) Comparing the services of Government Veterinary service and that of Private Veterinary Practitioners, who would you say is:

More Available ........................................Government/ Private
More prompt .........................................................Government/Private
Cheaper ..............................................................Government/Private
More friendly ...........................................................Government/Private
Has more courtesy ..................................................Government/Private
Has higher quality service ............................................Government/Private
More reliable ............................................................Government/Private

U) How much do you spend on veterinary care per year? Ksh ------------------------

V) What's your education level? (Tick one):

1. No formal education.
2. Primary education.
4. College education.
5. Adult education.
6. Other (specify) .........................................................
APPENDIX 111

UNIVERSITY OF NAIROBI-DEPARTMENT OF IHPT.

AN ASSESSMENT OF THE ROLE OF DIFFERENT CADRES OF PRIVATE ANIMAL HEALTH
SERVICE PROVIDERS IN ANIMAL HEALTH SERVICE DELIVERY TO THE DAIRY
FARMERS IN KIAMBU DISTRICT, KENYA.

PRIVATE ANIMAL HEALTH SERVICE PROVIDER INTERVIEW.

Interviewer: -----------------------------
Survey No: -----------------------------Date: -----------------------------
Division: -----------------------------Location: -----------------------------
Sub-location: -----------------------------
Address: -----------------------------
Interviewee: -----------------------------

Service provider details.

Name: -----------------------------
Sex: Male / Female
Age: -----------------------------

A) Qualification (tick one): 1. Veterinary surgeon.
2. Paraveterinarian.
B) Education level?:
1. University
2. College
3. Secondary
4. Primary
5. No formal education
6. Other (specify) -----------------------------------------------

C) What type of services / products do you supply? (Tick)
1. Clinical services
2. Artificial insemination
3. Animal health products
4. Animal feeds
5. Human pharmaceuticals
6. Seeds
7. Hardware
8. Other (specify) --------------------------------------------------

D) What are your sources of animal health products/ information?
1. Drug suppliers
2. Posters
3. Drug leaflets
4. Veterinarian
5. Animal health assistant

E) What animal health products do you stock?

1. Antibiotics
2. Dewormers
3. Acaricides
4. Antiprotozoas
5. Trypanocides
6. Vaccines
7. Other (specify)

F) Give an estimate of number of farmers you see each day? --------------.

G) Do you charge consultation fees? Yes / No.

H) If the consultation charge is charged, how much? Ksh ------------------------------

I) How do the farmers contact you (tick the appropriate answer):

1. By phone
2. Personal visit.
3. Sends agent.

J) What means of travel do you use to attend the case?

1. Foot
2. Bicycle
3. Motor-cycle
4. Public transport.
5. Personal vehicle.
K) Who meets the travelling costs?

1. Farmer
2. Self
3. Cost sharing.

L) What proportion (%) of farmers in each of the following income categories do you serve?

1. Low income earners  
2. Middle income earners 
3. High income earners

M) Please rank-order the three most important animal health problems farmers mostly seek assistance for from the following list? (Use 1 to indicate the most important, 2 the next most important, e.t.c).

Tickborne diseases
Respiratory diseases
Reproductive diseases
Mastitis
Gastrointestinal diseases
Traumatic injuries
Other (Specify)

N) Do you usually have follow-ups? Yes / No.

O) If the answer above is yes, who prompts you to do so?
1. Self

2. Farmer

3. Other (specify).

P) Do you keep records of the diseases you treat? Yes / No.

Q) Do you hand over monthly/yearly reports to DVO / VO? Yes / No

R) What do you consider as the greatest problem affecting your practice? (Tick one).
   1. Infrastructure
   2. Poor policies
   3. Poverty among farmers
   4. Debts
   5. Lack of credit
   6. Unfair competition
   8. Other (specify) ------------------

S) How long have you been practising? ------------------.

T) When did you set up the clinic / Shop? ------------------.

U) Are you aware of the existence of the Kenya Veterinary Board? Yes / No.

V) Are you registered with them? Yes / No.
W) What do you consider as the greatest problem to the farmers hindering their access to quality veterinary service? (Tick one)

1. Poverty
2. Illiteracy
3. Inadequate extension services
4. Lack of market for their products
5. Lack of credit
6. Poor infrastructure
7. Other (specify)-----------------------