

**GEOGRAPHICAL PERSPECTIVES ON THE ROLE
OF SMALL URBAN CENTRES IN REGIONAL
PLANNING STRATEGY: A STUDY OF MARKETING
AND TRADE IN LAIKIPIA DISTRICT, KENYA.**

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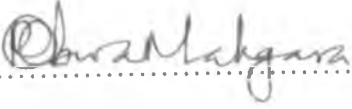


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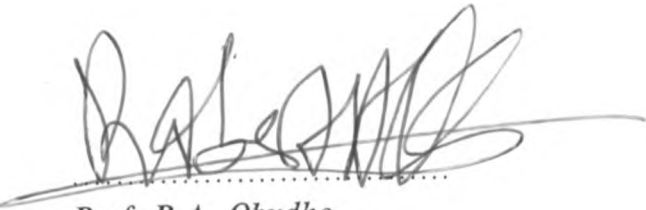
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ABSTRACT

Small urban centers have recently been recognized as important and integral components of regional planning designs in developing countries. For instance, the Kenya Government's Development Policy for ASAL (1992: 64), emphasized the importance of trade and commerce as the main informal sector activity in the centers of these areas.

This study sought to study a variety of issues pertaining to marketing in the district in an attempt to find out the potential of growth of small urban centers in the study areas, and in the adjoining rural (agricultural) economies. The study covered the major small centers in the district. The issues studied included potential market areas for some selected centers, distances travelled as applied to preferences of shoppers for centers, modes of transport used, traffic densities among the major routes, hierarchy of centers, marketing trends and problems of the farmers.

Both primary and secondary data was collected. Several simple descriptive statistics were applied in data analysis. Also, cartographic techniques were used to present and illustrate such data. Inferential statistics were further used to make general conclusions based on sample results. These included multiple regression and correlation analysis, simple regression and correlation, and chi-square technique. G.I.S was also used in data analysis.

The main findings of this work include, the positive correlation between the attractiveness of a center, on the one hand, and both the total number of customers visiting a center and the total number of customers present in that center, on the other hand. Secondly, there was consistency in the modelled zones of influence compared with the empirical ranking of market potentials of centers.

The relatively small urban centers registered the highest turnovers compared with the relatively larger centers. Centers which attracted the greatest number of customers were located further away from the households. The study proved the existence of inner and outer ranges of a good or service. It also revealed that the larger the center, the higher the interaction with the hinterland and, hence the higher the likelihood of diffusion of innovation.

Crops and livestock are marketed predominantly using specific channels. The most significant consideration by farmers in marketing is prompt payment followed by transport, good prices, ready market, in that respective manner. Thus, use of middlemen was the most popular channel of marketing.

In the light of these findings, it is recommended that the Government of Kenya develops an urban growth strategy that allows both for the possibility of decline of trade centers as well as the strengthening of the position of growth centers to be sustained. Also there is need to improve the communication network, and to provide incentives especially where risks are great for investors to locate in both the growth and service centers. Finally, a proper creation of the hierarchical structure of designated growth centers was necessary.

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DEDICATION

This work is dedicated to my late father, Enock Ogara Okun, and mother, Consolata Ogara.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
APPER	African Priority Programme for Economic Recovery
ASAL	Arid and Semi-Arid Lands
FAO	Food and Agriculture Organization of the United Nations
G.o.K	Government of Kenya
ILO	International Labour Organization
OAU	Organization of African Unity
LRDP	Laikipia Rural Development Programme
LRP	Laikipia Research Programme
PSV	Public Service Vehicle
RTPC	Rural Trade and Production Center
UNDP	United Nations Development Programme
UNCHS (Habitat)	United Nations Center for Human Settlements

CHAPTER ONE:

THE INTRODUCTION:

1.1 Background

Urban development seems to occupy the attention of most policy makers throughout the world and particularly in the developing countries. Africa, for instance, is a continent largely dependent on agriculture and pastoralism. According to a bulletin by *Spore* (August 1994 No.52), eighty per cent (80%) of Africans live in the rural areas and produce four-fifths of national output. Yet their needs, together with the opportunity to build a strong rural economy, have been by-passed. Instead, governments have given priority to the demands of the 20% of their people settled in urban centres, with the overall consequences now being too apparent. For instance, food production has fallen so far behind population growth. Also, the continued dependence on imported food, some of which is provided as aid, while much is purchased either with scarce foreign exchange or borrowed funds at high interest rates, continues to worsen the continent's economic performance;

It has been estimated by F.A.O. that by 2010 Africa will need U.S.\$ 28.7 billion to import food to supplement regional production and yet it cannot expect to be receiving more than U.S.\$ 12 billion from the export of its agricultural products. This excludes the necessary investment in the transport infrastructure-docks, roads, railways, among others, to facilitate the distribution of such large quantities of goods. The only option for African countries necessary to facilitate economic growth and development is to invest, mobilize and develop the rural sector. Already, several African governments have indicated their commitment to this extent.

In 1980, the Lagos Plan of Action for Economic Development of Africa, which was approved by the special session of the assembly of heads of state and

governments of the O.A.U, affirmed the need "for an effective agriculture revolution in Africa". The assembly insisted on policies that would improve the living conditions of the farmers, but also to increase real farm income as a means of making agriculture more attractive and remunerative. In 1986 at the meeting to discuss the Africa Priority Programme for Economic Recovery (A.P.P.E.R), heads of state agreed that 25% of national budgets be directed to the agricultural sector. similar commitments were made at the Popular Participation Declaration in Arusha in 1989, and at the Africa Heads of state meeting in Addis Ababa in 1990. Yet no Africa government has ever committed such a proportion of its funds to rural development. Recently, new strategies have been evolved aimed at regional planning. Efforts are being made to incorporate central place concepts into national and regional planning designs.

It is believed that central place nations can facilitate an understanding of how regional economies and social systems function, and are becoming an important and integral component of regional development plans. The important role of central places in promoting agricultural (crop and animal) development and in diversifying non-farm employment and rural industrialization has not been given quite adequate consideration over the years. In the allocative planning, the perspective is that of the national planner, faced with questions such as which regions, levels of urban hierarchy, and sectors to support in order to obtain the largest development with the limited resources available. The same case applies to local development planning, in order to secure the best use of the local, public, and private resources in order to develop the local area or urban centre.

In Kenya, the development Policy for the Arid and Semi- Arid Lands (ASAL) indicates that in such areas, most of the activities in the informal sector involve trade and commerce rather than manufacturing (Kenya, 1992: 64). In the more remote ASAL, the problem faced by would-be entrepreneurs is circular in

nature: Local produce is cheap and plentiful and for local traders, profit margins are small. The high cost of transport limits the ability of all but a few businessmen to export profitably and at the same time hinders small traders from importing the commodities that are retailed locally. Profit margins on the retail of imported items are small, many enterprises compete to sell the same items purchased from a few wholesalers.

1.2 Statement of the Research Problem

A healthy agriculture provides food self-sufficiency, employment and a surplus for export. It also forms the basis for small-scale industrialization based on agricultural service industries including agro-processing, manufacture and repair of farm implements, transport and the financial infrastructure for banking and credit. Some of the successful small businesses will grow, thus enhancing the investment of capital and other resources in new ventures. At the same time, the rural population, provided with employment opportunities both in agriculture and the related support services and industries, can remain for the most part in their home towns and villages, which in turn grow and develop. Mass migration to a few urban centres is avoided, together with the strain on urban services that unplanned settlements invariably cause.

Where agriculture is the focus of rural development, farmers require inputs, credit, and marketing services. In the past many governments in Africa have created monopolistic bureaucracies to supply inputs and purchase production. Not only have these state or parastatal bodies been unreliable, they have also lacked the commercial skills, organization and transport to buy, move, store and sell on the crops for which they have been the only legal outlet. As a result, low prices and late

payment have proved powerful disincentives for farmers to increase production. Furthermore, rural people are central to any rural development project, yet seldom has project planning been based on establishing needs and priorities as perceived by people who will be involved in projects. When asked, their priorities are usually different from those imagined by planners or government officers.

This study, based on field investigation, is basically aimed at carrying out research into the nature of marketing and trade (of agricultural-crop and livestock produce) in Laikipia district, together with the support services required to facilitate the trade via the central places. The research is in accordance with the major objective of the Government of Kenya (Ministry of Commerce and Industry), to ensure the orderly development of trade by promoting policy and institutional reforms that allow trade and commerce to play a dynamic role in the generation of economic growth and social development. It is also in line with a report by the Joint Evaluation Mission on Phase 1 (Laikipia Rural Development Programme) which recommended that the Laikipia Research Programme should extend the inventory of non-agricultural activities to the whole district and consider^{3/} an in-depth investigation in the dynamics of the non-agricultural sector and forces leading to the formation of centers and sub-centers. For the economy of Laikipia district (or any other region) as a whole, the study of marketing and trade is important in that it enables an understanding for purposes of policy recommendation, how to create a local environment which makes it possible and attractive for the prospective investors. The important consequences for such a study should, therefore, include the choice of urban centres, towns or market centres with the best prospects for investment, and where to improve on such prospects where necessary. The study derives its impetus from the earlier works, of Christaller (1933) and Losch (1954) who presented a consistent frame for delineating trading areas, selecting retail locations, and evaluating markets.

Thus, this study essentially investigates how the commodity flows in an economy could ultimately link the producer and the consumer as articulated by the network of urban centers. Centrality is the fundamental point of focus: consumers who must visit the market place on a regular basis want a location that permits them to conduct their business with a minimum of effort. It is believed that a system of centres arranged in a hierarchy provides an efficient way of articulating distribution to, and administration of regions. The aim is to avoid duplication and waste and to realize social benefits accruing from economies of scale.

1.3 Objectives and Scope of the Study

1.3.1 Objectives

The major objectives of the research are to ;

- (a) delimit and measure the potential market areas for some selected urban centers.
- (b) carry out a survey on how distance factor affects the preferences of shoppers for the different urban centers.
- (c) establish the performance of the different marketing channels in the handling of the farmers produce.

1.3.2 Scope and Limits of the Study

This study focuses mainly on the issues stated in the objectives above, namely: the delimitation and measurement of market areas for some centres and carrying out investigation into distribution and trade. The definition of Laikipia District (for this study) includes the present area designated as Laikipia District in

the modern Kenyan Atlas showing the political boundaries (See fig.2). All the central places (of varying sizes and importance) stand a chance of being considered for study.

1.4 The Hypotheses

1. The hypothesis to test whether distance travelled to an urban centre determines which centres shoppers visited.

H_0 : Distance travelled to an urban centre does not significantly determine which centres shoppers visited.

H_1 : Distance travelled to an urban centre significantly determines which centres shoppers visited.

2. The hypothesis to test whether different agricultural produce were marketed using different marketing channels.

H_0 : The type of produce does not significantly relate to the channel through which it is marketed.

H_1 : The type of produce significantly relates to the channel through which the agriculture produce is marketed.

1.5 Literature Review

In this section, a review is made on the contributions previously attributed to other writers to the idea of central places and regional planning policies, and to marketing and trade in particular.

1.5.1 General Contributions

King (1984: 9) realized that numerous and complex economic forces give rise to the development and continued growth of central places, and at the most basic level, they have to do with the development of agriculture and trade. Thus, there is dependence between the urban centres and the surrounding country side. Some have described this inter-dependency as a parasitic one in the sense that the urban center exists upon and collects the surplus (both agricultural and monetary) that originates within the rural community, hence the need to discover such relationships. King (1984) further pointed out that in studying centers and regional development, it should be noted that economic activities, for instance, farm machinery dealership, involves an element of what is called "centrality". For many economic activities located in an urban centre, town, or market centres, it is important that they be central to some larger market area that extends beyond the boundaries of urban centre itself. Also, any business person seeking to gain maximum advantage (or profit) would locate as close as possible to as many potential customers as he can, and in the realm of theory, this would require that he or she locate at the center of the market area. Thus, by seeking to delimit and measure the potential market areas for some selected centres, this study becomes of relevance not only to planners but also to businessmen.

Reference has also been made to the work of Christaller (1933) and Losch (1954) in the fashioning of regional development plans around the postulates of central place theory. Such reference in planning endeavors typically implies acceptance of the idea that a well developed hierarchical central place system is in some sense an efficient arrangement that is likely to have a positive or beneficial effect upon the economic development of the region in question. Johnston

(1970:37), suggested that "the neglect of central place analysis in the planning techniques of underdeveloped countries is doubly unfortunate: opportunities are lost and resources are devoted to less than optimal uses, perhaps far less". In the same line of argument, Mabogunje (1980:202), noted that the central place models of Christaller and Losch "do have an underlying value premise of economic rationality and some measure of distributive justice in their concern for the provision of goods and services to all individuals in a given society". Since the present study also covers the issues of distribution and trade, it provides for an opportunity to study the relevance of (central place) theory to empirical analysis. Mugambi (1993:12) noted that small urban centres have been stagnant and in some cases even declined as traders are capitalizing on an enlarged market region, and that this situation is not helped by the low purchasing power of the local people, and the fact that the would-be customers in the small centres find it easy to patronize the relatively larger centers. Mlalazi (1993:18-19), noted that considerable benefits have been reaped from infrastructural investments and financial incentives applied to small urban centres, hence better service provision to the rural population, and the associated agricultural productivity and enterprise development in Zimbabwe. Silitshena (1993:14) observed that in Botswana, the government has seen traditional towns as potential instruments for its rural development policies, to serve as focal points of the development of their rural hinterlands. He pointed out the need for research to determine how the central place systems operate, to facilitate an understanding of why rural development has not been very successful, especially with respect to income-generating activities.

Tirfie (1993:15), recommended that, among other things, research should establish the level of development of selected urban centres and the functional roles they ought to play vis-a-vis their locations, and the resource possibilities of their hinterlands and; study the spatial distribution of urban centres planned to be

instrumental to the spread of writing on the experience of Zimbabwe, notes that considerable benefits have been reaped development through urban influences in Ethiopia. Mulenga (1993:3) observed that in Zambia, the small urban centers are intended to compliment the overall regional development strategy of stemming rural to urban migration and reducing disparities by directing more government investment into such centers in order to increase their absorptive and productive capacities. He noted that the centres did not develop out of the need for, or services to, their hinterlands; rather, they were basically a result of the country's economic development. According to him, it is against such a background that Funnell (1976 :86) noted that "the relationship between the small service centers and the surrounding country side can be considered to be parasitic, sucking the wealth from the country side and giving nothing in return". Pedersen (1993), observed that the small urban centres is a link between the rural areas and large urban centres, and is in short the residence of the middlemen. He continued to explain that in many African countries, many of the growing small urban centres are located at points with good road connections to the rural hinterland. This location is probably optimal for the development of small urban centres because it is the basis for the location of a number of wholesale and retail functions in such centres. an adequate market for his crops and services; help bring urban way of life closer to the rural areas". Thus, Obudho proposed a planning scheme which is based on intermediate and small centers. Such a grassroot planning level would, among other things, induce development in the rural areas, re-orient urban centers towards their hinterlands, increase local participation, ease the pains of transition, and reduce the gap between the hinterland and the export enclaves. Such a strategy, he notes, should be central rather than peripheral to all development strategies in Kenya. Ayiemba (1989) has explained that in districts where ecological risks are great (such as Laikipia), the urban centers offer greater prospects for survival and security, but

reinforces core-periphery Smith (1993:6) pointed out that the realities of the 1990s is that the collapse of state socialism means that the new development orthodoxy is a revived 1950s emphasis on free trade/markets and private enterprises.

On the whole, the interface between small urban centres and their surrounding areas is becoming an important focus. Obudho (1993:34) noted that the most numerous of all the functions of small and intermediate urban centers can be said to be commercial and service functions. He asserted that if small and intermediate urban centers are to be strengthened, national governments must be able to distinguish those that are developmental and those that are exploitative in their functions. He went ahead to cite Meissner (1981:442) who summarized the expected functions of small and intermediate urban centres as ".....in order to be an effective decentralization tool, the regional town must fulfil a number of important functions for the surrounding rural communities; supply better and more varied services than those available in the village: offer attractive homes to entrepreneurs and professional people operating those services and enterprises; provide the farmer with an adequate market for his crops and services: help bring urban way of life closer to the rural areas".

Thus, Obudho (1993) proposed a planning scheme which is based on intermediate and small centres. Such a grassroot planning level would, among other things, induce development in the rural areas, re-orient urban centres towards their hinterlands, increase local participation, ease the pains of transition, and reduce the gap between the hinterland and the export enclaves. Such a strategy, he noted should be central rather than peripheral to all development strategies in Kenya. Ayiamba (1989) has explained that in districts where ecological risks are great such as Laikipia, the urban centres offer greater prospect for survival and security, but reinforces core-periphery relationships. Thus, since controversies still exist on the role of the small centres, no clear explanations have emerged on the conditions

of their growth. In this respect, use of conventional statistical techniques in a research study such as this becomes necessary in order to understand how and where to locate enterprises. Furthermore, several studies that have been carried on small urban centres are quite general with further recommendations on specific areas for research. For instance, Rushton (1974) suggested an analysis of consumer preferences on the structure of central place systems. This forms one of the objectives, and therefore gaps, that this study intends to fulfil. Also important is a study that incorporates proper analytical approaches in identifying centres with potentials for growth. Finally, there is need to carry out empirical studies and to test the validity of existing assumptions and/or hypotheses. This research provides a good opportunity to achieve these objectives.

1.5.2 Theoretical Basis

For purposes of convenience, this section has been further subdivided into two, viz: The basic formulation, which explain the major opposing views/perspectives on urban centres, and planning/shopping models, which explain the theoretical approaches which can be used to plan for market towns and to the process of marketing.

1.5.2.1 Major Schools of Thought

Controversies still exist as to whether development and progress can be associated with urbanization, and two major opposing views have emerged to this extent. Proponents of urbanisation argue that without urbanisation, the development of complex economic and social organisations may be slow, if they evolve at all. This

line of argument places urbanisation as a prerequisite to development, and is perceived not only as an excellent index of economic development and social modernisation but also a stimulus to such a change (Davis and Golden, 1954:23). Behind this reasoning is the assumption that the city is the most efficient mode of human settlement; with a large population concentrated in a small space, specialisation in production results and the creation of external economies is possible. Their location advantages are related to agglomeration economies which constitute the basis of industrial specialisation. Supplementary to this process of specialisation is the development of commercial and service activities, Sada,(1977).

According to Pedersen,(1993 :1) the diversity of experience of small towns and their growth has led to the development of a number of different theories and visions about the role played by small towns in development. In the 1960s, the small towns were perceived as the most peripheral link through which innovations and urban services are diffused to the surrounding rural areas. Inspired by Perroux's growth centre strategy, the small towns were seen as potential growth points through which economic growth could be injected into stagnating rural peripheries by transplanting growth industries. Through forward and backward trade linkages, economic growth and productivity increases were expected to diffuse from the growth industry to the existing economy of the small town and its rural hinterland. This line of argument is also consistent with the classical location theories (Weber, 1929, Christaller, 1933, Losch, 1954, Mulligan, 1984). According to these theories, enterprises were assured to be independent entities operating in a homogeneous free market. To explain the spatial concentration of enterprises in towns, they invented the concept of agglomeration economies. In Weber's industrial location theory, the agglomeration economies are production oriented, based on the economic interaction among specialised and vertically integrated enterprises.

The agglomeration economies consist of those advantages in terms of reduced costs or increased intensity of interaction that enterprises may obtain by joint location. Another type of agglomeration economies, according to Baker, (1990:89-130), which may be either production-oriented (backward linkages), or market-oriented (forward linkage), may occur when many similar enterprises agglomerate to exploit and develop a common resource base, a common labour market with specific qualification, or a common market. They are sometimes termed location economies. They may be found, for example in market towns, where all enterprises in a specific town are located in the same street. Another type of agglomeration economies, according to Baker (1990 :89-130), which may be either production-oriented (backward linkage), or market-oriented (forward linkage), may occur when many similar enterprises agglomerate to exploit and develop a common resource base, a common labour market with specific qualifications, or a common market. They are sometimes termed location economies. They may be found, for example, in market towns, where all enterprises in a specific town are located in the same street, quarter, or market place, to attract as many customers as possible. Baker argues that this is the new focus of urban policies and is the result of the lack of national resources to allocate and is also in line with the increasing research and policy interest in participation and decentralisation while observing that the theoretical basis for the new urban policies is, however, still rather weak, he argues that the small town depends, to a large extent on the view of the enterprise and the way it interacts with its hinterland and/or environment.

Unfortunately, the experience with growth centre policies have generally not been positive. The linkages supposed to develop seldom materialised because the transplanted growth industries were typically large mass producing industries which could not find suppliers or markets locally. Therefore, they remained enclaves in

the local economy without much local impact other than the direct wage multiplier based on the local labour which they cheaply employed. Furthermore, the massive rural to urban migration over the past few decades which has caused many serious socio-economic and political problems has led others to view urbanisation as an impediment to development. Some have perceived the small towns as the seat of the rural bourgeoisie and exploitative superfluous middlemen and, therefore, not considered a positive force in the development process. Among the most vocal of the dependency theorists have been Frank, (1969) who noted that as a policy of economic development and cultural change, diffusionism has been largely ineffective. He argued that no diffusion from the capitals to the provinces of the under developed countries brought about the development of those hinter lands. New technology, far from initiating the development of, initiated the underdevelopment of the now underdeveloped countries or regions. More diffusion *Per se* does not generate more development. Moreover, the diffusion which follows in the train of new roads, buses, transistor radios, etc, is not increasing the economic development of the recipient region. Often it has helped to sink them into even further or deeper underdevelopment. Conceived in this way and in its present form, diffusionism is inherently ineffective as a policy of economic development and cultural change. For it is not so much diffusion which produces a social change in the social structure as it is the transformation of the social structure which permits effective diffusion. Development, underdevelopment and diffusion are all a function of the social structure. Amin, (1974:187-224) asserts that at every stage in the development of the world capitalist system, the commercial and financial relations between the centre and periphery serve two-fold functions, on the one hand, to facilitate, by extending the capitalist market at the expense of the pre-capitalist systems, the absorption of the surplus and on the other hand, to increase the average rate of profit. The price structure at the centre is largely transmitted to the

periphery, where it determines unevenness of productivity between branches that express the uneven degree of modernisation of penetration by the capitalist mode of production. This price structure has, therefore, nothing rational about it from the standpoint of growth in order to put to an end the historical lagging behind, which is characteristic of the periphery.

In the neo-Marxist inspired location theories, the role of the local environment has, on the other hand, been largely discarded. Industries and enterprises and especially in under-developed regions, are often considered to be enclaves with little or no local interactions except with the labour market. Instead, location is explained in terms of internal enterprise and concern structure. Production takes place in footloose production plants which can be moved around the world at will and located in those regions which offer the lowest labour costs. The small towns are not viewed as service centres but, rather, as locations for independent branches of multinationals and other large organisations attempting to exploit the rural resources and labour markets. Attempts to engage the local rural population in local market trade and production are viewed as doomed to failure, because this will be only possible for activities with very low entry requirements, and here, the competition will be so fierce that no accumulation will take place. From the above paragraphs, it is clear that the role of the local environment is viewed very differently in the two theoretical frameworks. In the classical location theories considerable importance is attached to the local interaction between enterprises. But it is only discussed in a very aggregated way as expressed in the concept of agglomeration economies. In the neo-Marxist location theories, the local environment is, on the other hand, considered of little importance. Instead, they focus on the internal organisational structure of the multinationals and other large organisations. consequently, the different location theories have very different or even opposing views on the role of small towns. On the whole, the location theories

have not been able to explain when interaction among enterprises and between enterprises and their markets leads to growth and prosperity and when it leads to exploitation, continues to explain Baker. Neither do they give any clear indication for the conditions of growth of small towns. Thus, Baker, again, asserts that to be able to understand the development of small town, we need a much more differentiated view of the local enterprise and its interaction with the environment both vertically and horizontally. A proper theoretical methodology is required in order to provide a realistic delineation of market areas. This is indeed a gap which this study intends to fill.

1.5.2.2 Planning/Shopping Models.

Christaller's (1933) and Losch's (1940) service centre theories are perhaps the most specific attempts to explain the existence of small towns. An essential feature of their theories is the existence of hexagonal market areas for any set of "central" goods. Christaller sought to establish where the stores providing lower order goods would locate and what their market areas would be like. He argued that each highest order store location defines a central place from which all other goods and services will be provided. But the minimum size of market area required for support of successively lower order goods will be progressively less than the hexagons for the highest-order good. The problem is to find at what point and for what good an enterprising businessman will succeed at a location other than one of the "metropolitan" centres already defined. The answer is found geometrically, by use of either *marketing*, *transport* or *administrative* principle using the highest order good to define a set of store locations and hexagonal market areas covering the plain, such a pattern would be optimal in the long-run (maximum number of stores, minimum size of market areas). This is the so called Thiessen Polygons Model,

based on the central place theory. According to Berry (1973:59), this classical Central Place Theory is essentially detached from considerations of behaviours of consumers over time and over space. The essence of Thiessen polygons, as shown by many studies, is that people tend to go to the market centre which is closest to their home. "closest" is the criterion that defines Thiessen polygons. As explained by Gaile and Ngau (1993:6), while closeness does not determine actual market behaviour, it is the dominant variable in explaining the probability of using a specific market, especially if markets are not highly differentiated in terms of provision of goods and services as is commonly the case in Kenya. According to them, the calculation of Thiessen polygons is a somewhat complex graphic procedure which can be mastered with some training. The polygons can also be generated with a computer and they give the IDRISI Geographic Information Systems software as an example of using this capacity. However, they continue, there are more sophisticated approaches for deriving theoretical hinterlands using manual techniques. Illeris, (1967), for example, uses a gravity model which allows weighting of the population and the inclusion of distance decay effects. In this model, the hinterland boundary is the locus of points with equal amount of interaction.

Berry (1973:128), points out that analogous practices and a host of related rule-of-thumb procedures have been developed by store location practitioners. The most noteworthy summary of this work is by Nelson (1958), who discusses in his survey the effects of location on retailing, selection of a location, techniques of estimating business volumes, analysis of a three-level hierarchy of shopping centres (neighbourhood, community, and regional) and new trends in the economics of location. Berry notes that paralleling the work of consulting practitioners has been the gradual emergence of a science of marketing in university schools of business and economics. The first important contribution related to marketing geography was

the attempt by Reilly (1957) to develop the general "law" of retail gravitation. Reilly argues that knowing the population and central function of each centre, market areas can be determined without undertaking extensive and expensive consumer surveys. He developed his "law of retail gravitation" to summarise market area patterns. His "breaking point" equation states that the trade area boundary between two towns, A and B , is in miles from B , Equal to:

$$\frac{\text{Miles between } A \text{ and } B}{1 + \sqrt{\text{size of } A / \text{size of } B}}$$

Berry, however, notes that this equation cannot be applied indiscriminately. It must be applied only to cities and other large regional centres to develop market areas for goods of city order. He continues to explain that there have been many attempts to improve upon Reilly's law, with but little success until the recent work of Huff (1966), whose model states that the probability that a customer located at A will visit store 1 is:

$$P_{AI} = \frac{S_I / T_{AI}}{\sum_{i=1}^n (S_i / T_{iA})}$$

where S indicates store size and T travel time. Consistent application of the model provides a picture of the market penetration of each store. Further, for any store j and area i , where C_i is the total number of customers residing in i , and W_k is the average weekly expenditures on the product of interest for income group k , $P_{ij} C_i$ gives total customers coming to store j from area i and $P_{ij} C_i W_k$ measures the sales accruing to the store from that area. Summation over all areas provides a measure of total trade. Huff argues that his model provides very good replications of actual behaviour and he has programmed it for routine solution on a large computer.

According to Berry, Huff's model of consumer behaviour, in integrating the practice, provides the probabilistic

rules from which central place theory may be generalised within the urban scene, to allow for complex overlapping market areas. Gravity models, sometimes referred to as spatial interaction models, are primarily used for analysing trade areas and forecasting sales for many different types of retail and service institutions. The underlying premise of a gravity model is that the share of customers that an outlet attracts from a market area is inversely proportional to distance and directly related to the attraction of the outlet (INTERA TYDAC TECHNOLOGIES Inc.; (1992:8-127)). The basic gravity model can be written as:

$$I_{ij} = G \frac{P_i P_j}{D_{ij}^b}$$

where;

I_{ij} is the interaction between traffic zones i and j ; G is a constant, P_i and P_j are populations of the respective areal units; D is the distance between i and j ; and b is a constant.

Although gravity models are calibrated at the aggregate level, the models are based on principles of individual consumer behaviour. It is argued that individual shopping patronage patterns depend upon the consumer's evaluation of the relative utility or attractiveness of each store. Generally, the greater the perceived attractiveness, the higher the likelihood of the outlet being patronised by the customer.

Gravity models are also useful when attempting to predict the impact of changes in the retail environment on the performance of existing stores. For example, what impact would the expansion of one store (i.e an increase in

attractiveness) have on the sales of other stores in the area?. How would the opening of a new store affect the performance of existing stores, and what opportunities opens up for the existing stores if a store in the market closes down. Gravity-area modelling is used in marketing geography to model trade areas. Another type of gravity model, Gravity-probability modelling, is used to produce a map indicating the probability that a given person at a given location on the map would patronise a specific shopping centre in lieu of competing centres. This map can be overlaid with other maps which show population and disposable income in order to arrive at expected revenues. Thus, the probability of a study point (shopping centre k) attracting customers located at (x,y) is computed as follows:

$$P_k(x, y) = \frac{\text{Attractivity of study point } k \text{ (shopping centre } k \text{)}}{\text{(The sum of attractivity of all points (shopping centers))}}$$

Finally, potential mapping techniques can also be used to generate classified maps from point data using 2 different sets of techniques: Surface interpolation and statistical modelling. This technique is used most frequently to convert point data representing spatially non-continuous phenomena into classified trend surface maps. For example, as in this study of the market areas for centers, It is possible to have data for which one is reasonably certain that there is no occurrence of an attribute outside of a specific radius which is specified. Thus, a classified surface could be generated which excludes areas outside of this radius (i.e they would be assigned a class of 0). The final map could be represented as a set of contiguous spatial entities.

1.5.3 Empirical Studies

Specific planning efforts can also be cited as an illustration of how central place concepts have been applied. In the case of developing economies, the planning study of Ghana, a hierarchical pattern of urban centres was devised for the country and proposed the upgrading of existing places along with the establishment of a number of new urban places in order to guarantee that "the increasing quantity of services should be distributed between centers to ensure the maximum benefit from the resources available". Their plan was, however, not adopted in the form proposed.

Harvey, *et al.*, (1974) took a different approach to the hierarchical urban system in a developing country. They began with the existing location pattern in Sierra Leone and sought to devise a mathematical solution to the problem of determining where urban centers of different orders in a hierarchy should be located (or encouraged to develop) in order to provide the best possible patterns of access for the population to the centers offering different goods and services. The mathematical solution simply ensured that no cluster of population was more than a certain prescribed distance away from a central place. Again, there is no evidence that this plan was ever adopted. One approach to central place planning in a new economy that was put into practice involved the state of Israel. Following the creation of that nation in 1948, its newly formed National Planning Department devised a plan for development that was aimed at achieving uniform regional growth, in part through the establishment of Christaller-type of urban hierarchies in each region (Brutzkus, 1974, Schacher, 1971). Applications of central place theory in the planning of more developed and mature economies have been just as numerous. In Canada, the Saskatchewan Royal Commission on Agriculture and Rural Life (1957:39) presented a detailed analysis of the central place systems existing in that province and argued that "public policy encourage the reorganization of rural services on the basis of service center principles demonstrated in this

report". Rushton (1971), described a central place pattern derived on the basis of a modified assumption about consumer behaviour. In the classical central place model it is assumed that each rural household will patronize the closest central place that offers the goods and services demanded by the household. However, other factors such as availability of a variety of goods and services, improvements in transportation, etc, has meant that the closest center may not be the most attractive destination. This observation prompted Rushton to suggest that it was more appropriate to describe this behaviour in terms of the preferences that consumers have for shopping in different centers and to examine the effects of this proposal on the structure of a central place system. This is indeed another objective of this research. Another approach has been towards demonstrating the optimality of a particular hierarchical arrangement of urban centers in which certain activities are located. Bos (1965) developed the analysis further. His central place system was set within a region that had agriculture spread continuously throughout it, a region that required the production of other goods and services that were not perfectly divisible into small units of production and hence were subjected to economies of scale, and a region in which transportation involved costs on the last point. Bos considered three possibilities: First transportation costs depended only on the types of goods being shipped, and not on the distance over which the shipment was made. Secondly, assuming same transportation rates apply by types of goods, the cost of transportation between any pair of urban centers would then equal the higher cost of trade between the centers. Finally, transportation costs depend not only on the types of goods being transported but also on the distances the goods are shipped. He then sought to determine whether the Timbergen (his area of study) type of urban centers was an optimal one in terms of minimizing the total transportation costs. Leiser, (1988), found out that in Laikipia district, transport costs do not appear to depend as much on distance as might be expected. This is because there is a clear correlation

between the condition of the road and the price of the journey. Private vehicle owners charge repair costs and depreciation to customer according to road conditions, the worse the road, the more expensive the journey. In a recently published paper, Forster and Brummell (1984), have examined further the question of what happens to a central place system in which multiple purpose shopping trips occur. They found out that tendency for producers to concentrate in the larger centers is increased; that considerable variation in the prices of goods and services from one center to another results.

Gaile and Ngau (1993: 6) tried to explore the question as to whether the theoretical methodology (Thiessen polygons) provides a realistic delineation of market areas, or whether other methods should be used. In their field study they found out that there were no significant differences between the population densities of sub-locations in which market centers (but not urban centers) were located and those in which they were not. They also found out that there is a very strong predictable distance-decay relationship between the likelihood of market attendance and the distance of residence from the market (84% and 74% of the variation in market attendance by any person could be explained simply by knowing the distance of their residence from the market). Mode of transport is expected to have a major effect on the relationship between frequency of market use and distance travelled to market.

Musyoki (1986) described the spatial structure of staple food marketing. Six variables were considered and the sum of their z-scores constituted an index of market importance. The major conclusion of her study was that the staple food marketing systems was incomplete in that the hierarchy did not fit the classical Central Place Theory. She therefore suggested a restructuring of the market system based on the existing rural markets as a possible solution. Again she realised that

trade movements were horizontal with very little vertical movements. Thus, the hierarchy could not ensure uniform distribution of food commodities. Centres were connected with very poor transportation network which reinforced the incompleteness of the market hierarchy.

Wambugu (1990) investigated the spatio-temporal and function characteristics of market places in Nyeri District. Standardised z-values from five market place variables were summed up to provide an index of market place importance. His study revealed that in Nyeri market places and market days are significantly uniformly distributed. Secondly, there is a significant relationship between population density and market provision. The district, he observed was served by an undeveloped hierarchical system of market places which did not insure a proper distribution of goods and services to the ruralites. He devised a hierarchy which closely resembled Christallerian marketing pattern which is the most efficient rural consumers.

2

Arising from the above empirical studies, it is apparent that the theoretical framework for most studies on markets and marketing activities is Central Place Theory. This has been so despite the drawbacks of the theory. The formulation of Christaller (1933) Losch (1954) are based on Classical Economic Theory. Their models emphasise the fact that site selection of firms is a matter of finding a location at which profits are maximised. The models have been described as being static, descriptive equilibrium models. The models also ignore non-optimal consumer behaviour and lack historical perspective. They also deal with closed local economic systems e.g. producers and consumers within a region. The models assume that space is uniform and object and activities can be manipulated and freely located within it, and this is unrealistic.

Thus, this study, by applying field research and incorporating theory becomes necessary so as to investigate the process of marketing and development of small urban centres in the district. The studies so far conducted have also been region specific, hence, there is need to conduct similar studies elsewhere. The idea of levels of hierarchy has already been proved to be different in various districts. It would be interesting to establish similar hierarchies in other districts hence, the importance of the study.

1.6. Justification and Significance of the Research

Small urban centers have important functions to undertake in the economic development process especially in the developing countries. The roles that they are expected to play includes contribution to national development. They have also been viewed as important components of the overall hierarchies of settlements, including restoring some sense of "balance" to the abnormal top-heavy urban hierarchies Smith (1993:9). In addition, small urban centers have important roles to play in relation to regional development, a complex spatial formulation which includes the rural dimension and may well involve the small town with other linkages.

For purposes of local development planning, there is a need for a proper choice of small towns to focus on, with the objective of the local development planner being to create the best possible strategy for local development, no matter what extent the regional capabilities and resources might be. This will enable the national governments to determine which centers to support, or encourage to develop. Furthermore in the light of the increasing importance of the role of small urban centers in regional development in Africa, there is need to study the possibilities of creating a hierarchical structure out of the existing urban centers and

identify gaps for creating new urban centers. Also, to establish through research, the level of development and the functional roles they ought to play vis-a-viz their locations and the resource possibilities of their hinterlands and to investigate the spatial distribution of urban centers planned to be instrumental to the spread of development through urban influences.

It is equally important to carry out surveys and establish how people evaluate the various urban centers. In addition, knowing the nature of the flows that take place between the main centers and their hinterlands and what channels they follow is a vital research agenda, so is the need to establish or analyze the flows of goods and people between settlements designated as catchment areas. Not much has been done by geographers as far as marketing and trade is concerned. Available literature indicate that apart from the work of Christaller (1933) and Losch(1954), only a few others, Including Applebaum (1954), have made their contributions in marketing geography. This study provides an opportunity to contribute to literature on marketing geography. The significance of the study can also be seen when it is realized that proper and accurate marketing data, if availed, could be of great use in regional planning. This view is shared by many others including Berry (1973:131-139) who noted that planners consistently make use of the concept of urban hierarchy and related facets of regional organisation.

Finally, Laikipia District falls within the two thirds of the land surface of Kenya generally classified as arid and semi-arid. The orientation of the Laikipia Research Programme (L.R.P) reflects the priority objective of the ASAL Programme, includes development of human resources, optimal use of the productive resources, potential resources management and conservation and integration into the national economy. These are in line with the policy of Sessional Paper No.1 of 1986 on "Economic Management for Renewed Growth" which stress

the necessity of rural-urban balance. The activities and field research by L.R.P. seem to be in line with G.O.K policies concerning Rural Trade and Production Centres (R.T.P.C's). According to a report by the Joint Evaluation Mission on Phase 1 (L.R.D.P) it was recommended that L.R.P should: extend the inventory of non-agricultural economic activities to the whole district and consider an in-depth investigation in the dynamics of the non-agricultural sector and forces leading to the formation of centers and sub-centers. This study is therefore in line with the objectives of the L.R.P and its results could prove useful to the Programme.

1.7 Conceptual/Theoretical Framework

The theoretical framework for this study is based on the Central Place Theory as formulated by Christaller (1933) and Losch (1954) and modified by other scholars. As explained by Hartshorn (1980), the theory provides an elegant conceptual mechanism for understanding the role of the urban centre as a service place. As a focus for a complimentary region or hinterland, the urban centre becomes a supplier of goods and services to the surrounding countryside. It depends on the in-bound cash flow produced by the surrounding of the hinterland population to support the complement of goods and services offered. The urban centre and its surrounding complimentary region constitute a mutually inter-dependent system. The theory therefore relates to the location, size and function of service centres. Its application to marketing and consumer shopping behaviour can be examined.

Christaller (1933) reasoned that urban centres exist for economic reasons - as articulation points that facilitates the exchange of goods and services. Two urban centres of the same population did not necessarily function as equally important central places. He noted that population size is positively correlated with the

importance of a settlement as a distribution centre, but not perfectly. Telephones were used as a measure of central place importance, though more modern measures would be sales tax receipts, number of retail and wholesale stores, and employment, among others, and are more appropriate surrogates of centrality. He used the concept of "threshold" to represent the amount of purchasing power required in a region to support a person engaged in a tertiary business activity. Thus, merchants, wholesalers and professionals have a certain amount of overhead costs, including rental space and inventories, which must be paid to remain in business. The money spent by consumers on the purchase of business merchandise or services must be at least sufficient to recoup the entrepreneurs' investment, otherwise the business fails.

In the theory two types of goods are identified namely; lower and higher order goods. Lower order goods are frequently replenished. Retailers distributing such lower order convenience goods have low threshold levels of economic support. Higher order goods are more specialised e.g. appliances and automobiles, are purchased less often and require a sizeable expenditure of the disposable income available to an individual. They involve sizeable capital expenditure and inventory stock for people in business. Thus, they are only offered in large urban centres. A large trade area is required to keep sales at an acceptable volume for such items. Hence, a higher threshold support level is required for such items.

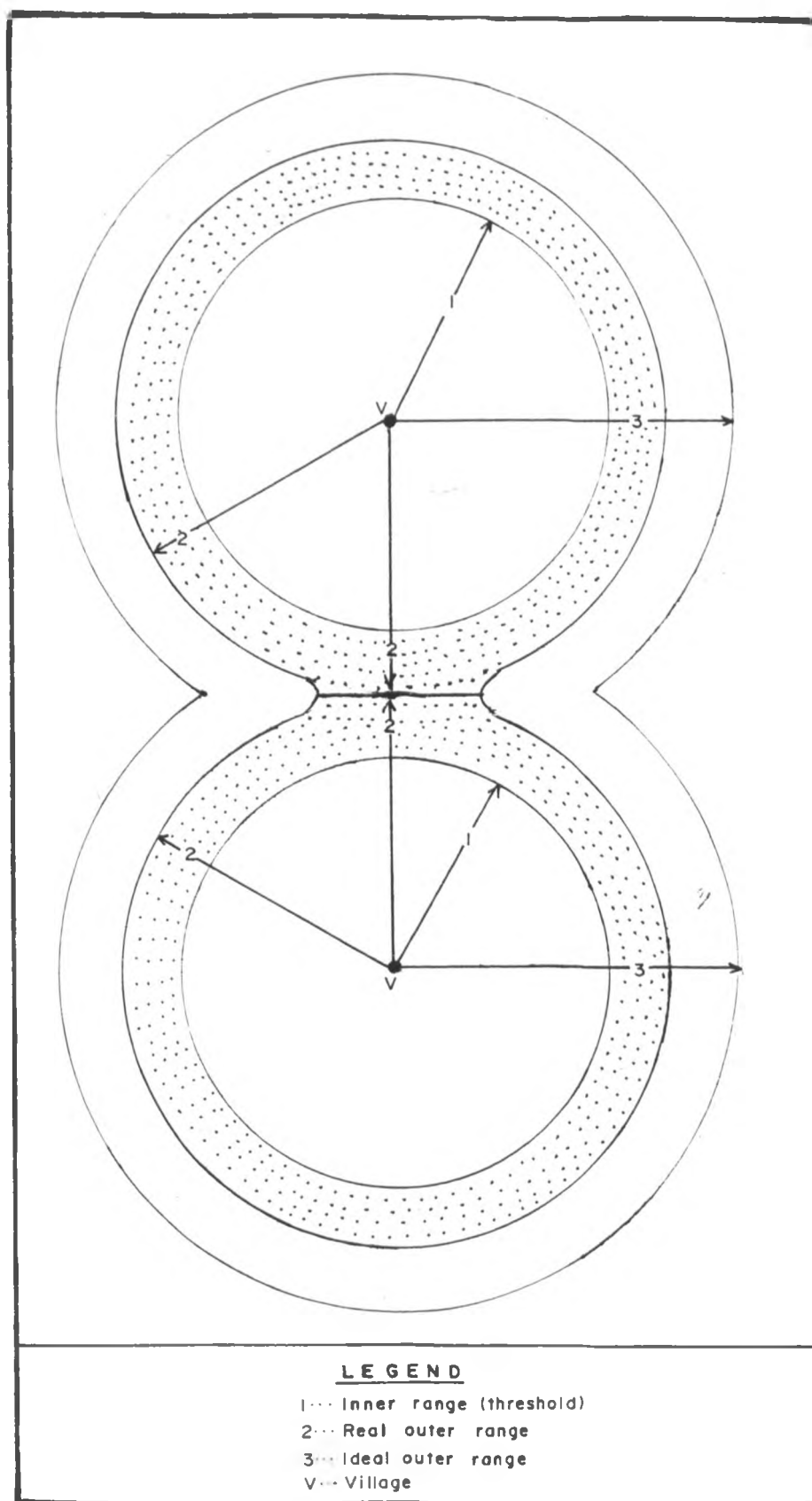
Hurtshorn (1980), explained that threshold is a difficult concept to measure. Monetary flows are replaced in most empirical tests in the theory by the number of customers. Thus, threshold is the minimum number of people needed in order for a central place activity to be viable. "Threshold" has a spatial corollary in Christallers (1933) notion of the "range" of a good. The range refers to the market area for the good, or alternatively, the distance people travel to purchase a good.

The range is affected by the price of the item, transportation costs, the necessity of item, consumer tastes and preferences.

Thus, in fig. 1, the relationship between the range of a good and the trade area limits can be illustrated. There exists the inner range of the good which is the spatial expression of the aspatial concept of the threshold. It is the areal extent of the hinterland or trade area necessary to provide the threshold purchasing power. Secondly, there is the ideal outer range of a good, which is the maximum spatial extent of the trade area. beyond a certain distance from the central place, people residing on the hinterland will simply do without the good, since they find it unfeasible to bear transportation cost in order to purchase such central goods and services. The extent of both the inner range and the ideal outer range will vary depending on the necessity of the good, its price and other characteristics that affect the frequency of the purchase.

Finally, there is the real outer range of the good which is the actual spatial extent of the complementary region given the competition between central places to attract customers. Thus, if there were no competing centres in a particular region, then the one central place offering goods and services would have a real outer range exactly coincidental with the ideal outer range. If central places compete against each other for the patronage of people residing in the countryside, then the real outer range will normally be smaller spatially than the ideal outer range for any competing good or service offered.

Fig. 1 : Relationship between range of a good and trade area limits.



1.8. Operational Definitions and Concepts.

1. **Bottom-up Planning Strategy:-** A planning model which emphasise planning at the local or grassroot level rather than at higher order centres.
2. **Central Place:-** Refers to settlement in which people converge for their supply of goods and services.
3. **Market Centre:-** Refers to a central place where people converge on a regularly scheduled basis for the purpose of buying and/or selling of goods and services.
4. **Marketing:-** The act of looking for the opportunities to create exchanges that satisfy individual and organizational objectives.
5. **Planning:-** This is a decision - making process for balancing conflicting claims on scarce resources and of achieving compromise between the conflicting interests.
6. **Range of good:** Maximum distance that consumers travel for a particular good or service.
7. **Region:-**An area of the earth surface differentiated from an adjoining area by one or more features which give it a measure of unity, usually dominant physical features such as vegetation, soils or climate.
8. **Regional Planning:-** Refers to planning with a spatial (or geographical) component, in which the general objective is to provide for a spatial structure of activities (or land uses) which in some way is better than the pattern existing without planning.
9. **Revealed Preference:-** Refers to what an individual actually has.
10. **Stated preference:** What an individual would like to

have.

11. **Threshold:** Condition of entry for a good or service, or the minimum sales required to support that good or service.

12. **Top-Down Planning Strategy:-** A planning where development proceeds from a few central foci of economic activity, normally capital cities and/or chief ports, down the urban hierarchy and out from the core to the national periphery.

13. **Urban Centre/Town:-** A settlement with more than 2,000 inhabitants (in Kenya) mainly engaged in non-agricultural activities, thus concentrating in other commercial activities.

14. **Urbanisation:-** Refers to the movement of people from rural to urban areas where they engage in primarily non-rural occupations or functions, but also a change in their lifestyle from rural to urban with its associated values, attitudes and behaviours.

2

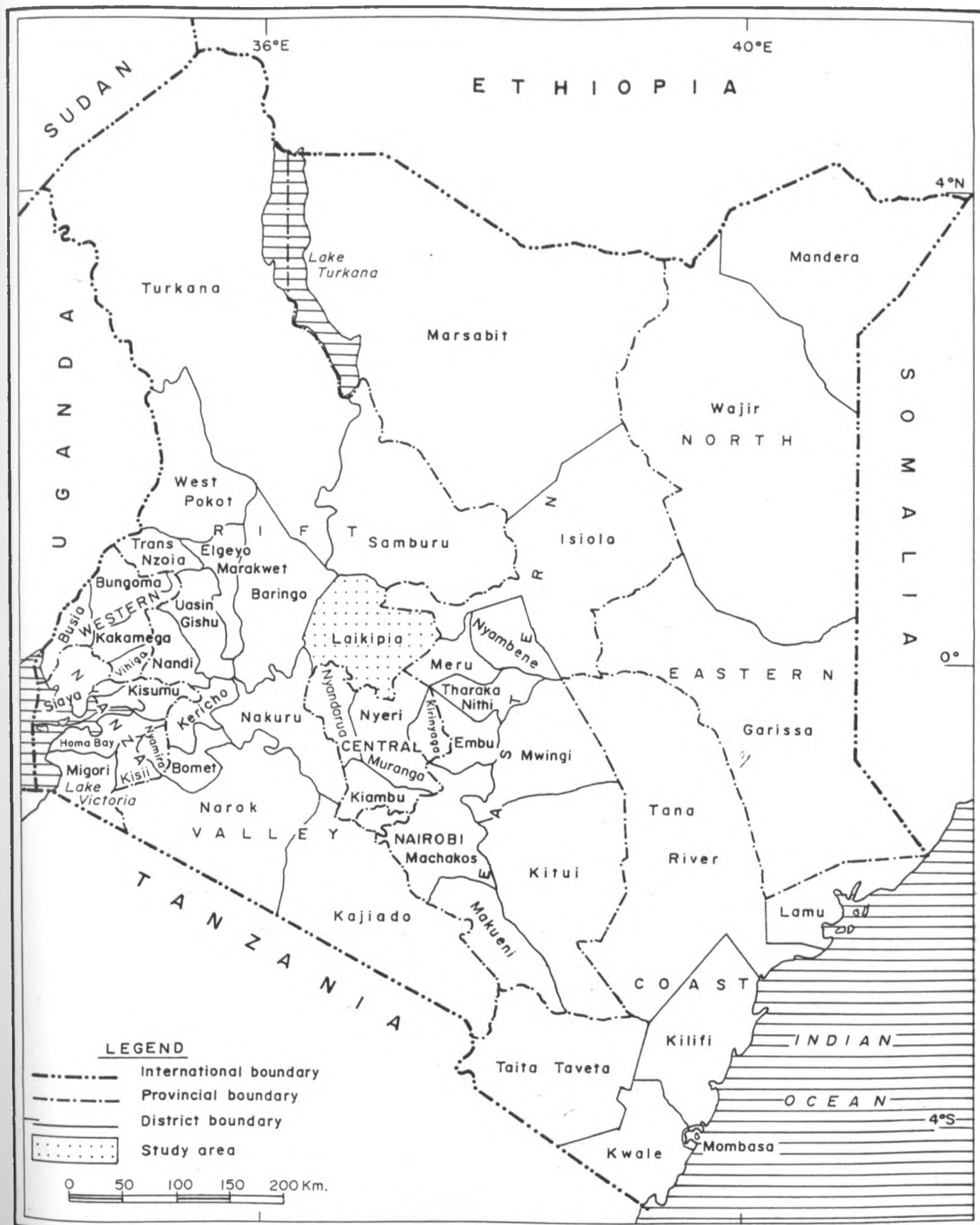
CHAPTER TWO

THE STUDY AREA

2.1 Location, Position and Size:

Laikipia District is in the Rift Valley Province of the Republic of Kenya (Fig.2). It lies between latitudes $36^{\circ} 10' - 37^{\circ} 3' E$ and longitudes $0^{\circ} 17' - 0^{\circ} 45' N$ and covers an area of $9,728 \text{ km}^2$. It is one of the 13 districts of the Rift Valley Province, and its neighbouring districts include Samburu, which bounds it to the north, Isiolo to the north-east, Meru to the east, Nyeri and Nyandarua to the south and south-west, and Baringo and Nakuru to the west and south-west. The district lies east of the Great Rift Valley and is generally characterized by level plateau bounded by the edge of the Rift Valley to the West of the Aberdares and Mt. Kenya massifs to the south. The other areas of high altitude are Mukogodo (North) and Loldaiga Hills to the east. The altitude of the district varies between 1,800 meters in the North and 2,100 meters in the south with a maximum height in the Marmanet Forest of about 2,600 meters in the western part of the district.

Figure 2 The location of Laikipia District in Kenya.



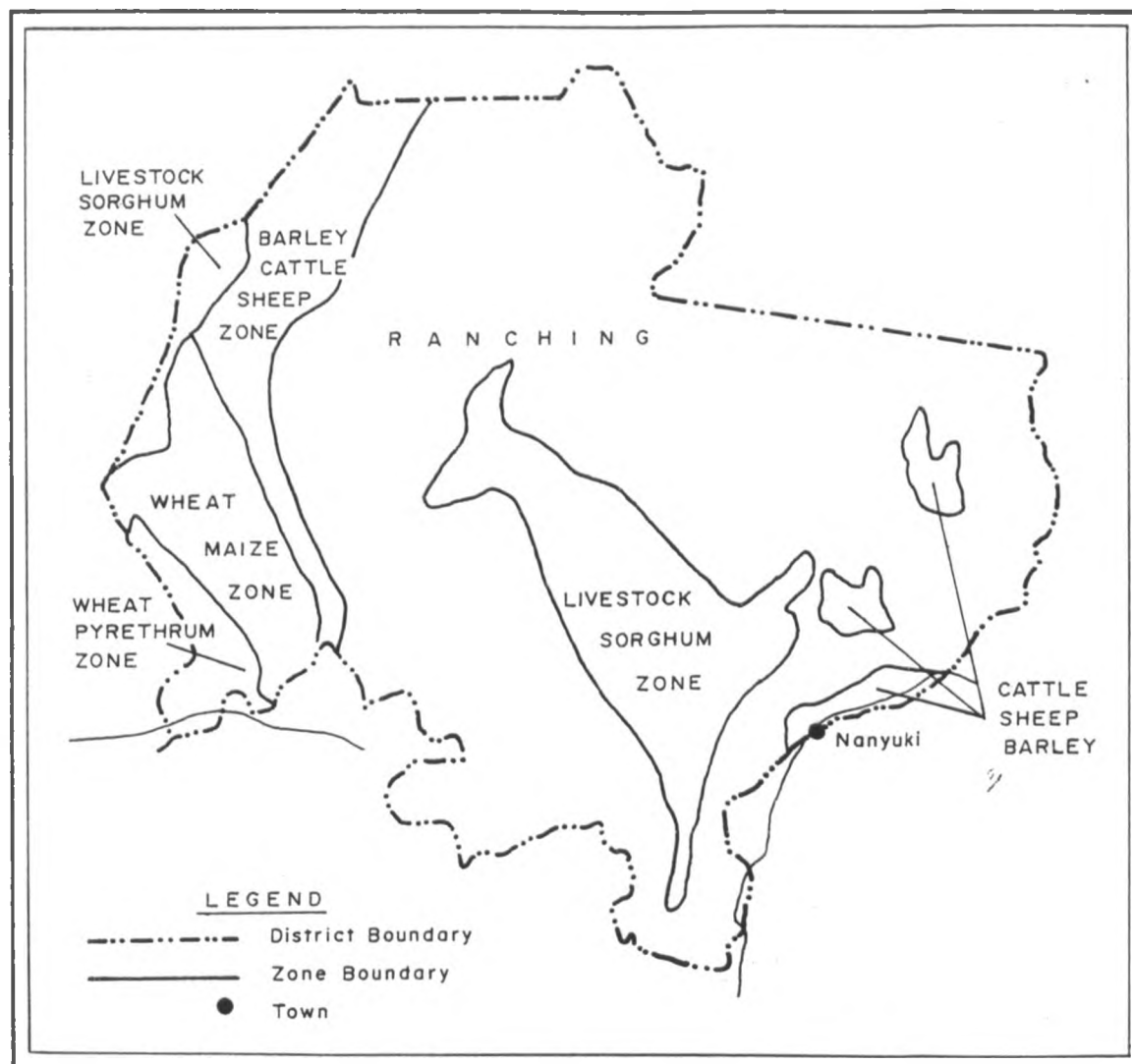
Source: Laikipia District Development Plan, 1994-96.

2.2 Agro-Ecological Zones: (AEZ's)

Laikipia District can be categorized into three agro-ecological zones (Fig. 3). Zones 1 and 2- are those referred to as high and medium potential lands and these constitute 1.7% of the total land area in the district. The medium potential zone covers 9.8% of the district's area. (This is equivalent to about 95, 208 hectares); of this percentage 78, 164 hectares lies in the Central Division. Two-thirds ($\frac{2}{3}$) of the district lies in low potential zones, which has moderately fertile soils. This zone is not suitable for rain-fed agriculture because the rains are quite inadequate and unreliable. The western part of the district is the most fertile. Here, land has been demarcated and is suitable for small scale mixed farming. Crops such as pyrethrum, wheat, and barley are grown. The southern part of the district is composed of less agriculturally productive clay soils, as rainfall drops further to the east. The northern part of the district is generally dry with poor sand soils and the lowest rainfall. The most suitable economic activity is livestock farming, with Maasai, Turkana, and Samburu ethnic groups practising nomadism.

Following major changes involving land sub-division in the district, many areas are now small scale holdings, with favorite crops for small farmers being maize, beans, and areas where water is available with considerable variety of vegetables, fruit trees, sugarcane, and bananas. New crops such as cotton, sorghum, and pyrethrum are planted on experimental basis. Wheat production has markedly decreased in the district owing to the fact that the crop is not suitable for small scale production. Besides crop production, the small scale farmers also keep dairy cows and small stock. The present land use system is set to experience problems from land pressure resulting from widespread immigration and high increase in natural population growth. In drier parts of the district, large scale ranching is practised by indigenous and non-African settlers and the Government of Kenya.

Figure 3 The Agro-Ecological Zones of Laikipia District.



Source: B.P. Kiteme, 1992 pg. 41

2.3 Population Density and Distribution

Available literature indicates that the population density and distribution in the district have been greatly influenced by topographic features, climatic condition, patterns of land use and general concentration of other off-farm activities within the district. as shown in Fig.4 (below).

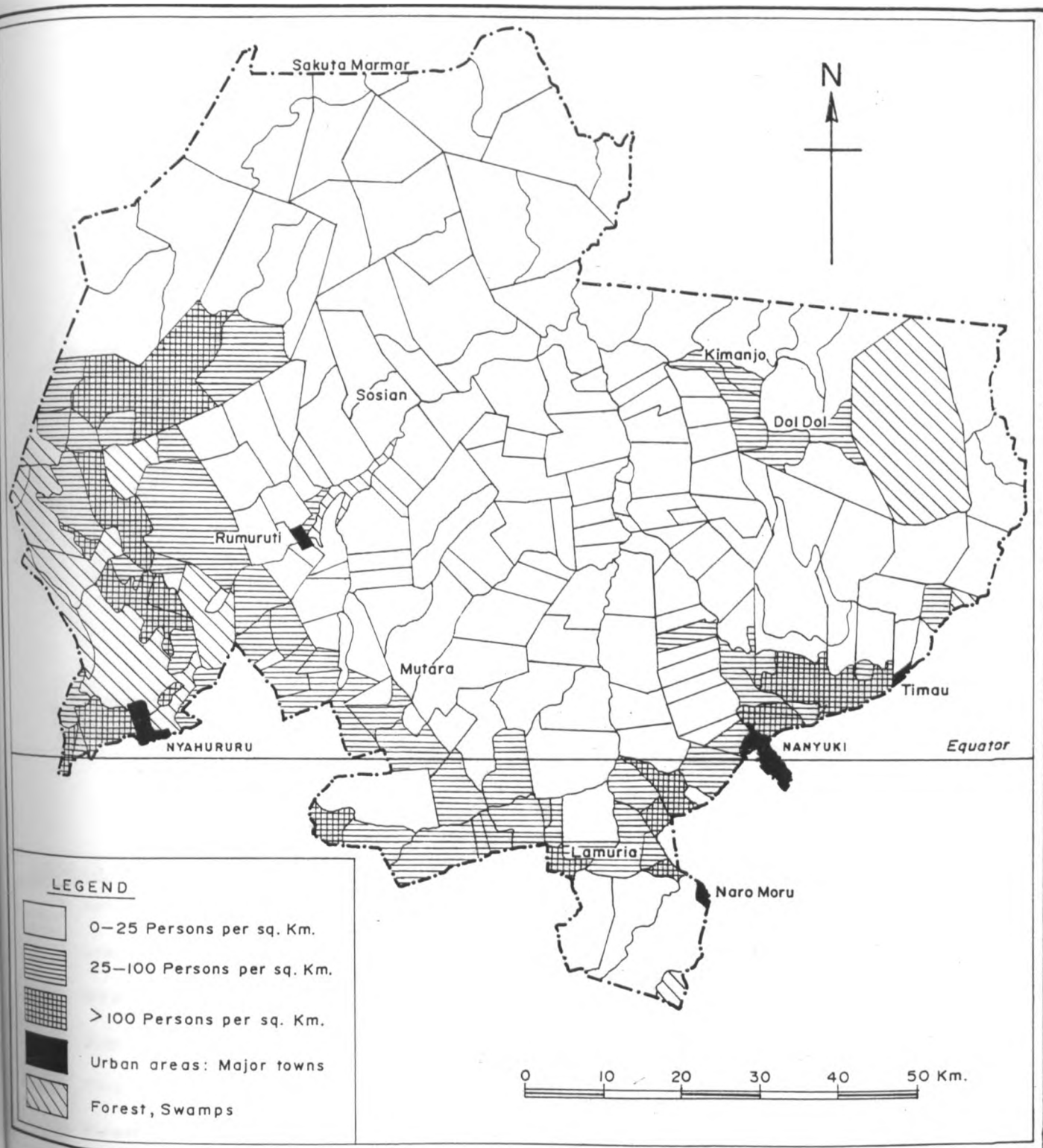
Table 1 gives the population density by division in district. As can be seen from the table, Ng arua division is the most densely populated, followed by Rumuruti, Central and Mukogodo respectively.

Table 1: Laikipia District: Population Density by Division

Division	Area (km ²)	1979	1993	1994	1996
Rumuruti	3, 498	13.8	26.1	22.3	29.5
Ng arua	1,070	32.6	61.6	64.5	69.6
Central and Lamuria	3,989	10.0	19.9	19.9	21.5
Mukogodo	1,166	9.9	18.2	18.2	19.7

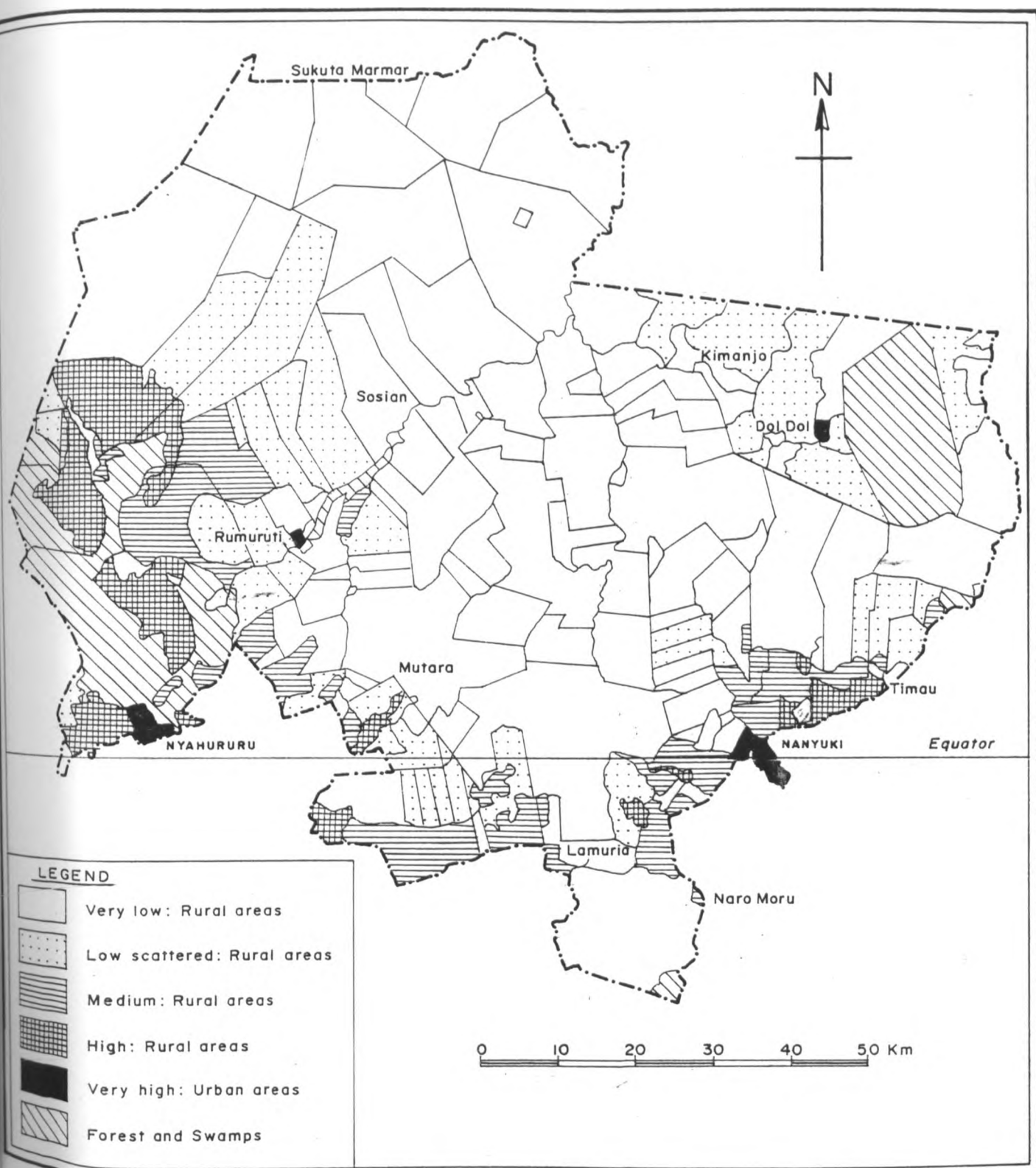
Source: District Development Plan (1994-96).

Figure 4 Laikipia District: Population Density and Distribution.



Source: L.R.P. Nanyuki, 1990.

Figure 5 Laikipia District: Settlement Pattern.



Source: L.R.P. Nanyuki, 1990.

2.4 Demographic Characteristics

According to the 1989 Population Census, the district had 238,000 people(excluding Nanyuki township). This represents an increase of about 77% over a period of 10 years, i.e considering the 1979 population figure of 134,524. This also indicates a population growth rate of about 5.9% per annum. At the same time, a classification of the population into the economically vital age-groups gives the following results;-

Table 2: Age-group structure of Laikipia District

AGE-GROUP	NUMBER	PERCENTAGE OF TOTAL POPULATION
0 - 19	163,241	61
20 - 54	89,415	34
55 and over	13,743	5
TOTAL	266,399	100

Source: Kiteme, 1992:42; Population Projection of Kenya (1980 - 2000)

The above ratios indicate that only 39% of the population in the district is economically productive, while the rest are considered to be dependants.

2.5 The Physical and Social Infrastructure:

In terms of the provision of physical and social infrastructure, Laikipia District is one of the least developed in Kenya. There are two major arteries constructed in colonial times - Nairobi - Karatina - Nanyuki - Isiolo/Meru (eastern Laikipia) and Nairobi Gilgil - Nyahururu - Rumuruti - Maralal (western Laikipia) are still very important as major access routes that link Laikipia district with Kenya's national transport network. These

two old routes have been supplemented by the addition of two new ones that run through newly traversed areas. These areas are the Nyeri-Mweiga-Nyahururu (only partially within the district) and the Ng'arua-Kinamba routes. (Leiser, 1988).

Access to major trading in major trading and administration centres of the district is through tarmac roads via the neighbouring districts such as Nyeri and Nyandarua (Kiteme, 1992: 45). The communication network consists of roads that are largely impassable during rainy periods. This has had adverse effects on the development of a dynamic market economy in the district as the free movement of resources, goods, and services is limited. The network of secondary roads plays an important role in public transport. However, the supply system is extremely rudimentary throughout the district. Transport capacity and means of transport both decline rapidly in importance as distance from the main central places increases. Only in rare cases is there a local road network like those in other regions of the country that have been systematically opened up to transport for a long time.

Secondary roads are often routes that lead to former ranches or serve other enterprises or they are new routes that were planned or constructed spontaneously. However, the district is well served with telephone communication, as every divisional and major market centres are supplied with the facility (Kiteme, 1992). The underdeveloped road communication network will continue to exert an adverse effect on the socioeconomic development of the district.

2.6 Distribution of Markets/Urban Centres

There are quite a number of market/urban centres within the district from where farmers can get necessary farm implements (Fig.6). Unfortunately, there are quite a number of areas where the distances covered are far. Furthermore, most urban/market centres are inadequately stocked to cope with the rising demand for those implements. This retards farming activities. For the very basic necessities, people have at times to travel for long distances such as to the major urban centres of Nanyuki or Nyahururu, both of which are at the far ends of the District. During these journeys to and from these urban centres, much time and money is wasted for even minor businesses. Thus, urban/market centres will require to be developed faster to cater for the increasing requirements of their hinterlands. In the case of Laikipia District, it should be noted that there has been a rapid growth of Central places since 1963 due to important migration.

2.7 Growth of Urban Centres

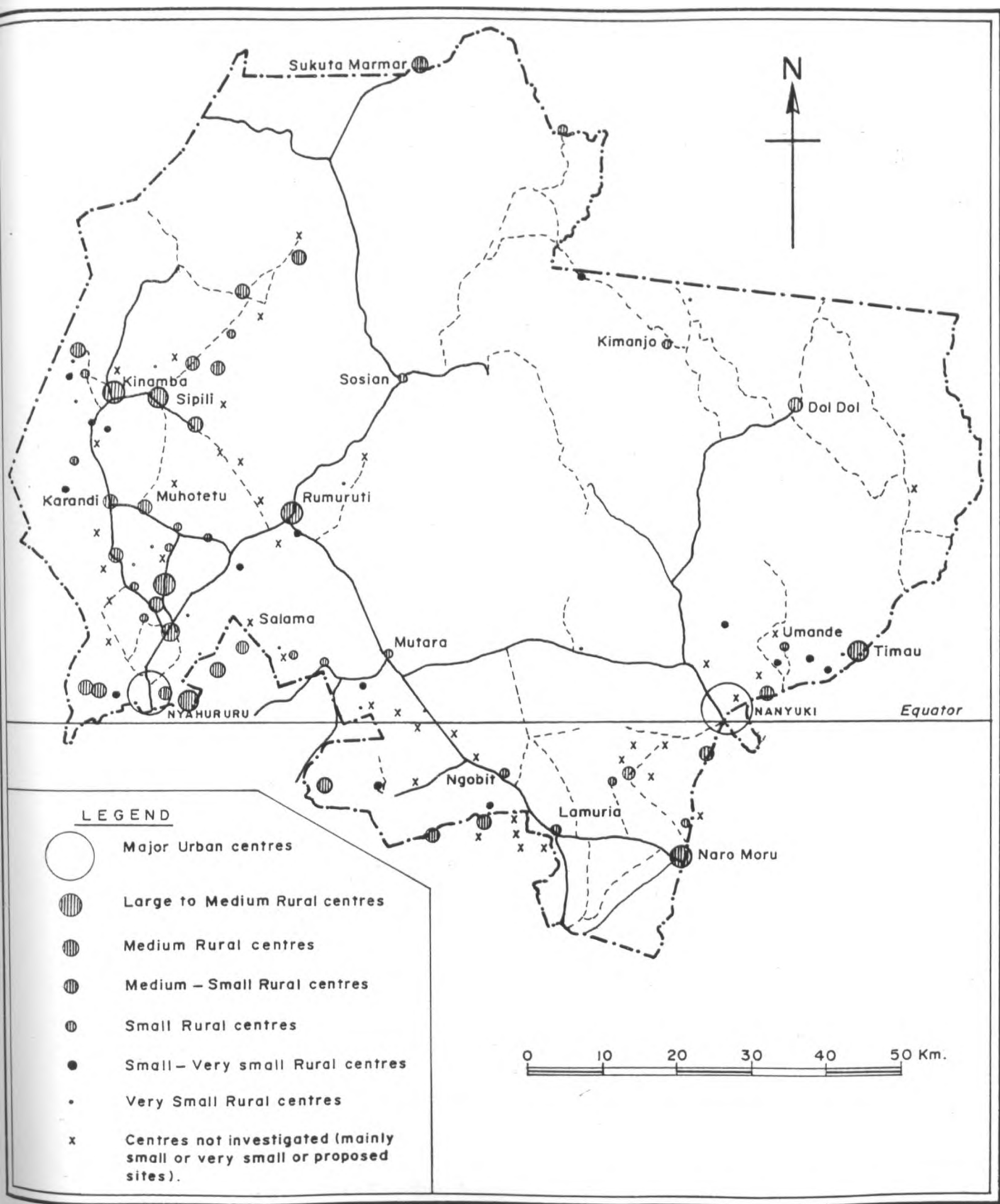
2.7.1 The Pre-Colonial Period:

This period was characterized by free movement of people within the confines of ethnic land. The two ethnic groups were the Maasai pastoralists and the Kikuyu agriculturalists, whose modes of life were non-competitive with respect to demand for land due to relatively small populations of these groups at that time. If anything, the two modes of life were complimentary, being based on exchange of cattle and goats with grains between the Maasai and Kikuyu respectively. Land utilization for agriculture by the more numerous Kikuyu was based on shifting cultivation on the clan lands, thereby obtaining loss of soil fertility. Among both pastoralists and

agriculturalists, non-farm activities formed an important occupation for a significant number of people. These non-farm activities included metal work, pottery, herbal cures, crafts and hunting and gathering of forest products. The outputs of these activities in addition to agricultural produce encouraged several forms of trade including barter market exchange, within a tribe and between neighboring tribes. Inter-tribal trade with salt, iron, cloth and luxury items to the interior communities, also took place. By that time there were no built up constructions to indicate the common trade-routes or place of exchange.

2/

Figure 6 The Central Places of Laikipia District.



Source: L.R.P. Nanyuki, 1992.

2.7.2 The Colonial Period

Colonial occupation of Kenya was adversely felt in the so-called "White Highlands" which included Laikipia District. Before that period, Laikipia was the home of the nomadic Maasai, who were subsequently moved by force to either Kajiado area or the nearby Mukogodo reserve. The establishment of Rumuruti (1920) and Nanyuki (1921) as the initial colonial strongholds within Laikipia laid the ground for more effective occupation of Laikipia by non-African settlers in subsequent years. Initially, these two were supplied with goods from outside, except in the case of meat, which was furnished by the newly installed non-African settlers. The creation of "White Highlands" reduced the traditional land of the Kikuyu people quite considerably (notably within the Kiambu / Murang'a area in the South). Meanwhile, the Kikuyu population was increasing, causing a big land pressure and hunger. The "pool" of African labour that could not be absorbed in the shrinking Kikuyu land, became laborers and squatters on the white farms, where wheat and dairy farming became an export oriented enterprise.

In time, urban centres other than Nanyuki and Rumuruti were growing including Nyahururu (previously Thompson's Falls), Naro Moru, Timau and Dol Dol. The Nanyuki-Nairobi-Mombasa railway plus the Nyahururu railway branch, stimulated the

growth of these urban centres, as they increasingly became collecting points for agricultural products from the hinterland destined for further transport to external markets.

Thus, these urban centres became exit points for products generated in Laikipia. Whatever gains accrued from the export of these agricultural products enriched the white settler community, while little was gained by the majority of Africans in the surrounding areas. The local population was peripheral to the whole system, as these central places operated as distribution and service centres for the large scale sector and the small urban population found in the region (Obudho, 1993).

2.7.3 The Post-Colonial Period:

The "land hunger" that emerged during the colonial period is now being satisfied, at least to some degree, through small scale settlement in Laikipia. Settlement schemes on Kenyan Government land (former Crown lands) were initiated either through government or through land buying companies that subdivide the former white farms among shareholders. In time these small holder farms were further subdivided among family members who later established independent families. This has resulted in declining production due to declining economies of scale. As immigration continues, the increased population demands nearby supply/provision centers. Thus, many new central places emerged on the subdivided estates without taking into consideration the actual potential of these areas. The scattered pattern of settlement also increased the cost of all infrastructural installations.

The formerly designated colonial central places such as Rumuruti and Nanyuki became less significant. Timau and Naro Moru retained their earlier importance, although they lost their complete dominance due, mainly due to the dispersal nature of

rural settlement, which is totally different from the pattern that once existed during colonial times. New shopping centres which provide strictly basic needs have come into being nearer to the rural areas in order to minimize transport expenditure. Such new centres were the result of planning (each subdivided area contains an area set aside for the development of trading centres), or they emerged spontaneously. They started within former non-African settler farm houses or on former farm premises, as in the case of Matanya, or they were started on an important route or crossroad or developed in any place where an innovative and solvent individual has decided to erect a small shop that does well enough to entice others to follow suit. In 1987, there were a total of some 120 central places in the district (Fig. 7 Annex 1 and 2).

It must be noted that production for the local market in these places is very limited and essentially involves cattle, small stock (sheep and goats), few vegetables and few manufactured goods. In most cases, the few agricultural (e.g wheat) and animal products (e.g hides and skins) are sold off at low prices to large manufacturing companies in urban centres and the final product is brought back in the form of bread and shoes to be sold at prohibitive prices. This means that the value of these farm products is added up outside and only very little is ploughed back into Laikipia District. Consequently, the increasing number of immigrants into Laikipia District become more dependent on transfers and remittances from relatives who are living outside the area.

Presently, the available evidence show that the spatial distribution of central places does not correspond to estimated (actual) population distribution . This means that generally speaking, the situation is not yet consolidated. Only a very limited number of urban centres can be found away from the main road (due to bad access), although these areas can be understood as the result of the settlement process, which often precedes attention to infrastructural development, including the development of central places.

2.8 Political Issues and Future Perspectives

2.8.1 Political Issues

Available evidence clearly indicates that Kenya cannot afford to absorb its increasing population on her tiny 18% of the land that has high agriculturally potential. The portion of land already has overwhelming 80% of the total population living on it. Increasing demand for agricultural employment in marginal areas does not auger well in the absence of appropriate technology, especially within the arid zones that make up the larger part of the land surface. To encourage settlement in these areas is to invite general impoverishment of the people, as well as the richer ones sacrifice their wealth in support of their relatives who, though genuinely working hard to generate production, cannot survive within the harsh environment. A continued sacrifice in support of these people reduces the possibility of investing in different gainful enterprises. Employment within the formal sector, where until recently the labour force pinned its hopes, cannot absorb more than 40,000 job seekers per year, whereas the labour force is growing at 500,000 per year. Ironically, the hope for gainful of the remaining large majority of people is in these very marginal lands. In order to minimize the investment into "no future" enterprises, at least two possibilities seem attractive, namely; innovations of arid zone agricultural crops should be promoted and a consolidation of the "wildly" growing centres.

The attempt should be to increase self reliance by promoting their own raw materials that can be further developed in local industries. For example, tannery and meat factories can be established to manufacture products for local consumption out of local raw materials, and thus save huge amounts of money that are lost to outside manufacturers in the distant urban centres, through transport expenses and, last but not at least, to traders and middlemen.

2.8.2 Future Perspectives

A future consolidation of the "wildly" growing urban centres could lead to a reduced number of central places, each of them assuming the triple function of collection point for the surplus farm products of the respective hinterland; serve in supplying the population with goods and services and, finally, provide conditions favorable for a wide range of income generating activities in the manufacturing and services sector (Mburugu and Leiser, 1990). This consolidation is likely to result in a reduction of the number of these urban centres especially if the process is fostered and directed in such a way that each center can fulfil the above (three) functions.

The policy of fostering and actively promoting the consolidation process among central places can be understood as a political signal to; discourage immigration into unsuitable areas, which will later become a burden to the district as a whole; and, encourage local initiative in promising centers as a means of to increasing local available employment opportunities.

Promising urban centres are the ones which have a hinterland of a certain size and fair or good agricultural potential. The urban centers could then take on the role of "small gate" urban centres in the medium term. This expression is used to describe places which serve as a rural focus for all those who seek income generating off-farm activities daily reach of their farms, or are in need of services (health, education) or goods. A "small gate" urban centre should also have the capacity to absorb surplus population from its farming areas which are too marginal to guarantee sustained farming. Such urban centres would have the advantage of a relatively dense settlement, which would reduce the cost of infrastructure. Moreover, there would be advantages based on close contact between the different enterprises, especially between manufacturing enterprises. Furthermore, the rural exodus that floods the greater urban centers of the country could be reduced.

Finally, access to and within the district will need attention. In regard to access to the district from the central and more developed parts of Kenya, existing railway lines should be given higher priority for both passenger and freight transport. In regard to access within the district, the construction of new access roads should only be promoted in areas suitable for crop farming. In order not to encourage further immigration to marginal farming lands (Mburugu and Leiser, 1990). Initiatives that center on the district should be encouraged as much as possible. This means that priority should be given to business and enterprises that rely on local raw materials (e.g honey, meat, hides and skins). This would help eliminate imports, increase local self-reliance, and increase income within the district. The central places would benefit from the increased economic activity and purchasing power among local population.

As for the exchange of goods with other regions, it should be noted that the district has some potential for providing other regions of the country, including urban centres, with meat and to a lesser extent, with crops (maize, wheat), whereby the latter will come almost exclusively from western Laikipia. Processing of these local products should be done in the district wherever possible in order to generate value added within the economy of Laikipia District. Under present circumstances, considerable sums of money are drained from the district to outside manufacturers in other areas of the country, not to mention losses incurred from transport, traders, and middlemen (Mburugu and Leiser, 1990).

CHAPTER THREE

THE METHODOLOGY

3.1 Introduction to the Methodology:

This chapter deals with the principal procedures used in gathering information relating to the research as well as the actual data analysis. The methodological approaches used in this study were those geared towards deriving detailed information on current trading centers generally and marketing in particular. The term "trading centre" is for the purposes of this study, replaced by "small urban centers", and generally refers to central places of varying size and importance. This notion seems to be appropriate for the study, since the enterprises covered involve much more than trade alone. Other types of services and even manufacturing are located in the central places (Mburugu and Leiser, 1990).

We will first explain the type of data required and the relevant sources from which such data is to be obtained. After which the sampling procedures to be used in the selection of centers for study is considered. Next, the problems of investigation vis-a-vis the techniques or methodological procedures relevant to their solutions are stated. The chapter ends with the actual data analysis and presentation of the data collected from field investigation, together with the presentation of final results.

3.2 Data Required:

The investigation mainly requires information relevant to the research problems and/or objectives identified above. The first problem is concerned with measuring the centrality or potential market areas for a selected urban centre. The variables to be used include the relative growth and potential of the informal sector, the relative attraction of each central place, and the institutional framework including degree of modernisation and concentration of enterprise (the soundness of the economic base). These three broad groups of indicators are further discussed in section 3.6 below. The results of these investigation would be of practical use as it provides a central place idea to be used by planners as well as prospective investors for locating retail business of other forms of enterprise in urban centres.

The second problem involves testing the hypothesis on how distant factor affects the preferences of shoppers for the different urban centres. The problem derives its significance from one of the notions of Central Place Theory- that there is an economic and geographic limit to distance beyond which people will find it unfeasible to bear the cost of transportation in order to purchase central goods and services. Thus, variables required for hypothesis testing include, distance travelled to each urban centre and the corresponding total number of respondents or customers to such centres.

The third problem is aimed at investigating issues relating to channels of marketing. The aim is to find out the performance of the various channels and thereafter establish the reasons leading to the differences in their performance. The data required is the number of farmers marketing their produce through such channels and the reasons for using the channels. Also important is the problem that they experience in using such channels.

3.3 Data Sources:

The main sources of data use in the study can be broadly grouped into two, namely, primary and secondary sources.

3.3.1 Primary Sources:

These consist of information obtained from the fieldwork by the researcher(s). The procedure, carried out largely under the district atlas project, involved personal interviews of households. By use of a recording schedule which had been prepared in advance together with the accompanying legend, the households were asked certain questions and their replies entered appropriately (into the recording schedule). In all the cases, the legend was used in recording the information so as to facilitate the consistent and easier analysis of the information. Such interviews were preceded by proper greetings and explanations about the purpose of the interview by the field researcher(s) who also answered any questions asked by the interviewees, thus clearing up any misunderstanding or suspicions that could arise.

The interviewees were let to take their time in order to give satisfactory answers. In cases where statements/answers were believed to be mistaken, further questions were tactfully asked to obtain the correct replies. The researcher(s) also used personal observation to gather certain information and these were also entered into the recording schedule. In some cases, questionnaires would be left with respondents to be collected several days later.

3.3.2 Secondary Sources

The researcher obtained secondary information in the form of published materials or data from a variety of sources especially from the L.R.P. Other secondary information sources included data from local and central administration, books, reports, journals, magazines and other publications, which formed part of the library research carried out by the author.

3.4 Sampling Procedures

3.4.1. Central Places

The criterion was to choose those centres that would provide the necessary data required for making decisions about the allocation of investments in regard to the development of central places and infrastructure. Investments which should follow from such a study should be in well chosen places, where many persons can be reached, or in central places with a high potential not only for present but also for future considerations. To be useful for this study, only data on daily market centres were considered.

The study area is the entire Laikipia District, a region of rather numerous central places. Since any functional classification of urban centers based exclusively on population can purely be an arbitrary and crude measure of their relative importance, it is essential that the central function offered by each settlement is considered. All settlements came to the list of data assembly by virtue of possessing any of the functions being considered. Centres selected for study, therefore, included Nanyuki, Nyahururu, Naro Moru, Sipili, Timau, Kinamba, Rumuruti, Ol Jabet, Muhotetu, Dol Dol, Nairutia, Matanya, Karandi, Umande, Matwiku,

Ndurumo, Muruku, Ol Moran, Lamuria, Mutara, Mithuri, Pesi, Salama, Minjore, Sosian, Survey, Gatero, and Gatundia (Fig. 6).

3.4.2 Households

Collecting data from the entire population in the district (composed of households) could have been very time consuming and expensive. Instead, a sample of 183 households was selected from the population of 5,950 households. This is based on the 1989 population census of 238,000, which excludes Nanyuki township, and an average household size of 4 in the district. Furthermore, since it was essential that every household in the population of the district has a chance of being chosen in the sample (so that the sample results may be representative of the population), a stratified random sampling method was applied. The four divisions were grouped into their relevant areal sizes (in km²). However, due to great differences in the population densities of the four divisions, the number of samples drawn for interview in any of the divisions need not to have been strictly proportional to the sizes of the divisions. Thus, non-proportional stratified sampling was used in some cases, especially for Ng'arua and Mukogodo Divisions.

3.4.2.1. The Sampling Frame

Based on the above procedure, the sampling frame on which the household sampling data is based can be described as below;

Table 3 Sampling Frame for Household Data

Division	Area(Km ²)	Pop.Density	No. of H'hold	Sample size
Rumuruti	3498	26.7	2119	70
Central	3201	24.0	17924	68
Ng'arua	1070	62.9	15681	33
Mukogodo	1166	19.2	5208	12
District	9718	26.2	60552	183
Percentage (%)			100	0.3022

Source: Compiled by Author (1996).

3.5. Introduction to Data Analysis and Presentation

This section deals with the techniques that are to be used to facilitate the presentation, analysis and interpretation of data for purposes of the research. Two broad categories of statistics, namely; descriptive and inferential statistics, were used.

3.5.1 Descriptive Statistics

These were used to organize and present numerical data. The purpose was to describe data which has already been collected, so as to understand the trends taken by such data. Basically, two of such methods were used to summarize numerical data. First, the graphical presentation of data, including line, bar, and pie charts. Secondly, frequency distribution was constructed, where necessary and portrayed graphically in the form of histograms, frequency polygons.

3.5.2 Inferential Statistics

This involves techniques used to make general conclusions about an entire group (the population), based on a sample of the population. Generalizations are made based on the sample results. Several reasons necessitate the use of sampling, including time limitation, expense factors, and also the physical impossibility of studying all the populations in this case, central places and households. The main facet of statistical inference is in hypothesis testing, a formal procedure often followed to test the validity of certain statements. The statistical techniques to be used to test the hypothesis (for this study) include the multiple regression and correlation analysis, as well as the chi-square technique.

3.6 Data Analysis and Presentation

In this section, the various methods used in data analyses are discussed. The methods used depended on the forms of the available data and the problem in question.

3.6.1.1 Indices

The first problem involved measuring the centrality or potential market areas for some selected centres. Certain indices were used which provided a means of interpreting the data available on urban centres. Thus, in assessing such centres using indices, there was need to take advantage of the emerging pattern which had demonstrated meaning both in social and economic sense. The indices considered important were therefore, established links with the hinterland. These included the informal sector whose relative importance can generally be measured from the total number of shops and businesses in a central place together with the time period in which they were established: degree of specialisation and increased variety of goods and business atmosphere. The next index is the relative attraction of a central place. It is generally agreed that there is great importance for the diffusion of innovation in rural areas. Diffusion theorists emphasise that information flows are indispensable prerequisites for the flows of capital, labour and commodities. Diffusion of innovations comprise two processes, namely; the dissemination of information about the innovation and adoption of the innovation. The sources and receivers of information are social actors with definite locations who establish contact with each other for various reasons. Thus, in the study area respondents were asked where they went for several types of services, and their responses were recorded in a tabular form so that central places could be organised in terms of economic and social significance. Central places with high scores of people coming for several reasons were highly significant in terms of diffusion of innovation.

The last index used was the institutional framework, relative degree of urbanisation (soundness of economic base). This stems from the importance of entrepreneurs in the development process. They are considered a key element in the growth pole concept. Friedmann (1972) saw development as innovation and argued that "innovations require individuals or institutions that will organise the necessary resources and assume the risks of failure, every innovation requires an agent". Thus, the businessmen, bus and lorry owners, and their like are the entrepreneurs of a rural society. The concentration of such people can be measured by recording the numbers present in each centre. Those with highest concentration are likely to be appropriate growth centres.

Based on the above indicators and on the available data, the hierarchy of centres was identified as indicated in section 3.6.2 and table 5 below. The arrangement is an indication of the order of market attractivity and probably growth potentials.

3.6.1.2 Regression and Correlation Analysis

The second problem relates to how distance factor affects the preferences of shoppers for the different urban centres the statistical technique used in solving this problem was the regression and correlation analysis. This is a general statistical technique through which one can analyse the relationship between a dependent (response) or criterion variable and a set of independent (explanatory) or predictor variables.

The general linear regression analysis assumes that the underlying are linear and additive. As a descriptive tool, regression analysis is used to; find the best linear prediction equation and evaluate its prediction accuracy, and to control for other confounding factors so as to evaluate the contribution of a specific variable or set of variables. It is also used to find structural relations and provide explanations for rather complex multivariate relationships.

3.6.1.3 The Chi-Square

The third problem is concerned with determining the performance of the different marketing channels in the marketing of agricultural produce. The statistical technique used in solving this problem is the Chi-square test. This is a statistical test which can be used whenever we wish to evaluate whether or not frequencies which have been empirically obtained differ significantly from those which would be expected under a certain set of theoretical assumptions.

It is applied to problems in which two-nominal scales variables have been cross-classified. The statistical test assumes independence between samples. Also the sample size must be relatively large because chi-square has a sampling distribution that approximates the true distribution given in the table only if the population is large.

3.6.1.4 Graphic Presentations

This is a way in which data is presented in a visual form so that the differences are distinct. The figures depict areas or heights proportional to the frequencies in each category. If the scale is nominal, the actual ordering of bars will be irrelevant. For ordinal and interval scales the bars can be arranged in a proper order, giving a good visual indication of the frequency distribution. The resultant figure is referred to as the histogram. Either the absolute frequencies or the proportion of cases in each interval may be indicated along the ordinate.

3.7 Assessment of Central Places in the District

To provide an overview of the urban hierarchy currently existing in the study area, certain indicators were used. Generally, centers were compared with each other and with overall district picture. The comparison was on the basis of indicators conventionally thought appropriate for such an analysis (Kimani and Taylor, 1973:15-20). This comparison was quantitatively done and the results tabulated. Thus, it was important, first, to determine which indices would be used. There were three broad groupings of indicators: the relative growth and potential of the informal sector,

the relative attraction of each place, the institutional framework, degree of modernization and concentration of enterprise or the soundness of the economic base.

(i) The Relative Growth and Potential of the Informal Sector

The phrase "informal sector" as used here and defined by I.L.O generally refers to those activities characterized by ease of entry, reliance on indigenous resources, family ownership of enterprises, small scale of operation, labour intensive and adopted technology, skills acquired outside the formal school system, and unregulated and competitive markets. Arguments for the importance of this sector have already been made. For this analysis, two specific indices have been used to measure the relative importance of this index.

a) Total Number of Enterprises

Only centers with 15 businesses or more were considered for the award of points. This, it was felt, was a reasonable minimum threshold and also to some extent, a measure of the relative concentration of entrepreneurs.

Table 4.1 Index 1: Award of Points on the basis of Informal Sector

(a) Total Number of Enterprises

Number of Enterprises	Points awarded
1 - 14	0
15 - 20	1
21 - 30	2
31 - 40	3
41 - 50	4
51 - 60	5
61 - 70	6
71 - 80	7
81 - 90	8
91 - 100	9
100 - 200	15
200 +	20

Source: Compiled by the Author (1995)

(b) Average Turnover per Enterprises

This was also felt to be an important measure of the importance of the informal sector as it reflects the intensity of activity in the center. Central places which recorded average enterprise turnovers of above 20 per annum are the ones that were considered for points. This, it was felt, was a reasonable minimum for a viable centre in terms of intensity of activity.

The points were awarded as follows:

Table 4.1 (b) Average Turnover per Enterprise

Average enterprise turnover per annum	Points awarded
20 and below	0
21 - 40	1
41 - 60	2
61 - 80	3
81 - 100	4
101 - 130	5
131 - 160	6
161 - 190	7
191 - 220	8
221 - 250	9
251 +	10

Source: Compiled by the Author (1995)

(ii) The Relative Attraction of Each Place

The arguments on the significance of this index are primarily for the purpose of diffusion of innovation, as was explained earlier. The award of points was tabulated as below:

a) Total number of respondents who visit the center for a variety of goods and services;

Table 4.2, Index 2: Award of Points on the Basis of the Relative Attraction of a Centre (a) and (b)

(a) Total Number of People Visiting a Centre

Total no. of people	Points awarded
Below 5	1
5 - 10	2
11 - 15	3
16 - 20	4
21 - 30	5
31 - 40	6
41 - 50	7
51 - 60	8
61 - 100	10
101 +	15

Source: Compiled by the Author (1995)

(b) Total Employment

Total Employment	Points Awarded
20 and below	1
21 - 30	2
31 - 40	3
41 - 50	4
51 - 60	5
61 - 70	6
71 - 80	7
81 - 90	8
91 - 100	9
101 - 110	10
111 - 120	11
121 - 130	12
131 - 140	13
141 - 150	14
151 +	15

Source: Compiled by the Author (1995)

(iii) **The Institutional Framework, Degree of Modernization or the Soundness of Economic Base**

The arguments for the importance of this index have also been made. This was rather a difficult concept to measure but, nonetheless, an attempt was made to identify the extent to which the following functions were present in the central places viz, consumer goods, banks, farm implements and inputs, medical services, electricity, telecommunication facilities, fuelling stations and vehicle repair, among others. Furthermore, about seven broad sub-groups of enterprises were identified and points were awarded to the centres on the basis upon which they were represented with the sub-groups. Finally, the average turnover per employment was also used to infer the degree to which the above index existed in a centre.

(a) Subgroups of Enterprises

Table 4.3, Index 3: Award of Points on the basis of institutional framework and modernization degree (a) and (b)

Number of Sub-groups of Enterprises	Points Awarded
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Source: Compiled by the Author (1995)

(b) Average Turnover per Employment:

Average Turnover per Employment	Points Awarded
Below 20	0
20 - 30	2
31 - 40	4
41 - 50	6
51 - 60	8
61 - 70	10
71 - 80	12
81 - 90	14
91 - 100	16
101 - 120	18
121 +	20

Source: Compiled by the Author (1995)

On the basis of the above indices, the urban hierarchy for the district was established as shown on the Table 5 overleaf

Table 5: The Assessment of Centres in the District

Name of Central Place	Indicators and Points			Total Points scored
	I	II	III	
Nanyuki	28	30	28	86
Nyahururu	25	30	24	79
Naro Moru	25	18	34	77
Sipili	24	25	24	73
Timau	21	19	30	70
Kinamba	20	22	28	70
Rumuruti	19	19	24	62
Ol Jabet	12	16	22	50
Muhotetu	8	8	26	42
Dol Dol	11	7	22	40
Nairutia	7	8	24	39
Matanya	8	4	24	36
Karandi	6	6	24	36
Umande	6	2	26	36
Matwiku	6	4	22	32
Ndurumo	6	5	20	31
Muruku	5	2	24	31
Ol Moran	4	8	18	30
Lamuria	6	4	20	30
Mutara	4	2	22	28
Mithuri	7	3	18	28
Pesi	4	3	20	27
Salama	4	3	20	27
Minjore	4	4	18	26
Sosian	3	2	20	25
Survey	2	5	14	21
Gatero	2	2	16	20
Gatundia	2	2	14	18

Source: Compiled by Author (1995).

Table 5: The Assessment of Centres in the District

Name of Central Place	Indicators and Points			Total Points scored
	I	II	III	
Nanyuki	28	30	28	86
Nyahururu	25	30	24	79
Naro Moru	25	18	34	77
Sipili	24	25	24	73
Timau	21	19	30	70
Kinamba	20	22	28	70
Rumuruti	19	19	24	62
Ol Jabet	12	16	22	50
Muhotetu	8	8	26	42
Dol Dol	11	7	22	40
Nairutia	7	8	24	39
Matanya	8	4	24	36
Karandi	6	6	24	36
Umande	6	2	26	36
Matwiku	6	4	22	32
Ndurumo	6	5	20	31
Muruku	5	2	24	31
Ol Moran	4	8	18	30
Lamuria	6	4	20	30
Mutara	4	2	22	28
Mithuri	7	3	18	28
Pesi	4	3	20	27
Salama	4	3	20	27
Minjore	4	4	18	26
Sosian	3	2	20	25
Survey	2	5	14	21
Gatero	2	2	16	20
Gatundia	2	2	14	18

Source: Compiled by Author (1995).

CHAPTER FOUR

THE MARKET AND TRADE AREAS FOR NANYUKI

4.1.1. Introduction

It is important to describe and delimit the trading areas of urban centres. The main concern is the economic role of the centres as providers of goods and services to a surrounding region. In this section, an attempt is made to answer the pertinent economic questions businessmen and the farming population or consumers usually ask. Business persons always seek to realise their largest possible profits, whereas consumers to minimise their purchase costs. This chapter explains the chosen model to be used in depicting potential market areas of a selected centre. This is later followed by empirical analysis so as to test the model essentially for academic and planning purposes.

4.1.2. Catchment Areas for Nanyuki on the Basis of Selected Model

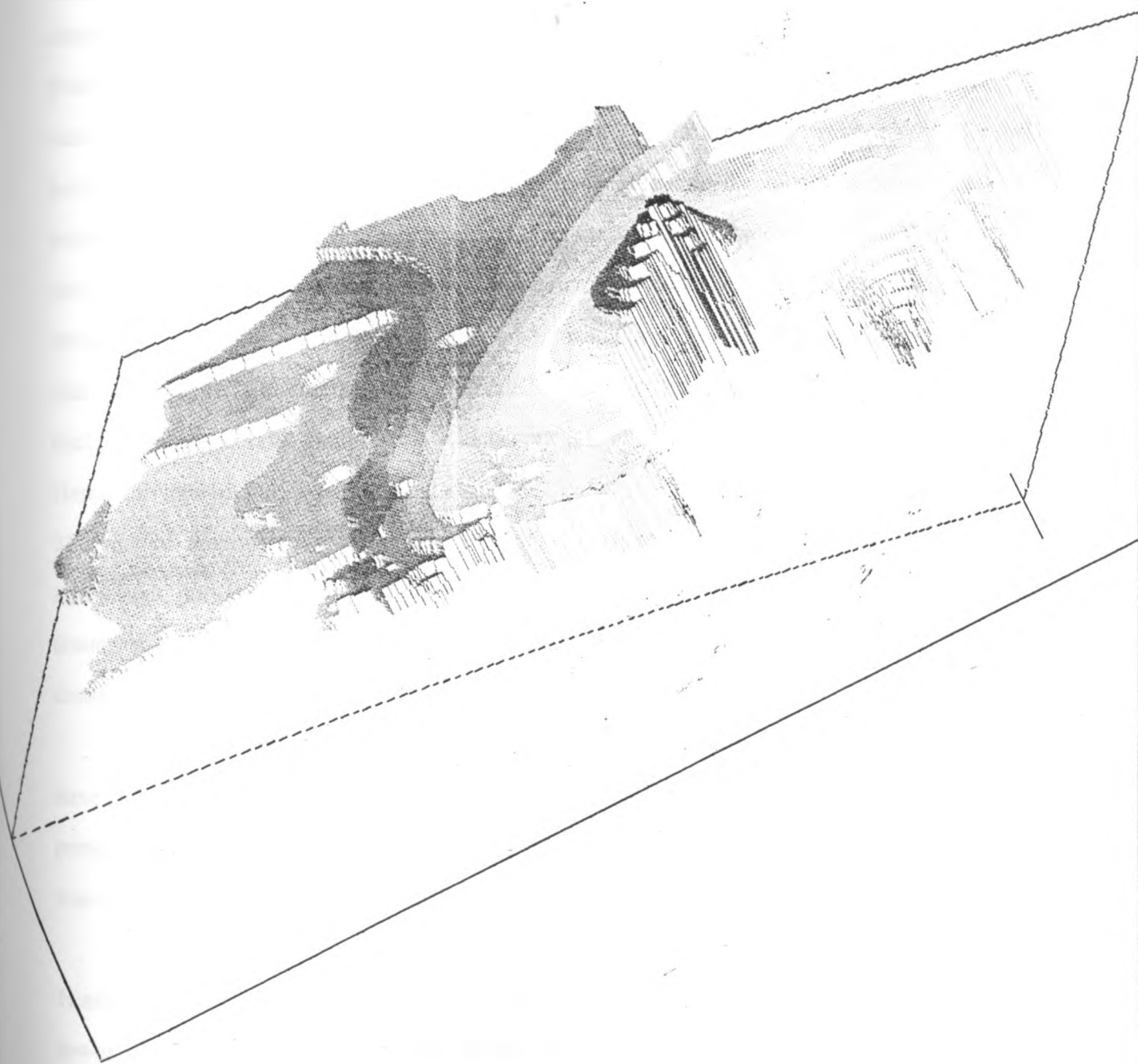
The figure 8 shows the potential market or catchment areas for a selected center in the district - Nanyuki. It has been modelled on the basis of total number of enterprises in the center, which is highly correlated with the total turnover.

The highest peak represents Nanyuki town. As one moves away from Nanyuki, its influence becomes less and less felt, partly due to the distance factor, and also due to competition from other centers (Notice the lowering peaks representing other centers). For the district as a whole, the influence of Nanyuki urban centre is least felt in Nyahururu township on the furthest end of the district, itself represented by the lowest peak on the left hand side of the figure.

The Model is an indication of the attractivity and therefore probable market share for the center in the light of other competing centres. It shows a way in which Geographic Information Systems can bring the science of spatial visualization to market analysis. It is important to note that the model represents only a useful generalization about the concept of "*Potential Market Area*" for the centre(s). The actual market area depends on the transferability or the ranges of goods and services being offered, and on changes over time.

For instance, the lowering of the relative transport costs could widen the market areas due to increased interaction of all kinds.

Fig. 7: Catchment Areas for Nanyuki on the basis of Chosen Model



Source: Huber, M. and L.R.P. Data Base (1994)

4.2 Total Turnover Effect as the Model for Hinterlands and Trade Centre Viability

In this study, total turnover effect has been taken as a model for potential market areas for centers in the study area. Several factors influence the value of the total turnover in a central place including the total number of enterprises in that central place and the total number of customers who visit that central place, both of which are positively correlated with the total turnover. The rationale for using the total turnover effect as the model is derived from an economic viewpoint. In studying centers and their market areas, the concern is with investment decisions and criteria, which involves the principles underlying the allocation of scarce investment resources in a rational manner so as to maximize output. It is a commonly known fact that the private enterprise is motivated by profit maximization and their investment decisions are generally for projects which may not be conducive to economic development. Hence reliance on public authorities.

The rate of maximization of output per unit of capital criterion is especially important for investment purposes. The logic involved is that since capital is scarce in underdeveloped countries, maximization of output per unit of capital employed should be an important consideration. (Jhingan, 1990: 605)

In the case for investment decisions in central place, those in which investment projects have a high rate of capital turnover should be selected. It is such centers that will allow projects to be quick yielding especially with a low capital intensity, thus making it possible for scarce capital resources to be realized soon enough for re-investment into other projects.

The hierarchical structure of central place is often measured by the size of function. Hierarchy is assumed to mean that restricted functions are higher in level (i.e the higher the fewer). "Restriction" is measured by; number of central places having the function; size of the population served by the function and area of population served by the function. In this study, the latter has been taken to indicate this measure of "restricted" functions offered by the studied centers. This areal extent has been delineated through the use of the total turnover

effect. Turnover itself refers to the amount of business done in a particular period and measured in monetary terms, and varies between different traders. Nonetheless, the total figures indicate the volume of business in enterprises and centers, hence the attractiveness of such central places.

4.3 Employment Productivity of the Central Places

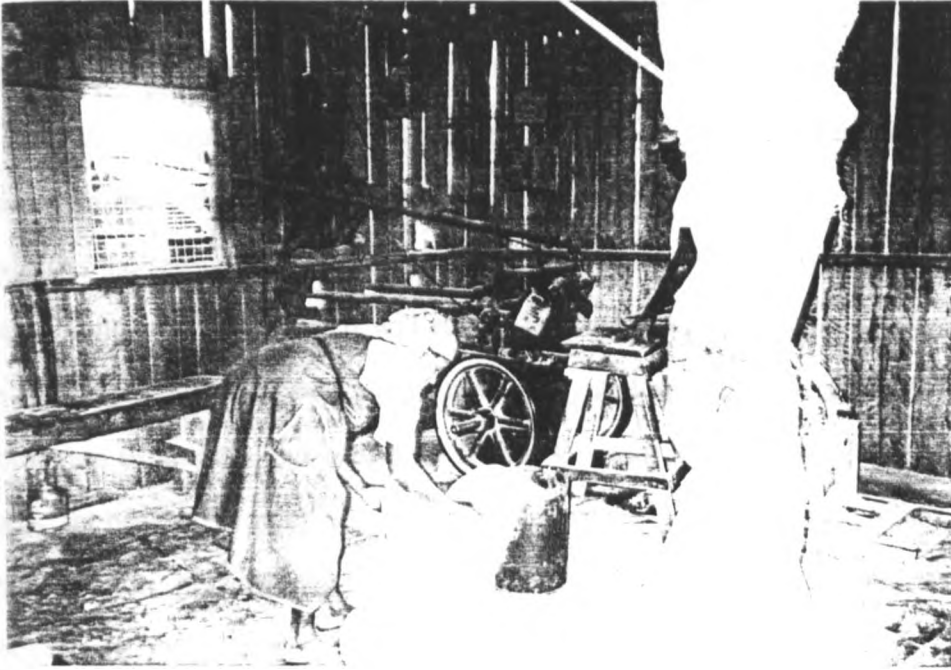
In line with the increasing research and policy interest in participation and decentralization, the role of small urban centers must be emphasized. Of utmost concern is the decentralization policy, aimed at avoiding migration to large urban centres which are already congested and suffering from numerous socioeconomic problems. The idea is to encourage the setting up of industries and other enterprises in and around small urban centres, preferably relating to the local factor endowment, thus developing such areas and also providing larger employment opportunities to the people there (Jhingan, 1990: 78).

In the study area, data available from a study by Wiessmann (1992) indicate that even though the large urban centres offered a majority of employment opportunities, the average employment per enterprise did not seem to depend on the size of the urban centre. Instead, other small urban centres registered even higher average employment per enterprises figures than the large urban centres. Furthermore, in terms of average turnover per employment, it is the smaller centers which registered even higher figures, though this is to be expected because of the specialities in the types of goods traded in the smaller urban centres.



Plate 1: (a) Exchange through auction in Gatirima rural Centre

Source: Fieldwork by Author (1995)



(b) A Posho Mill plant in Ndurumo Centre

Source: Fieldwork by Author (1995)

NB: Such smaller centers registered relatively high turnovers for their specialities in goods

4.4 Evaluation of the Urban Centres

4.4.1 Regional Planning

"Region" as used in this study refers to an economic entity within a state, district, town, or village. According to Myrdal (1957), regional differences in income and employment in underdeveloped countries are caused by strong "backwash effects" and weak "spread effects". The genesis of these regional inequalities has a non-economic basis which is associated with the capitalist system guided by the profit motive. This results in the development of those

regions where the prospects of profit are high while other regions remain underdeveloped. Myrdal (1957) attributes the phenomenon to the free play of market forces, which tend to concentrate economic and social overheads in certain regions, leaving the rest of the country in a backwater. These inequalities are accentuated by migration, capital movements and trade.

In order to minimize these effects, there is need for deliberate state action. Several contributions as to which actions should be taken have already been highlighted in the literature review. Further, the Indian Working Group on Incentives for Industrial Development in Backward Areas, (which was formed by the Indian Government to look into ways of assisting backward regions to develop), introduced the idea of "Growing points", which envisages the setting up of urban estates which encourage commuting of workers to such towns from neighbouring villages. It will reduce construction costs, foster rural development through the flow of incomes earned from urban jobs, and spread new ideas and knowledge of new production techniques and pattern of living. Growing points may also take the form of market towns in backward areas which may benefit the farmer by providing various inputs for modernization of agriculture and facilities for marketing and processing of agricultural products and for the distribution of durable consumer goods.

Kimani and Taylor, (1973: 12), Ominde *et al.*, (1969), among others, agreed on the need for the concentration of central goods and services in selected centers to ensure that input of capital resources into the rural areas used with the maximum possible efficiency and to the greatest possible benefit of the regional economy and the convenience of the local people. The role of the small urban centre thus includes the provision of residential and service facilities. Also important is the introduction and diffusion of innovation and the stimulation of socio-economic growth, especially through trade, marketing, commerce and small scale local industry. This necessitates the centering of planning in these small urban centres especially to enhance local involvement and participation.

However, there is danger to weakly developed structural relationships between the present urban systems and the rural sector in many developing countries, including the study area. This has often been attributed to the fact that the spatial systems were those built by the colonial governments and which were not always conducive to the country as they always tended to be geared to "extraction" from the rural areas. It is to this extent that scholars

presently agree on the idea of growth centres, places which have "complementarities" with their hinterlands (Hirschman, 1958). In our present study, these complementarities will be agricultural rather than industrial, at least due to the present stage of development in the district.

4.4.2 Business Prospects:

The main objective of a business enterprise is to make maximum profit (Butt, 1976: 218 and Saleemi, 1988: 159). In so doing, they have to face one of the basic problems of selection of location. Generally, such a place should have the required inputs or factors of production in addition to market for the products and other supportive services such as banks, communications, schools and hospitals, among others. Transport costs for instance, may limit the extent of a firm's operations, especially if consumers are spread out geographically, it becomes more costly to supply them. The turnover figures used to model zones of influence of centers in section 4.1 above are important for business purposes.

However, the precise value of turnover to rely upon will vary from one trader to another e.g a grocer has a higher rate of turnover than a furniture trader. Consequently, the latter invests more capital than the former. Since the hierarchy of central places already identified also signifies the extent to which specialized goods and services are offered, the use of the total and average turnover values should further guide a prospective investor where to start business, transfer or even continue depending on his/her position.

4.5 Infrastructure

In order to develop the district's growth centers some of which have already been identified in the present study, it is inherent that infrastructural facilities such as roads, hospitals, schools, be developed. In addition to identifying these growth centres, agro-ecological factors, population and terrain must be considered.

4.5.1 Agro-Ecological Factors

Just as small urban centres and their services may have a positive influence on rural development and the agricultural productivity, the development of centres depends on the growth of rural incomes which in turn are largely determined by agro-ecological factors. Baker (1990), for instance, noted that a necessary condition of the creation of urban places in a rural area is the existence of a sufficient economic surplus in the region. That economic surplus may come from local agricultural production and external sources. Since the urban system may be viewed as a way of organizing economic activity in space, and seen from the local area, these local activities may be concerned with local distribution of local production, collection and processing of local agricultural products for export out of the region, and distribution of products produced outside the region, both consumer goods and inputs, and investment goods for the local production.

Thus, hinterland endowment of the urban centre in question should be an important consideration in the development of market centres or growth centers. To help the long range of such urban and market centres, the resource potential of various regions and micro-regions should be estimated. Then the possible locations should be arranged in a hierarchical order, depending on investment (output ratios, with investments needed for transport alignment charges as well as provision of social overheads fully taken into account.

4.5.2 Population

In India, one of the criteria considerations agreed upon was that size of the new growth points should be determined in such a way that social overhead investments made could be recovered within a generation such that the planner has freedom to place new locations when new resources are discovered or when transport alignment is radically altered. This view is also held by Kimani and Taylor (1972) who saw scale as a significant factor in terms of the size of the hinterland a center should serve. The rationale is that the hinterland area must be large enough to provide a threshold if the urban centre is to survive and perform adequately the

functions expected of it, but not too large altogether as to adversely affect accessibility and the possibility of effective community involvement and participation in planning.

4.5.3 Terrain

This is important both for transport and urban land requirements. Urban land includes all built up areas residential, commercial, industrial and transport, all of which generally require flat, well drained sites, with bedrock deep enough below the surface to avoid constructional and drainage problems. Mitchell (1991), for example, suggested that the slope angles of less than $1/2^\circ$ constitute poor drainage and liable to flooding if low lying, while $< 2\ 1/2^\circ$ is usable for all kinds of intense human activity. Land requirement for transport purposes such as roads, railways, canals and airports demands special treatment because of divergent interests of users. Thus, Mitchell (1991) again argues that economic and engineering considerations are important but used alone may provide an unsafe guide to the choice of the routes, and the overriding principle should be to choose those which provide maximum social benefit at least social cost. They should go through areas of low value both in terms of land and building costs and also from the aesthetic point of view.

CHAPTER FIVE

TESTING THE HYPOTHESES

5.1 Distance Relations and Household Preferences

This investigation is basically derived from central place theory. The basic notion is that distance plays a vital role in any determination of complimentary region of central places especially "economic distance", measured in time and cost. The range of a good is the furthest distance a dispersed population is willing to go in order to buy a good or service offered at a place. This range will take on lower limit if there is competition from another central place.

Shoppers will always travel to their nearest centres and may only go further if the desired commodities are lacking in the local centres. It is important to investigate the extent to which this holds. The research aims at establishing the trend upon which total number of customers travel to a centre based on the average distance that they cover. Thus, if there is a relationship between the two variables, figures could be gathered to predict the number of customers likely to visit a centre based on the average distance that they cover.

The statistical technique used in solving this problem was the simple linear regression and correlation. In order to determine this relationship, the researcher collected data on the total number of customers visiting a center and the average distances that they travelled to such centres.

The regression equation obtained from the analysis was:

$$\hat{y} = 4.2375271x - 15.30133$$

where

$\hat{y}$ = estimated total no. of customers

x = Average distance travelled by the households

NB: Since the slope is positive, it can be concluded that more people tended to go to the centres further away for a variety of goods and services; and since centres with many customers necessarily drew from a wider area their customers covered long distances.

It was also established that the proportion of variation in y (dependent variable) accounted for by this regression line i.e the coefficient of determination, was 0.8172811. That is about 81% of variation in the total number of customers visiting a center was attributed to the average distance travelled to that centre. The correlation coefficient in this case is 0.904036, i.e the degree of relationship or correlation between the distance travelled and the total no. of households visiting a center is 0.9, indicating a strong degree of relationship between the two variables.

The average distance travelled by customers increased, so did the total number of customers visiting a center. In other words, people tended to go to centers further away from them to obtain a variety of goods and services. The negative value indicates that at the *y-intercept* (at distance value of 0), the number of customers into a centre is null or even negative.

Significance Test for the Regression Line

This was done by determining the statistical significance of the slope of the regression line. The procedure basically involved generating an analysis of variance table, using the "F" statistic, in the following way:

(i) First, the null hypothesis was formulated

$$H_0 = \beta(\text{slope}) = 0$$

$$H_1 = \beta \neq 0$$

Secondly, the ANOVA Table was generated;

Table 6: Generation of ANOVA Table for Distance Relations with Customer Travel

Source of Variation	D.F	Sum of squares	Mean Squares
Regression	1	24303.607	24303.607
Residual	19	5433.536	285.97558
Total Variation	20		29737.143

Source: Compiled by the Author (1995)

- (iii) Computed "F" = 84.984903
- (iv) Critical "F" with d.f 1 and 19, and $\alpha = 0.05$ is from tables, 4.38

Thus, the computed "F" is greater than the critical "F" value, and the null hypothesis is rejected. Hence, the slope of the regression line is significant. The regression accounts for a significant amount of variation of sample data.

In this study, it has been revealed that the total number of customers visiting a central place for a variety of goods and services is positively correlated with the average distances that such customers travelled to such centers. This tendency could be explained by the fact that there were few centres in the district which offered adequately the various goods and services desired by the households. Such central places were also spatially dispersed, thus necessitating the household to travel log

distances for essential goods and services lacking in their nearest centers. Lower order central places are therefore logically expected to have fewer customers , and smaller hinterlands or catchment areas. Secondly, in fact that distance covered to a center by a customer to buy goods and services lacking in his nearest center is an economic consideration in terms of time and money spent. This provides an indication for planners to look into the possibilities of developing lower order central places, at least for the purpose of efficiency, for traders in the distribution of goods and services, and on the other hand by farmers in saving time and money for more productive uses.

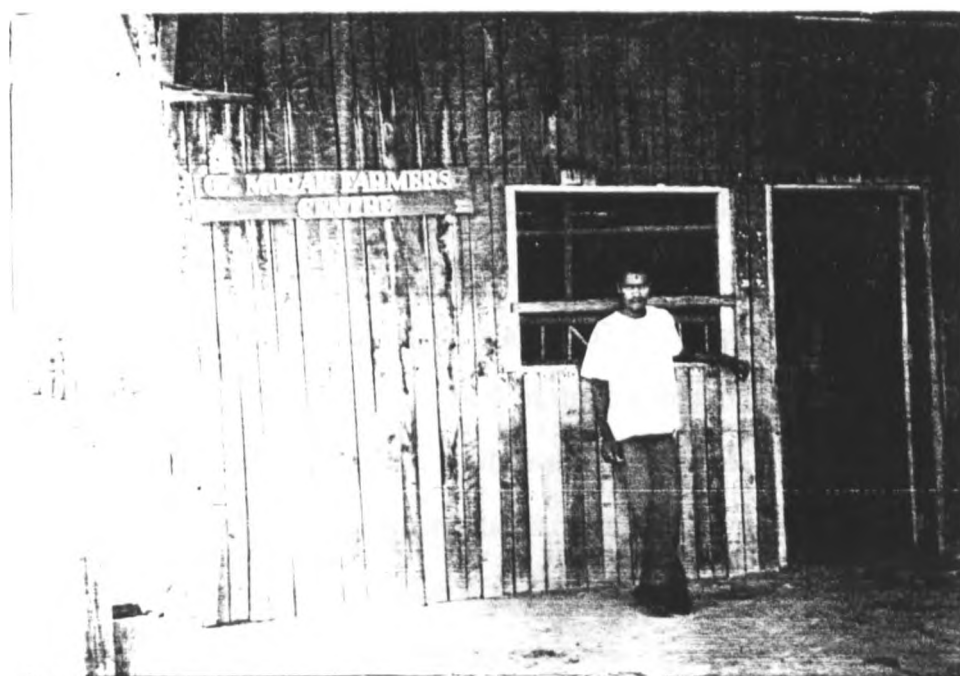


Plate 2: The only farm inputs enterprise in Ol Moran:

NB: Very few centers offering adequately the goods and services required by the population made few centers to draw an increasingly disproportionate share of Customers for themselves.

5.2 Mode of Transport used and the Type of Service Sought in the Centres

In the Central Place Theory, central goods and services are categorized into two types: higher and lower order. Higher order goods are offered at centers of higher order, and lower order goods at central places of both higher and lower order. Central goods offered at a high order central places have a larger range than those offered at a smaller centres. Every type of good has its special range which differs at different central places and is not the same in all directions from the same central place, but varies according to objective and subjective economic distance, Berry and Horton (1970: 172).

In order to describe the trend taken by the data collected on the above problem, the bar chart was constructed as shown. Thus, Public Service Vehicles offered the most commonly means of travel catering about 67 % of travellers to central places. As for individual services sought, about 94% of those going to centres for banking services used public service vehicles (PSV) , while the percentage of PSV users for livestock feeds, veterinary medicine, farm inputs, farm implements and consumer goods was 75%, 71.5%, 72.6%, 79% and 12.8% respectively. The next most common modes of travel to centers was by foot, accounting for about 26% of the total modes of travel to centers. Out of the total journeys made to central places to buy consumer goods, about 77% was by foot, though the total journeys made by foot specifically for consumer goods was slightly less, about 53% the balance being meant for other central goods and services.

The third most important mode of transport was bicycle, accounting for about 5.9% of the total. The greatest use for which the bicycle was made was to buy

consumer goods. Thus, about 9% of those visiting central places for consumer goods used the bicycle, while those who used the bicycle specifically to buy consumer goods from centers were about 29% of the total number of bicycle users. Finally, private cars was the least represented mode of transport, and was used by about 0.99% of the total number of households who visited centers. On the whole, about 96.5% of P.S.V users travelled to centers for goods other than consumer goods, and 77% of households received their supplies of consumer goods by just walking to their nearest centers. For the supply of higher order goods and services found in higher order centers, households required the use of P.S.V and to a lesser extent, bicycles. For their supply of consumer goods, households mostly had to walk on foot to their nearest centers.

Table 7: Relations between the Mode of Transport used and the type of Service sought from the Centres

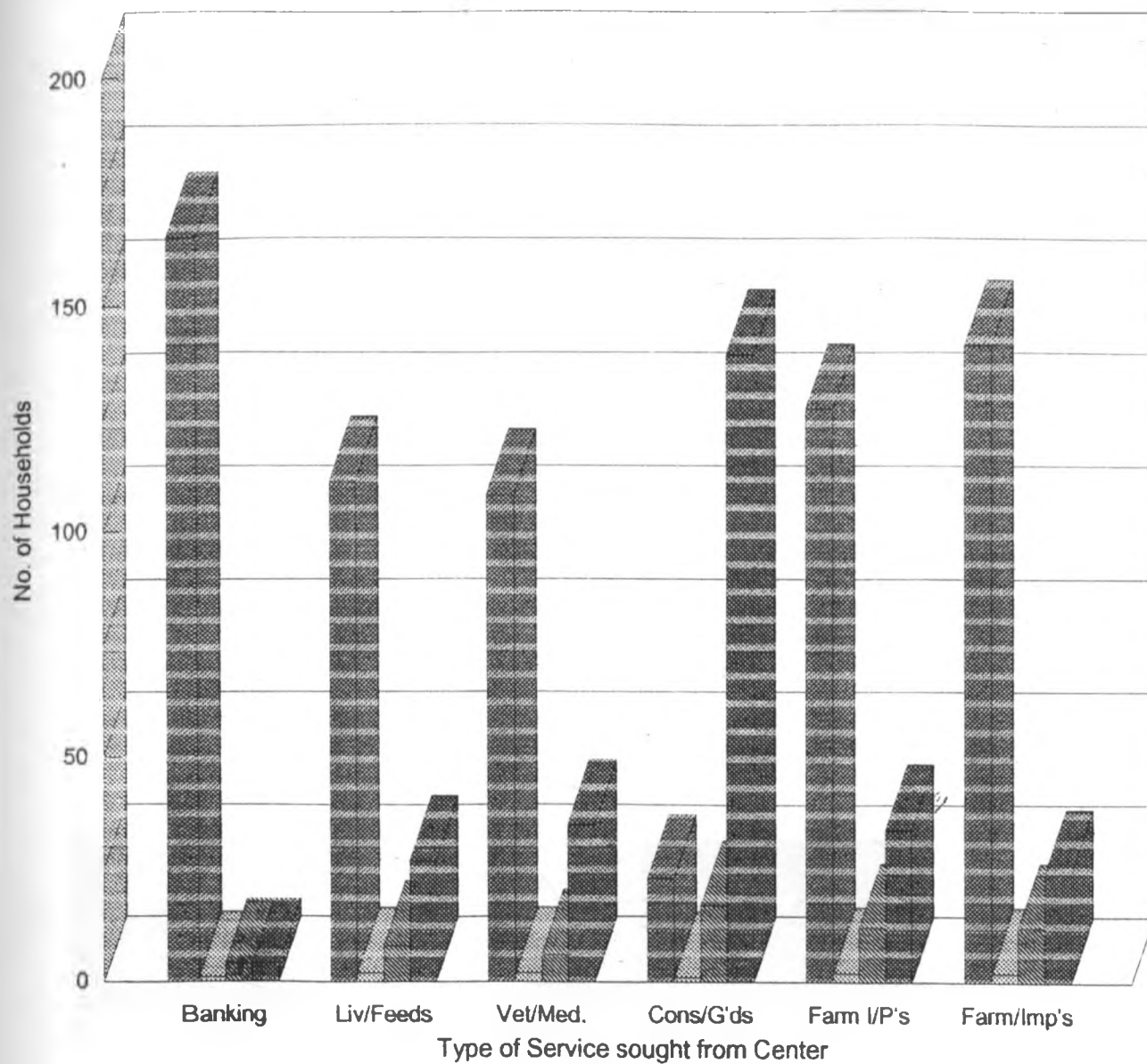
Type of Service sought from centres and the corresponding No.of Households							
Mode of Transport	Banking	Livestock Feeds	Veterinary Medicine	Consumer goods	Farm Inputs	Farm Implements	TOTAL
1	165	111	108	23	127	141	675
3	1	2	2	1	2	2	10
4	4	8	6	17	12	12	59
7	4	27	35	139	34	24	263
TOTAL	174	148	151	180	175	179	1007

Legend: (Mode)

1 = Public Service Vehicle (PSV's) 4 = Bicycles
 3 = Private Cars 7 = Trekking (walking by foot)

Source: Compiled by Author (1995)

Relationship between the Mode of transport used
and type of Service sought from Center



■ 1- P.S.V's ▨ 3- Pvt. Cars ▩ 4- Bicycles ▤ 7- By foot

Results of data analysis for the study area reveal that Public Service Vehicles (P.S.V's) offered the most common means of travel (about 67%) to central places, especially to obtain higher order goods and services, 94% for banking, 79% for farm implements, and so forth. Only 128% of those using P.S.V's went for customer goods. To this extent, the research agrees with one of the relationships defined in Central Places Theory, between the inner and outer limits for the range of distances over which central goods may be sold. Furthermore, this result is again supported by the fact that 77% of the households merely walked into their nearest centers to buy lower order-mostly consumer goods. This is also an important finding for prospective businessmen requiring where to locate depending on their enterprises.



Plate 3: Inside a Supermarket in Nyahururu

Source: Fieldwork by Author (1995)



Plate 4: A Modern Hotel in Nyahururu.

Source: Fieldwork by Author (1995)

NB: Such goods and services clearly have their own ranges and require certain thresholds to be offered.

5.3 Size of Central Places and Traffic Densities

Mobility and interlinkages with other central places are an important indicator of growth potential. Those centers which show a high degree of mobility in their population are more likely to be effective growth centers than those which do not. Weisner, (1971: 3) argued that a rural-urban network exists in Kenya which is of considerable development significance. He put forward the idea of the "returnee" and argued that there is a constant interchange of men between their home area and the urban centers and that "...the partially urbanized peasant whose presence and involvement in the social life of his community acts as a lever for change" is a very significant factor rural change. This also included other kinds of "returnees". Influence of transport is thus of critical importance, by moving goods and people, it is also an aid to trade, creating utility of place and time for goods, hence assists in marketing and production of goods.

The aim is to establish the extent to which traffic densities vary along the major routes linking the different sized central places. This relative difference in traffic density along such routes has been emphasized qualitatively through the use of the bar chart (Chart 2, overleaf). Thus out of the total traffic flow on an average day in the district, only about 31% served the relatively smaller centers with the balance (about 69%) serving the larger centers. The relative importance of certain types of vehicles also varied with the type of routes traversed, with the notable exception of the *matatu*, whose relative representation in all the routes was roughly the same (58% for smaller centres and 56% for the larger centres).

Thus, the routes between small central places, the Peugeot constituted about 2% of the total traffic density compared to 15% in the case of larger centers. The relative importance of the Nissan was 11.8% in routes serving smaller centers compared to 17.7% in the case of larger centers. The percentage for Bus / Minibus varied from 3% in the routes linking smaller centers to about 8% in the case of routes linking smaller centers to about 8% in the case of larger centers. The other common type of vehicles especially in the case of routes linking smaller centers was the Land Rover and pick-ups, whose relative importance in such routes was 12.2% and 13.1% respectively.

The threshold values for each category of centres were as follows;

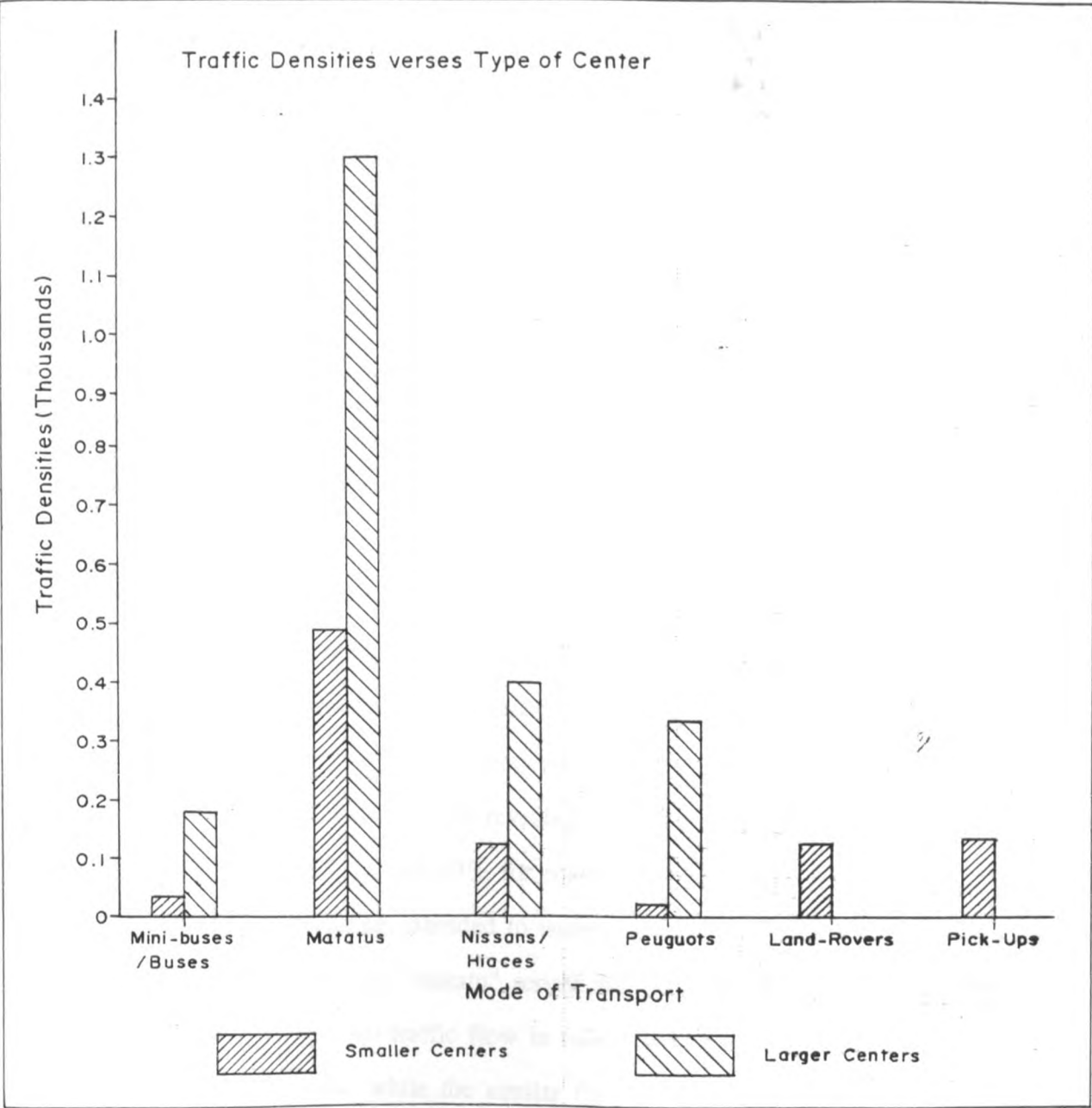
- I) *Small centres*; those which had below 7 subgroups of the classical subdivision of economic activities
- II) *Large Centres*; those which had all the seven subgroups of economic activities as the following the classical subdivision above.

Table 8: Traffic Densities along the Major Routes versus the size of the Centres being visited

Type of Centres	Traffic Density (per day)	
SMALLER:	Mode:	Number:
	Minibuses /Buses	33
	Matatus	590
	Nissans /Hiaces	121
	Peugeots	21
	Land Rovers	125
	Pick-ups	134
	TOTAL	1024

Source: Compiled by the Author (1995)

Chart 2 Traffic Densities along the Major Routes verses the Size of the Centers being visted



Source: Compiled by the Author (1995)

The aim is to establish the extent to which traffic densities vary along the major routes linking the different sized centres. This relative difference in traffic density along such routes has been emphasized qualitatively through the use of the bar chart (Chart 2). Thus out of the total traffic flow on an average day in the district, only about 31% served the relatively smaller centers with the balance (about 69%) serving the larger centers. The relatively importance of certain types of vehicles also varied with the type of routes traversed, with the notable exception of the *matatu*, whose relative representation in all the routes was roughly the same (58% for smaller centers and 56% for the larger centers). Thus, the routes between smaller centers, the Peugeot constituted about 2% of the total traffic density compared to 15% in the case of larger centers. The relative importance of the Nissan was 11.8% in routes serving smaller centers compared to 17.7% in the case of larger centers. The percentage for Bus / Minibus varied from 3% in the routes linking smaller centers to about 8% in the case of routes linking smaller centers to about 8% in the case of larger centers. The other common type of vehicles especially in the case of routes linking smaller centers was the Land Rover and pick-ups, whose relative importance in such routes was 12.2% and 13.1% respectively. In the study of traffic densities along the routes in the study area, first, the relative densities of traffic between routes serving small centres on the one hand were emphasized. The research revealed that the total traffic flow was 31% in the routes linking small centres and 69% for routes serving relatively large centres, with the possible difference being extended to issues regarding interaction and diffusion of innovation. Furthermore, the "matatu" served the routes relatively equitably (and not equally). Thus, for the total traffic flow in routes serving smaller centers 58% of the vehicles were the matatu, while the similar figure in the case of larger centers was 56%. On the whole, the routes linking the relatively larger centers are denser probably because not only is the interaction greater but also the type of road surfaces could be better. This is an important regional planning issue, in terms of construction and

upgrading of roads, among other important infrastructural investments.



Plate 5: (a) Passengers awaiting for transport inside a Land Rover in Ndaragwa Market



Plate 5: (b) An aerial view of Kinamba centre.

Source: Fieldwork by Author (1995)

NB: There is need to increase infrastructural facilities in such centers to facilitate the process of Diffusion of Innovation.

5.4.1. Type of Agricultural Produce and the Channel of Marketing used:

Three forms of the main channels of marketing use by farmers to market their produce were identified namely, the co-operatives, middlemen and direct sale to consumers. The research was interested in finding out whether the variety of agricultural produce are evenly distributed (in terms of marketing) throughout the main channels identified above. More precisely the interest is on studying the relationship between the performance of the main types of marketing channels and the various types of agricultural produce. It may be that the produce is equally well marketed through the channels, or one channel type performs better for certain types of produce.

Performance by channel (or channel score) is measured by the total percentage of produce marketed using the channel. The sample of performance scores revealed that for channel scores of 25% and below, 18 farmers marketed livestock produce. For channel scores of between 25 and 50, 53 farmers marketed crops and 48 farmers marketed livestock. For channel scores of 50% and above, no crop was marketed while 98 farmers marketed livestock produce.

Table 9: Produce type versus performance score by Channel

Produce Type	Performance scores (% marketed by channel)			Total
	25 and below	25 - 50	50 +	
Crop	18	53	0	71
Livestock	37	48	98	183
				254

Source: Compiled by Author (1995)

The question to be explored is "Is there a relationship between the percentage of agricultural produce marketed by a channel and the type of produce?".

Thus, the null and alternate hypotheses are:

H_0 : There is no relationship between the percentage of agricultural produce marketed by a channel and the type of produce

H_1 : There is a relationship

The test statistic χ^2 is computed by:

$$\chi^2 = \frac{(f_o - f_e)^2}{f_e}$$

where:

χ^2 = chi-square

f_o = observed frequency

f_e = expected frequency

In the contingency table 71 out of 254 farmers in the sample, or 27.95% marketed crops. If the null hypothesis is true-, that there is no significant relationship between the type of produce and the channel through which it is marketed, we would expect 27.95% of the 55 farmers marketing through the channels with performance of 25 and below to be selling crops. Thus, 27.95% of 55 = 15.3725, the expected frequency. This expected frequency (f_e) is recorded in the following table for all the values. Thus, again, 183 out of 254 farmers in the sample, or 72.05%, marketed livestock produce. Logically, if there is no relationship between the percentage of agricultural produce marketed by a channel and the type of produce, 72.05% of the 98 farmers marketing

through the channel with scores 50 and above sold livestock, and so forth. The contingency table is thus completed for all the values in that manner.

Table 10: (Contingency Table) Produce type versus Channel Performance

Produce Type	Performance		Scores (% marketed by channel)			
	Below 25		25 - 50		50 and over	
TOTAL						
	f _O	f _e	f _o	f _e	f _O	f _e
Crops	18	15.3725	53	28.2295	0	27.391
Livestock	37	39.6275	48	72.7705	98	70.609
TOTAL	55		101		98	
						254

Source: Compiled by Author (1995)

Thus the computed $\chi^2 = 68.806987$

To arrive at the decision rule, the critical χ^2 must be known. The degrees of freedom in this case is 2, found by $(2 - 1) \times (3 - 1)$. NB There were 2 rows (crops + livestock) and three columns (above).

Decision Rule:

Using the 0.05 level of significance and 2 degrees of freedom, the critical value χ^2 is 5.99.

If the computed chi-squared is less or equal to the critical chi-squared, accept the null hypothesis, otherwise reject it. In this case, the computed chi-square is greater than the critical, thus the null hypothesis is rejected. Thus, there is a significant relationship between the percentage of agricultural produce marketed by a channel and the type of

produce. Secondly, the performance of the channels is not the same, i.e. various types of produce are marketed predominantly using specific channels.

5.4.2 Reasons for the use of the Various Channels

Three main channels of marketing have already been identified. Most farmers liked the channels through which they were paid immediately (in cash). The second most important preference for farmers in the use of a channel was the absence of transport costs. Good prices ready market, the only buyer active in selling, and so forth, were the other important considerations by farmers in using channels available to market the produce.

Furthermore, as can be seen, the use of middlemen was the most common channel through which farmers marketed their produce. Thus out of the sample studied, 150 out of 256 or about 58.6% of the farmers used the middlemen to market their produce for one reason or the other.. 85 or about 32.2% marketed their produce directly to the farmers, while the co-operatives appeared to be the least used, with only 21 out of 256 or 8.2% of farmers using the co-operative for one reason or another to market their produce.

Table 11: Reasons for Marketing through the Various Channels

Reasons for the use of channel	Co-operatives	Direct to Consumers	Middlemen	TOTAL
Pay immediately	4	11	32	47
No transport costs	2	7	34	43
Good prices	9	10	14	33
Ready market	1	9	22	32
The only available buyers	—	14	16	30
Active in buying	—	4	12	16
Buy any amount	1	3	12	16
Help one another		16		16
Lack of Transport to market /town	—	3	2	5
Standardized weight	1	3	—	4
No strict grading			4	4
Stable prices	—	2	1	3
Convenience	2			2
Pay on regular basis	2	—	—	2
No permit needed	1	—	—	1
Room for Bargaining	—	1	—	1
TOTAL	21	85	150	256

Source: Compiled by Author (1995)

5.4.3 Problems Encountered in Marketing and Selling through the main Channels

Specifically, the most important problem experienced by farmers in selling directly to the consumers was low or poor prices. The other problems included lack of a ready market, delays in payment, long distances and long tedious journeys to the market centers, among other problems as can be seen in the table (Table 12 a). By selling their crop produce through the co-operatives, the most serious problem that the farmers experienced was delay in payment as some of the co-operatives bought on credit. They also experienced the problems of high transportation costs including poor roads, strict grading, time wasting, charges / taxes on farm produce, delays in collection among other problems.

The co-operatives were largely inactive in the marketing of livestock and tended to be strict in grading of the livestock produce. Transportation delays in payment, and the fact that the co-operatives did not buy when supply is low , long distances to market centers, cheating over measures, among others, were the main problems experienced in marketing livestock (Table 12 c.). Finally, even though the use of the middlemen emerged as the most common channel through which the farmers marketed their produce, most farmers felt that there was an element of excessive bargaining in order for them to sell their produce. Furthermore, farmers walked for long distances to fetch the middlemen (including the butchers). Prices tended to fluctuate widely while some middlemen were dishonest, among other problems encountered in selling through middlemen (Table 12 b).

Table 12: Specific Problems of Marketing through the various Channels

(a) Problems of selling directly to the Consumers

RANK	Total number of farmers who perceive the Problem	Problem
1	40	No Problem
2	31	Offer poor /low prices
3	19	Lack of Ready Market
4	16	Delay in Payment
5	6	Long distance to market
6	3	Predation of Livestock enroute to market centres
7	2	Transportation problems
7	2	Use of defective scales
	1	Payment in small bits
8	1	A lot of bargaining
8	1	Failure to collect products
8	1	Levy by Council
8	1	Competition
N/A	59	(Either used other channels or did not sell at all)

Source: Compiled by the Author (1995)

(b) Problems of selling through Middlemen

RANK	Total number of farmers who perceive the Problem	Problem
1	36	Excessive bargaining
2	24	No Problem
3	20	Walk for Long distances fetching the Middlemen
4	8	Fluctuating prices
5	5	Dishonesty
6	4	Theft on the way to market centres
6	4	Predation on the way to market centres
7	1	Prefer what may not be available

N/A	81	(Either used other channels or did not sell at all)
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Source: Compiled by the Author (1995)

(c1). Problems of selling through the Co-operatives (Crop Production)

RANK	Total number of farmers who perceive the Problem	Problem
1	11	Delay in payment
2	10	High transport costs
3	4	No problem
4	3	Strict grading
5	2	Time wasting
5	2	Taxes on farm produce
5	2	Poor roads
5	2	Inactiveness
6	1	Defective weighing machines
6	1	Offer low prices
6	1	Unreliable /Fluctuating prices
6	1	Delay in collection
N/A	143	(Either used different channels or did not sell at all).

Source: Compiled by the Author (1995)

c2). Problems of selling through the Co-operatives (Livestock Production)

RANK	Total number of farmers who perceive the Problem	Problem
1	7	Inactiveness
2	4	Strict grading
3	3	Poor roads
3	3	No Problem
4	2	High transport costs
4	2	Delay in Payment
4	2	Do not buy when supply is low
4	2	Long distance to market
4	2	Cheating by buyers
5	1	Delay in collection

5	1	Defective weighing machines
5	1	Offer low prices
5	1	Lack of ready market
5	1	Strict competition due to over supply
N/A	151	(Either used other channels)

Source: Compiled by the Author (1995)

Thus, as can be seen from the preceding analysis, middlemen are the most popular with farmers in the marketing of the produce. Farmers walk long distances so as to reach these middlemen. Poor roads and high transportation costs also hinder marketing through the co-operatives. Even where farmers could send directly to the consumers, they suffered long and tedious journeys to the marketing centres. Thus, this is a serious policy implication matter, and implies that there is need to develop infrastructure, especially roads linking the various market centres considered necessary in the development of agriculture in the region.

5.4.4 The Relevance of Marketing Data in the Viability of Urban Centres.

Marketing in agriculture includes trade in foodstuffs and other agricultural produce between surplus and deficit areas each season within a country and may be carried on over vast distances. The function of the marketing system is therefore to give place, time, and form utility for the commodities that pass through it as a result of transport, store processing and even packaging. It is not enough that the commodities in demand are produced: they must be provided where and when and in the form that consumers want them (Livingstone and Ord, 1980: 139). In Africa generally and in the study area in particular farmers take their produce to the local market, co-operative society, or some middlemen buy from them, and these form primary buying points.

5	1	Defective weighing machines
5	1	Offer low prices
5	1	Lack of ready market
5	1	Strict competition due to over supply
N/A	151	(Either used other channels)

Source: Compiled by the Author (1995)

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First, in the present study, the researcher was interested in finding out whether there was any marketing channel which was more popular with the farmers especially in the marketing of the two broad groups of agricultural produce-crops and livestock. The results revealed that the channels did not perform equally well in the marketing of crops and livestock produce. There is a predominance by certain marketing channels for either the marketing channels of crops or livestock produce. Which types of produce was the next line of investigation.

Thus, an enquiry was made on the reasons for the use of the various channels. The immediate payment in cash was the most important consideration by farmers in choosing between channels. This was followed by lack of transport costs, goods prices, ready market, among other reasons, and in that respective manner. It was therefore not surprising that the use of the middlemen was the most popular channel through which the farmers marketed their produce. About 58.6% of the farmers relied on middlemen, whose functions of course include buying from the local producers for further sale, transportation, management, stock-holding, storage accommodation, risk bearing and marketing assessment.

However, most farmers felt that there was an element of excessive bargaining in order for them to sell their produce through middlemen. It should be noted that middlemen are businessmen who can only make profits by "buying low" and "selling high". Again farmers had to walk for long distances to fetch the middlemen, including butchers. To this end, there is need for a better market assessment and communication of market intelligence by the middlemen.

The ordinary process of collection, transportation, and distribution needs to be made more efficient in the study area. The other notable problem with the middlemen is was the fluctuation of prices which is indeed a policy issue in many developing countries. Agricultural produce is very prone to seasonal fluctuations in prices due to

changes in climatic conditions among other causes. These fluctuations also determine the costs and margins for middlemen and their price willingness.

About 33.2% of the farmers interviewed sold their produce directly to the consumers. But by so doing, the farmers received low prices lacked a ready market, experienced delays in payment, and made long and tedious journeys to market centers, among other problems. This is also an important result especially as it indicates the need for infrastructural development in the planned growth centres. The co-operative appeared to be the least used channel of marketing, with a mere 82% of those interviewed using the channel. The co-operatives are often expected to perform the important roles in increasing prices received by growers e.g. by improving their bargaining position, more effectively grading, ideas, reduction of costs of marketing and performing the middlemen's functions on behalf of the farmers.

However, in the study area, the most serious problems the farmers experienced in selling their crops through the co-operative included delays in payment as the co-operatives bought on credit, high transportation costs, strict grading, among other problems. The co-operatives were largely inactive in the marketing of livestock, together with the fact that farmers also had to walk long distances to reach the co-operatives in market centers. The co-operatives did not buy when the supply is low, and at times, cheating over measures are the additional problems.

Thus, on the overall, marketing and distribution is largely inefficient in the district. First, many peasant farmers are in places made remote by lack of transport links, and the local feeder roads to support the system of trunk roads is lacking. This inefficiency in communications has led to the problem of low prices earned by farmers from their produce. Other issues relevant to marketing such as market information capital for effective operation, organization of trade, and the provision of all other necessary supportive infrastructure needs to be addressed by policy-makers.

On the whole, it should further be realized that the marketing problems experienced in the study area are due to an inefficient marketing system which, further limits the specialization. This necessitates the development and social modernization.

Behind this reasoning is the assumption that the urban centre is the most efficient mode of human settlement because with a large population concentrated in a small space, there are results specialization of production and the creation of external economies.

The locational advantages acquired by the urban centers are essentially those related to agglomeration economies, which constitute the basis of specialization. Urban centres therefore continue to serve as the main centers of manufacturing, commerce and service activities and as the economic nerve centers of regions, Sada (1977).



Plate 6: (a) Marketing agricultural produce in Naro Moru

CHAPTER SIX

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.

6.1 Summary and Significance of the findings.

Among the major findings of the research included the fact that the attractiveness of a central place (as expressed) in terms of total turnover is positively correlated with both the total number of customers visiting it and the total number of enterprises present in the central place, with the total number of enterprises present in it being a more important consideration for its attractiveness. Secondly, there was consistency in the modelled zones of influence (on the basis of total turnover) as compared to the empirical ranking of market potentialities for some considerable number of central places which were ranked on the basis of growth center idea. The small central places registered the highest turnover.

Another finding was related to the Central Place Theory. First, the research revealed that there was a positive correlation between the number of customers visiting a central place and the average distance that the customers travel to such centers. By inference, the central places which offered adequately the various commodities desired by the households located far away from them, an issue which they had to contend with as their lower order central places lacked many goods and services that they required. The study further concurred with one of the relationships in the central place theory between the inner and the outer ranges of a good or service when established that P.S.V's offered the most common means of travel for customers to higher order goods and services while for the lower order goods and services respondents walked to their nearest central place.

In terms of interaction which is important for diffusion of innovation necessary for rural and especially agricultural development, this study has revealed that the larger the central place the higher the interaction that takes place in the

hinterland as indicated by traffic densities and hence the more likelihood of diffusion of innovation. Thus, this is an important planning issue.

For the marketing of agricultural produce, crops and livestock are marketed predominantly using specific channels with the cooperative being least favoured in the marketing of livestock, for example. The most important consideration by farmers in using a channel for marketing their produce was whether there was immediate cash payment. Other considerations were transport services prices and ready market. To this extent, the most popular channel through which farmers sold their produce was through middlemen followed by direct sale to customers while the cooperatives were least popular. The main problems farmers experienced in marketing through middlemen included excessive bargaining, long distances of travel and wide fluctuations in prices. In selling their produce directly to consumers, farmers complained of low prices, lack of ready market, delays in payment and long and tedious journeys to market centres. Finally, the most important problem in selling through the cooperatives was delays in payment. High transportation costs including poor roads, strict grading, time wasting, charges taxes on farm produce delays in collection were the other important problems experienced in marketing crop produce through the cooperatives. Inactivity, cheating over measures and the fact that the cooperatives did not buy when the supply was low, were the additional problems facing experienced by farmers when they marketed their livestock produce through the cooperatives.

6.1.1 Significance to Planners

Small urban centers have important roles to play in relation to regional development. This rests upon the idea that of growth centre is necessary for rural and agricultural development. Planners often need to come up with a choice of small urban centres to focus on. This will enable the national governments to determine which centers to support, or encourage to develop. In Africa, there is already an increasing realization on the importance of the role of small centers in

regional development (Obudho, 1982 and 1983; Obudho and Aduwo, 1990 and Obudho and Salau, 1979). Emphasis has been laid on the need to study the possibilities of creating a hierarchical structure out of the existing urban centers and in identifying gaps for creating new urban centres.

Also, there is need, to establish through research, the level of development and the functional roles they ought to play viz-a-viz their locations and the resource possibilities of their locations and the resource possibilities of their hinterlands. Equally important is the investigation of the spatial distribution of urban centers planned to be instrumental to the spread of development through urban influences. This also includes establishing flows of goods and people between settlements designated as catchment areas. This study has attempted to delimit and measure the market areas for some centres theoretically and by an empirical verification on the basis of growth center approach ranked the studied centers in terms of potentialities. It is thus recommended to regional planners to at least borrow some useful issues from these results for planning purposes in the district and probably any other district. Thus, Beryl, 1973: 131 noted that planners consistently make use of the concept of the urban hierarchy and related facets of regional organizations.

Furthermore, the findings regarding marketing and distribution of agricultural produce are important for planning purposes. The planners are, from these study, made aware of the necessary infrastructural facilities lacking in the district for the purposes of agricultural development seen as necessary for the growth in rural incomes. Furthermore, to the extent that trade is an important consideration in determining the movements of resources in terms of equity between rural and urban areas for instance findings from this study necessitate improvements in institutional framework to enhance marketing in the district.

6.1.2 Significance to Investors

This study is in line with one of the major objectives of the Government of Kenya (GoK) to ensure the orderly development of trade by promoting policy and

institutional reforms that allow trade and commerce play a dynamic role in the generation of economic growth and social development. Thus, the findings of this research are important for, the purpose of policy recommendation, how to create a local environment which makes it possible and attractive for those people who make have a surplus for investment in farm or non-farm activities.

Furthermore, by helping to identify the power choice of urban centres to focus on especially as far as prospects for investments are concerned, this study probably provides for an important direction. By being concerned with the measurement of the present or estimating the likely market areas for centres, an indication is provided to an investor, potential or present, with regards to the expected turnovers and revenue figures, which are important in the determination as to whether to invest in a central place, the scale of operation and so forth. Lastly, by studying the marketing and distribution of agricultural produce, the study has created a chance especially for middlemen, as far as their business is concerned, at least some feedback as to what is expected of them.

6.2 Recommendations

6.2.1 Recommendations to Policy-Makers

On the basis of this research, it is possible to make some suggestions for policy-makers, First, depending on the present and expected conditions, not all the centers in the district had "growth" potential and some of them could decline over time. Several other centers, as can be inferred from the hierarchy (in this study) could probably be designated as growth centers. In both these cases, it should be possible to have an investment strategy that allows both for the possibility of decline of trade centers hosting such investments as well as the allocation of the facilities to strengthen the position of growth centers to be sustained.

Secondly, since the important central places were generally located far away from the households, there was need to improve on the transport and

communication network, while at the same time providing for incentives, especially where risks are great, for investors to locate in both the growth and service centers, at least to improve on the service provision to the rural population. At the same time, the important infrastructural facilities to be put into place should be extended far to the remote central places so as to improve on the interaction between urban and rural population and thus facilitate the required diffusion of innovation process.

The designated growth centers should be organized, through a proper creation of the hierarchical structure with the supportive infrastructure so as to enable the them play their important role in the in offering an avenue through which the resources of their hinterlands could be tapped. This could also ensure a better and regulated marketing and distribution of agricultural produce, among other hinterland resources. The roles of such centers also need to be strengthened not only to bring in the rural hinterland into the commercial network but also to serve as service and agro-based industrial centers. It is also hoped that this would reduce the need for too large migrations from the villages as is already inherent in many parts of the district.

6.2.2 Recommendations for Further Research

First of all, it would be useful to have comparative study in the other areas. Furthermore, another area for further research lies in the refinement of potential market areas or hinterlands. In this study, trade areas have been delimited based on potential mapping and using the turnover effect as the model. It is possible to use other approaches to model the similar zones of influence, e.g. the probability model. It is also felt that a further inventory on growth centers be made by considering all the central places in the district. This would enable the availability of a more complete data necessary for planning purposes.

6.3 Conclusions

Growth Center Theory is of great relevance in the field of rural and agricultural development. In many parts of Laikipia District, there are high risks of crop failure. The bulk of the new settlers in the district thus remain under poverty conditions. The district's rural inhabitants are subsistence producers with little or no exchange with other economic systems. Nor do they have any proper links with these other systems. Thus, there is need to raise the level of economic interaction between the study area and other areas of the country, even though the farmers appear to have only little to offer, especially livestock and a few crop produce.

Suggestions have been made to modernize and introduce new farming activities in the district, through extension and input packages, for instance. It is expected that with such developments, the pace of settlement would increase steadily. Since increased provision of infrastructure alone has not improved significantly the crop-driven activities for some areas in the district, the growth center idea becomes an important policy issue. It is expected that a general improvement in infrastructure together with the growth center approach in planning implementation will lead to an improvement in farming systems due to diffusion of innovation and change in the attitudes towards progressive ideas. This would also enhance increased settlement and population, efficient utilization of resources, and more social control. Dispersed local processing on small scale will be made possible especially through the establishment of an agro-based industries. Such industries, being likely be labour-intensive, requiring less investment could be located closer to sources of supply. Such industries also produce smaller volumes of higher value products to transport, and leaves residues in rural areas. On the whole, agriculture, agro-processing, and distribution services, all require skilled labour, whose services

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APPENDIX

HOUSEHOLD QUESTIONNAIRE:

SECTION 1: IDENTIFICATION

Name of Respondent

Position in the household

Plot Number

Age

Division Location

Sub-Location Village

Farm / Ranch Name

SECTION 2 : CENTRAL PLACES AND HUMAN SETTLEMENT:

I. CENTERS

1.1 Where do you buy your daily consumer goods ?

1.2 Distance in kilometers (kms)?.....

2.1 Are all these goods available in the town? 1. Yes 2. No

2.2 If No, where do you get those that are unavailable?

Name of Center

Distance in Kilometers

3.1 Are there small shops (canteens) within your neighbourhood?

1. Yes 2. No

3.2 If Yes, how far is it from here?

3.3 What kind of goods do you get from these small shops?

.....

3.4 What kind of goods do you get from your nearest center?

.....

4.1 What services are lacking in your nearest center?

.....

4.2 Where do you get such services?

Name of Center

Distance in Kilometers

II TRANSPORTATION FACILITIES (INFRASTRUCTURE)

1. How far are you from:-

a) Tarmac road? Distance in Kilometers

b) All weather murrum roads? Distance in kms

c) Rural access roads? Distance in kilometers

2. For each of the goods/services shown below, please indicate the nearest and the furthest center/town from which you obtain them. Indicate also the mode of transport/cost incurred.

1. Major basic consumer goods (household goods)

2. Banking services

3. Medical services

4. Farm inputs

5. Farm implements

6. Livestock feeds

7. Veterinary medical services

8. Others

3.1. What major problems in transportation do you normally face?

.....

3.2. How do you think these problems could be solved?

.....

4.1 What services are lacking in your nearest center?

.....

4.2 Where do you get such services?

Name of Center

Distance in Kilometers

II TRANSPORTATION FACILITIES (INFRASTRUCTURE)

1. How far are you from:-

a) Tarmac road? Distance in Kilometers

b) All weather murram roads? Distance in kms

c) Rural access roads? Distance in kilometers

2. For each of the goods/services shown below, please indicate the nearest and the furthest center/town from which you obtain them. Indicate also the mode of transport/cost incurred.

1. Major basic consumer goods (household goods)

2. Banking services

3. Medical services

4. Farm inputs

5. Farm implements

6. Livestock feeds

7. Veterinary medical services

8. Others

3.1. What major problems in transportation do you normally face?

.....

3.2. How do you think these problems could be solved?

.....

SECTION 3 : MARKETING OF AGRICULTURAL PRODUCE

1.1. Is the plot already developed? 1_ Yes 2. No

1.2. If Yes, indicate the extent of development

1.3 If No, why, is the plot not developed?

.....

1.4. How big is the your plot?

1.5. Acreage under crop and livestock production

.....

2. What is your opinion about this statement: A farmer should plant crops for sale first; and then buy his own food? Explain.

.....

.....

.....

3. How do you sell your products?

.....

3.1. Why do you market directly to the consumer?

.....

3.2. What problems do you get by marketing directly to the consumer?

.....

3.3. Why do you market through middlemen?

.....

3.4. What problems do you get by marketing through middlemen?

.....

3.5. Why do you market through Co-operatives?

.....

3.6. What problems do you get by marketing through Co-operatives?

.....

3.7. Others (Specify)

3.8 What other marketing problems do you have?

4 How do you sell your livestock produce? (milk, eggs, honey, chicken, shoats (sheep / goats), cattle)

4.1 What problems do you get in selling directly to the consumers/centers?

4.2 What problems do you get in selling through the Co-operatives?

4.3 What problems do you get in selling through the middlemen?

4.4 Any other? (specify)

4.5 What major problems do you encounter in marketing your animals?