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A case study of the management of veterinary animal health services in the Erstwhile Bophuthatswana: Relevance to rural development in South Africa

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Abstract

This paper is most important from the perspectives of management and administration of animal health services delivery, veterinary extension, extension education and rural development. Its importance basically, underscores the all embracing fact and reality of the failure of animal health services in the erstwhile Bophuthatswana (Bophuthatswana was a former Black homeland of apartheid South Africa) and, exemplifies that the animal health services of the Democratic Republic of South Africa, has to learn from this case study, because its performance, in respect of animal health services via its nine agricultural veterinary services directorates, post 1994 has been very poor, uneven and dysfunctional. This paper, therefore, captures and enunciates the salient findings of a study undertaken, in 1992, in respect to Animal Health Services: Customer Needs and Perceptions. The study is further reinforced by virtue of the recommendations made by the researcher, in a subsequent 2008 study. All of this bears significantly upon extension and rural development in the context of democratic South Africa.

Keywords: Development, Erstwhile, Extension, Perceptions, Livestock

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1. Introduction

The study was commissioned on behalf of the Directorate of Veterinary Services of the erstwhile state of Bophuthatswana. The study would provide some empirical evidence on some of the parameters of uneven development and, the failure of agricultural training programmes; coupled with ascertaining possible ineffective management techniques, and administration, in terms of ineffective service delivery of veterinary extension by state / governmental institutions to the farming and livestock owners of the erstwhile Bophuthatswana, with particular reference to resource poor farmers. This would allow agricultural and veterinary authorities in democratic South Africa to apply the lessons learnt from this case study, in order to deal with the manifest problems that confront the animal health services, after nearly twenty years of democracy.

2. Purpose of the study

In this regard, an independent researcher within the erstwhile Bophuthatswana Agricultural Development Corporation's (Agricor) Research Section (I. Schmidt) was entrusted with the task in July 1992. The brief given to her by the researcher, who was a state veterinarian within the Bophuthatswana Veterinary Services at that time, was essentially, for purposes of making some assertions within the ambit of his PHD Thesis – titled, "The Impact of Political Legitimacy on the Management of Veterinary Services in the Former State of Bophuthatswana" (Karodia, 2008). The brief of the study consisted of two parts, as follows: - (1). To identify the Bophuthatswana livestock owner's perceptions and needs with regards to animal health services and to (2). Assess the demand and availability of patent stock remedies at service centers.

The research emanating from the above brief had to provide answers to the following questions:

- Do animal health services provide the kind of services needed by the farmers?
- Which of the services offered were most needed and used by farmers?
- What were the animal health, – related services needed by livestock owners, but not offered?
- How did the livestock owners feel about the provision of patent stock remedies at service centers?
- How frequently did livestock owners make use of the animal health services?
- What were the biggest problems of the livestock owners regarding animal health, and how did they see Agricor and the Directorate of Veterinary Services assisting them?
- What was the nature and extent of stock remedy provision by service centers?

The time frame of the study was from April to July 1992 (4 months)

3. Report format of the study

The report format of the study entailed eight separate sections. The first section discussed the national findings and aimed at providing information to strategists and policy – makers. The remaining seven sections

were district discussion documents. These could have been used by the Agricor district office staff to develop their own strategies or change / adjust the services they provided. In some cases, districts with very similar characteristics were grouped together in order to save time and money.

4. District summaries

In addition to the national overview, summaries of the survey results for each district or combination of districts were made available to the organization as a whole. These documents were aimed at providing the districts with some basic statistics about the livestock owners' perceptions in their area. Ideally, these should have been interpreted and used by the district staff involved in the provision of animal health services and also by extension staff.

5. Target population

The target population comprised of livestock owners living in the rural areas of the former Bophuthatswana. The study population was reduced to livestock owners who brought their livestock to be vaccinated against anthrax. This was due to practical and cost considerations. These vaccinations were compulsory and were done nationally from May to June each year.

6. Sample size and interview procedure

The minimum sample size required per district or combination of two districts was 200. In cases where two districts were combined, 100 livestock owners were interviewed in each. Two - stage sampling techniques were used for this study. First, a random sample was drawn from all the vaccination points, scheduled for May and June 1992. The number of points selected per district varied from 10 and 20 depending on the total number of questionnaires required per district.

During the second phase of sampling, a number of livestock owners were randomly selected from each sampled vaccination point. The number of livestock owners selected depended on the total number of questionnaires needed for a particular district, and the number of livestock owners who used a particular vaccination point, in most cases, 10 livestock owners were interviewed at each selected vaccination point. If vaccinations did not go ahead as planned, the completion of questionnaires was postponed with the vaccination. In cases where postponement was not possible, another vaccination point, close to the one in question, was used as replacement, if neither of these options was practical; the required questionnaires were completed during stock inspection / brucellosis testing periods.

7. Fieldwork

Fieldwork was conducted by senior veterinary health officers and coordinated by them in each district. The animal health officers and, in some cases, extension officers completed the questionnaire in the field. Field workers, trained and hired, completed the study for the Molopo and Ditsobotla districts, as animal health officers were unable / unwilling to do the survey (A problem that is still being experienced in many situations in South Africa, and has to be dealt with decisively by appropriate sanctions by government, in this regard). Naturally, some problems were encountered, but these were solved and did not impinge upon the study as a whole.

8. Methodology

The methodology was chosen against the background of limited time and money. Its biggest strength was that it was a low – cost survey, done within a relatively short period of time. However, the general information was not as high as it would have been if traditional and highly controlled methodologies had been used. Despite its slightly lower quality, the data was still useable and provided a good insight into the situation on the ground and particularly in the rural areas. The positive aspects of this methodology in terms of its strong performance in three respects were as follows:

- Its biggest strength was its cost – effectiveness. The cost per questionnaire was only R 5, 75 as compared to R 16, 80 for a highly controlled study of similar scope and size.
- Relatively very little time was needed to execute this survey, and the study was completed in four months.
- Another advantage of this methodology was that the survey provided an opportunity for the livestock owners to give ‘formal’ feedback to the animal health officers. This form of direct feedback reduced the need for a report filled with statistics, since dedicated officers could use the information they had obtained immediately after completing the interviews.

Still, this methodology, like most methodologies, had its weaknesses. The most important of these were:

- The study population only represented approximately 79 percent of the target population (Note: that the calves are not usually vaccinated and 3 percent of the cattle were excluded when calculating this percentage).
- Very little quality control could be carried out, as the study was done in different parts of the erstwhile country.
- The survey placed additional pressure on the animal health staff, because of their other routine duties.

Despite these negative aspects, the quality of the data was still sufficiently high. This is confirmed by internal consistencies and findings that correspond with these or other studies. The only data that had to be excluded, because of poor quality, were those received from the district of Ganyesa. Their data was replaced with extrapolations of the Kudamane district data. The survey and sampling design required that sample sizes be adjusted, using weights, in order to get proportional representations. These proportions were based

on livestock owner statistics as summarized in the Directorate of Veterinary Services, Annual Report, for October 1990 to September 1991.

9. Data analysis

The SAS analysis package was used for the analysis of data. Frequency counts, percentages and chi square were the main statistical tools used. All percentages were rounded off to the nearest integer to facilitate easy reading. The methodology chosen for this study was the most appropriate, given time and financial constraints. (The questionnaires cannot be scrutinized by the reader, because they are included as appendices A and B of the PHD Study, completed by the writer in 2008 and, can be accessed from the Study - Karodia, A M. (2008) - The Impact of Political Legitimacy on the Management of Veterinary Services in the Former State of Bophuthatswana. The reader is referred to the Bibliography of this paper, for ease of reference).

There were over 2, 000 respondents. Open – ended questions were utilized. The writer cannot provide all the data that emanated from this survey, due to its length and volume, nor will tables and graphs be presented as was done by Schmidt in the survey. In this regard, “an executive summary of the 1992 findings is provided and lastly, the conclusions and recommendations of the survey and, those made in the 2008, PHD Thesis will be provided and presented as captured by the researchers (Schmidt and Karodia, 1992: 47 – 54; Karodia, 2008).

It must be acknowledged that, perhaps this survey is narrowly based in that, it looked at livestock farmers only and did not cater for those farming with different agricultural frames of reference. However, this does not alter the picture and supports the views of the researcher, that agriculture was a failure in the erstwhile homeland of Bophuthatswana. This survey provides more empirical evidence and data on the status of agriculture, extension and the processes of uneven development. The researcher is also of the opinion that livestock farming was the most important farming activity in erstwhile Bophuthatswana, which was neither appreciated by the agricultural sector nor by the policy – makers within the agricultural sector. Therefore, the findings and conclusions of this survey / study weigh heavily upon the thought processes and general criticisms, as outlined and advanced in this paper.

10. Executive summary – Salient findings

The results of the Service Centre Evaluation indicated that of all of the services offered by Agricor, animal health services were the most widely used. Yet, very little was known about these services and their problems. In April 1992, the Directorate of Veterinary Services, Department of Agriculture (Karodia, A.M. Principal State Veterinarian), requested the study on the perceptions and needs of the users of animal health services (in support of his PHD dissertation). The study, therefore, became part of the official research programme of Agricor, in order to correlate the assertions made by the researcher. The perceptions and felt

needs of livestock owners need to be seen against the backdrop of the structure of animal health services in the erstwhile Bophuthatswana homeland. The support specialists were within the Department of Agriculture and the operational staff within Agricor. The tension and communication problems that emanated from the arrangement led to considerable management confusion and friction, which had an influence on the quality of the service that was provided.

It was not only the structural arrangements, but also the distribution of staff and infrastructure that influenced the quality of state – provided animal health services. Serious staff shortages were identified in the western region, particularly in Taung, Kudumane and Ganyesa. Moretele, in the eastern region, needed more animal health officers. The central region had very high numbers of large stock / crushpen ratios and could have benefited from the erection of more crushpens. Districts with high small stock / diptank ratios were also identified. However, as pointed out in the recommendations, building more dipping tanks might not have been the most appropriate answer. Most livestock owners found it difficult to get access to veterinarians and veterinary clinics. Districts in the western region needed at least two veterinarians each. Once a district had more than one veterinarian, the mobile clinic concept could have been the most effective and appropriate way to address problems related to clinic access. Ninety seven percent of the livestock owners used at least one of the animal health services, once a year or more often. Of these users, 62 percent were dissatisfied with one or more of the services they used. The highest level of dissatisfaction was in the central region with 26 percent, they were followed by the eastern region with 31 percent and the western region with 29 percent.

The three animal health services most utilized were vaccinations; advice on the treatment of illnesses and diseases; and assistance with dipping. The regional usage patterns and levels of satisfaction for all these services, except dipping, were analyzed. In the eastern region, where state assistance with dipping was limited to facilitation and advice, the livestock owners did not use the service regularly and many of those who did, were dissatisfied. Possible ways of addressing this problem are made in the recommendations.

Nationally, only 46 percent of livestock owners received training from the state, in at least one of the livestock – related aspects tested in the questionnaire. The regional variations were quite high. Sixty seven percent of the livestock owners in the central region received training in at least one of the listed aspects. In the western and eastern regions, these percentages were 46 and 32 percent respectively. Training in general disease treatment was received by only 13 percent of the livestock owners. At the same time, 64 percent felt that they needed training in this regard.

The low percentages of livestock owners who received training in animal - health related activities could be symptomatic of the lack of direction and poor leadership of the Directorate of Veterinary Services, which had a minimum impact upon both field staff and clients. Further, animal health officers had to spend most of their time doing regulatory and control functions, which had a minimum impact upon development. This left little time for training and other disease – prevention activities. It was recommended that the operational staff within Agricor develop strategies to bring greater balance between preventive and curative animal health services. The Taung district is a good example of a district where some progress was made in this regard.

In conclusion, it can be said that this particular paper identifies a variety of patterns and problems related to the management of animal health services. However, what emerged clearly is that animal health was a very high priority for most livestock owners. Within this context it was hoped that animal health services must be given more strategic importance in South Africa, as part of a livestock and extension development strategy. It is obvious that, from the data that emerged from this study, it could be confidently asserted that other sectors within agriculture (in the erstwhile Bophuthatswana) were also in disarray and, if they were to be surveyed, the same or even worse patterns would have emerged" (Schmidt and Karodia, 1992: 1 – 11).

11. Conclusions and recommendations

11.1. Staff and infrastructure

All districts in the western region, except Thaba Nchu, were facing serious staff problems (Thaba Nchu was a very small district, with a very small animal population). Their animal health officers provided a service to nearly twice as many livestock owners as the officers in other regions. This did not only increase the work load of individual officers, but also adversely affected the quality of the service they provided. The same applied to the veterinarians in these districts. If one considers the fact that the western region was the main livestock producing area in the erstwhile Bophuthatswana, it becomes clear that attention should have been given to this problem without delay.

The distribution of animal health – related infrastructure did not have a clear pattern, as shown by the distribution of staff. The number of clinics per district appeared to have had little influence on the farmers' perception, on the ease with which the facility could be reached. This indicated that a need existed for more mobile clinics rather than more clinics. Also needed were regular visits by a state veterinary surgeon to fixed points in the district, on specified days. The mobile clinic concept would have been most useful in the western region and could best be implemented if there were at least two veterinarians per district. Crushpen / large stock ratios indicated that priority needed to be given to the erection of crushpens in Ditsobotla, Molopo and Lehurutshe. Taung and Mankwe also had high ratios for crushpens, but the situation was not as serious as in the central region. In Kudamane and Taung, where small – stock dipping was compulsory, consideration should have been given to increasing the numbers of small stock dipping tanks. However, such a decision could have been taken only after alternatives such as promoting the use of injectable dips, could have been taken into consideration (The researcher feels it necessary to mention that trials with injectable dips were carried out and that, in addition to professional problems of missing animals, the exercise proved to be very expensive).

In Madikwe where dipping of small – stock was not compulsory there was also a high small – stock / diptank ratio. The erection of more tanks would have been entirely dependent on the needs and practices of the small stock owners in that area. It is useful to point out that a high percentage of livestock owners in the eastern region were dissatisfied with the nature of the dipping support provided to them. One of the reasons for these complaints was the nature of the service and the availability of the diptanks. The answer to these

complaints was unlikely to be found in copying the type of dipping services available in other regions, as this region had unique needs and livestock owners. This was certainly a point where strategic thinking was necessary.

11.2. Access to services

In general, most livestock owners found it difficult to get access to veterinary clinics and veterinarians. The main reasons given for this were related to the distances to the service and poor road and transport networks. As already pointed out there was no clear relationship between the number of clinics per district and livestock owners perceptions on the ease of access to those services. More than 55 percent found it difficult to get help from animal health and extension officers, when needed. This was an unacceptable percentage. There was no distinct relationship between staff members and the farmers' perceptions of ease of access to these staff members. This could have been related to people's perceptions and expectations regarding access to services. In the western region, where the state initiated relatively few development projects, people were often only too glad to receive the crumbs, and would therefore be happy with a less regular service.

11.3. Livestock ownership

According to livestock ownership patterns, only 25 percent of these owners had more than 20 head of cattle in their herds. The majority of the clients who made use of animal health services, had small herds and required services geared towards small herds.

11.4. Provision of patent stock remedies

Nearly all respondents felt that they required a service that provided them with patent stock remedies at cost price. The main benefits of retailing medicines at service centers were that remedies became more accessible and that there was a direct link between recommendations made by animal health officers and the available remedies. When considering the turnover of medicines at service centers in the western region, which was R45, 700 in six months. It indicated that the service was underutilized when considering the number of farmers in the area.

11.5. Skills development

Training of livestock owners is seen as one of the key elements in the growth and development of the livestock industry. The results of this survey indicated that very few livestock owners received training on key livestock – related aspects. The respondents in the central region received the most training (This was previously explained). They were followed by the western region and finally by the eastern region. The two aspects listed in the questionnaire that were most related to the functions of animal health officers, that is, general disease treatment and preparation of specimens, were only enjoyed by few livestock owners. In the

case of general disease treatment, less than 15 percent of the livestock owners received training, and yet training in general disease treatment was the one aspect that most livestock owners felt that they needed training in.

One gets the impression that animal health officers spent so much time on unnecessary regulatory and control functions, that relatively little or no time was spent or left for training. As a result, livestock owners were not equipped with the skills that they needed to improve the health of their herds. Serious attention needed to be given to shifting the focus of their work from regulatory and curative to more preventive work. This commendable task was carried out in the Taung district and was solely due to the veterinarian stationed in this district and not due to the support of the Directorate of Veterinary Services or, for that matter, of the system. It must be noted that a shift to a more curative approach would only have been effective if staff shortages were meaningfully addressed.

11.6. Dipping

The vast majority of owners felt that they needed help from the state with dipping services. Most livestock owners in the central and western regions made use of this service and were satisfied. In the eastern region, were the state, only facilitated dipping 44 percent of those who made use of state help were unhappy with the service. They were mainly unhappy with the nature of the service and the distribution and availability of infrastructure. More strategic thinking needed to be done in this regard. However, the answer to the high level of dissatisfaction was not necessarily found in 'cloning' the type of dipping services provided by other regions, as the type of livestock owner and diseases profiles are, and were different.

11.7. Vaccination

The vaccination service provided by the state was the most commonly – used service. It was also the service with which most users were satisfied. This is obvious, because scheduled vaccinations, for example, rabies, anthrax and other diseases are controlled and regulated by international codes via the Organization International Epizootics in Paris, France. These vaccinations that were controlled and provided free of charge by the former Bophuthatswana state were important because of the international movement of animals and also because of public health implications and considerations, but generally had no impact upon production parameters of livestock.

11.8. Advice on the treatment of illness and diseases

Advice on the treatment of illnesses and diseases was the second most – used service. It was also the service, with the second highest number of dissatisfied, users. This service was closely related to training and, therefore, more attention had to be paid to this area on the basis that it is closely related to skills development and can thus form the very basis of future training programmes.

11.9. Assistance with births and operations

Improved nutrition was the animal health – related need of most livestock owners, particularly, in the western region. These needs were related to the supply and access to fodder and supplements. Many actually wanted the state to give or heavily subsidize these inputs. The fact that this was not possible does not mean that no attention should have been paid to this need. At the root of the problem was, the overstocking problem and also the episodes of drought. There are two ways in which adequate grazing can be addressed: through stock reduction (Which was not only a sensitive issue, but an objective difficult to achieve) or by increasing the amount of food available. The second opinion was not explored extensively. Since it coincided with an expressed need of livestock owners, ways of tackling the overgrazing problem from this perspective, needed to be considered. The supply of fodder and supplements through service centers, at cost price, would have been a big move in this direction. Making this service available to more livestock owners, particularly during droughts, should have been a strategic priority. Water – related needs and problems featured as the second highest on the priority lists of the livestock owners. In the central region, the need for water – related infrastructure was even higher than the national average. This need was not known to the front – line staff and efforts in the future must be made to address it in a comprehensive and sustainable manner.

12. Recommendations from the 2008 study for democratic South Africa and other African countries

From the evidence presented as a result of the above study and further recommendations from the 2008 PHD study are highlighted. These recommendations are made in respect of improving veterinary services policy, extension and research within the context of South African agricultural policy. It must be first acknowledged that in the erstwhile homeland of Bophuthatswana and even today in South Africa, veterinary extension and general extension is and has been a mammoth failure. The fact that, a large part of the erstwhile Bophuthatswana now forms part of the new North West Province of democratic South Africa, these recommendations apply to the new North West province of South Africa. It is hoped that at least some of these recommendations will be implemented by the North West Provinces, Directorate of Veterinary Services within the Department of Agriculture. The recommendations that follow are not meant to presume upon the wealth of experience which organizations themselves have on practical questions. For that reason the recommendations are at a general level.

- It is recommended that the New Institutional Economics (NIE) be given serious consideration by governments in respect to the structural reform of the state veterinary services, by means of consensus by all role players. It would be feasible to look at the model critically and to modify some of the features to suit local conditions, before any implementation is considered in a regional or national context, as a component of a management strategy to improve the income position of the poor, thus allowing the rural periphery to re – emphasize the growth of primary sector exports.
- It is generally accepted that a veterinary service in Africa will be ineffective if staff salaries represent more than 60 percent of its budget (This is the case in South Africa and other African nations), leaving

less than 40 percent for veterinary supplies and transport. This has led to the collapse of many African State Veterinary Services. It is therefore recommended that serious consideration be given to the reversal of this situation, and that, budgets be so constructed, allowing the service delivery, the supply of inputs, veterinary extension and training as priorities.

- African states in general but more importantly South Africa must be engaged in more interesting and applicable experimentation, in the hope of finding new models for animal health systems that will be better adapted to contemporary reality.
- The need to retain a central role for Para – professionals in any new delivery system and the desirability of competition between the veterinary and Para veterinary professions is a recommendation that must be pursued and considered by African governments.
- The importance of developing state contracting procedures for assisting the private delivery of animal health, given the shortages of veterinarians in the Republic of South Africa, that will avoid the problems of local monopoly and also bring about the restrictions on the influx of foreign trained veterinarians.
- The strengthened role that the new and strengthened professional associations will have to play in this area, if collective goods and the public interest are to be served. Professional associations it is recommended must be very seriously engaged in respect of their participation.
- The amelioration of poverty in the rural areas of South Africa and Africa as a whole must be addressed in respect of veterinary services moving away from being a regulatory service to a service oriented towards veterinary extension and training. It must pay special attention to preventive disease control and the development of the resource poor farmer. This is a crucial recommendation and must be looked at seriously by government.
- It is recommended that the government of South Africa address the critical shortage of veterinary professionals, veterinary structures, veterinary laboratory capabilities in rural areas, the construction of more rural and mobile clinics and veterinary infrastructure across the provinces.
- Salaries must be improved drastically in order to avoid the reliance on expatriate professionals and to retain veterinary professionals who are immigrating to the developed nations of the world. This will also allow for recruiting students to pursue a career in the veterinary sciences.
- It is also recommended that successful state veterinary services in the continent of Africa be engaged, in order to learn best practices in respect of livestock production and the experiences of resource poor farmers. This will allow for the understanding of local indigenous culture and its application to modern veterinary intervention strategies. African countries have much to offer South Africa, towards the development of agricultural systems and the general improvement and delivery of services, extension and the modalities for training. It is strongly recommended that these issues be pursued by the democratic government of South Africa.

13. Research findings

A number of research findings emanated from the study as a whole. The critical outcomes of the research are tabled as follows:

- The study findings indicate that a regime such as the erstwhile Bophuthatswana government would have reached the limits of reformism, from its very inception as a so – called independent entity and state and thus, will have entered into a fiscal, administrative and discontinuity crisis. The study confirms these assertions and verifies these considerations.
- Land reform and rural development programmes that forment collective action and a consciousness can be effective mechanisms in the creation of social articulation and mass based democratic regimes. In this regard, the study clearly shows that this was not achieved in the erstwhile homelands as a whole, and is not being achieved in democratic South Africa, after nearly twenty years of democracy and that the situation is deteriorating even further.
- The contradictions of the agrarian question and unequal development within all of the former homelands, against the equation of food and massive poverty, can only be expected to deepen in South Africa. (Poverty and the lack of economic growth, unemployment, inequality, instability has deepened in democratic South Africa, under the present government and the situation is deepening and worsening. It is also exacerbated by the world economic recession currently).
- The study confirmed that extension and training within agricultural development can play a pivotal role in accommodating change through the effective development of a vast, and hitherto untapped, reservoir of human resources in the territory formerly defined as Bophuthatswana.
- Black upliftment and advancement in the large rural periphery in terms of the findings of the study, must continue and confirms the view that non – formal education, extension, training and agricultural development must be relentlessly pursued and coordinated, in the interests of a more acceptable society.
- The study further confirmed the view that many aspects in respect of agricultural and rural development discourse was a ‘novelty’ within the erstwhile Bophuthatswana. Another contributory factor was the relative infancy of the organizations which were charged with the responsibility of addressing agricultural and extension needs of communities and, particularly, the rural masses as intended beneficiaries of development initiatives within erstwhile Bophuthatswana.
- The research findings also show explicitly that, the dynamic nature of non – formal extension education and training is an area of development theory and practice which is heavily influenced by time and the historical and political context within which it exists and operates. For this reason, it was not possible to make finite judgments about trends in extension education, trends within the actual delivery systems of extension or for that matter, in respect of training, either about the content or its methodology, as was applied and implemented in this region.
- The study confirmed that an assessment of non – formal extension education, training and veterinary services must primarily concern itself with the role that extension; training and agricultural development can play within agriculture. A further confirmation in respect of the research undertaken, is that, it must be seen in the context of its orientation towards positive and much needed change, in the historical and social fabric of the present South African society that has suffered from the constraints of apartheid policy and ideology, in order to promote the general welfare and for the purposes of orderly government and society.

- The research findings clearly show that, the problems of agricultural development in general and of non – formal extension education and training in particular, is the question of change. Further, that the solutions to these problems lie in the practices of organizations in agricultural development, non – formal extension education and training.
- The research findings confirm that, the principal difficulty encountered was one which arose from the paucity of material dealing with development, particularly extension and training. This was further exacerbated by the difficulties encountered in harnessing material and engaging role players and the management involved in agricultural development, and therefore, most of their work consisted of formal reports and memoranda and these were hardly adequate for the purpose of making any deep – seated analysis.
- Finally, the study in terms of the research findings strongly confirms that, the major stumbling block to development in this region was the major pre – occupation by the ruling elite, with modernizing imperatives, in an attempt to gain legitimacy, credibility and recognition of the erstwhile Bophuthatswana regime on the international arena. In terms of agriculture, there was a total lack of understanding that development is not in the game for making huge profits, but is an investment towards human development and therefore, could not be quantified solely in monetary terms as was the case in the erstwhile Bophuthatswana.

14. Recommendations for further research

- Research on the characteristics of farmers and the physical characteristics of extension areas, gender and material status together with the educational level of the training of farmers, employment and sources of income of households and of farmers are vital. Also the possession of capital goods by farmers / recipients must be established.
- It is also recommended that the role of the different institutions within the same government, which carry out and pursue extension activities be established, determined and researched, in order that a unified and cohesive extension strategy be developed.
- Intensive research on the types of infrastructural development, the land tenure system, human potential in conjunction with the socio – economic factors that affect extension; the characteristics of individual extension agents, the aptitude of extension workers, their knowledge of communities, geography, topography and the evaluation of job descriptions must be established. This will assist to modify the approaches in purely local terms, thereby contributing to the construction of more equitable local extension and development initiatives.
- It is recommended that non – formal extension education in the regional context be subjected to detailed research, in respect to establishing actual needs, the competing theories and to establish problems in respect to methodology.

- The identification of problems of individuals and solutions to them, the promotion of critical analysis, the development of simple materials and evaluation tools, including the planning of lessons relevant to needs must receive the attention of research. In addition it is also recommended that a situational analysis of the entire system be subjected to intensive research.
- A further recommendation is that agencies engaged in extension need to be cautious in 'transfusing' imported programmes without first establishing their effectiveness through research and that, organizations' design and construct through research, relevant and purposeful programme packages, specific to the needs of the communities within which they operate. It is also recommended that extension models should not be 'top - down' and paternalistic. Innovation of the linkage between research and extension must be obtained and developed by conducting experiments in farmer's fields and using them for demonstration purposes on an ongoing basis, particularly on field days.
- It is essential for an extension and research system to have competent village level extension workers, who will visit farms regularly with relevant technical skills and information and who bring farmers problems to research. The challenge with extension is to identify technology which is most appropriate to a given situation and to communicate to farmers how to use technology together with research findings? A need exists to separate field extension services for commercial and communal land owners. This must be further explored via extensive research, in respect to the region under consideration and for South Africa as a whole, across the nine provinces.
- Subject Matter Specialists (SMS's) should work with appropriate researchers and research stations and, undertake regular study to become competent in their field of specialization. They should organize an important adaptive research and training programmes with senior field staff. They should also undertake field visits to outline and monitor field trials; carry out statistical surveys and market analysis, as well as document specialist and research activities at all levels. It is also recommended that, it should be their task to convey suitable innovations to district and area extension staff, which in turn, must pass on information to small - scale landholders and commercial farmers.
- It is recommended that an adaptive research committee be established, in order to define the work of extension workers, thereby formulating research priorities and designing extension programmes for each district. This must become the forum of interaction and a multidisciplinary approach to extension must be applied and rigorously followed.
- Research must become a priority. Linkages with local colleges. Universities, other agricultural departments and agricultural institutions must be pursued. Unnecessary, irrelevant and duplicated research must be avoided. Research in the South African context must move away from single cropping and reflect on a dual approach.
- Research recommendations need to be tailored for different target groups. Institutional support for farmers must become a policy imperative. This means that inputs, credit, marketing and the constraints of mechanization must be examined continually because of high costs.
- Pilot extension projects must be put into place before launching regional or national programmes. Such projects and research can only succeed if there is a strong political commitment, cooperative tribal

authorities, sound planning and provision for institutional support and inputs together with application of sound management principles, adequate supervision, training and control of field staff.

- That government give serious attention to conduct a longitudinal survey of this nature and as comprehensive as possible across the nine provinces of the Republic of South Africa, in order to determine delivery modes of extension and confront the real challenges and problems that confront the extension services of the country, in order to secure economic agricultural development and thus deal with inequality, poverty and unemployment.

15. Conclusion

This paper, together with the two studies cited and conducted was undertaken, in order to prove, some of the assertions made, in respect to agricultural extension and development. It clearly shows that the management principles required for the successful implementation of extension, in all of the erstwhile homelands and in present day South Africa, were and are found wanting and that, there was an abject paucity of strategic planning of animal health services, which resulted in a devastating lack of empowerment of small – scale livestock farmers and for economic growth in general. Given the disarray of agricultural and veterinary extension across the nine provinces currently and after nearly twenty years of democracy that, there would be some new engineering of this important facet of agriculture by the government of the day, in terms of promoting and empowering, small – livestock owners for purposes of economic growth and sustained rural development. By the same token, it is hoped that the central government of South Africa, will find it expedient to conduct a longitudinal study, in this regard. This will allow for determining the salient issues that hamper extension services and agricultural programmes and their development, across the country.

The paper looked at a variety of factors that interacted with the health of livestock, and which contributed either positively or negatively to the development of the agricultural sector, in the erstwhile Bophuthatswana. Overwhelmingly, viewpoints and criticism prove that agriculture was a failure in all of the former homelands. Agricultural organizations in the former homelands including democratic South Africa today has and, had impacted negatively upon the entire process of rural development, had marginalized the rural periphery as intended beneficiaries and had contributed very significantly to the processes of uneven development.

The provision of animal health services is cardinal to agriculture and development in all regions of South Africa, and therefore, the state must play a major role, particularly because animal health is central, firstly to the economy, and secondly in order to improve herd productivity, and thirdly to the very empowerment of rural communities. The paper identified areas which negatively impacted upon agriculture and identified very few areas that impacted positively upon development. It is hoped that these recommendations will be of use in any restructuring programme, by the democratic South African state, given its very poor performance over nearly twenty years of democracy and that, the government will ensure the sound implementation of management principles and the processes of applicable strategic planning, in dealing with the manifest and real problems that confront the delivery of animal health services, extension and agriculture, in South Africa.

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